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Russia's Strategic Commodities:

Energy and Metals as Security Levers

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Russia's Strategic Commodities: Energy and Metals as Security Levers

Abstract (not more than 200 words)

The report aims to analyse Russia's usage of its strategic commodities in a security policy context. For this purpose Russian production, consumption, reserves and exports etc. of five strategic commodities: oil, gas, aluminium, nickel and palladium, are assessed. These commodities have been chosen mainly for their importance in a supply-perspective for importing countries, but also for the Russian political leadership's possibility to control commodity flows, directly or indirectly. The report holds the concept of dependence as of special importance, especially dependence on Russian commodities by CIS and European countries, primarily in a long-time perspective. This also encompasses a description of the political background to Russian views on economic security and strategic reserves.

The authors further attempt to analyse Russia's possible manipulation of international commodity markets and thereafter proceed to investigate historically known examples of Russian use of strategic commodities in its relations to Georgia, Ukraine, Estonia, Latvia, Lithuania and Moldova. The authors find that in all of these cases, Russia has tried to use oil and gas as political levers, albeit with limited success, as far as is known. The report concludes, after discussing mental, political, economic and structural factors that Russia within every field analysed continuously strengthens its ability to use commodity policy as a security lever.

Keywords

Russia, oil, gas, aluminium, nickel, palladium, commodities, security, supply, trade, raw materials, commodity policy, economic security, strategic reserves, economic dependence, energy

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Rapportens titel (i översättning)

Rysslands strategiska råvaror: energi och metaller som säkerhetspolitiska hävstänger

Sammanfattning (högst 200 ord)

Rapporten syfte är att analysera rysk säkerhetspolitisk användning av strategiska råvaror. Rapporten beskriver därför den ryska produktionen, konsumtionen, reserverna och exporten etc. av olja, gas, aluminium, nickel och palladium. Dessa råvaror har valts främst genom sin betydelse för omvärlden i ett försörjningsperspektiv, med utgångspunkten att den ryska ledningen också har direkt eller indirekt möjlighet att kontrollera råvaruflödena. Särskild vikt läggs vid OSS och europeiska länders försörjning från Ryssland. Likaså analyserar författarna det långsiktiga beroendet av ryska råvaror. Därefter studeras den ryska synen på ekonomisk säkerhet, strategiska reserver och den politiska bakgrunden till denna syn.

Författarna gör därefter ett försök att analysera ev. manipulation av råvarumarknaderna och går sedan över till att undersöka hur ryskt agerande historiskt sett kan ge belägg för att råvaruflöden utnyttjats i relationerna med omvärlden. De länder som undersöks är Georgien, Ukraina, Estland, Lettland och Litauen samt Moldavien. I samtliga fall kan konstateras att försök att utnyttja dessa länders beroende av framför allt olja och gas har gjorts, men med, såvitt känt, liten framgång. Rapporten avrundas genom en diskussion kring de mentala, politisk-ekonomiska och strukturella faktorer som bedöms påverka den ryska råvarupolitiken i dag. Slutsatsen är att Ryssland kontinuerligt stärker sin förmåga att använda sina råvaror som säkerhetspolitiska instrument.

Nyckelord

Ryssland, råvaror, olja, gas, aluminium, nickel, palladium, säkerhetspolitik, råvaruförsörjning, råvarupolitik, manipulation av råvarumarknader, ekonomisk säkerhet, strategiska reserver, ekonomiskt beroende, energi

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FOREWORD AND ACKNOWLEDGEMENTS

This study represents a follow-up of an earlier attempt to analyse the security policy-related factors of Russian strategic commodities carried out at FOA/FOI in 1998. The present study has been made more comprehensive, with the ambition to make a deeper analysis of Russian thinking, strategies and performance regarding the political use of strategic commodities. The main part of the work has been carried out by Robert Larsson.

The report was presented at a FOI research seminar in Stockholm on June 26th 2004. Ph.D. Gunnar Sjöstedt from the *Swedish Institute of International Affairs* reviewed the report and acted as discussant and opponent at the seminar. The authors would like to thank him along with our colleagues at FOI who have given constructive criticism and important feed back on drafts of this report.

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"Reflections of Realities: Energy View from the Kremlin"

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CONTENT

EXECUTIVE SUMMARY

During the last decade, Russia gradually became significantly more dependent on the exports of raw materials for its economic recovery. Simultaneously, consumers of these commodities have become more dependent on Russian supplies. The interdependence can be seen as gradually growing more favourable to Russia, since high world market prices for the commodities allow for a substantial improvement in Russia's trade balance and consequently in its currency reserves as well. If the Russian leadership were to use the commodity weapon against any Western importer it would have an lasting effect. European countries have few substitutes for imports from Russia when it comes to natural gas.

This report shows that Russia has said that it will use, has used and probably will continue to use commodity exports as a political tool, even if this has been found to be a blunt instrument. Its intentions are relatively outspoken, at least within the former Soviet area, where dependence on Russian strategic commodities is high. One of the major problems in this context is Russia's unpredictability.

Given the extraordinary powers of the president there can be decisive impacts on relations with the West. The present pro-Western policy is met with concern by parts of the Russian political establishment and there are no guarantees that this policy will remain after Putin. Factors like Russia's handling of Chechnya (and the related terrorist attacks) have chilled relations with the West, as have the repercussions for democracy. Unpredictability is growing as Russia is returning to a one-party state system without checks and balances in the political system. The absence of genuine rule of law adds further to this uncertainty.

Commodity and Security Policy

In its energy strategy, *Russia states that it aims to utilise energy policy for security purposes*. This idea connects to the general notion of security and strives, by non-military means, to extend Russia's influence abroad, to secure its independence and to create growth. The analysis made here confirms that Russia is true to its statement.

This strategy is linked with Russia's perception of *economic security*, as expressed in the Security Concept. Promoting growth, ensuring independence and extending international influence are some key factors. This perception has also led to the continued holding of strategic stocks and a high level of secrecy concerning some commodities being retained.

Russia's state control over the individual commodity sectors is strong. This makes it possible to use the energy and metal levers when conducting both domestic and foreign policy. The political rationale for doing so is found in several spheres, for example the political, economic, financial, security, social and military spheres. Explanations of policy outcome are found to be complex and to encompass multiple levels, ranging from nationalism and collective perceptions of Russia as a great power to individual actors and their personal connections and priorities.

Due to Russia's actions on the non-ferrous metals markets, there have been claims of manipulation or dubious behaviour. Evidence is lacking, but it seems that *Russia has been acting 'tactically' within the market boundaries*. As the sector by and large is shielded from insight and data are secret or unreliable, it is hard to assess, but it is clear that Russia's impact on the markets is substantial.

No clear evidence of Russian attempts to cut off gas supplied to the West has been seen, *but it has occurred with several former Soviet republics (and Bulgaria).* A review of cases in Georgia, Ukraine, Moldova, Estonia, Latvia and Lithuania shows at least six things.

1) By turning off oil or gas, Russia has on several occasions *tried to use the energy weapon* against the states listed above, with the aim of reaching a goal that has varied depending on the occasion, for example in order to enforce concessions in ongoing negotiations.

2) Russia has in all important respects *failed to reach its goals* by using the energy tool. In addition, several negative effects have been visible, both in economic and in political terms, and concerning perceptions of Russia as an energy supplier. This has not prevented Russia from renewed attempts. As it seems, actions today are first and foremost directed at insolvent customers. This has partly legitimised the actions taken, but evidence point to other reasons as well.

3) *It is not always clear whether solely private firms or Kremlin's wish is behind these actions*. It is clear, however, that most often priorities are the same, that minor actions on the market are taken care of by firms and strategic issues are decided by the Russian state.

4) Most important is *Russia's long-term strategy of partly reintegrating the former Soviet space with Russia*. Russia does not conquer, but acts, directly or via state-owned or controlled or semi-state-controlled firms, under market conditions. Infrastructure is means for doing so. Investments, hostile takeovers, acquisitions and joint ventures are made either according to market mechanisms or under political and economic pressure, for example oil and gas cut-offs.

5) *Transport systems for energy carriers, such as pipelines and ports, are the single most important tool Russia has and strives to have in an energy/security context.* By this means it has strengthened and continuously attempts to strengthen its capacity to control energy transport and transit even further, resulting in a strengthening of the security levers it has both on the CIS and on Europe, as well as other places.

6) As a consequence, *dependent states become even more dependent on Russia*. Russia may have failed in reaching its short-term policy goals by its energy policy, but *its over-arching strategy is slowly but steadily being fulfilled*. Long-term contracts, for example with Turkmenistan, have been realised. Infrastructure of significant importance in most states has been acquired, by formal and dubious means. Russia has retained its transit monopoly in most cases. Reserves within the CIS area have also been brought within Moscow's reach, for example in Kazakhstan. The importance of foreign states, such as the Baltic states, as transit countries for Russian energy has decreased. True, policy has backfired, for example in relations with Ukraine and Belarus it has been much less successful and new pipelines are bypassing Russia.

In conclusion, Russia is not strong enough to control either states or the energy sectors. However, it can strongly affect them, as their dependence on Russia grows continuously.

Conclusions Concerning all Commodities

1) First it can be said that of all the issues pinpointed below, *all but a few have existed in one form or another since 1991*, which is something previous work by FOA/FOI bears witness. This means that developments since early 1998 have not been revolutionary but have evolved along the same lines as before, even despite the severe financial crisis in mid-1998. The commodity sectors are thus battling against the same foes as before, but on a more stable ground, even if differences between the sectors exist.

2) Concerning *costs*, obsolete technology and extraction techniques not only pose an efficiency problem for the commodity sector but are also some of the key factors behind the rising costs. In relation to this, costs of input, most notably for energy, are increasing and gradually reducing Russia's competitive advantages within the energy and metal sectors.

3) *New infrastructure is required*, which demands major investments. The process has started, but is slow and so far insufficient. Awareness of needs is however high but lack of funding is the key obstacle. Occasionally political and corporate forces set their priorities differently, for example concerning pipeline routes, which is something that prevents crucial infrastructure projects being realised.

4) *The metal content of extracted ore is less than it used to be*, which partly connects to the problems of obsolete technology. Mines and alluvial sites are becoming depleted and extraction has to take place in deep shafts, which is costly. Similarly, newly prospected oil and gas fields contain relatively small amounts of hydrocarbons compared to those found in the 1980s. However, this trend is the same as for explorations conducted in Norway and the North Sea, to mention just two examples.

5) *Aggregated trends are similar for all commodities*. Production declined during the 1990s compared to the Soviet period, but is now increasing again. Domestic consumption has also fallen dramatically and has not completely recovered yet. Exports are mainly directed towards the West instead of towards the CIS countries. This development is linked to both domestic and international processes at large. The Yeltsin era was characterised by financial crises, unclear policies, and laws and regulations that resulted in a lack of control of the commodity sector. As the situation improved, and Putin became president, stability was enhanced and the anarchical development came to a halt.

6) The commodity sector is facing and causing severe *environmental problems* that receive little attention. Yet reducing energy waste is making its way onto the agenda, mostly thanks to the possibilities of saving money. In addition, the environmental safety of pipelines is being prioritised and is considered to be successful by international standards.

7) *New laws are required* if the commodity market is to work properly. The needs relate to everything from laws concerning corporate finance and export quotas to general improvements of the investment climate and taxation.

8) The *strategic aspect* of strategic commodities is both increasing and decreasing. This means that the high level of secrecy connected to data on certain strategic metals - in this report most notably palladium - is gradually decreasing, and the current trend points to greater transparency. The strategic stock, or reserves, have had the function of buffers in case of crises and war, but are now taking on a role as a tool for operating on the commodity market.

The geo-strategic aspect of energy is still at the top of the agenda and this report shows its importance, in particular in relations between Russia and former Soviet republics.

Crude Oil

Overview: The Russian oil sector of today is stable and has been consolidated compared to the 1990s. Production companies are privatised, owned by some 20-25 domestic financial-industrial groups, operating largely under market conditions. However, the sector still has substantial and deeply embedded problems, including environmental ones. Investments needs amount to US$150-200 billion until the year 2020, but few investments are made. The investment climate is not advantageous - even if risks can turn out to be profitable. Large uncertainties exist. Laws and regulations are unclear and state policy is highly ambiguous and unpredictable. The '*Yukos* affair' and recent actions by President Putin have induced further doubts about Russia's strive to take serious rule of law, democratisation and marketisation. Any commitment to become integrated in Western structures cannot be seen. The importance of oil for Russia's state finances cannot be stressed enough and presumed growth is very dependent on exported quantities and oil price, as is the state budget.

State control: Seemingly, Russian control of the oil sector is small as oil companies are privatised. However, in addition to the firm *Rosneft*, Russia controls *Transneft*, which owns the pipeline grid. This results in almost complete control over oil transports. In addition, governmental bodies such as the CDU, MVK, FEK and the *Ministry of Energy* control such things as tariffs, quotas, laws, regulations, export grants and access to ports and pipelines. State policy often goes in line with companies' lines. President Putin is clearly strengthening his control over both private companies and state institutions, which results not only in a strengthening of *state* control, but also direct *presidential* control.

Production: Russian oil production fell from over 500 to 300 million tonnes per year after the disintegration of the USSR. Since then it has regained much of its former strengths and production now amounts to 450 million tonnes per year, which occasionally makes it the number one producer in the world. Focus is on crude oil, as refined products are not up to international standards. Produced oil is yet of poor quality, which is seen in lower prices (than for Brent oil). Russia's approach is short-term in nature and it exploits the situation in an unsustainable way, which partly can be explained by a high oil price and the prevailing market situation. Forecasts show that production may increase somewhat, and may stabilise between 300 and 400 million tonnes per year even if levels above 500 can be reached. Thus, Russia is today slowly reaching its maximum production capacity under current operation conditions. As a consequent, its role as producer becomes infringed. Despite this limitation, Russia will continue to be of pivotal importance.

Reserves: The Russian oil reserves, mainly located in Western Siberia, make up roughly 6% of world reserves, which is to be compared with Saudi Arabia's 25%. Its position in the long-term perspective is thus questioned as most, but not all, of Russia has been prospected. No major, but several minor findings can be expected. Technological improvements may have an impact on the margin. Unconventional hydrocarbon liquids will not take a central role in Russia. Problems of classifications and estimates of reserves result in problems for companies involved in mergers and acquisitions.

Consumption: Consumption of oil in Russia has declined from around 470 to 100 million tonnes per year, as a result of the general decline within the industrial sector after 1990. It can

only be expected to increase slowly. Usage of oil is inefficient and energy saving is difficult due to obsolete industrial technology.

Exports: As a world supplier Russia is outflanked only by Saudi Arabia and has an unquestionably strong role by exporting almost 10% of world supply. Since 1991, westward exports have increased, while exports to the CIS have declined. Bottlenecks, quotas and regulations put limits on the amount of oil Russia is able to export. Currently, Russia moves towards the limit of the export capacity. The US gets almost 4% of its needs from Russia, while the EU gets around 15%. Sweden has strongly increased its imported share from Russia, which now amounts to 20% of its needs. Many individual states are dependent on Russia. Demand in the next ten years will strongly increase in the US, in the EU and in Asia. The situation is expected to become restrained, resulting in higher prices and higher degree of competition. Russia will still be able to affect world market prices, but cannot control them. Its reliability as a supplier has been high towards Europe, but not against former Soviet republics. Russia's role on world markets will definitely be strong also in the future.

Natural Gas

Overview: The Russian gas sector is stable, but far from dynamic. *Gazprom* is the mismanaged and rigid gas monopoly, which stands for over 80% of produced gas in Russia. Prices are artificially held low for political reasons that together with lags from the USSR result in inefficiency, inertia, stagnation, lack of transparency and deprivation of means for investment. Problems of corruption, non-payments, and leakages, tapping and wasting are found within the whole sector. Some US$160-170 billion are needed during the coming decades for investments. The market is largely shielded from open competition, even if some signs of improvements are seen. State policy, as stated by Putin, bears witness of that there is no strive to privatise. This has infringed on Russia's possibilities to WTO accession, both due to the monopoly and to difference in domestic and export prices. Gas is, like oil, of highest importance for the Russian state budget.

State control: Russian state control of the gas sector is even stronger than of the oil sector. *Gazprom* and most of its subsidiaries are state-owned. *Transgas*, which owns the gas pipeline grid is also state-owned. The informal power base is also important as many key positions in the gas sector are held by persons closely connected to the president or former governmetal officials. Governmental bodies enjoy strong powers over the sector, especially concerning exports. The trend indicates that the state intends to keep its grip of the sector and in many ways increase it. Russia can strongly affect world supply of gas, now and in the future.

Production: Gas production has, although stagnating, been kept at high levels during the last decade and now amounts to over 600 billion cubic meters per year. Russia is the largest producer by a 22% share of world production (followed by the US close behind) and has potential to increase production further, but not under current conditions. Both reform and investments are needed.

Reserves: By far, Russia has the largest gas deposits, namely over 30% of world reserves. There are many problems of prospecting and classifications, but many deposits are explored albeit not taken into operation. Given this fact, Russia's long-term position as world supplier is unthreatened.

Consumption: Consumption has declined sharply since 1991, but has risen somewhat since. Gas accounts for 80% of Russia's power generation. Conversion towards gas operating

energy plants is slow. Domestic prices must increase by 100% in order to reflect costs and make investments and reform possible. Consumption is expected to rise when the general industrial situation improves.

Exports: Gas exports doubled during the 1990s and now amount to over 200 billion cubic meters per year. Gas makes up between 15-20% of total exports and is thus extremely important for Russia. If transport and production infrastructure are improved, the potential for further exports is very large. 20% of Westerns Europe's gas comes from Russia and EU's dependence of gas is expected to increase sharply. Russia is likely to strengthen its role as supplier, both to Europe and Asia. Today over 10 countries are dependent on Russia to more than 80%.

Aluminium

Overview: The aluminium sector in Russia is by and large old-fashioned, but change is under way. The sector is privatised and dominated by the companies *RusAl* and SUAL. Investments and modernisation are under way and Soviet lags, such as barter-payments and non-monetary transactions, have been reduced. Despite the general poor investment climate in Russia, international actors have shown confidence in the Russian aluminium sector and several companies have adopted western-style reporting, accounting and management models.

State control: The Russian state has no direct control over the aluminium market. The primary means of managing the sector are by tariffs, quotas, taxes, regulations and permits et cetera that are powerful enough to affect market supply and world market prices. Governmental bodies as *Rosrezerv*, enjoy strong power over the resources rather than firms operating on the market. Additionally, informal networks and political connections of key-actors can be expected to have an impact.

Production: production of primary aluminium is cheap as cheap energy is Russia's comparative advantage, but also a necessity due to its old-fashioned production facilities. SUAL and *RusAl* control 95% of the Russian sector and 20% of the world's production. Production has increased since 1991 and now amounts to almost 3.5 million tonnes per year, which after China makes it the second largest producer in the world. Russian aluminium is of much higher quality, despite the fact that its raw materials are of poor quality, than China's and Russia will likely keep a premier position, even if falls in aluminium price and higher energy costs put restraints on expansion.

Reserves: Russia's bauxite reserves (less than 1% of world's total) are poor and therefore nepheline and apatite make up the lion's share of Russian production, despite a higher need for energy. New deposits are continuously found, but most often far away from production facilities that are found near hydro energy plants. Reserves will last for the overseeable future.

Consumption: Domestic aluminium consumption has fallen dramatically (97%) since 1991 and has just started increasing. The reason behind the fall was declined demand from the military-industrial complex. Future demand depends on needs in the aviation and car manufacturing industries.

Exports: As domestic consumption fell, most aluminium had to be exported. Consequently, world supply heavily increased resulting in price falls. Main importers of aluminium are the US (18% of needs comes from Russia); Thailand and Japan, but European demand is also

increasing, although aluminium trade between the EU and Russia not has been free from problems.

Nickel

Overview: Russia's nickel market has, as has the whole metal market, been plagued by problems of corruption, ownership disputes, lawsuits and general instability. Nickel is found at deep levels, which makes exploration and extraction costly and difficult. The main producer is *Norilsk Nickel*, the world's largest nickel producer with 96% of the domestic market and almost 20% of the international market. Some, but too few, investments are made and the share of aging technology is increasing. The market is sensitive to most actions within the sector, including seasonal effects. *Norilsk Nickel* alone makes up almost 2% of Russian GDP and is hence important for state finances.

State control: The sector is privatised and *Norilsk Nickel* acts as an independent and market-orientated company. *Norilsk Nickel's* and the state's interest sometimes converge and sometimes not. State control is both related to laws and regulations, which is enough to affect world supply and impose restrictions when considered necessary, and to the overall Russian policy of state control over natural resources. Thus state control is long-term and strategic in nature. Actions affecting world market price on nickel in the short-run are connected to *Norilsk Nickel* and in the long run to Russia as a state.

Production: After an initial decline, Nickel production is almost back at the levels of the early 1990s, namely close to 300 thousand tonnes per year. Unlike other commodities, the initial fall was not a consequence of decreased demand, but instead of problematic production. Closely ahead of Canada and Australia, Russia is the world's largest nickel producer. Russia is expected to strengthen its position as a result of increased international demand, despite lack of investments.

Reserves: Russia's nickel reserves are substantial and amounts to some 6-7 million tonnes, which however is not much compared to Australia's 22 million tonnes. Norilsk Nickel has just initiated production at two deep mines, but no major exploration projects are under way. In a long-term perspective, new explorations are necessary if production levels are to be kept.

Consumption: During the 1990s, consumption fell even more than available data (74%) suggest. Decline in production within the military-industrial field was the main explanation. Increased demand is expected when the general economic climate improves.

Exports: Russia has increased nickel exports since the early 1990s, and now exports over 200 thousand tonnes per year. 73% of *Norilsk Nickel's* nickel goes to Europe and 10% to the US. This means that around 12% of the US' imports come from Russia. Exports are expected to increase in the future due to increase in global demand.

Palladium

Overview: The palladium/precious metals market in Russia has slowly moved from state control via chaos and anarchy back to state control again. It is now stable but still unpredictable and enigmatic. Market data is incomplete and notoriously unreliable. Laws and regulations are unclear and change continuously. Secrecy concerning stocks and reserves has been total, but is gradually reduced, at least for firms (albeit not for state reserves). The company *Norilsk Nickel* and its subsidiaries stand for close to 100% of the palladium market

in Russia. In addition it owns the refineries, melting plants and transportation firms. Investments are continuously made and many improvements can be seen. Produced palladium is for example of top-notch quality. No foreign operators exist. Instead, *Norilsk Nickel* has acquired other large international firms, for example the largest in the US. The financial importance of palladium is debated, but it has made up almost 2% of Russia's total export revenues and has at times been crucial for requiring hard currency.

State control: Despite being privatised, the precious-metals market is centralised and state control is very strong and shielded from insight. Governmental bodies such as the *Ministry of Finance* and *Gokhran* together with *Gosbank* and others are not only part of the policy process, but also own large palladium stocks. Export quotas have been imposed and a coordinated export policy developed. Thereby the state has been able to affect the market directly, resulting in supply fluctuations and price volatility. Several issues on the market have been decided by presidential decrees and *Norilsk Nickel* can do few things without state approval. Palladium is a strategic resource of even higher importance than nickel and aluminium. Secrecy has even further enhanced Russia's position vis-à-vis other actors.

Production: Palladium in Russia comes from extraction and recycling and has reached a level of almost 100,000 tonnes per year (in the early 2000s). This is a doubling in 10-years time. World supply is not only dependent on production, but mostly to governmental sell-offs of strategic stocks. *Norilsk Nickel* strives for increasing efficiency and reducing costs rather than increasing mine output. Production is likely to remain at current levels.

Reserves: Data on palladium ore reserves are by and large secret, but some estimates suggests that Russia has some 10% of world reserves of platinum-group metals, which in Russia is palladium dominant. South Africa is nonetheless far ahead of Russia in terms of reserves. Russia's strong position is largely related to its strategic stocks, which may amount to some 3-400 thousand tonnes. Stocks and reserves suggest that Russia still will be able to affect the market in years to come.

Consumption: Because of general industrial decline, palladium consumption has fallen. It is unclear how much it presently is, but official figures point to some 5,000 tonnes per year. Unless military production increases, consumption will stay at low levels.

Exports: Stock sell-offs have resulted in great impact on the market. Exports have reached levels of 120 thousand tonnes, which are higher than production levels. Maybe as much as 50% of world supply comes from Russia, which can be seen in relation to its modest ore reserves in comparison to South Africa. Russia's behaviour is unpredictable and unreliable. Its attempts to control the market have so far backfired. Yet, Russia is able to strongly affect the palladium spot-market. Many states are dependent on Russian palladium. Japan imports 60-70% of its needs from Russia and the US 20%. 44% of Europe's palladium imports come from Russia. There are risks for oversupply, although Russia is expected to strengthen its position as world supplier.

1 INTRODUCTION

In January 2004 the Russian newspaper *Vedomosti* wrote: "slowly, but steadily, Russia is transforming the energy factor into a political tool."[1] Russia's development, a country which according some estimates has the world's largest reserves of hydrocarbon energy carriers,[2] also indicates that its role as a commodity supplier is increasing in importance and in the light of increased demand in the US, Europe and Asia, the situation calls for attention.

Table 1: Russia's Share of World Market Production of Oil, Gas and Selected Metals, 1991-2002

	1991-92	1996	2002
Crude oil	12,2%	8,8%	10,7%
Natural gas	29,2%	25,1%	22,0%
Palladium	55,0%	63,0%	51,6%*
Aluminium	8,1%	25,0%	13,2%
Nickel	16,9%	20,0%	24,8%

Sources: See appendix 1.

Another important factor is the still prevailing unpredictability of Russian policy, for example toward organisations such as the CIS, the EU and the WTO. In addition, the Yukos affair has brought about new doubts concerning Russia's market orientation.

Europe's growing dependence on Russian supplies and the confirmed Russian inclination to use its economic and energy levers in security-related matters makes an assessment even more urgent.

As far as Sweden is concerned, the importance of this matter has, at several occasions, been acknowledged,[3] but after the Cold War, attention given to related risks and problems has faded. Yet, the situation brings about several challenges. Ecological threats from Russian oil transport at the Baltic Sea[4] or expected increased dependence are two. In addition, the *International Energy Agency* recommends Sweden to increase its usage of natural gas,[5] which brings the issue onto the security agenda.

The rationale behind this study of Russia's strategic commodities is thus multi-fold. First and foremost it serves a purpose *per se* to gather and present data and information on the topic, as a thorough understanding of conditions relating to economics, politics and security are, almost by definition, of importance. Issues often neglected in other analyses should therefore be brought to attention.

Moreover, canvassing a magnitude of aspects and issues concerning Russia's commodities creates better understanding of the conditions for the Russian economic development as well as facilitating mental and physical preparedness for political or economic actions within the fields discussed.

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[2] Boxell, James and Cameron, Doug (2004), "Lubricating Russia's Oil Wheels", *Financial Times*, 4 October, 2004, p. 19.
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[4] Nordin, Tommy (2004), "Ryska oljefartyg farliga", *Svenska dagbladet*, 5 April, 2004 and: Norrbom, Hans (2004), "Brist på statlig hamnpolitik", *Från Riksdag och Departement*, no 24, 2004, p. 15.
[5] - (2004), *Energy Policies of IEA Countries: Sweden 2004*, Paris: IEA.

1.1 Point of Departure

The Russia study group at the *Department for Security Policy and Strategy, Division of Defence Analysis* at the *Swedish Defence Research Agency* (FOI) has during several years studied and analysed various dimensions of Russia's security policy. Much attention has been given both to fundamental studies of Russia's *resource base*[6] and its *non-military security policy* towards neighbouring states.[7] This report aims to continue along these two roads by assessing new dimensions and issues found at the intersection.[8]

The report is intended to reach several kinds of readers, namely: officials, policy makers and analysts both within the commodity and the security policy field. The requirements by these groups naturally vary, which explains the structure of the report. The intention has been to satisfy all groups by having both a substantial amount of data and a thorough discussion.

1.1.1 Objective and Aim

The initial selection was made in a previous study of similar kind[9] and three criteria were then pinpointed: 1) Russia's share of possession or exports to the world market for respective commodity must be of significant importance. 2) Other states must at the aggregated level be dependent on Russia to a certain extent and the importance of the commodity must be considered as large.[10] This also means that they are not easily substituted in the short-term perspective or to feasible costs. 3) The export share of the production of the commodity in question must be at a high level.

Several Russian commodities could fulfil these criteria. A number of non-ferrous metals are for example used in alloys that are of significant importance in certain industrial processes. In order to cover all of these in a satisfactory way, the study would however have to be considerably enlarged and the authors suggest that this could be treated in future studies. The final selection, therefore, has been made on the findings in the above-mentioned report and while considering a trade-off between wideness and depth of the report, five commodities have been considered to be of greatest importance and were consequently chosen, namely: crude oil, natural gas, aluminium, nickel and palladium. These all fulfil the above stated requirements in varying degree. For natural reasons, oil and gas constitute the two most important commodities, especially regarding size of and dependence on Russian exports.

The use of non-ferrous metals as a political tool is in some cases of great importance in a longer time perspective and for a country's future industrial capacity, while interruption of energy carriers has almost immediate effects on several sectors of the economy in any country. The unique possibility Russia has to combine these two types of strategic commodities in a possible effort to use them as a political tool is of course of special interest,

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[6] See: Leijonhielm *et al* (2002), *Den Ryska militärtekniska resursbasen: rysk forskning, kritiska teknologier och vapensystem*, Stockholm: FOI and Unge, Wilhelm (2000), *The Russian Military-Industrial Complex in the 1990s: Conversion and Privatisation in a Structurally Militarised Economy*, Stockholm: FOI.

[7] Hedenskog, Jakob (2004), *The Ukrainian Dilemma: Relations with Russia and the West in the Context of the 2004 Presidential Elections*, Stockholm: FOI, Sjölund, Joakim (2002), *Ekonomisk säkerhet – till vilket pris? En studie av den ryska synen på ekonomisk säkerhet*, Stockholm: FOI, Svensson, Charlotte (2003), *Ekonomi och säkerhet i de baltiska staterna: en studie av relationen mellan säkerhetstänkande och ekonomiska beroenden*, Stockholm: FOI.

[8] For a list of selected FOI publications, see backside of report.

[9] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished).

[10] The issue of dependence is further discussed below.

not least concerning former Soviet republics and Eastern Europe, where dependence on Russian supplies often is very high.

Objective of the Study

The *objective* of this study is to shed light on Russia's situation concerning commodities and raw materials in a broad perspective. Consequently, the *aim* of this report is two-fold.[1]

Aim of the Study

The *first* aim is to canvass the situation of the past, present and near future concerning Russian production, consumption, possessions of reserves and export volumes for the strategic commodities crude oil, natural gas, aluminium, nickel and palladium.

The *second* aim is to assess and discuss the complex and tangled web of political and economic issues and roles played by these strategic commodities, with special emphasis on Russia's intentions and capabilities to use commodities as security levers in its foreign relations.

1.1.2 Approach and Basic Assumptions

There are two basic assumptions of this study. The first is that Russia, above all, prioritises its national interest and security and that all policy tools available to the state are used in this context. One such policy tool, which naturally encompasses many dimensions, is commodity policy.[11] However, it would be far-fetched to relate every single action on the commodity market to a long-term over-arching goal of security. Therefore, the second basic assumption is that commodity policy also can be used for various purposes that to variable degrees are subjugated to the over-arching goals. As a consequence, in the following analysis special attention is given to issues connected to the second assumption.

In this context, two issues of terminology must be underscored. The concept of *commodity policy*, mentioned above, is here used as a collective term for policy connected to raw material and commodities, such as metals, natural gas and oil. It thus refers both to policy of managing the various commodity sectors and to policy where commodities are used as tools for other reasons than managing the commodity sector.

If commodity policy is founded in other reasons than simply managing the commodity sectors, the question of *why* arises. One reason could be military and relate to the needs of the military-industrial complex, while another could be purely economic, for example as a way of improving the financial liquidity in hard currency for the state. A third reason could be for scoring political points before an upcoming election or relating to security while exerting pressure on neighbouring states. In short, there could be numerous reasons that likely are integrated in each other.[12]

Consequently, they are all integrated and hereinafter, these 'other' reasons will be labelled *political reasons* in order to avoid lengthy reiteration of all options at hand. After all, most reasons have a political dimension. It is also clear that commodity policy is closely related to

[11] See further comments in relation to Russia's energy strategy.
[12] A somewhat more detailed elaboration is found in *chapter 3* of this report.

issues of security and national interest, which is one reason why it receives so much attention in Russia.[13]

Having said this, it must also be noted that even if security is the hub around which the commodity sphere is spinning, this report holds the perspective of *dependence* as of special importance. It will both implicitly and explicitly guide the study and in subsequent segments of this report dependence, vulnerability, economic security, commodity policy, political reasons and dimensions of the commodity sector are all further discussed, albeit not formulated as a theoretical framework.

1.2 Method Employed and Scope of Inquiry

If the objective of this study is to be reached, the method employed must include several steps. Concerning the first aim: 1) if a trend is to be identified, an assessment must encompass time series, preferably by covering at least ten years, 2) explanations of irregularities in time series data must be given, 3) background information of actors and market forces must be looked at in order to give an understanding of the situation, 4) present factors that might affect the future market must be detailed, 5) prognoses and key points raised by observers and analysts must also be taken into consideration.

Concerning the second aim and the aggregated level: 1) some over-aching key points of Russia's approach to commodity policy must be given, 2) aspects of dependence, commodity policy, strategic stocks, vulnerability and economic security must be outlined, 3) possibilities for usages of commodity policy for political reasons must be given, 4) examples of such Russian usages of commodity policy must be pinpointed, 5) underlying mechanisms and structures of the market and politics must be touched upon and finally, 6) everything must be put in the context of Russia's general development. The report attempts to do this.

1.2.1 Delimitations of the Study and Criteria of Selection

When it comes to Russia's position on the world commodity markets, it can be said that it often is strong due to the great richness of natural resources in Russia. Naturally, including all commodities and raw material produced in Russia would pose too wide a scope for a study of this kind if a certain depth of analysis is required. Therefore, the first delimitation of this study concerns *commodities* covered, which already has been touched upon.

The second delimitation of this study concerns *time*. In a rear-mirror perspective, this study takes into consideration the development since the fall of the Soviet Union. This is the natural starting point since it marks the beginning of *Russia's* role as a market actor and dramatically changed all parameters covered in this report. The end-point is by and large mid-2004, depending on availability of updated data and statistics. In a forward-looking perspective, the time-span is both longer and shorter. Analyses and prognoses that this report relies on cover a period of approximately between 5 and 15 years, depending on the commodity in question. Forecasts and analyses based on statistical data in this report are indeed shorter in time-span as some factors, such as demography or general economic-political development, are not accounted for other than in brief terms.

The third delimitation concerns *issues* covered. In short, this means that issues well covered in other reports only are awarded subsidiary roles. Geopolitics at large, global energy patterns, peak production analysis, reserve estimates of the Caspian Sea, pipeline diplomacy, the role

[13] See Sjölund, Joakim (2002) *Ekonomisk säkerhet-till vilket pris?,* Stockholm: FOI.

of individual actors or corporate structures are a few examples of issues deliberately left out in this report.[14] True, these issues are highly important for all security policy, but it is out of the scope of this study to assess them in full. Data of private/household consumption has also been left out since its impact on foreign policy is limited. As far as explanations are concerned, this report does not attempt to give the full understanding, although the third chapter raises some central points in this very matter. The intention is, where appropriate, to give suggestions for further reading, for explanations or where to find deeper analyses.

1.2.2 Sources Utilised

This report relies on a variety of sources. First, there is official Russian statistics provided by the *Russian State Commission on Statistics – Goskomstat*. However, these figures are not always comprehensive, complete or reliable for various reasons, and it is difficult to tell how large the margin of error is. Therefore, alternative data is occasionally presented. This alternative data comes from, for example, the *International Energy Agency* (IEA) or *Oil and Gas Journal*, which are leading in the field and provide often-cited data.[15]

It can in this context be noted that there is no obvious correlation between the origin of the sources and the location/language of the site in question. For example, Russian data found at official governmental web sites occasionally have *Oil and Gas Journal* as source, and some information is also taken from the Russian edition of IEA reports, although its data is from western sources (and therefore compiled by western methodology). Similarly, English sources cited may contain official Russian figures. To the extent possible, the original source is pointed out. Latest data is seen in the text, but not always in the tables as it may be compiled by monthly of half-year data.

When it comes to bias of sources, two things can be underscored: first that the political bias of newspapers, news agencies or analytical articles is of minor importance. Second, news and data used in section 3.4 (on Russia's commodity policy towards former Soviet republics), naturally sees Russia's actions from *their* respective horizons which naturally might have an impact. They are chosen for this very reason.

Furthermore, statistics from organisations specialised on certain commodities or spot markets is used, for example *Johnson Matthey*, the *Nickel Institute*, the *London Metal Exchange* or the *London Bullion Market*. This means that statistical yearbooks, annual reports and statistical overviews are used, especially in the second chapter detailing the 'strategic commodities'. If Russian figures differ from international estimates, this is pointed out and if possible, an explanation is also given. This intends to show the span of the data, but the correctness of the data is not assessed.

The second group consists of research reports, forecasts and analyses issued by think-thanks, international organisations or official institutions, for example by the EU or Russian governmental bodies. The third group includes news and press releases, which provide up-to-

[14] For a somewhat brief and updated coverage of the security issues of the Caspian basin, see: Donaldson, John W. (2004), "Bilateral Agreements Raise Stakes in the Caspian Competition", *Jane's Intelligence Review*, May 2004, pp. 48-53.

[15] BP bases its often-cited annual global energy report on figures from *Oil and Gas Journal* just to mention one example. It must also be noted that in most cases, almost complete time serie data is possible to get hold of, although the costs involved are overwhelming for non-profit-seeking organisations. Just to mention one example, *Virtual Metal's* data on Platinum Group Metals costs US$10,000 on an annual basis (see: http://www.virtual-gold.com/Pages/ProductsWBook.htm).

date fact rather than analyses, from newspapers and websites. A somewhat more detailed division of sources is made in the sources chapter. One final thing that deserves to be mentioned is that throughout the report, only cited (not consulted) sources appear in the sources chapter. This means that a great range of literature and data has been consulted and reviewed, both hard-copy journals and internet resources. However, the majority were considered to be of less importance, for example in such a way as that focus is on technical issues, like the journal *Tsvetnaia Metallurgia* does.

1.2.3 Methodological Problems

There are some methodological implications of a study of this kind. First, selection of commodities is, as indicated above, done on the basis of certain criteria. A selection of other commodities could, in fact, change the outcome of the aggregated analysis made. Since the impact on the international market is large for the commodities covered, compared to commodities such as manganese or molybdenum,[16] this is a problem that for now can be overseen. A complete overview of Russia's commodity market is therefore not needed here; although it ought to be object of future research.

Second, there are, as indicated, problems of relying on statistical data and it is therefore necessary to be cautious when using this for analysis. Some of these implications are detailed in the overview section for each commodity. Time series presented in tables are most often compiled of a variety of sources and the reader is advised to take note of this and the comments made in relation to it.[17] It must also be emhasised that not all tables are comparable, as the units not always have been recalculated to the same unit. The reason is to avoid another factor that increases the margin of error, while at the same time the figures *appear* to be comparable. This problem exists in particular when it comes to currencies and units like *British Thermal Units* (BTU).

It cannot be underscored enough that figures are primarily intended to serve as a relative measurement of Russia's role and abilities contra other actors. The exact numbers are of less importance than then trends are.

Third, even the modest forecasting made here should not be seen as a definite prediction, but will be subject to change. Comments made throughout the report are naturally affected if the current premises changes. There is a longer comment on this in relation to the different methods of assessing oil reserves. Naturally, the assumptions will change, especially in the long-term perspective. This is also seen in Russia's energy strategy.[18]

1.3 How to Read the Report

In c*hapter 1*, the 'introduction' chapter should be read. Here, the approach of the report is detailed and the method utilised is explained together with comments on certain peculiarities

[16] At one time, the Soviet Union was the largest producer in the world of oil, iron ore, manganese, chromite, nickel, tungsten, platinum, titanium, magnesium, lead, zinc, cadmium and beryllium. It was also the second largest producer of natural gas, lignite, copper, cobalt, gold, tin, diamonds, asbestos and the third largest producer of coal, bauxite, molybdenum, mercury and uranium. Szuprowicz, Bohdan O. (1979), *How to Avoid Strategic Mineral Shortages: Dealing with Cartels, Embargoes and Supply Disruptions*, Toronto: John Wiley and Sons, p. 34f.

[17] The sources used to compile tables are separated to the greatest extent possible.

[18] - (2003), *Energeticheskaia Strategiia Rossii na period do 2020 goda*, Otvershdena no 1234-r, 28 Avgost, 2003, (Can be downloaded from: http://www.mte.gov.ru/docs/32/189.html).

that are important to note in order to grasp the magnitude of uncertainties and reliability of presented data.

Chapter 2, called 'strategic commodities', in turn assesses Russia's situation concerning crude oil, natural gas, aluminium, nickel and palladium in separate sections. Within each section, production, stocks and reserves, domestic consumption, exports and imports from Russia are detailed. Additionally, issues regarding actors, prices, quotas, tariffs, taxes, investments and Russia's position in relation to international competitors are briefly covered.

The chapter is information heavy as a subsidiary purpose has been to provide something that can be used as a tool of reference for further work. Information and analysis, based on bulks of statistical data, are presented throughout the section, often with comments on the methodological problems related to it. This chapter also forms parts of the empirical foundation that the third chapter relies on.

A reader interested in a certain commodity may read just that section, but ought to read the initial sections of the chapter (2.1-2.3) and is advised to take note of cross references concerning methodological peculiarities. Each section ends with a sum-up of some key findings and conclusions.

Chapter 3, 'commodities and security', is in many was the most important chapter and it puts the main thrust on discussion and analysis. The chapter covers issues of Russian economic security, dependence, strategic stocks, political rationale behind usage of the energy lever, how to understand Russia's commodity policy and a review of cases where Russia has used the energy lever.

Readers mainly interested in the political dimensions may focus on this chapter - although some key points are *only* found in relation to respective commodity and a reader is advised to read the conclusions at the end of sections 2.4-2.8.

Chapter 4, 'conclusions', must be read as it details conclusions drawn in the report and puts them in a political context. Conclusions of the individual commodities are found as brief summaries at the end of the section for respective commodity.

2 STRATEGIC COMMODITIES

Strategic commodities are of two types – non-ferrous metals and energy carrying hydrocarbons. Palladium, nickel and aluminium fall within the first type while natural gas and crude oil fall within the second. This chapter covers the first aim of the report, namely: *to canvass the situation of the past, present and near future concerning Russian production, consumption, possessions of reserves and export volumes for the strategic commodities: crude oil, natural gas, aluminium, nickel and palladium.* Before each and every one of these commodities is scrutinised, some points found at the aggregated level must be said.

2.1 General Economic Development

Russian economic development has, as can be seen in *table 2*, since the financial collapse in 1998, showed a stable and rapid recovery. GDP during this period has on average grown by 6% yearly, industry by 7.7% and investments by 9.3%. A budget deficit, existing since 1991 was 2000 changed into a surplus, which seems sustainable. Inflation has been steadily decreasing and open unemployment, since 2000, has been kept at a level of 8-9%. Capital flight yet increases and amounts to some US$ 8.5 billion.[19] Highly positive results presently can however be seen in foreign trade as a result of high oil and metals prices, with increasing trade surpluses. Russia is just about to regain levels from the period before the Soviet collapse and the 1998 financial break down.[20]

Table 2: Russian Macroeconomic Indicators, 1992-2003

	92	95	98	99	00	01	02	03
GDP, change in%	-14.5	-4.0	-4.9	5.4	9.0	5.0	3.9	6.7
Industrial production, change,%	-18.2	-3.0	-5.2	11.0	11.9	4.9	3.8	6.8
Investments, change in%	-40.0	-10.0	-12.0	5.3	17.4	8.7	2.4	12.5
Unemployment, in%	4.9	8.2	11.8	11.7	10.2	9.0	7.5	8.6
Budgetary balance,% of GDP	n.a.	-5.7	-4.9	-1.7	2.5	2.9	2.1	2.6
Exports, billion ECU or USD	41.2	63.2	66.9	70.7	114.7	112.9	61.7	$134.4
Imports, billion ECU or USD	33.1	47.8	51.8	37.0	48.8	59.7	35.2	$74.8
Inflation, in%	n.a.	131	84.4	36.5	20.2	18.6	14.9	12.0
Roubles/US$	0.51	4.64	20.65	27.0	28.16	30.14	31.78	29.45

Sources:
1) All info except exchange rate 1992-2002: Goskomstat, RECEP, Russian Economic Trends and Blackwell, from: Leijonhielm, Jan (ed), (2003), *Rysk militär förmåga i ett tioårsperspektiv: en förnyad bedömning 2002*, Stockholm: FOI, p. 90 and for 2003: - (2004), *Bofit Russia Review*, Finlands Bank, 13 January, 2004.

2) Roubles/US$: *The Central Bank of the Russian Federation*, Internet, http://www.cbr.ru/eng/statistics/bank_system/, 2003-11-06.

A fast growing economy is however not necessarily a healthy one. Russia remains at the end of a transition phase between command and market economy, but still has a long way to go to a post-industrial economy. A faltering democracy in combination with too little of transparency in the political, legal and economic processes nourishes the already widespread corruption. Administrative and legal reforms are yet to be implemented, as are structural reforms. Productivity and real wages are on the rise, but unevenly. The fact that a very small

[19] Ostrovsky, Arkady *et al* (2004), "Russian Capital Flight Picks up Speed", *Financial Times*, 6 August, 2004, p. 1.
[20] It can be noted that the Russian energy strategy includes persectives on general economic development, which by and large is seen are rising in every aspect. - (2003), *Energeticheskaia Strategiia Rossii na period do 2020 goda*, Otvershdena no 1234-r, 28 Avgost, 2003, (Can be downloaded from: http://www.mte.gov.ru/docs/32/189.html), pp. 9-12.

number of entrepreneurs control and partly inefficiently use 35% of industry is another problem with complex implications for the future. The large dependence on commodities exports remains one of the unsolved problems, as will be seen in the context of this report.

In January 2004, Mikhail Kasyanov, then Prime Minister of Russia, stated that "[i]n spite of numerous changes in the Russian economy, Russia is still too dependent on primarily commodity exports".[21] This dependence will inevitably make a sustainable growth more uncertain, since there are few signs that Russia will have the ability to exchange it for a more robust growth engine. Gains from commodity exports are not fully taken care of by advancing general market reform, as is the case for the Baltic states. A doubling of GDP in ten years, as has been predicted by President Putin seems not feasible, unless counted in foreign currency terms, as the rouble at present is heavily undervalued.

In figures, the dependence on commodity exports is very high: energy carriers account for 55% of the country's exports, total raw material exports (metals and timber included) about 80%. This in turn represents about 45% of revenues in the state budget. In terms of GDP growth, commodity exports accounted for more than 2% out of a 7% growth in 2003, according to official statistics. The contribution made by the oil and gas sector to GDP is given as 7-8% during the past three years. These figures are however underestimated, according to calculations made by the *World Bank* in early 2004. By using tax loopholes and illegal means, many companies in the extracting industry evade tax through what is called transfer pricing. This method consists in short of transferring profits and values from the industrial sector to the trading sector by selling the product cheaply to a trading company, owned by the producing company and sometimes just existing on paper. An important factor is that the trading company is situated in a region that enjoys special tax relief, a so called "internal offshore".

The effect of a recalculation on the composition of Russian GDP is significant, to say the least. The share of trade in 2000, the last year when input-output tables are available, drops from 27 to 15% of GDP, while industry's share increases from 28 to 41%. The major impact is made in the oil and gas sector, while metals and timber account for a smaller effect. The oil and gas industry's share of GDP is estimated to about 20% instead of 8%, and metals (ferrous and non-ferrous) to about 9% These figures show that Russia's dependence on commodities is in fact much larger than previously anticipated, being exposed as it is to world market price fluctuations. Furthermore, since the workers employed in extracting industry only amount to about 2-3% of the total Russian work force, while this sector draws more than 60% of fixed investments, the 'Dutch disease' evidently constitutes a serious problem to Russia. It refers to a situation in a country with large possessions of natural resources that uses these resources in order to boost its exchange rate and by that make other industries uncompetitive. Another related problem is that tax evasion has taken enormous proportions, since the transfer pricing method is used by several companies. Adjustments in early 2004 have however limited the use of this method.[22]

[21] - (2004), "Russia Still Dependent on Primary Commodity Exports", *New Europe*, January 25-31, 2004, p. 36.
[22] - (2004), *Russian Economic Report*, February 2004, World Bank, Internet: www.worldbank.org.ru, 2004-10-04.

2.2 The Russian Approach to Energy and Metals

The ongoing discussion on Russia's approach to energy and all its aspects reached a new landmark in 2003 when a new draft of its national energy strategy was launched. It outlined Russia's view on what is to be done until 2020.[23] It has several interesting aspects and details. For example that Russia has decided to reduce the relatively large share of investments in the oil and gas sector and that coal and nuclear power are supposed to take greater roles in the future of Russian energy. Most important, however, is that Russia explicitly states that energy policy *is* seen as lever for economic and political control over other states and actors. It is crucial for Russia's national security.[24]

Russia's energy policy balances between gaining control over the domestic and international markets at the same time as it attempts to avoid becoming dependent itself. It attempts to reintegrate infrastructure in the former Soviet territory with modern Russia by mergers, acquisitions and investments. This standpoint is pivotal for understanding the analysis of this report; it becomes both a point of departure and a conclusion. One way of reaching this goal is to ensure that energy, most notable energy carriers, goes straight to international markets and by that bypass countries instead of transiting energy over foreign territory. To do this, Russia attempts to develop infrastructure that makes this possible. At the same time, Russia wants to develop infrastructure for transit of energy over its own territory and by that strengthen its political and economic powers.

The second, and implicit point, was raised by the *Moscow Times* as a comment to the strategy and it concludes that there is no coherent strategy that *both* private actors and Russia as a state work on the basis of - instead, there are rather two than one strategy: one held by the state and the other by the oil corporations.[25] One could even argue that there are more than two, but often interests converge and corporate leaders have access to state officials at officials and policy makers; even the President. This partly shows why the Kremlin is so eager to tighten its grip over the 'commanding heights' of Russia's economy.[26]

State policy is confined to strategic priorities, while companies act independently in ordinary market situations. It becomes important when Russia's geostrategic priorities differs from commercial interests. This situation is similar for metals and non-fuel minerals. During the Soviet era, the state was the only real actor on the commodity market but now privatisations have led to a great magnitude of actors some of which enjoy a very strong position, also in an international perspective. It is therefore not always clear if changes in supply to the market are in the interest of the state or the individual producers. Consequently, the state's powers over the commodity market have decreased during the last decade.

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[23] - (2003), *Energeticheskaia Strategiia Rossii na period do 2020 goda*, Otvershdena no 1234-r, 28 Avgost, 2003, (Can be downloaded from: http://www.mte.gov.ru/docs/32/189.html). The document comments on most aspects of Russia's energy sector, but this report refrains from commenting its stand on issues such as enevironmental and social issues together with those energy carriers that are not objects of this report. The document is 118 pages in lenght and a full review would here be too wide a scope. Instead, this report will link the standpoint as seen in the strategy to the findings of this report.

[24] - (2003), *Energeticheskaia Strategiia Rossii na period do 2020 goda*, Otvershdena no 1234-r, 28 Avgost, 2003, (Can be downloaded from: http://www.mte.gov.ru/docs/32/189.html), p. 17.

[25] - (2003), "Rysk energistrategi till år 2020", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/369, 29 augusti, 2003.

[26] See: Ostrovsky, Andrew (2004), "Politics First: the Kremlin Tightens its Control over the Commanding Hights of Russia's Economy", *Financial Times*, 5 August, 2004.

By and large, the formal tools for controlling the market are two: one is the obvious one of controlling the legislative system of regulation of tariffs, taxes, quotas of extraction and exports. The other is control of the remaining strategic stocks of certain metals. Naturally the informal ways are numerous but as it seems, market-based activities are predominant. This will also be further discussed below.

2.3 Commodity Dependence and Vulnerability

It has been indicated that dependence is a central term in this context, but dependence *per se* does not necessarily imply a security problem. It becomes a pivotal, but latent, security problem only when its magnitude takes such proportions that it results in vulnerability. There are a number of danger key points that can be used to identify a situation of vulnerability, namely:[27]

1) Lack of domestic reserves
2) Lack of known substitutes
3) Small number of primary producers
4) Single or sole supplier
5) Few foreign suppliers
6) Remote location of foreign sources
7) Hostile ideology of foreign suppliers
8) Low production levels
9) Small trade and sales volumes
10) High energy requirements
11) Extended transportation lines
12) Low supply frequency
13) Poor recycling potential
14) Rapid technological advances
15) Declining use of material
16) Poor usage visibility
17) Declining production capacity
18) Small exploration effort
19) Extensive military use
20) Low research and development activity
21) Severe regulatory restraints
22) Increasing environmental restrictions
23) Important health and safety hazards
24) Foreign trade controls

If these issues are grouped into clusters, four general points can sum up the issue. A state, which is dependent becomes vulnerable when: "1) The supply of the material in question is relatively concentrated in a few geographic sources, especially if they are in nations that have substantially different political or economic systems and aims, 2) supply is readily subject to manipulation or to interruption as a consequence of such contingencies as political decisions, wars, internal upheavals, labour strikes, terrorism, or embargos, 3) there are no readily

[27] Szuprowicz, Bohdan O. (1979), *How to Avoid Strategic Mineral Shortages: Dealing with Cartels, Embargoes and Supply Disruptions*, Toronto: John Wiley and Sons, p. 274. A detailed account of all of these points is here left out, but is found in the source cited above.

available economical substitutes for, or stockpiles of, the particular material, and 4) recycling possibilities are limited in scope or not feasible within the time available."[28]

These points have impact on several dimensions. The first is, as is shown throughout this report, that several customers of Russian commodities are affected by these points. The second is Russia's own needs, even if it is not a situation of dependence. The third is Russia's approach to other actors' dependence and vulnerability and, possible, attempts to exploit them. Drawing on the list above, a vulnerability index for states, sectors, industries or regions could be constructed.[29] However, as this report focuses on the actor in possession of the commodities rather than the consumers of it, such indexes would therefore be out of context. This is why details on how to avoid shortages, dependency and vulnerability are not given. Consequently, hereinafter only the term dependence (not vulnerability) will be used, unless the discussion takes place at a general level. However, neither dependence nor vulnerability poses an immediate problem until something happen that trigger a crisis (which might results in shortages or cut-offs). By then, latent security problem becomes immediate. Even if a thorough discussion is left out, a few such triggers are quoted below.[30]

1) Wars, revolutions, and civil unrest
2) Formation of cartels
3) Nationalisation and state monopolies
4) Strikes
5) Embargos and sanctions
6) Boycotts
7) Terrorism
8) Capital availability and cost
9) Labour availability and cost
10) Transport availability and cost
11) New regulation (taxation, tariffs, trade control, price and wages control etc.)
12) Stockpiling and production controls
13) Corporate policy changes
14) Acts of God

The report further shows below that all of these points have, to various degrees, affected both the spot-markets and individual consumers of Russian commodities - domestic and international. A case in point here is that the future development of Russia's commodity policy and situation is connected with great uncertainty.[31] This relates to the general political-social-economic situation in Russia, which also is connected with great uncertainty.[32] In sum, it means that every future aspect of the commodity sphere depends on the road Russia takes, along what lines it develops and what kind of scenario that emerges. Development towards

[28] Jordan, Amos A. and Kilmarx, Robert A. (1979), "Strategic Mineral Dependence: The Stockpile Dilemma", *The Washington Papers*, no 70, Washington: SAGE/CSIS, p. 18f.
[29] Szuprowicz, Bohdan O. (1979), *How to Avoid Strategic Mineral Shortages: Dealing with Cartels, Embargoes and Supply Disruptions*, Toronto: John Wiley and Sons, pp. 284-295.
[30] Szuprowicz, Bohdan O. (1979), *How to Avoid Strategic Mineral Shortages: Dealing with Cartels, Embargoes and Supply Disruptions*, Toronto: John Wiley and Sons, p. 281. This piece of literature has detailed explanation of each individual trigger, although it serves no purpose to discuss them further here.
[31] For an historical background of this issues during the Soviet era, see: Stein, Jonathan B. (1983), *The Soviet Bloc, Energy, and Western Security*, Washington DC: Lexington Books/The Center for Strategic and International Studies.
[32] See the general discussion in: Leijonhielm, Jan (ed), (2003), *Rysk militär förmåga i ett tioårsperspektiv: en förnyad bedömning 2002*, Stockholm: FOI. Also see previous reports on the same topic.

stability, growth and a liberal-democratic market economy naturally have a different impact on the commodity sector and Russia's commodity policy than what a national-chauvinistic development, plagued by recession and instability has. Additional aspects of this are discussed in relation to prospects for the future in the concluding chapter of this report.

As with most security issues, at the end of the day, there are two issues that must be considered in the context of dependency and both depend on scenarios, namely Russia's *capacity* and *intentions*. There is not much in this report that discusses Russia's *future* intentions although a few cases that underscore passed intentions and factors underlying these intentions are analysed. The main thrust is instead put on Russia's past, current and future capacity; that is Russia's capacity to control and affect markets and individual states. Additionally, aspects of political motives for such actions are discussed. Together it gives a hint of what can be expected in the future.

2.4 Crude Oil

Oil, a hydrocarbon resource and energy carrier, is the commodity most frequently discussed in a political context. Its strategic character is derived from the fact that it is essential for industrialised countries. Much high politics is connected to it. In addition, the armed forces and military-industrial complex must have access to oil. In peacetime, it is mainly used for heating and power generation, for petrol and diesel and for lubricants, among other things. This analysis focuses on crude oil since all these products are derived from it.

2.4.1 Oil Overview

Soviet oil production grew in volume after the Second World War, but peaked in the mid-1980s and fell until 1999, when the situation changed. Slow technological development, insufficient investments, unsuitable extraction methods and poor quality of equipment were some of the reasons for the fall. Production is now rising again and is expected to stabilise around 300-360 million metric tonnes per year in the coming decades according some forecasts. Progress was, in Soviet times, measured by the amount of wells drilled instead of economic indicators. Lack of maintenance of pipelines and related infrastructure reduced transport capacity and also resulted in reduced profitability. Oil was exported to Eastern Europe within the *Comecon* structure, which in reality meant that under-priced oil was traded for overpriced industrial products, at a time when the costs of extraction were increasing dramatically.[33]

Table 3: Overview of Russian Crude Oil, 1990-2020

	90	91	92	93	94	95	96	97	98	99	00	01	02	03	*04**	*15**
Production	516	460	395	354	318	307	301	306	303	305	324	348	379	421	*444*	*530-550*
Consumption	474	409	335	281	230	218	197	127	124	126	125	119	n.a.	n.a.	*~100*	*~100*
Alt. data	n.a.	n.a.	224	189	163	146	130	129	124	126	124	122	123	123		
Exports	220	174	142	128	127	122	126	127	137	135	145	162	154	187		
To the West	99	57	66	80	89	91	103	106	118	116	128	138	n.a.	150		
Imports	12	11	8	7	3	9	9	8	8	6	6	5	n.a.	n.a.		
Price	23.8	20.0	19.4	17.1	16.0	17.2	20.8	19.3	13.11	18.3	29.0	24.8	25.2	n.a.		

Explanatory remarks: All figures in rounded million metric tonnes per year (recalculated from barrels/day).

Production = Extraction of crude oil including gas condensate - NGL (Natural Gas Liquids), approximately 8-10 million tonnes per year (1990-2002).
Consumption = Russian domestic oil consumption.
Alt. data = Alternative data stand in contrast to the official Russian statistics presented in the row above. This means estimates and calculations made by, for example, BP and IEA.
Exports = Russian oil exports.
To the West = The amount of oil exported by Russia to Europe/the West.
Imports = Russian oil imports.
Price = Spot market crude oil price in US$/barrel (Brent), rounded figures. N.B. Russian oil qualities differ and domestic price in Russia is one-half or one-third the world market price for Brent oil.
* Prognoses (N.B. These prognoses change every year and cannot be taken at face value.)
Sources: See appendix 1.

Methodological Considerations of Oil Assessment

Before the data above are scrutinised, it must be said that there are several explanations as to why production, consumption and imports/exports do not add up; together they explain some of the discrepancies in the data presented. 1) The figures are rounded. 2) There are continuous

[33] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 16. For an overview of the Soviet oil sector, see: Moberg, Erik (1980), *Sovjet: oljemakt med problem*, Stockholm: Centralförbundet Folk och Försvar/Försvar och Säkerhetspolitik.

changes in the patterns of consumption of non-petroleum-based additives and substitute fuels. 3) There are disparities in terms of definitions and conversions concerning measurement and data. 4) There are stock changes. 5) Reports rely on different sets of data.[34] 6) Large amounts of oil are transported, especially in the early and mid 1990s, outside ordinary channels, labelled 'regulated exports' to CIS states. The above mentioned pricing transfer factor should also be taken into account. 7) Occasionally oil produced by other countries is routed via Russia and therefore is considered to be Russian, although it is not. 8) Some export is shielded from official statistics and is thus not accounted for. 9) The constant reorganisations of the market have led to statistics not being able to keep up in a satisfactory way.[35] 10) There are not only problems with Russian statistics. *The European Union's* data, for example, show imports of oil by country of destination – not country of origin.[36] This must be taken note of. 11) As far as export figures are concerned, exports by train are usually not included in statistics and the use of this form of transport for exports seems to be increasing.[37]

Moreover, when it comes to reserves, there are more issues to take note of, but these are explained further on. In short, figures should not be taken as definite, but rather as an indication of trends and a way of understanding the politics and economics related to it.

What is more, only 50% of the world's oil is traded on a single and integrated spot market. Oil often does not leave the country of origin and is thus domestically priced, although domestic prices follow international prices. Besides politics, prices are dependent on small differences and actions that are sensitive to costs and qualitative factors, such as viscosity and sulphur contents.

It is generally believed that even small differences in costs of production and transport have an impact. In the over-arching perspective, technology rather than behaviour has greatest impact. In other words, demand responds slowly to price fluctuations while supply is very sensitive. This can be seen when actors such as OPEC operate on the oil market.[38] Russia has no gain in joining OPEC as it by being independent can chose how large quantities it wishes to sell. Consequently, Russia is able to stay free from production limitations, which is highly advantageous in times of high demand and high oil prices. At the same time, Russia is free to follow OPEC when it raises the price of oil.

2.4.2 Production of Oil

As seen in the table above, production fell dramatically from 1990, when Russia produced over 500 million tonnes, to merely about 300 in 1996. This 40% decrease is explained by the collapse of the USSR, but also by decreased demand as a result of the fall in industrial production at large. In late 2003, the oil output for 2003 was estimated to become 418 million

[34] A few of these point are discussed in: - (2003), *BP Statistical Review of World Energy – June 2003*, London: BP.
[35] See, for example: Stinemetz, Douglas (2003), "Russian Oil Sector Rebound under Full Swing", *Oil and Gas Journal*, 2 June, 2003, p. 30.
[36] This must especially be taken note of then it comes to Europe's expected energy dependency (where figures differs between various reports).
[37] Łabuszewska, Anna (ed) (2003), *The Resource Wealth Burden: Oil and Gas Sectors in the Former USSR*, Warsaw: Ośrodek Studiów Wschodnich, p. 11.
[38] Victor, David G. and Victor, Nadejda M. (2003), "Axis of Oil?", *Foreign Affairs*, vol. 82, no 2, 2003, p. 51f. For an extensive analysis of the politics of oil, see: Bülent, Gökay (ed) (2001), *Politics of Oil*, Stratfordshire: Palgrave Publisher and: Claes, Dag Harald (1998), *The Politics of Oil: Oil Producer Cooperation*, Oslo: Department of Political Science, University of Oslo.

tonnes with potential to increase further to 430-450 million tonnes in 2004.[39] Lukoil nevertheless foresees that the oil sector will stop expanding in 2007.[40] In the long perspective, several forecasts exist. IEA is somewhat sceptical, but if Russia's economic recovery continues, Russia sees a possibility to reach levels above 500 million tonnes per year between 2015 and 2020.[41]

Although Russia produces many qualities of oil, only two are considered to be separate products. The most common is *Ural Crude*, which is a blend of several qualities that are mixed during production and transport. It is mainly transported westwards and is of poor quality in terms of sulphur content (compared to oil from the North Sea for example). *Siberian Light*, the other quality, is of much higher quality standard and is exclusively transported in a pipeline from the Tyumen region to Tuapse at the Black Sea coast.[42]

The Oil Industry in Russia

After 1991, the oil market in Russia was characterised as having five features, namely: 1) there was great anarchy within the whole industry, especially concerning ownership of fields and products, 2) revenues were not reinvested in ongoing projects or maintenance, 3) there were huge payment problems due to failed market mechanisms, 4), there were mass shutdowns of wells in combination with reorganisations and privatisations that together rearranged the whole market, 5) there were many lags from the 1980s that were related to depletion of wells.[43]

In the early years of the 1990s, the oil market was still largely controlled from the centre and privatisations were not fully completed. In due time, the oil sector was divided into two types of companies that to a varying degree were privatised. The first was small, independent producers, usually foreign joint ventures that operated on a regional basis. The second type was large, *vertically integrated companies* – VICs. Being a VIC includes "having up to five upstream units, up to three refineries and a marketing chain encompassing multiple regions."[44] All companies that will be discussed hereinafter fall within this category.

Today, the situation is different. All but a few minor companies are privatised and all operate under market conditions, albeit with some typical Russian peculiarities, discussed below. The predatory capitalism is no longer a characteristic of the Russian market. Instead of fighting for pieces of what once was state property focus is on gaining market shares, on increasing prices for company shares and to improve the general liquidity situation. In this context, it can be noted that the deregulated market infringes on the possibilities to use oil as a tool for political purposes. Additionally, it becomes problematic if market forces do not consider the political priorities as financially feasible.

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[39] - (2003), "Russia is Expected to Produce 430-450 mln tons of Oil in 2004", *Mineral*, Internet: http://www.eng.mineral.ru/Chapters/News/10908.html, 2003-12-04.
[40] - (2004), "Russian Oil and Gas Sector Growth may Stop in 2007", *Ros Business Consulting*, 13 January 2004, Internet: http://www.rbcnews.com/free/20040113182855.shtml, 2004-01-14.
[41] - (2003), *Energeticheskaia Strategiia Rossii na period do 2020 goda*, Otvershdena no 1234-r, 28 Avgost, 2003, (can be downloaded from: http://www.mte.gov.ru/docs/32/189.html).
[42] A map illustrating locations mentioned in the report can be found in appendix IV.
[43] Stinemetz, Douglas (2003), "Russian Oil Sector Rebound under Full Swing", *Oil and Gas Journal*, 2 June, 2003, p. 22.
[44] Pasukeviciute, Irma and Roe, Michael (2001), "The Politics of Oil in Lithuania: Strategies after Transition", *Energy Policy*, no 29, 2001, p. 383.

What is more, Russia is a federal state, and this occasionally brings about problems in centre-periphery relations when regional leaders act in contradiction to Moscow's wishes. By and large, the Russian oil industry of today is highly productive, but this is partly explained by a short-term approach of increasing production levels as fast as possible. Whether this results in over-exploiting existing assets without thinking of long run consequences is debated. Most observers agree that focus is on expansion.[45]

It is clear that the Russian state keeps and tightens its grip of the energy sector by informal means as well. A few examples can be given. Vladislav Surokov, former deputy head of the Russian presidential administration, has been named to the board of the company *Transnefteprodukt*. *Rosneft* has, to the position of head of the board, been awarded President Putin's former aide. The former Energy Minister, Igor Yusufov, was also a representative to the boards of both *Rosneft* and *Transnefteprodukt*. The new non-executive chairman of *Gazprom*, Dmitry Medvedev, is not only head of the presidential administration, but also a close friend of President Putin. Chief executive of *Gazprom* is Alexei Miller, an old ally to Putin from St. Petersburg. Yevgeny Shkolov, earlier deputy head of the presidential administration, is now on the board of *Transneft*. In addition, Alexander Voloshin, also He a former head of the presidential administration, has been reappointed as non-executive chairman of the *United Energy System*.[46]

Oil Companies in Russia and Control of the Market

When it comes to actors on the energy market there are some 25-50 major financial groups in Russia that together practically control the market. Within these groups, ownership is concentrated to a few persons of which none is foreign. First, the often criminal company leaders who made headlines a few years ago have started to disappear as leaders of energy companies, although some are still involved in the metal industries. Second, old 'red directors' from the Soviet era are also decreasing in numbers. Third, the 'oligarchs', frequently mentioned in the press, still exist and own a considerable share of the market. Nowadays, however, they act with caution on the oil market. Final, there is a group of young and 'aggressive' actors that play a central role today. Foreign actors have to rely on these in order to operate on the Russian market.[47] Even if there are hundreds of oil companies, only a handful are of major importance.

In late 2003, the main oil companies in Russia were *Yukos* (19% of Russia's total production), *Lukoil* (19%), *Surgutneftegaz* (13%), *Tyumen Oil* – TNK (10%) and *Sibneft* (8%) in addition to over 150 small companies [48] (which together accounted for 30% of total production).[49] Companies within the oil and energy sector in Russia are naturally specialised in different petroleum products, for example diesel, petrol, kerosene, aviation fuel or lubricants.[50] This

[45] Dixelius, Paul; Fredriksson, Carl and Lindfors, Bo (2003), "Rysslands olja och gas", *Nätverk om Olja och Gas: Redovisning och utvärdering av verksamheten t.o.m. våren 2003*, Toll, Mikael, (ed), ER 22:2003, Energimyndigheten, p. 24.
[46] Jack, Andrew (2004), "Kremlin Tightens Hold on Russia's Energy Sector", *FinancialTimesk,* 25 August, 2004
[47] Lundin, Adolf H. (2003), "Internationella oljemän om oljeläget", *Nätverk om Olja och Gas: Redovisning och utvärdering av verksamheten t.o.m. våren 2003*, Toll, Mikael, (ed), ER 22:2003, Stockholm: Energimyndigheten, p. 47f.
[48] For example Slavneft, Sidanko, Onako, Bashneft, Tatneft and Langespasneftegaz. Their web sites are listed in the sources chapter of this report.
[49] - (2003), "Country Analysis Brief – Russia", *Energy Information Agency/US Department of Energy,* internet: http://www.eia.doe.gov/emeu/cabs/russia.html, 2003-11-27. For a detailed overview of ownership etc., see: Łabuszewska, Anna (ed) (2003), *The Resource Wealth Burden: Oil and Gas Sectors in the Former USSR*, Warsaw: Ośrodek Studiów Wschodnich.
[50] - (2002), "TEK Rossii: Neftepererabativaioshaia Promishlennost v 2002 Goda", *Mintop*, no 77, 2002, p. 9.

has resulted in some companies buying others in order to strengthen their domestic positions as VICs.

During 2003, one major corporate deal was carried out. *Tyumen Oil* and *Sidanko Oil* were subject to investments worth over US$6.75 billion by BP and two Russian investment groups. Consequently it was reformed into TNK-BP. *Yukos* and *Sibneft* were supposed to merge and form *YukosSibneft Oil Corporation*.[51] TNK-BP now has 15% and *Surgutneftgaz* still has its 13% of the Russian market.[52] It was for a long time unclear whether *Yukos* and *Sibneft* would complete the merger. In late November 2003, the merger was suspended by *Sibneft*.[53] Russian analysts claim that the reason was the dispute between the Kremlin and *Yukos*. As a compensation for the withdrawal, *Yukos* initially requested US$5 billion from *Sibneft*.[54] As it turned out, the merger was cancelled, but the last scores are not settled yet, although market analysts point out that *Sibneft*, under the auspices of Roman Abramovich, might be interested in deals with foreign companies, such as *ExxonMobil*.[55] The opportunities for additional domestic mergers in Russia are few, as most of the 'perfect matches' already have been made.[56]

Yukos,[57] which was headed by the now arrested arch-oligarch Mikhail Khodorkovsky, has proven reserves[58] of 18.4 billion barrels and production capacity of 2.2 billion barrels per day. It has seven refineries and 2500 filling stations in Russia and other ex-Soviet states. It is considered very progressive and was among the first companies to adopt Western methods of auditing and accounting. It operates all over Russia, but has directed much attention towards Asia and the Adriatic Sea. BP's investment is the largest in the history of post-Soviet Russia and TNK-BP[59] has a reserve of 5.2 billion barrels and an annual production capacity of 1.2 million barrels per day. It is on the offensive and has taken on serious prospecting and made strategic acquisitions of reserves. It transports much oil to Germany and Poland, mostly via the Baltic states. The problems related to *Yukos* are not solved yet and its future is uncertain.

The state formerly owned 14% of *Lukoil*[60], which was the former premier oil company in Russia, but has now sold off some of its shares. It operates in 25 countries and its exports go mainly via the Black Sea, the Czech Republic, Slovakia and Poland. Apart from *Gazprom* (mainly a gas company that also act on the oil market) of the Russian oil companies only *Rosneft*[61] is 100% state-owned. In 2004 it was announced that a merger was planned between

[51] - (2003). "Russian Oil M&A Action Surges with Mixed Outlook", *Oil and Gas Journal*, 5 May, 2003, pp. 34f
[52] - (2003), *Den ryska oljan: nuläge och framtidsmöjligheter*, Stockholm: Energimyndigheten, pp. 35-38 and: - "Country Analysis Brief – Russia", *Energy Information Agency/US Department of Energy*, internet: http://www.eia.doe.gov/emeu/cabs/russia.html, 2003-11-27.
[53] Arvedlund, Erin E. (2003), "Yukos Faces $5 Billion for Unpaid Taxes", *International Herald Tribune*, 3 December, 2003.
[54] Ostrovsky, Arkady, Freeland, Chrystia and Hoyos, Carola (2003), "Yukos may Seek $5bn for Failed Deal", *Financial Times*, 12 December, 2003.
[55] - (2003), "Yukos Said to Seek Fee in Breakup of Merger", *International Herald Tribune – Business*, 16 December, 2003, p. 13.
[56] Mabro, Robert (2003), "Oljemarknaden och tjärsand", *Presentation by Robert Mabro, President of the Oxford Institute for Energy Studies at NOG seminar*, Stockholm: Nätverk om olja och gas, 3 December, 2003.
[57] For more information, see the *Yukos* web page: http://www.yukos.ru.
[58] Terminology on reserves is a debated topic that is explained below.
[59] For more information, see the TNK web page: http://www.tnk.ru/.
[60] For more information, see the *Lukoil* web page: http://www.lukoil.ru. The state might sell some of its shares but this issue is currently not clear, although decrees have been signed. See Ostrovsky, Andrew (2004), "Politics First: the Kremlin Tightens its Control over the Commanding Hights of Russia's Economy", *Financial Times*, 5 August, 2004, pp. 9f.
[61] For more information, see the *Rosneft* web page: http://www.rosneft.ru.

the two.[62] These companies do not have a central role when it comes to volumes of production, but is a tool for the government as far as energy policy is concerned. They have an advantage as state-owned companies by being able to take part in bilateral agreements. Yet, they operate old-style and have huge financial problems.[63] In the context of recent mergers and acquisitions, other international companies are expected to attempt to acquire several Russian companies in order to strengthen their position in Russia.[64]

State Pipeline Monopoly by Transneft

Generally speaking, actors on the Russian oil market cannot act as a coherent unit, as OPEC does. The structure, where all but one company are privatised and more or less operate under market conditions, further aggrevate this problem resulting in problems of defining a national interest common for state and industry.[65] The Russian state does not, with the exceptions of *Rosneft*, possess any major oil company that can be used as a political tool on the oil market (as it can use *Gazprom* when it comes to gas). What the state does have, are the regulating bodies and the company *Transneft*, a monopoly that owns and controls the pipeline system. This point is returned to later in this report.

The governmental bodies responsible for regulating the oil market, besides the *Ministry for Energy*, are the *Federal Energy Commission* (FEK), MVK–the commission that grants licences to export and the *Central Dispatch Unit* (CDU), which is the central unit for fuel and energy. FEK deals with issues such as tariffs on trade while the MVK regulates the export quotas and gives permits to transport oil by pipeline. In addition, it decides which ports are to be used for shipping oil. In short, they enjoy a strong position in controlling the exports of oil from Russia.

By and large, *Transneft* is now operating at full capacity, which means that it transports some 3.5 million barrels per day, but Russia as a whole exports much more than this—over 5 million barrels per day. The surplus has been transported by train or river barge, but this is costly and can only be done when world market prices are high. Some oil must be sold domestically below market price. Consequently, *Transneft* must invest in new pipelines and runs the risk of being challenged by private projects.[66] In conclusion, if one single entity is to be pointed out as Russia's main lever in the politics of oil, it is *Transneft*.

[62] Jack, Andrew (2004), "Kremlin Tightens Grip on Energy"*, Financial Times*, 15 August, 2004.
[63] - (2003), *Den ryska oljan: nuläge och framtidsmöjligheter*, Stockholm: Energimyndigheten, pp. 35-38 and: "Country Analysis Brief – Russia", *Energy Information Agency/US Department of Energy*: http://www.eia.doe.gov/emeu/cabs/russia.html, 2003-11-27.
[64] Lundin, Adolf H. (2003), "Internationella oljemän om oljeläget", *Nätverk om Olja och Gas: Redovisning och utvärdering av verksamheten t.o.m. våren 2003*, Toll, Mikael, (ed), ER 22:2003, Stockholm: Energimyndigheten, p. 48.
[65] Victor, David G. and Victor, Nadejda M. (2003), "Axis of Oil?", *Foreign Affairs*, vol. 82, no 2, 2003, p. 54
[66] - (2003), "Country Analysis Brief – Russia", *Energy Information Agency/US Department of Energy*: http://www.eia.doe.gov/emeu/cabs/russia.html, 2003-11-27.

Russia vs. World Production

In absolute numbers, Russia produces much oil. Even if Russia's production has declined, by approximately 30% since the disintegration of the USSR, it is the world's second largest producer, and in 2002 only one percentage after Saudi Arabia. In fact, Russia has even surpassed Saudi Arabia in terms of production from time to time. This underscores the small margins and illustrate that ranking is subject to change. The US, however, comes in third place, not far behind.[67] Other oil producing ex-Soviet republics within the CIS have attempted to gain market shares at Russia's expense, but have not been very successful. The data in *table 5* show that, compared to total CIS production, Russia has kept its share in recent years. In 2001, this was 83%.[68] In order to increase production and keep the lead, investments must unquestionably be made. This is acknowledged in the energy strategy, but production is believed to be kept at a level between 450 and 520 million tonnes, depending on scenario.[69]

Table 4: Main Producers of Crude Oil in 2002

Country	In million tonnes	In%
Saudi Arabia	418.1	11.8
Russian Federation	379.6	10.7
USA	350.4	9.9
Mexico	178.4	5.0
China	168.9	4.8
Iran	166.8	4.7
Norway	157.4	4.4
Venezuela	151.4	4.3
Canada	135.6	3.8
Great Britain	115.9	3.3

Source:
- (2003), *BP Statistical Review of World Energy – June 2003,* London: BP from: Svenska Petroleum Institutet, Internet: http://www.spi.se, 2003-10-30.

Whether or not the global supply of oil is becoming depleted is a topic that has been debated since the 1960s and all analyses have different estimates of when the oil will run out. It is clear, however, that the new major finds of today are small compared to the major finds of the 1970s. Moreover, at the global level, annual consumption is four times greater than the new discoveries each year - so that in the long run, depletion is a fact, and if economic factors are taken into the equation, its impact might be seen in the 50-year perspective.[70]

Table 5: Main CIS Producers of Crude Oil, 1999-2001

Country	000' barrels per day			Share of total		
	1999	2000	2001	1999	2000	2001
Russian Federation	5927	6271	6780	84%	84%	83%
Kazakhstan	534	599	704	8%	8%	9%
Uzbekistan	99	83	74	1%	1%	1%
Azerbaijan	276	280	298	4%	4%	4%
Others	252	254	270	4%	3%	3%
Total CIS	**7088**	**7487**	**8126**	**~100**	**~100**	**~100**

N.B. Figures may not add up due to rounding.
Source: - *(2002), Oil, Gas, Coal and Electricity: Quarterly Statistics/Fourth Quarter 2001*, Paris: IEA, p. 42.

[67] - (2003), *BP Statistical Review of World Energy – June 2003*, London: BP.
[68] - (2002), *Oil, Gas, Coal and Electricity: Quarterly Statistics/Fourth Quarter 2001*, Paris: IEA, p. 42.
[69] - (2003), *Energeticheskaia Strategiia Rossii na period do 2020 goda*, Otvershdena no 1234-r, 28 Avgost, 2003, (Can be downloaded from: http://www.mte.gov.ru/docs/32/189.html), p. 62.
[70] See, for example: Aleklett, Kjell (2002)"Ny oljekris står för dörren*", Svenska Dagbladet,* 24 april 2002 and Monboit, George (2003), "Bottom of the Barrel", *The Guardian*, 2 December, 2003, Internet: http://www.guardian.co.uk, 2003-12-02.

Investments in the Oil Sector

The energy sector in Russia has been plagued by all kinds of problems[71] and the overall investments needs, as shown in *table 6*, amount to between US$157 and 197 billion in the coming two decades. It can therefore be argued that there are some areas that Russia cannot handle by itself and need foreign capital for. First, Russia lacks experience and means for deep water drilling and advanced offshore oil development. Second, despite experience in arctic exploration, Russia lacks the recent technology (and financial means), which are necessary for undertaking such a task. Finally, the two points above require long-term financing that not even the major Russian firms can handle without taking unwanted financial risks.[72] Despite revenues from oil and its potential, investments have largely been neglected.[73] This is also the case in an international perspective. 2002 was the year when foreign direct investments in the world as a whole peaked, but Russia, despite its potential, only managed to acquire US$2.7 billion.[74]

Table 6: Investment Needs in the Russian Oil Sector

	2001-2005	2006-2010	2011-2015	2016-2020	**Total**
Whole Oil Industry	28-32	34-43	43-58	55-64	**157-197**
Extraction	19-21	23-31	31-44	41-48	**115-145**
Refining	2	3	3	3-4	**10-12**
Transportation	5-6	5	5-6	6	**20-22**

N.B. All figures in billion US$.
Source: - (2002), *Energeticheskaia Politika Rossii – obzor 2002,* Paris: IEA, p. 41.

It is true that Russia, for example via the *PetroAlliance*, has access to top-of-the-line Western technology and equipment.[75] However, this option is limited to a few companies that actually can afford it, probably only around 60%.[76] The problems of investments and attracting foreign capital are found within the whole sector, both for so-called *greenfield* (new developments) and *brownfield* (acquisitions of existing production) investments.[77] A key issue here is the contract regimes under which investors operate. Problems within this area relate to bad experiences, such as when BP lost half a billion dollar when *Sidanco* was declared bankrupt.[78] Another fundamental market problem is that financing of investments by long-term loans are virtually impossible, due to the insufficiently developed credit market. Therefore, investors have to rely on five-year loans, which do not provide what is sought after in terms of long-term stability.[79] In the eyes of the international oil market, Russia is seen as an area where the economic risks of investments are high. At the same time, the potential and the margins are

[71] One central aspect in this context is the problems of payments in the energy sector as payments for energy is supposed to pay for investments. This aspect is discussed at greater length in the following section covering natural gas.
[72] Stinemetz, Douglas (2003), "Russian Oil Sector Rebound under Full Swing", *Oil and Gas Journal*, 2 June, 2003, p. 29.
[73] For a longer comment on energy investments in Russia and the CIS, see: Wiśniewska, Iwona (2003), "Foreign Investments in the Oil and Gas Sectors of the Energy Producers", *The Resources Wealth Burden: Oil and Gas Sectors in the Former USSR*, Warsaw: OSW/CES, pp. 41-49.
[74] Victor, David G. and Victor, Nadejda M. (2003), "Axis of Oil?", *Foreign Affairs*, vol. 82, no 2, 2003, p. 54f.
[75] Stinemetz, Douglas (2003), "Russian Oil Sector Rebound under Full Swing", *Oil and Gas Journal*, 2 June, 2003, p. 21.
[76] Fletcher, Sam (2003), "Mergers, not PSAs, Key to Foreign Russian Investment", *Oil and Gas Journal*, 2 June, 2003, p. 31.
[77] Victor, David G. and Victor, Nadejda M. (2003), "Axis of Oil?", *Foreign Affairs*, vol. 82, no 2, 2003, p. 55.
[78] Victor, David G. and Victor, Nadejda M. (2003), "Axis of Oil?", *Foreign Affairs*, vol. 82, no 2, 2003, p. 55.
[79] Dixelius, Paul; Fredriksson, Carl and Lindfors, Bo (2003), "Rysslands olja och gas", *Nätverk om Olja och Gas: Redovisning och utvärdering av verksamheten t.o.m. våren 2003*, Toll, Mikael, (ed), ER 22:2003, Energimyndigheten, p. 23.

also high. This means that there is great potential for attracting foreign capital to Russia if market conditions are improved.

Indeed, the institutional climate is paramount if investors are to be attracted to Russia. The institutional situation can be measured by looking at the production/reserves ratio for oil (P/R) as history shows that regions with unfavourable institutional climate are less productive and thus have a low ratio. In fact, the countries within the CIS are considered to have the worst institutional situation, and the P/R-ratio for the CIS as a whole is among the lowest, merely some 4-5% (to be compared to a P/R-ratio for Europe of almost 12%). True, the situation in Russia is far better than that in many of the other former Soviet republics, but the situation deserves attention.[80] This calls for a closer look at the options at hand.

Investment Climate in the Energy Sector

If the political and economic climate is unstable, the need for economic guarantees becomes urgent. In Russia, there are mainly two ways of improving the situation and attracting foreign capital by providing long-term stability on the market, namely by contractual agreements such as the *producing sharing agreements* (PSA), or by licence/concessions-based systems usually called *tax/royalty agreements* (TRA). Basically, TRAs work in such a way that the producer is given the right to extract oil by the state and subsequently pays a licence fee, royalty and tax for this, which usually is defined as a percentage of gross revenues. By and large, the state dictates all financial terms and the producer has to accept the situation. This is mainly used in industrialised countries as the contract, in reality, makes expropriation possible and therefore is unsuitable in countries where the risk of exproproation is real.

For PSAs, in contrast, the state keeps the ownership of the resources, but transfers the rights of a certain share of the production to the foreign producer in return for work and services provided by the investor. It resembles a tax paid in kind. PSAs are also subject to civil law, which means that both parts must agree on any contractual changes. Laws adopted during the time of contract do not affect the rules applying to the contract as that aspect is 'guaranteed' by the state. PSAs are mostly found in oil-rich developing countries that recently have opened up for foreign investors.[81]

Regarding PSAs, investors know that they run the risk of 'renegotiations' when investments once are made. Usually these renegotiations fall within areas where the law is weak.[82] In either case, analyses suggest that if the factors of adaptability, immunisation against legal and political risks and budgetary effects are jointly considered, PSAs would be best for the Russian market.[83] Despite its advantages, Russia is not eager to adopt PSAs except for projects that are extremely expensive, such as some offshore projects.[84] The process is complex and companies wishing to take part must be approved by the Russian Duma.[85] In fact, Russian PSA regulations, to the extent they exist and are in operation, are often modified insofar that they put limitations on the numbers of deposits that can be extracted under a PSA

[80] Ziener, Gert (2001), "The Russian Oil Sector: Finally Ready for Investors?", *Russian Economic Trends*, vol. 10, no 3/4, 2001, p. 38f.
[81] Ziener, Gert (2001), "The Russian Oil Sector: Finally Ready for Investors?", *Russian Economic Trends*, vol. 10, no 3/4, 2001, pp. 38-41.
[82] Victor, David G. and Victor, Nadeja M. (2003), "Axis of Oil?", *Foreign Affairs*, vol. 82, no 2, 2003, p. 57.
[83] Ziener, Gert (2001), "The Russian Oil Sector: Finally Ready for Investors?", *Russian Economic Trends*, vol. 10, no 3/4, 2001, pp. 41-43.
[84] - (2003). "Russian Oil M&A Action Surges with Mixed Outlook", *Oil and Gas Journal*, 5 May, 2003, p. 38.
[85] - (2003), *Den ryska oljan: nuläge och framtidsmöjligheter*, Stockholm: Energimyndigheten, p. 39.

agreement. Currently this limit is 30% of the Russian reserves.[86] This limitation is, however, pointless since the law on PSAs was adopted in 1995, no agreement has been made. The ongoing projects under a PSA regime were all initiated before the law was adopted. These are the Charyaga project and Sakhalin one and two,[87] which all are costly and require advanced technology.[88]

Another reason why PSAs are not used is that domestic firms are reluctant to operate under a PSA regime due to the transparent nature of it. It prevents them from murky deals, shielded from insight.[89] The conclusion drawn by several analysts is that PSAs are not expected to increase. Mergers and acquisitions will be the way for foreign companies to start operating on the Russian market.[90]

Instead, TRAs are generally utilised for investments and in 2001, these consisted of three types of tax for oil and gas. First, royalties that vary between 6 and 16% of gross revenues. Second, mineral resources tax, which is 10% of gross revenues less the value of exploration expenses. Third, excise tax, which is a fixed amount of 55 Roubles per metric tonne of produced oil. Change is under way and the proposed change consists of a 16.5% tax of gross revenues from the sales of oil and gas. The current tax regime, which is supposed to end in 2004, stipulates a temporary flat fee of 350 Roubles per tonne (for oil only), which should be deflated by an index that reflects general price fluctuations. It is open to question whether it will have a positive impact as investors are burdened in the early stages of production, rather than when revenues are increasing.[91]

In March 2004, Alexei Kudrin, Russia's Finance Minister stated that Russia aims to increase taxes on oil according to a model that correlates tax to price. For example, if oil price is between US$20 and US$25 per barrel, the tax would increase from 35 to 45% of the difference between US$20 and the actual price of oil. If price goes above US$25, the duty will increase from 35 to 65% of the difference in price above US$25 and so on.[92] In short, it can be said that Russia still has a long way to go in order to provide necessary prerequisites for a stable and long-term institutional climate aiming at attracting foreign investors. Enormous investments are needed, but foreign capital is likely to come via mergers and acquisitions rather than via direct investments. It is still too early to say which changes in the investment pattern the *Yukos* affair will have. Some investors will likely withdraw, while other are attracted by the potential.[93] It nonetheless invokes doubts of reliability and predictability of the Russian market.

[86] Ziener, Gert (2001), "The Russian Oil Sector: Finally Ready for Investors?", *Russian Economic Trends*, vol. 10, no 3/4, 2001, p. 43.
[87] For an overview of the projects on Sakhalin, see Sakhalin Energy web site: http://www.sakhalinenergy.com/.
[88] - (2003), *Den ryska oljan: nuläge och framtidsmöjligheter*, Stockholm: Energimyndigheten, p. 40.
[89] Victor, David G. and Victor, Nadejda M. (2003), "Axis of Oil?", *Foreign Affairs*, vol. 82, no 2, 2003, p. 56.
[90] Fletcher, Sam (2003), "Mergers, not PSAs, Key to Foreign Russian Investment", *Oil and Gas Journal*, 2 June, 2003, p. 31.
[91] Ziener, Gert (2001), "The Russian Oil Sector: Finally Ready for Investors?", *Russian Economic Trends*, vol. 10, no 3/4, 2001, p. 43.
[92] Ostrovsky, Arkady (2004), "Russia Pledges to Increase Export Duties for Oil Groups", *Financial Times*, 23 March, 2004.
[93] See: Jack, Andrew (2004), "Two Faces of Russia Split the World's Investors", *Financial Times*, 25 August, 2004, p. 1.

2.4.3 Stocks and Reserves of Oil

The recent wars and crises in the Middle East, brought the potent function of the American strategic oil reserve, which was created in the 1970s, into use. Russia also aims to create a strategic reserve stock of oil during the coming years. The rationale is first and foremost to create a basis for managing oil supply in times when prices vary to stabilise the market and ensure a stable price.[94] However, the following section aims to canvass the situation concerning, not the strategic stocks, but Russia's deposits and reserves of oil. When it comes to reserves and assets of oil in Russia, a few notes are called for that primarily relate to methodology of estimating reserves and to the technology, but also to geography.

Further Comments on the Methodology of Oil Reserves Assessments

The Russian model focuses on what is technically possible to extract, not what is commercially possible. Naturally, technological innovations affect this factor. Utilising the current outdated equipment and infrastructure puts a limitation on how much oil a market-based company can extract without economic losses. As an example of how great a difference new technology can make, Yukos states that by using modern technology it has been able to triple the amount extracted from average Russian wells.[95]

Evidently, assessments of oil reserves in Russia are not easily made. First, Russia is vast and largely unprospected, which means that new fields can be found and estimates must be recalculated continuously. Second, inefficient oil extraction and production during the Soviet days and today's short-term approach has reduced oil flows at existing extraction sites, which makes future production questionable. It is also unsure whether necessary but costly investments can be made on feasible economic terms. Third, Russia has traditionally not revealed information about reserves of strategic assets and commodities, which has made estimation difficult. Fourth, what is technically possible to extract is not the same thing as what is commercially feasible. The final point refers to Russia's system of classification of reserves.[96] As indicated, this differs from the international standard used by the US or Saudi Arabia. *Table 7* below illustrates the difference.

Table 7: Comparative Classification of Oil Reserves

Russia and Former Soviet Union			USA and Saudi Arabia et al.			
Reserves	Proven	A	Identified	Showed	Drilled	Proven
		B			Unused	
		C1			Indicated	Probable
	Estimated	C2		Calculated		
Assets	Expected	C3	Possible			
	Foreseen	D1	Hypothetical			
		D2	Speculative			

N.B. Unlike figures of oil production, reserves do not include oil sands or shale oil.
Source: Russian Ministry of Energy, from: - (2003), *Den ryska oljan: nuläge och framtidsmöjligheter*, Stockholm: Energimyndigheten, p. 29.

While refraining from a thorough comparison, the meaning of the key word 'proven' must be underscored. As seen in *table 7*, what is considered to be proven in the Russian system also encompasses what is considered to be only 'probable' in the international system. Usually in

[94] - (2002), "Ryssland, USA och oljan", *Sveriges ambassad i Moskva/Utrikesdepartementet*, 7 October, 2002.
[95] - (2003), *Den ryska oljan: nuläge och framtidsmöjligheter*, Stockholm: Energimyndigheten, p. 31.
[96] - (2003), *Den ryska oljan: nuläge och framtidsmöjligheter*, Stockholm: Energimyndigheten, p. 28f.

international standards, 'proven reserves' are defined as "[…]those quantities which geological and engineering information indicates with reasonable certainty can be recovered from known reservoirs under existing economic and operating conditions".[97] If one attempts to compare the two estimates, an indication of how to read the Russian half of the table is given when looking at an assessment of *Yukos'* oil made by international auditing firms. This assessment suggests that approximately 80% of the Russian categories A+B+C1 are feasible as 'proven'. Category C2 ought to be reduced by 50% in order to be in line with international estimates.[98]

A third way of classifying oil is the Norwegian way. This system relies on estimates according to the *Monte Carlo* simulation method. It differs from both the Russian and American systems that assume that operating conditions will remain as they were at the time of estimation. They also neglect certain factors, such as assessing the whole field in relation to parts of fields in addition to changes in usage of modern technology. Norway thus considers these other methods inadequate. The Norwegian and the *Monte Carlo* system, however, incorporate these dimensions and have, in addition, a well-developed way of reporting figures between oil agencies and oil corporations.[99]

Unclear forms of classification of reserves become important when they are used as securities on the debt market. Moreover, most international companies use the American system, stemming from the *US Securities and Exchange Commission* (SEC), which facilitates comparisons between reserves belonging to various firms. This becomes crucial when one company buys another and is supposed to pay for the amount of oil reserves bought. The Norwegian system is not yet widely spread and there are indications that Russia, as a step towards market reform, is adopting the US system.

Table 8: Russian Estimates of its Crude Oil Reserves in 2001

Region	*A+B+C1*	*C2*	*C3+D1+D2*
North -West Russia	188.70	632.4	5400
Offshore	54.6	117.6	3200
Southern Russia	258.8	65.7	1500
Offshore	3.1	4.9	167
Volga-Ural	3693.40	355.5	4300
Western Siberia	12,092.20	6,346.7	34,700
Offshore	-	19.6	3500
Eastern Siberia	349.6	643.9	113,000
Far East	376.9	254	8100
Offshore	147.3	230	5600
Total	**18,159.6**	**8,303.20**	**65,300**
Offshore	206	372.5	12,500

N.B. All figures are in million metric tonnes according to the Russian system of classification, (see explanation in the text at previous page), where Offshore shows oil reserves located offshore in each region.

Source:
Russian State Committee for Reserves, from: - (2003), *Den ryska oljan: nuläge och framtidsmöjligheter*, Stockholm: Energimyndigheten, p. 30.

Location of Russia's Oil Reserves
Judging from what has been said above, a clear discrepancy in the approach to 'proven reserves' can be detected. It is useful to divide the estimates of Russia's reserves in various categories.

[97] - (2003), *BP Statistical Review of World Energy – June 2003*, London: BP.
[98] - (2003), *Den ryska oljan: nuläge och framtidsmöjligheter*, Stockholm: Energimyndigheten, p. 31.
[99] Leonard, Ray (2002), "Russian Oil and Gas: A Realistic Assessment", *International Workshop on Oil Depletion*, Uppsala: Uppsala University/Association for the Study of Peak Oil.

Table 8 shows that 72% of Russia's total oil reserves are located in Western Siberia while 14% are found in the Volga-Ural region. Eastern Siberia holds 4% and the overall offshore reserves amount to a mere 3%. The remaining 7% are found in the Timan-Pechora region in North-West Russia. This is a largely unprospected territory that often is mentioned as one of the most potential areas for further exploration. In addition, Eastern Siberia and the Russian Far East have great potential, as has the autonomous region of Nenets and the Komi Republic.[100] The continental shelf is mainly unexplored, and there are reasons to believe that this area contains vast resources as well.

Table 9: International Estimates of Proven Crude Oil Reserves in 2002

Country	Billion tonnes	Share of total
Saudi Arabia	36.0	25.0%
Iraq	15.2	10.7%
United Arab Emirates	13.0	9.3%
Kuwait	13.3	9.2%
Iran	12.3	8.6%
Russian Federation	8.2	5.7%
USA	3.8	2.9%
Libya	3.8	2.8%
Nigeria	3.2	2.3%

Source: - (2003*), BP Statistical Review of World Energy – June 2003*, London: BP.

Russia vs. World Reserves

Table 8 illustrates that Russia has some 18 billion metric tonnes of 'proven oil reserves', which would make Russia's reserves the second largest in the world. Nevertheless, if international estimates, as seen in *table 9*, are considered, the situation changes and the table below shows 'proven reserves' according to international estimation standards. If 80% of this is feasible, it would be somewhere nearer 14.4 billion metric tonnes. Still, other figures point to much less. Figures from *Oil and Gas Journal* thus show that Russia only has 8.2 billion metric tonnes, which is less than 6% of the world's proven reserves. Given the fact the Russia was the second-largest oil producer in 2002 it is interesting to note that its proven reserves are far less than those of other countries, given the same source and method of classification. Saudi Arabia, for example, holds 36 billion tonnes, which amounts to 25% of the world's total. According to these estimates, Iraq, the United Arab Emirates, Kuwait and Iran all have greater reserves than Russia has.[101]

Furthermore, states or agencies occasionally change their estimates of oil reserves for various regions. This is natural as new deposits are found and others are depleted. However, there are also political and economic reasons for doing this and once one state has done it, others usually follow. One recent case is Canada. The figure for Canada's 'estimated proven reserves' of oil was raised in 2003 from 5 billion barrels to 180 billion by the *Oil and Gas Journal*. At the same time, the global reserves were considered to be 20% higher than before. This new estimate put Canada in second place as far as reserves are concerned. However, this sharp augmentation does not stem from new deposits. The explanation is that oil sand has been included in the estimation.[102]

There is an ongoing discussion on whether so-called *unconventional hydrocarbons liquids* (UHL) and resources such as oil sand and shale oil will have an impact on the market. Given the right circumstances, it might be profitable. Nonetheless, the environmental impact is large, even so large that BP refrains from exploring the possibilities of breaking into the UHL

[100] - (2003), *Den ryska oljan: nuläge och framtidsmöjligheter*, Stockholm: Energimyndigheten, p. 31.
[101] - (2003), *BP Statistical Review of World Energy – June 2003*, London: BP (On the basis of Oil and Gas Journal).
[102] Skinner, Robert (2003), "Oljemarknaden och tjärsand", *Presentation by Robert Skinner, Director of Oxford Institute for Energy Studies at NOG seminar*, Stockholm: Nätverk om olja och gas, 3 December, 2003.

market allegedly due to environmental concerns. Extraction results in five times more carbon oxide emissions than for crude oil and emission from burning are 25% higher than for oil. IEA estimates suggest that a maximum of 8% of the energy needed in 2030 can be derived from UHL. Robert Skinner, Director of the *Oxford Institute for Energy Studies*, points out that it will not have a paramount impact on the market and OPEC does not need to 'worry'.[103] As both OPEC and Russia focus on crude oil production, there are reasons to believe that neither UHL as resources nor recent revised estimates of reserves will change the conditions on the Russian oil market to a notable extent.[104]

Value of Russian Oil Reserves
As mentioned above, rating of reserves might be an obstacle when it comes to attracting investors. In an international perspective, the value of Russian oil reserves is extremely low. As an example, reserves held by BP and *ExxonMobile* are valued to US$10 per barrel while Russian oil is only valued to US$2.[105] Yet, when BP entered the Russian market, it paid over US$3 for the oil reserves acquired and this can be seen as an indication of a long-term commitment to the Russian market.

Despite the problems discussed hitherto, oil prospecting has been made more effective and cheaper than it was in the beginning of the 1990s. For example, prospecting in Eastern Siberia in 1991-1992 had an average cost of US$1 million per well with a production of 100 barrels per day. This cost has decreased 30 times until today and production capacity of 1000 barrels per day now only costs US$300,000.[106] As it seems, the only major factor that reduces the incentives to explore these areas is the cost involved. Many of the unexplored fields, for example in the Russian arctic, were discovered during the Soviet era, but never came into production. Some estimates suggests that these fields hold some 4 billion barrels.[107]

2.4.4 Domestic Consumption of Oil

Table 3 shows a dramatic decrease in domestic oil consumption from the early 1990s until the year 2001. In 1990, Russia consumed some 470 million tonnes while the figure for 2001 only was 119 million–hence a fourfold decrease was evident. The reason for this fall was, by and large, the 50% decrease in domestic industrial production. However, industrial energy consumption during this time only decreased by 20-25%.[108] The explanation is partly Russian energy policy and partly issues related to the obsolete machinery at the Russian production plants, which make energy-saving problematic. Moreover, debts, owed by both domestic corporate customers and other CIS countries, have grown significantly and oil companies have accordingly had great trouble receiving payments.[109] This has resulted in greater focus

[103] Skinner, Robert (2003), "Oljemarknaden och tjärsand", *Presentation by Robert Skinner, Director of Oxford Institute for Energy Studies at NOG seminar*, Stockholm: Nätverk om olja och gas, 3 December, 2003.
[104] For this reason, this report relies on figures before re-evaluation.
[105] Lundin, Adolf H. (2003), "Internationella oljemän om oljeläget", *Nätverk om Olja och Gas: Redovisning och utvärdering av verksamheten t.o.m. våren 2003*, Toll, Mikael, (ed), ER 22:2003, Energimyndigheten, p. 47.
[106] Dixelius, Paul; Fredriksson, Carl and Lindfors, Bo (2003), "Rysslands olja och gas", *Nätverk om Olja och Gas: Redovisning och utvärdering av verksamheten t.o.m. våren 2003*, Toll, Mikael, (ed), ER 22:2003, Energimyndigheten, p. 24.
[107] Stinemetz, Douglas (2003), "Russian Oil Sector Rebound under Full Swing", *Oil and Gas Journal*, 2 June, 2003, 22.
[108] - (1997) *Statisticheskoie Obozrenie 1-4*, in Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, unpublished.
[109] See the next section on natural gas concerning payment problems.

on the international oil market.[110] In the long run, Russia does not see the exports of energy resources in general as gaining in importance. Its relative share is supposed to be kept while total production is increases.[111]

Russian domestic prices on oil increased dramatically in early 1995, but have since then stabilised.[112] Given the fact that Russian quality differs from that of Brent oil, prices differ too, which makes it impossible to compare world market prices easily. By and large, Russian oil has been sold on the domestic market for 20% of what Brent oil costs on the international market. This price was even lower than usual, which is due to the fact that in the winter of 2002-2003, Russia was unable to export as much as it planned to, as the ports on the Baltic Sea were frozen.[113] On an annual basis in 2001, the world market price was two or three times higher than the domestic price.

Energy Saving
Russia's problems of wasting energy and low efficiency in energy consumption are inherited from the Soviet period. The new energy strategy outlines some key ideas of how to save energy and by this also illustrates the economic rationale for doing so. Russia acknowledges that energy consumption cannot rise faster than GDP and its goal is to have an energy increase until 2020 by only 27.4% at the same time as GDP is supposed to rise by some 230-330%. The way of accomplishing this is by utilising local power plants, by propaganda, by focusing on energy saving improvements for the industry and most important by raising prices. If prices on gas are not raised, only 20% of the potential for energy saving can be realised.[114] Figures from Ukraine, which also has obsolete technology and inefficient energy usage, show that it expends 6-10 times more energy than Western Europe does for similar activities.

However, despite huge potential in energy conservation, there are reasons to believe that it is more difficult than expected. The means for doing so would be by market pricing, which is especially important for natural gas, but also through modern technology and equipment. Yet, if energy savings through utilising of modern technology is taken at face value, its potential might be exaggerated. Energy is not inefficiently used compared to other factors of production, such as labour, land or capital. Therefore, it can be said it is impossible to isolate this factor when assessing restructuring of energy industries in Russia. Thus the sector must be analysed as a whole and when doing so it is clear that the potential for saving energy is not as great as it first seems.[115]

2.4.5 Exports of Oil

Table 3 shows that Russia exported some 220 million tonnes of crude oil in 1990, which was 43% of total production and of this amount 45% went to Europe. In 1996, when the negative production trend was interrupted, 42% of Russia's production was exported, and over 80%

[110] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 18.
[111] - (2003), *Energeticheskaia Strategiia Rossii na period do 2020 goda*, Otvershdena no 1234-r, 28 Avgost, 2003, (Can be downloaded from: http://www.mte.gov.ru/docs/32/189.html), p. 34.
[112] - (1995), *Energy Policies of the Russian Federation*, Paris: IEA, p. 27.
[113] Lundin, Adolf H. (2003), "Internationella oljemän om oljeläget", *Nätverk om Olja och Gas: Redovisning och utvärdering av verksamheten t.o.m. våren 2003*, Toll, Mikael, (ed), ER 22:2003, Energimyndigheten, p. 46f.
[114] - (2003), "Rysk energistrategi till år 2020", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/369, 29 augusti, 2003.
[115] Dobozi, Istvan (1996), "Russian Gas and Aluminium: Revisting the Outlook for Consumption and Exports in a Post-Depressing Economy", *Resources Policy*, vol. 22, no 1/2 , 1996, p. 127f.

went to Europe. In 2001, production had risen to 379 million tonnes and of this, 46% was exported (of which 85% was to Europe).

In short, Russia's exported oil relatively speaking has remained at a constant level, while Europe's share of those exports has doubled over the decade.

Table 10: Main Exporters of Crude Oil in 2002

Country	In tonnes	In%
Saudi Arabia	354.7	21.3
Russian Federation	154.7	9.3
Norway	148.0	8.9
Venezuela	128.5	7.7
Iran	113.6	6.8
Mexico	97.5	5.8
UAE	93.2	5.6
Kuwait	81.1	4.9

Sources:
- (2002), *BP Statistical Review of World Energy – June 2003*, London: BP and Ros Business Consulting from: Svenska Petroleum Institutet, Internet: http://www.spi.se, 2003-10-30.

Russia vs. World Exports

Saudi Arabia is, as shown in *table 10*, well ahead of Russia when it comes to shares of world resources. As seen in the table, the same is true for oil exports; Saudi Arabia has over 21% of the world market, compared to Russia's just above 9%. Norway is not far behind and is followed by Venezuela and Iran.

Export Prices for Oil

In 2000, oil and gas in Russia brought in over 50% of Russia's hard currency revenues.[116] In addition, in 2000 revenues from oil alone amounted to over US$13 billion and together with gas it represented 13% of Russia's GDP.[117] In 2001 23% of revenues from exports came from oil.[118] In other words, high prices for oil are essential for Russia in terms of state revenues. However, prices do not have to be as high as they had to be a few years ago. In 1997, Russia needed a price of US$28 per barrel in order to keep the state budget in balance.

In 2003, however, US$17-18 per barrel was enough.[119] For oil companies the revenues from oil are around US$7/barrel if the oil price is approximately US$25/barrel. In October 2004, an customs tariff of US$87.9 per tonne was imposed on crude oil and oil products exported outside member states of the CIS Customs Union. Before October, the export tax on oil products was US$45.4 per tonne.[120]

Table 11: Russian Crude Oil Export Price, 1995-2001

To	95	96	97	98	99	00	01
The CIS	89.6	90.7	104	77	68	102	152
Non-CIS	110	133	118	74.4	111	185	156

N.B. Figures in US$/metric tonne
Source: - (2002), *Rossiskii Statisticheski Ezhegodnik*, Moskva: Goskomstat Rossii, p. 630.

The table above shows that prices differ depending on who receives Russia's exported oil. Since 1995, the price gap, which was 23%, has reduced to only 3%. This is explained by the fact that in the early years of the 1990s, the CIS states were getting discounted price on oil as

[116] Pasukeviciute, Irma and Roe, Michael (2001), "The Politics of Oil in Lithuania: Strategies after Transition", *Energy Policy*, no 29, 2001, p. 384.
[117] Ziener, Gert (2001), "The Russian Oil Sector: Finally Ready for Investors?", *Russian Economic Trends*, vol. 10, no 3/4, 2001, p. 38.
[118] Dixelius, Paul; Fredriksson, Carl and Lindfors, Bo (2003), "Rysslands olja och gas", *Nätverk om Olja och Gas: Redovisning och utvärdering av verksamheten t.o.m. våren 2003*, Toll, Mikael, (ed), ER 22:2003, Energimyndigheten, p. 23.
[119] Lundin, Adolf H. (2003), "Internationella oljemän om oljeläget", *Nätverk om Olja och Gas: Redovisning och utvärdering av verksamheten t.o.m. våren 2003*, Toll, Mikael, (ed), ER 22:2003, Energimyndigheten, p. 46.
[120] - (2004), "Russia Imposed New Oil Export Tariff", *Ros Business Consulting*, 1 October, 2004, internet: http://www.rbcnews.com/free/20041001100103.shtml, 2004-10-04.

essential parts of political agreements. As the oil sector started to adapt to general market conditions it prioritised the Western market. These discounts have therefore decreased for oil, albeit not for gas.

The energy strategy discusses several scenarios in which production and prices differ.[121] In short, it can be said that if the price is low–between US$13 and US$15 per barrel–exports will decrease by 8-10%, while a price between US$18-20 would result in a quantitative export increase by 20-22%. If prices are as high as around US$30, the increase is expected to be some 36-38%.[122] It is a moot point whether short-term price will fluctuate, but it is interesting to note that in January 2004, the *Russian Economy Ministry* expected Brent oil to cost $26.75 per barrel and Ural Crude to cost US$25.5 per barrel.[123] At the time of writing, the oil price is above US$52 per barrel.

Table 12: CIS and OECD Importers of Crude Oil with >15% from ex-USSR, 1999-2001

Country	1999	2000	2001
Austria	21%	29%	26%
Belgium	16%	17%	16%
Czech Republic	88%	91%	84%
Finland	47%	47%	52%
Germany	31%	33%	34%
Greece	10%	25%	29%
Hungary	100%	100%	100%
Italy	21%	22%	26%
Poland	90%	91%	90%
Turkey	14%	12%	20%
Belarus*	n.a.	98%	n.a.
Kazakhstan*	n.a.	99%	n.a.
Ukraine*	n.a.	68%	n.a.

* For CIS countries import share only from Russia.

Source:
1) OECD countries: - (2002), *Oil, Gas, Coal and Electricity: Quarterly Statistics/Fourth Quarter 2001*, Paris: IEA.

2) CIS Countries: - (2002), *Rossiskii Statisticheskii Ezhegodnik,* Moskva: Goskomstat Rossii, p. 622ff and: - (2000), *World Petroleum Supply and Disposition, 2000*, Energy Information Agency/US Department of Energy, Internet: http://www.eia.doe.gov/emeu/international/petroleu.html#IntlTrade , 2003-11-13.

Here, the Russian government is faced with a dilemma. At the same time as it has replaced export fees by higher taxes, it is trying to promote industries that need oil on the domestic market, which would result in lost revenues from export taxes. However, the Russian government is also aiming to promote a transition from production plants relying on oil to plants operating on gas. If successful, this could lead to exports levels being maintained during the coming decade.[124]

In addition, the environmental improvements and economic gains would be substantial. The intention has been to move away from the gigantic power plants currently in operation and to move towards using small and local plants in order to reduce transport costs and take advantage of plants with efficient energy usage. Moreover, oil-consuming power plants are often producing natural gas as a by-product, which they either burn as open flames or sell to *Gazprom* below market price. The idea, as stated in the energy strategy, is that a gas market can make efficient use of the by-product gas, if created.[125]

[121] It must be noted that the estimates and forecasts made in the energy strategy differs from previous strategy and should be utilised with care.
[122] - (2003), "Rysk energistrategi till år 2020", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/369, 29 augusti, 2003.
[123] - (2004), "Official Sheds Light on Oil Price Effect on Russia's GDP", *Ros Business Consulting*, Internet: http://www.rbcnews.com/free/20040121150027.shtml, 2004-01-22.
[124] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 18.
[125] - (2003), "Rysk energistrategi till år 2020", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/369, 29 augusti, 2003.

Export Quotas
Given the huge discrepancy between domestic prices and prices on exported oil, it is clear that Russian oil companies prefer to export a large proportion of their production. This is impossible due to the bottlenecks of transport, but it also involves the risk of deprioritising the domestic market. In order to prevent this, Russia imposed an export quota that stipulates that a maximum of 38% of production may be exported. Companies wishing to export have to apply for an export permit. This is not to say that the export quotas reflect the exact amount exported. There are reasons to believe that illegal transfers of oil for export take place and are closely connected to problems of corruption. Officially, Yukos is the only company that actually exports 38%, but the next seven largest companies all export over 35% of their production. *Lukoil*, *Bashneft* and *Sidanco* export less. This is partly explained by the fact that there are not as many pipelines in the regions where they operate. Although *Gazprom* is focused on the production and exports of gas, it merely exports 11-12% of its oil, which means that it is expected to take responsibility for supply to the domestic market.[126]

Infrastructure for Transport
In 2001, about 60% of Russia's exported oil was shipped by tanker. The most important port is Novorossiysk at the Black Sea as almost 50% of shipped oil is exported from there. Currently, this route is used at full capacity. The Russian port of Tuapse and the Ukrainian port of Odessa, both at the Black Sea, are also important. The Baltic ports of Klaipeda, Tallinn and Ventspils are used for transport westwards, but are not operating at full capacity. The remaining 40% is taken care of by the *Druzhba pipeline* between Russia and Slovakia, the Czech Republic, Poland, Hungary and Germany.[127]

Development in eastern Siberia is also increasing since the Asian market, most notably China, is considered to have great potential as a customer for Russian energy.[128] The construction of a new pipeline to China was planned to start in late 2003.[129] Due to increases in the cost of transit of oil via the Baltic states, Russia is aiming to double its transport from Primorsk and to increase its capacity by building several new ports in the area.[130] Yet some analyses point out that the constraints on export capacity are exaggerated and that the system will be able to cope with what is expected during the coming years.[131]

Geopolitics indeed has an important role, although this is not focused on here.[132] A recent incident concerning Turkey in 2003 reflects this. Several pipelines from inland Russia and the Caspian region reach the Black Sea and this oil is transported by ship trough the Bosporus and the Dardanelles. However, in addition to the ecological risks, the strait has become crowded and several ships have had to wait for a long time before they could pass and bring Russian oil to foreign markets, which results in delays and loss of money.[133] There are also reasons to

[126] - (2003), *Den ryska oljan: nuläge och framtidsmöjligheter*, Stockholm: Energimyndigheten, pp. 52-54
[127] Pasukeviciute, Irma and Roe, Michael (2001), "The Politics of Oil in Lithuania: Strategies after Transition", *Energy Policy*, no 29, 2001, p. 385.
[128] For a longer discussion on the Asian dimensions, see: Kiesow, Ingolf (2003), *Energy in Asia: An Outline of Some Strategic Energy in Asia*, Stockholm: FOI.
[129] Fletcher, Sam (2003), "Mergers, not PSAs, Key to Foreign Russian Investment", *Oil and Gas Journal*, 2 June, 2003, p. 31.
[130] Dixelius, Paul; Fredriksson, Carl and Lindfors, Bo (2003), "Rysslands olja och gas", *Nätverk om Olja och Gas: Redovisning och utvärdering av verksamheten t.o.m. våren 2003*, Toll, Mikael, (ed), ER 22:2003, Energimyndigheten, p. 25.
[131] - (2003), *Russia: Development and Forecasts*, RZB Group, 7 August, 2003, p. 21f.
[132] For an up-to-date survey of issues related to the Caspian sea, see: Tsalik, Svetlana (2003), *Caspian Oil Windfalls: Who Will Benefit?,* New York: Caspian Revenue Watch/Open Society Institute.
[133] - (2004), "Zapadnoi Evrope ne Chvataet Nefti iz-za Nedopostavok iz RF", *Itar-Tass*, 21 January, 2004.

believe that Turkish objections to increased transit through the Bosporus are intended to raise the attractiveness of the *Baku-Tbilisi-Ceyhan pipeline* currently under construction (expected to be finished in early 2005), which is supposed to carry oil from the Caspian Sea to the Turkish Mediterranean coast.

2.4.6 Imports of Russian Oil

It has already been shown that a large proportion of Russia's exports go to the West, although sometimes 'West' is defined as Western Europe and the US and sometimes as 'not-CIS'. In the following part, 'the West' is considered to be the OECD states.

Dependence on Russian Oil

Europe's demand for energy has, not surprisingly, increased over the last decade. Estimates suggest that demand will increase even more and in the year 2020 be 22% higher than in 1990, which calls for increased Western imports of oil and gas.[134]

It is clear that a majority of the countries to which Russia exports its oil are those that largely *depend* on Russian oil. However, these countries are importing oil not only from Russia, but also from other places. If one seeks an indication of dependence on Russian oil, one must look at the share of Russian oil for each country. This is done in *table 12*, although it shows oil from the former USSR and not only Russia. Given the fact that Russia by far is the largest producer of the former Soviet republics, it gives a good indication of the situation. In real, rounded, figures, Germany imported 21 million tonnes, Italy 20, the Netherlands 16 and Poland 15 million tonnes. In short it can be said that the dependence of the EU countries as a whole on Russian oil is 14%.[135] Many factors can change the situation. For example Germany's decision to stop using nuclear power will result in greater needs for other energy carriers.

Drawing upon the data in *table 12,* four things are worth drawing attention to. 1) East European states, such as Poland, Czech Republic and Hungary, imports an extremely high proportion of oil from Russia and are as a result largely dependent on Russia.[136] 2) Most states have been on a stable level, but Greece and Turkey have increased their import substansially from Russia. So has Sweden, which is shown on the next page. 3) Some states produce their own oil, for example Kazakhstan, and therefore their dependence is not very large, even if Russia makes up for a large proportion of their imports. 4) It must be noted that some non-OECD East European states, which to a great extent rely on Russian oil, are not represented in the table. These are Bulgaria, Romania, the Baltic States, Slovakia, Slovenia, the Federal Republic of Yugoslavia, Albania and Macedonia.

During the cold war, NATO states were recommended to have a maximum of 10% dependence on Russia for certain commodities. Naturally, the situation has changed since then, but it can serve as an indication of what sometimes is considered to be the level where dependence makes possible usage of the energy leverage for political or economic purposes. In short, if Russia decided to utilise energy as a political tool, it is possible against states that are more than 10% dependent.

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[134] - (2001), *Green Paper: Towards a European Strategy for the Security of Energy Supply – Technical Document*, Luxemburg: EU/European Commission, p. 46.
[135] - (2001), *Green Paper: Towards a European Strategy for the Security of Energy Supply – Technical Document*, Luxemburg: EU/European Commission, p. 66.
[136] A detailed table of CIS oil trade is found in table 47 in appendix 3.

Europe and Russian Oil

Europe thus receives the lion's share of Russia's oil exports. Given the prognoses on Europe's development over the coming decades (approximately 2% GDP growth per year) it is clear that Russia's importance will increase even further.[137] Europe's dependence on oil in general is expected to rise from just above 50% in 2000 to almost 80% in 2030.[138] Despite increased demand for natural gas, oil is expected to be the key source of energy within most sectors, especially transport. The EU, therefore, sees development in areas such as Russia and the Caspian Sea as "extremely important".[139]

To create a favourable situation for handling this issue between the European Union and Russia, an energy partnership was launched in the mid-1990s, and has continuously developed into a dialogue where deeper cooperation is on the agenda. It encompasses all political levels, and is slowly becoming institutionalised. The rationale is thus found both in geopolitical and economic aspects. Common goals of stable markets go hand-in-hand with deeper integration, Russia's capacity to export and the EU countries' demand for oil and gas. In 1999, the EU imported 16% of its oil from Russia, but the share has actually fallen somewhat since then.[140]

However, the partnership is not supposed to be a way to promote Russia over other suppliers or to support the construction of pipelines to Europe. The objective, is to put pressure on Russia to initiate reform within the energy sector.[141]

As far as Sweden is concerned,[142] it relies on Norway as its main supplier. Yet imports from Russia have increased by 400% in only one year. In 2001, only 5% of Sweden's oil imports came from Russia, compared to 46% from Norway. In 2002, by contrast, 20% came from Russia and 34% from Norway. This was the most important change but imports from Saudi Arabia decreased to zero during the same time.[143]

[137] - (2003), *European Union Energy Outlook until 2020 – Executive Summary*, European Union.
[138] - (2001), Green Paper: Towards a European Strategy for the Security of Energy Supply, Luxemburg: EU/European Commission, p. 23.
[139] - (2001), Green Paper: Towards a European Strategy for the Security of Energy Supply, Luxemburg: EU/European Commission, p. 37.
[140] - (2001), *Green Paper: Towards a European Strategy for the Security of Energy Supply – Technical Document*, Luxemburg: EU/European Commission, p. 66.
[141] Cleutinx, Christian (2002), "Towards an EU-Russia Energy Partnership", *Presentation in Budapest,* EU Energy and Transport, 2 June, 2002. For an insight on the general EU-Russian security dimension, see: Lynch, Dov (ed), (2003), "EU-Russian Security Dimensions", *Occasional Paper*, no 46, Paris: European Institute for Security Studies, July, 2003.
[142] For an up-to-date survey of Sweden's energy situation, see: - (2004), *Energy Policies of IEA Countries: Sweden 2004*, Paris: IEA.
[143] Note that almost only crude oil is imported from Russia. This is to a great extent due to the fact that European environmental laws are so strict that Russian refineries are not allowed to sell refined oil to the EU member states. However, a table concerning Russia's refining capacity is found in table 44 in appendix 3.

Russian Oil and the World

In the spring of 2002, a new shipment of Russian oil to the US was realised and by that, Russia's share in US imports of oil increased from 1% to 1.3%. By the end of 2003, this is expected to have grown to over 4%.[144] This marked the beginning of a new era and later in 2002 Russia and the US initiated an energy dialogue, which is supposed to develop cooperation in this sector, especially at corporate level. The Russian standpoint was that Russia needs investments and is therefore improving regulations and the corporate climate. These investments might be financed both by Russia and by the US and involve, for example, the construction of a deep-water port near Murmansk.

Table 13: Swedish Imports of Crude Oil in 2001 and 2002

	2001		2002	
Country	'000m^3	In%	'000m^3	In%
Norway	10,754	46	7173	34
Russia	1270	5	4330	20
Denmark	2820	12	3287	15
Great Britain	2127	9	2837	13
Iran	3625	16	2302	11
Venezuela	982	4	1079	5
Saudi Arabia	1348	6	-	-
Others	471	2	352	2
Total	**23,397**	**~100**	**21,360**	**~100**

N.B. Figures may not add up due to rounding. According to EU regulations, "imports from" refers not to country of origin, but to country from where the oil is transported.

Sources:
1) 2002: - (2002), *BP Statistical Review of World Energy – June 2003*, London: BP and Ros Business Consulting from: Svenska Petroleum Institutet, Internet: http://www.spi.se, 2003-10-30.

2) 2001: - (2001), *Oljeåret 2001 - sammanfattning*, Svenska Petroleum Institutet.

In addition, Russia aims to become a strategic supplier to the US, as it is supposed to be more reliable than Middle Eastern states.[145] Yet, there are reasons to believe that this cooperation lacks the momentum it needs. For example, Russia needs high oil prices in order to get necessary state revenues, while the US, in contrast, in reality is unaffected by lower prices.[146] In short, Russia estimates that it would be able, in the long run, to supply the US with 10% of its needs,[147] but investments of several billion dollars are needed.[148] Of course, this energy cooperation connects to the general relationship between the US and Russia, which encompasses many dimensions, such as US policy in the Middle East and the Caspian region, NATO enlargement and nuclear disarmament. The same kind of complex and multifaceted relationship is found in the Eastern dimension, especially concerning China. Russia indeed wants to sell oil to China, but is unwilling to build a pipeline to China alone (such proposals have been made by *Yukos*). Instead, Russia prefers to see pipeline reaching its Eastern coast, so that oil can be sold to world markets as well. China's future needs will be of the greatest importance and Russia cannot afford to miss the opportunity to sell oil to it. This would propably also boost activities in Siberia and establish a bridgehead to Asia.

[144] Filippov, Yuri (2003), "Will Energy Ties Between Russia and the USA be Expanded?", *RIA Novosti*, 2 October, 2003.
[145] - (2002), "Ryssland, USA och oljan", *Sveriges ambassad i Moskva/Utrikesdepartementet*, 7 October, 2002.
[146] Victor, David G. and Victor, Nadejda M. (2003), "Axis of Oil?", *Foreign Affairs*, vol. 82, no 2, 2003, p. 48.
[147] For an overview of the US's oil and gas situation, see: Radler, Marilyn (2003), "High Prices Limit US Oil Demand Growth: Gas Flat in 2003", *Oil and Gas Journal*, 7 July, 2003.
[148] - (2002), "Ryssland, USA och oljan", *Sveriges ambassad i Moskva/Utrikesdepartementet*, 7 October, 2002.

2.4.6 Conclusions - Crude Oil

Overview: The Russian oil sector of today is fairly stable and has been consolidated compared to the 1990s. Production companies are privatised, owned by some 20-25 non-foreign financial-industrial groups, which operate largely under market conditions. But the sector still has substantial and deeply embedded problems, including environmental ones. Investments needs amount to US$150-200 billion until the year 2020, but few investments are made. The investment climate is not advantageous, even if high risks can turn into large profits. Substansial uncertainties exist. Laws and regulations are unclear and state policy is highly ambiguous and unpredictable. The '*Yukos* affair' and recent actions by President Putin have evoked further doubts about Russia's intentions to to take serious rule of law, democratisation and marketisation. No commitment to become integrated into Western structure can be seen. The importance of oil for Russia's state finances cannot be stressed enough and presumed growth is totally dependent on quantities of oil exported and the oil price—as is the state budget.

State control: Seemingly, state control of the Russian oil sector is limited as oil companies are privatised. However, in addition to the firm *Rosneft*, Russia controls *Transneft*, which owns the pipeline grid. This results in almost complete control over oil transport. In addition, governmental bodies such as the CDU, the MVK, the FEK and the *Ministry of Energy* control tariffs, quotas, laws, regulations, export grants and access to ports and pipelines. State policy often goes in line with companies' wishes. President Putin is clearly strengthening his control over both private companies and state institutions, which results not only in a strengthening of *state* control, but also in direct *presidential* control.

Production: Russian oil production fell from over 500 to 300 million tonnes per year after the disintegration of the USSR, but has regained much of its former strengths and now amounts to 450 million tonnes per year, which occasionally makes it the number one producer in the world. The focus is on crude oil, as refined products are not up to international standards. The oil produced is of poor quality, which is reflected in lower prices (compared to Brent oil). Russia's approach is short term in nature and it exploits the situation in an unsustainable way, which can partly be explained by a high oil price and the prevailing market situation. Forecasts show that production may increase somewhat, but is likely to stabilise between 300 and 400 million tonnes per year even if it occasionally reaches 500. Thus, Russia is today slowly reaching its maximum production capacity under current operating conditions. As a consequence, its role as producer becomes limited. Despite this, Russia will continue to be of pivotal importance.

Reserves: The Russian oil reserves, mainly located in Western Siberia, make up roughly 6% of world reserves, which is to be compared with Saudi Arabia's 25%. Its position in the long-term perspective is thus questioned as most, but not all, of Russia has been prospected. No major, but several minor findings can be expected. Technological improvements may have an impact on the margin. Unconventional hydrocarbon liquids will not play a central role in Russia. Problems of the classification and estimation of reserves result in problems for companies involved in mergers and acquisitions.

Consumption: Consumption of oil in Russia has declined from around 470 to 100 million tonnes per year as a result of the general decline within the industrial sector after 1990. It can only be expected to increase slowly. Usage of oil is inefficient and energy-saving is difficult because of obsolete industrial technology.

Exports: As a world supplier, Russia is outranked only by Saudi Arabia and has an unquestionably strong role by virtue of exporting almost 10% of total world supply. Since 1991, its exports westward have increased, while its exports to the CIS countries have declined. Bottlenecks, quotas and regulations set limits on the amount of oil Russia is able to export. Currently, Russia is moving towards the limit of its capacity to export. The US gets almost 4% of its needs from Russia, while the EU gets around 15%. Sweden has substansially increased its share of imports accounted for by Russia, which is now to 20% of its needs of imported oil. Many individual states are totally dependent on Russia. Demand will strongly increase in the US, in the EU and in Asia. The situation is expected to become problematic, resulting in higher prices and higher degree of competition. Russia will still be able to influence world market prices, but cannot control them. Its reliability as a supplier has been high against Europe, but not against former Soviet republics. Russia's role on world markets will definitely be strong in the future.

2.5 Natural Gas

Natural gas is the most common form of gas as an energy resource. Without gas, the military-industrial complex would not be able to operate. It is mainly used for power generation and within industrial production, but also for private heating and cooking. It is not easily stored and is difficult to transport in any other way than by pipeline. Natural gas can also be liquefied and is then called *Liquid* or *Liquefied Natural Gas* – LNG. This process is complicated and costly and although LNG is expected to take a central role in the future, it will not be in focus here, for two reasons. First and most important, LNG production does not exist to a notable extent in Russia and, second, figures of LNG is included in the section of oil.

2.5.1 Natural Gas Overview

Russia's production of natural gas has gradually increased since the end of the Second World War. Gas production in the USSR amounted to 100 billion cubic meters (bcm) in the 1960s, 200 in the 1970s and 400 in the 1980s, which made it surpass the US as the world leader in gas production. In the 1990s, production peaked at over 600 bcm. Russia's share of Soviet gas export rose from a mere 5bcm in 1960 to 57 bcm in 1980 and this export was both directed to other Soviet republics and to Europe.[149] This trend was interrupted during the 1990s as the table below bears witness of.

Table 14: Overview of Russian Natural Gas, 1990-2020

	90	91	92	93	94	95	96	97	98	99	00	01	02	03	*05**	*10**	*20**
Production	641	643	641	618	607	595	601	571	608	592	584	581	595	616	*580-600*	*615-655*	*660-700*
Alt. data	n.a.	n.a.	597	577	566	555	561	533	551	551	545	542	555	n.a.			
Consumption	530	538	476	447	423	403	404	375	394	392	395	386	n.a.	n.a.			
Alt. data	n.a.	n.a.	417	416	391	379	380	350	365	364	377	373	388	n.a.			
Exports	110	104	165	171	184	192	197	201	203	205	194	181	204	171	*245-260*	*245-275*	*275-270*
To Europe	n.a.	n.a.	n.a.	n.a.	n.a.	117	124	117	125	131	134	132	128	142			
Price, EU, cif	2.82	3.18	2.76	2.53	2.24	2.37	2.43	2.65	2.26	1.80	3.25	4.15	3.47	n.a.			

Explanatory remarks: All figures in rounded billion cubic metres per year.
Production = Extraction of natural gas (excluding recycled gas and LNG).
Consumption = Russian domestic gas consumption.
Alt. data = Alternative data stand in contrast to the official Russian statistics presented in the row above. The alternative data refers to estimates and calculations made by, for example, BP and IEA. BP's figures show exports: 1) where former Soviet Republics are excluded: 2) that goes by pipeline (not LNG as that is included in oil: 3) is based on contracts (and not on physical transport).
Exports = Russian gas exports
To Europe = The amount of gas exported by Russia to Europe.
Price, EU, cif = Price in US$/million btu (British Thermal Units=1055 Kjoule), cost+insurance+freight (average price). In the EU (i.e. not Russian domestic price)
***** Prognoses (N.B. These prognoses change every year and cannot be taken at face value.)
N.B. Imports of nature gas are very limited in scale, approximately 3.6 million tonnes per year.
Sources: See appendix 1.

Methodological Considerations of Gas Assessment

As mentioned in the previous chapter concerning oil, there are problems of relying on statistics on the topic, especially when various idiosyncratic methodologies have been employed by the institution providing the data. Hence, production, consumption and

[149] Bakhtiari, Samsam A.M. (2003), "Russia's Gas Production, Exports Future Hinges on Dramatic Changes Needed at Gazprom", *Oil and Gas Journal*, 10 March, 2003, pp. 20-22.

imports/exports do not always add up. There is no point reiterating what has been said in previous chapter, but when it comes to reserves, it must be noted that categories such as 'hypothetical' do not have support of geological evidence. Therefore, the figures must be approached with great caution. Another reason why figures differ between countries is temperature. Gas volumes in Russia are measured at 20 degrees Celsius while European standard is 15 degrees. The difference in volume is 7%, which partly explains the discrepancy in the data presented in this chapter. Moreover, figures of imports/exports are often based on data of contracts instead of physical amounts actually imported or exported. This is another factor that increases the margin of error.

A problem that goes both for oil and gas is that it is not always clear who *de facto* controls the energy sector - the official state structures or the energy companies. Informal networks and silent agreements are supposed to have central roles within energy politics. This is especially the case with the main gas producer, *Gazprom*, which is closely connected to governmental structures and individual politicians. It is thus often impossible to pinpoint the underlying reasons for actions in the gas sector. Also, even if gas companies are privatised, the transportation infrastructure of pipelines are still owned by the state, which becomes the pivotal issue in terms of political leverages.

2.5.2 Production of Natural Gas

Table 14 shows a slow decline in gas production since 1990 that contrasts the long-term trend. The decline, which is not sharp, (merely around 7%),[150] is partly explained by the fact that the disintegration of the Soviet Union led to decreased demand, especially from other republics, and partly to the independence of Uzbekistan and Turkmenistan that both accounted for a small but important share of the overall Soviet production. In addition, gas depletion started to be visible in statistics.[151] Currently the situation is stable and Russia produces almost 600 bcm, 22% of the global production, which makes it the world leading gas producer.[152]

The Gas Industry in Russia

The most prominent gas company in Russia is *Gazprom* (with its subsidiary companies, for example *Gazexport*),[153] that in 2001 accounted for 88% of all gas produced in Russia. The Russian state for a long time owned 38% of *Gazprom*, but decided to increase this share to 51% in mid 2004.[154] The German company *Ruhrgas* owns 5.7%.[155] Gazprom is indeed strong, but its share of Russia's total production has decreased somewhat since 1991 when it had 92% of the overall share.[156] *Gazprom* has approximately 65% of Russia's reserves of gas and

[150] - (2002), *Rossiskii Statesticheski Ezegodnik*, Moskva: Goskomstat Rossii, and: *Statisticheskoie Obozrenie 1-4*, 1996, 1997; and: - (2000), *Promishlennost Rossii – Offitsialnoie Izdanie*, Moskva: Goskomstat Rossii, p. 328f and: - (2002) *Statistical Abstract: Commonwealth of Independent States in 2002*, Moscow: Interstate Statistical Committee of the Commonwealth of Independent States, p. 167.

[151] - (1999), *World Energy Outlook*, Paris: IEA, p. 118.

[152] Bakhtiari, Samsam A.M. (2003), "Russia's Gas Production, Exports Future Hinges on Dramatic Changes Needed at Gazprom", *Oil and Gas Journal*, 10 March, 2003, p. 20f.

[153] *Gazprom* has numerous subsidiary companies, a list is found at *Gazprom's* web site: *Gazprom*: http://www.gazprom.ru/eng/articles/article8526.shtml, 2004-01-28. For an excellent compilation of selected equity investments by *Gazprom* outside Russia, see: - (2003), *The Resources Wealth Burden: Oil and Gas Sectors in the Former USSR*, Warsaw: OSW/CES, pp. 60ff.

[154] Hansson, Rolf and Tapper, Gustav (2004), "Rysslands kronjuvel öppnar för utlänningar", *Dagens industri*, 15 september 2004.

[155] - (2003), "Rysk energi – rikedom, utvecklingshinder och påtryckningsmedel", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/14338, 11 March, 2003.

[156] Locatelli, C. (2002), *La Faisabilite de la Liberasation de l'Industrie Gaziere Russe*, Institut d'Economie et de Politique de l'Energie, Novembre 2002 (draft).

is allegedly undergoing a phase of privatisation. Its financial situation is nevertheless problematic and it is faced with the problem of expanding and consolidating its position at the same time. As a comparison of *Gazproms's* size, it holds reserves of approximately 130 billion barrels of oil equivalents, while *ExxonMobile* only has some 22 billion.[157]

Gazprom, the backbone of Russia's gas production, is in bad shape after mismanagement. Lack of investments, poor maintenance, increasing debts and lack of transparency are a few of the characteristics of *Gazprom* and its former head, Vyachirev, has been dismissed charged with corruption. Presently, *Gazprom* depends on huge loans, which naturally is unsustainable in the long run. The *Russian Ministry of Energy* has suggested that in order to break Gazprom's de facto monopoly, its divisions for production and transport should be split and production should be opened for competition. Transportation, however, should remain a state monopoly. Suggestions have also been made on creating a Russian spot market for gas with liberalised prices, where several actors should be granted access to transportation infrastructure. By and large, all these suggestions have been rejected by both *Gazprom* and Vladimir Putin. At best, transport and production can be separated *within* Gazprom, the argument goes.[158] Putin has further stated that *Gazprom* is a 'strategic asset' that should not be split for this reason.[159] One of the greatest improvements in recent years was when *Gazprom* in 2004 opened up for foreign investors.[160] At the same time, it became clear that Russia aimed to increase its control of the energy sector beyond the increased ownership share of *Gazprom*. The way of doing this was by merging *Rosneft* and *Gazprom* and by that creating *Gazpromneft*.[161] The outcome is yet to be seen.

Itera is the second largest gas supplier by having 4% of the total production share in Russia and is followed by Rosneft by 1%. In contrast to *Gazprom*, Itera started in 1994 by selling Turkmen gas to other CIS countries with the permit of *Gazprom*. Despite its modest size compared to *Gazprom*: in 2000 it outranked all European companies, such as *Gas de France* or *British Gas* in terms of sales volumes. It currently controls many local gas companies, just to mention two out of numerous examples: *Armrosgazprom* in Armenia and *Gruzgaz* in Georgia. *Gazprom* once owned 45% of *Armrosgazprom*, but sold itself out in 2002. As *Itera* owed US$380 million to *Gazprom*, it did not have to pay for the deal.[162]

Russia vs. World Production

As said, Russia is the world's largest gas producer by 22.0% of world production but the US comes in second place by 21.7%. This small margin is interesting to note as Russia's reserves, as shown further on, are nine times larger than America's.[163] The conclusion is that Russia's gas industry has a much greater potential than what the US has, but is presently not exploiting

[157] Lundin, Adolf H. (2003), "Internationella oljemän om oljeläget", *Nätverk om Olja och Gas: Redovisning och utvärdering av verksamheten t.o.m. våren 2003*, Toll, Mikael, (ed), ER 22:2003, Energimyndigheten, p. 47

[158] - (2003), "Rysk energi – rikedom, utvecklingshinder och påtryckningsmedel", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/14338, 11 March, 2003 and: Locatelli, C. (2002), *La Faisabilite de la Liberasation de l'Industrie Gaziere Russe*, Institut d'Economie et de Politique de l'Energie, Novembre 2002, (draft).

[159] - (2003), "Rysk energistrategi till år 2020", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/369, 29 augusti, 2003.

[160] Hansson, Rolf and Tapper, Gustav (2004), "Rysslands kronjuvel öppnar för utlänningar", *Dagens industri*, 15 september 2004, p. 21.

[161] Jack, Andrew (2004), "Kremlin tightens grip on energy", *Financial Times*, 15 August, 2004.

[162] - (2003), "The Gas Pipeline Remains the Most Efficient Tool of Russia's Influence in CIS and European Union", *Agency WPS*, 20 October, 2003.

[163] In addition, given the great uncertainties in assessments made, it is clear that the relative share is debatable.

this advantage. Canada is the third largest by 7.3% followed by the UK that produced 4.1% of the world's total in 2002.[164]

Compared to other former Soviet republics, Russia produces substantially more natural gas, which is crucial when assessing energy politics, dependence and energy as foreign policy. The main competitor within the FSU is Uzbekistan, but it has during the 1990s produced less than 10% of what Russia has.[165] However, Russia will face stronger competition in the future. Drawing on prognoses made, Russia will increase production by some 13% to 2020.[166] At the same time, Azerbaijan is expected to increase production between 300 and 400%, Kazakhstan by 260-300%, Turkmenistan by over 200% while Uzbekistan will stay at the current production level.[167] In short, this means that the littoral states of the Caspian region are expected to gain export shares on the expense of Russia.[168] Also, if new transport routes for energy that bypass Russia are created, this increased production will undoubtedly reduce Russia's ability to control the gas supply to its neighbours and to world markets.

Investments in the Gas Sector

As most industries in Russia, the gas industry has an outdated and insufficient infrastructure that creates bottlenecks and calls for huge investments. *The International Energy Agency* estimates that the whole gas industry needs some US$160-170 billion during the coming decades, and almost 40% of this is needed for extraction purposes.[169] Deputy Minister of Natural Resources in Russia, Pyotr Sadovnik, stated in February of 2004 that some US$64 billion is necessary to until 2020 for exploration and putting into operation the fields in northern Russia. US$5 billion would be used for exploration and 10 billion for the pipeline system. The remaining 50 billion would be used for putting the fields into operation.[170]

Table 15: Investment Needs in the Russian Gas Sector, 2001-2020

	2001-2005	2006-2010	2011-2015	2016-2020	Total
Whole gas industry	34-35	37-39	43-45	51-53	164-171
Extraction	12-13	17	19	23-24	71-73
Storage	3-4	4	4-5	6	17-19
Transportation	18	17-18	20-21	22-23	76-80

N.B. Figures in billion US$
Source: - (2002), *Energeticheskaia Politika Rossii – obzor 2002,* Paris: IEA, p. 41.

Some estimates from the mid-1990s suggest that efficiency can be improved by over 25%.[171] An opportunity for doing this was given when Russia in early October 2004 decided to ratify

[164] - (2003), *BP Statistical Review of World Energy – June 2003*, London: BP.
[165] - (2000), *Rossia i Strani Mira – Offitsialnoe Izdanie*, Moskva: Goskomstat Rossii, p. 148f.
[166] - (2002), *Energeticheskaia Politika Rossii – obzor 2002*, Paris: IEA, p. 137.
[167] For high estimates: Oil and Gas Journal. For low estimates: Wood Mackenzie. Both from: Locatelli, Cahtherine and Finon, Dominique (2002), *The Liberalisation of the European Gas Market and its Consequences for Russia*, Institut d'Economie et de Politique de l'Energie, 2002, p. 13.
[168] For a comprehensive background reading of the Caspian energy situation, see: - (1998), *Caspian Oil and Gas*, Paris: IEA and Chufrin, Gennady (ed) (2001), *The Security of the Caspian Region,* New York: Oxford University Press/SIPRI.
[169] - (2002), *Energeticheskaia Politika Rossii – obzor 2002*, Paris: IEA, p. 41.
[170] - (2004), "Russia Need $65bn to Explore its Northwestern Oil and Gas Fields", *Ros Business Consulting*, Internet: http://www.rbcnews.com/free/20040211174825.shtml, 2004-02-11 For more information on ongoing energy projects in Russia and the CIS, see: Łabuszewska, Anna (ed) (2003), *The Resource Wealth Burden: Oil and Gas Sectors in the Former USSR*, Warsaw: Ośrodek Studiów Wschodnich.
[171] - (1995), *Energy Policies of the Russian Federation*, Paris: IEA, p. 163.

the Kyoto protocol. Investments are also needed to reduce leakages that have been almost 1% of transported gas.[172] Nonetheless, this is not a prioritised object for investments. *Gazprom* has declared that its strategic priorities solely encompass development of the Zapolyarnoye field and the Yamal Peninsula.[173] Other analysis yet suggest that this is not as easy as it seems and that costs for doing so will be substantial.[174]

Despite these efforts, the production ratio of *Gazprom's* fields is expected to drop by 70% in the future. Thus, if current levels are to be sustained, large investments must be made. No major power plants have however been built the last 15 years and the yearly ratio of abolished versus created capacity is one to five.[175] In short, money *and* reform are needed for the situation to change. Russia has the possibility to extensively expand its production capacity, but not under current conditions. Internal problems at *Gazprom*, lack of clear energy policies, investment needs and lack of funding complicate the situation and must be handled before a sustainable situation has been reached.

2.5.3 Stocks and Reserves of Natural Gas

As with most commodities treated in this report, a distinction must be made between reserve deposits of natural gas, and stocks held by the state for strategic or economic reasons.

Strategic Stocks

As mentioned, natural gas is among the few commodities where the holding of strategic reserves is difficult due to the nature of the commodity. Much of the storage facilities that existed during the Soviet era are now on Ukrainian and Turkmen ground. Yet, Russia was left with some 20 major underground storage facilities, intended to hold over 66 bcm. As with most infrastructures, these were in bad shape and in 1995 their capacity was only 48.4 bcm.[176] By then, it amounted to 12% of the annual consumption, or 8% of production. Recalculated, this is approximately the consumption needs for one month on the annual average, which would be only a few weeks during winter time. Drawing on this finding, two conclusions can be made. First, the strategic factor of these storage facilities has but a modest role. They cannot be relied on for sustainable usage in war or long-term energy crisis. Second, they cannot be used as strategic reserves for managing the gas market when it comes to controlling supply or reduce price volatility.

Russian vs. World Reserves

Like oil, classification of gas reserves is a debated topic. Most analysts agree that Russia will have to adopt Western methodology in the future but meanwhile, the Russian system of classification, explained in previous chapter, has to be relied on.

According to *Gazprom*, it has 30.4 trillion cubic metres of Russia's total reserves of 46.9.[177] This total is remarkably less than European estimates of 1680 trillion cubic meters, as shown in *table 16*. The explanation is found in the way reserves are categorised and how great a

[172] - (1995), *Energy Policies of the Russian Federation*, Paris: IEA, p. 171.
[173] Bakhtiari, Samsam A.M. (2003), "Russia's Gas Production, Exports Future Hinges on Dramatic Changes Needed at Gazprom", *Oil and Gas Journal*, 10 March, 2003, p. 24.
[174] Royle, Gundi (2004), "Gas in Russia – The Drive to Liberalise metts Industrial Reality"*, Bofit Russia Review*, nr 9, p. 4.
[175] - (2003), "Rysk energi – rikedom, utvecklingshinder och påtryckningsmedel", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/14338, 11 March, 2003.
[176] - (1995), *Energy Policies of the Russian Federation*, Paris: IEA, p. 171.
[177] Bakhtiari, Samsam A.M. (2003), "Russia's Gas Production, Exports Future Hinges on Dramatic Changes Needed at Gazprom", *Oil and Gas Journal*, 10 March, 2003, p. 22.

margin of error one is willing to accept. Therefore, it is unwise to look only at absolute numbers. Instead, it is better to look at comparisons with other countries, given the same level

of insecurity and by applying the same system of classification. According to the estimate made by the respected magazine *Oil and Gas Journal*, Russia has 30.5% of proven natural gas reserves in the world, while Iran, on second place, only has half that amount. None of the European countries has more than 2% of world reserves and the US has only 3.3%.[178]

Location of Russia's Reserves

Russia's gas fields are located far from consumers' markets.[179] It has many fields in operation but some of them, such as Urengoi, Yamburg, Medvzhe and Orenburg (all located in Eastern Siberia and the Volga-Ural area), are ageing and peaked in production many years ago. Instead, Zapolyarnoye is currently the most important field, which is in its early stages of operation. These are all so-called super giant fields, which mean that they have or have had more than one trillion cubic meters of reserves. Giant fields, in contrast, hold between 0,5 and one trillion cubic metres, and are found in Western Siberia, in Timan-Pechora and on the Yamal peninsula.[180]

Table 16: Countries with Major Proven Natural Gas Reserves in 2002

Country	Trillion m^3	Share of world total
Russia	1680	30.5%
Iran	812.3	14.8%
Qatar	508.5	9.2%
Saudi Arabia	224.7	4.1%
UAE	212.1	3.9%
USA	183.5	3.3%
Algeria	159.7	2.9%
Venezuela	148.0	2.7%
Nigeria	124.0	2.3%
Iran	109.8	2.0%

N.B. These are international (non-Russian) estimates where 'major' means more than 2%.
Source: - (2003), *BP Statistical Review of World Energy – June 2003,* London: BP.

As seen in the detailed *table 48* (found in appendix three), reserves estimates by Gazprom (on the basis of information from 769 fields) suggests that 77% of known resources are found in Western Siberia, more exactly in the Pur-Taz region and on the Yamal Peninsula that contain 50% and 22% respectively. Russia has 11 *super giant fields* and at least 13 *giant fields*. Most of these are currently not in operation, but are prepared to be developed between 2005 and 2009. The Zapolyarnoye field is, after all three gas treating plants have been installed, expected to reach full capacity in 2004. 104 wells are already drilled and another 254 are planned.[181]

The potential of finding and exploring new deposits is connected to many things. Investment needs have been touched upon and show that over US$70 billion is needed during the coming decades for extraction.[182] There are many fields, both super giant and giant, that are prospected but where extraction has not started. New technology will naturally also have an impact as it can increase efficiency also in fields that are considered to be depleted. In short it can be said that the current inefficient system and obsolete infrastructure are the main bottlenecks for future extraction and prospecting of reserves. Russia will, nonetheless, continue to be the main producer of natural gas, given its enormous resources.

[178] - (2002), *BP Statistical Review of World Energy – June 2003*, London: BP (On the basis of Oil and Gas Journal.)
[179] A map is found in appendix IV.
[180] Bakhtiari, Samsam A.M. (2003), "Russia's Gas Production, Exports Future Hinges on Dramatic Changes Needed at Gazprom", *Oil and Gas Journal*, 10 March, 2003, p. 22.
[181] Bakhtiari, Samsam A.M. (2003), "Russia's Gas Production, Exports Future Hinges on Dramatic Changes Needed at Gazprom", *Oil and Gas Journal*, 10 March, 2003, p. 21f.
[182] - (2002), *Energeticheskaia Politika Rossii – obzor 200*, Paris: IEA, p. 41.

2.5.4 Domestic Consumption of Natural Gas

Figures of domestic consumption in Russia, shown in *table 13*, tell that consumption gradually has decreased since 1990. Official figures also tell that unlike production, the consumption trend is still negative. Alternative data, however, show that since 1999/2000, the level of consumption has increased somewhat. Additionally, in 1990, domestic consumption was 83% of total production. In 2001 this figure was 66%, which indicates that the consumption share has decreased also relatively speaking.[183] Three explanations for reduced consumption are the 1) general negative situation within the industrial sector, 2) the general decline in demography and 3) the actual existence of a price on gas, which contrast the days during the Soviet era when gas was free.[184] Having gas for free might have had its advantages then, but the lags from the Soviet era have proven to be a huge problem as they entrenched a culture of wasting energy and reduced the incentives for increasing efficiency and thus leaving Russia with technology that cannot match the requirements of a market economy. This is a key issue and will be assessed later on in this report.

Usage of Natural Gas in Russia

Natural gas currently accounts for 55% of Russia's primary needs and 80% of its power generation.[185] Conversion towards gas operating energy plants has not been as successful as expected, but in a long-term perspective, this will have an impact. Given the size of domestic consumption, issues affecting demand thus matter to a great extent when it comes to potential for export.[186] It is clear that in the context of general development, when the service sector takes shares from the industrial sector, the demand for gas decreases. However, gas as a primary fuel is expected to gain in importance and make up a 58% share in 2010.[187] Gradually, it will replace also oil and coal in industrial usage in Russia and there are laws under way that will promote new efforts to tackle the problems of inefficiency.[188]

Domestic Prices on Natural Gas

The price of gas is a key issue to look at when assessing domestic consumption. Prices are as of the fall of 2003 US$23/tcm but usually vary between US$20 and 25/tcm. Russia's energy strategy recommends an increase to between US$ 35 and 39/tcm so that it corresponds to the value of consumed energy, which in the long-term perspective is supposed to lead to reduced gap in domestic and export prices.[189] A single initial rise in prices is not enough, but the strategy also stipulates continued increase in gas, and oil, prices until 2020.[190] Hence, the Russian domestic gas price is extremely low, about eight times lower than what European customers pay for Russian gas. The reasons are 1) historically lack of competition, 2) financial incapacity to pay by the consumers and 3) implicit subsidies to the gas-using industries.

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[183] - "Russia's Declining Natural Gas Production and Consumption", *Platt Global Energy*, Internet: http://www.platts.com/features/russiaenergy/, 2003-11-18.
[184] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 21.
[185] Bakhtiari, Samsam A.M. (2003), "Russia's Gas Production, Exports Future Hinges on Dramatic Changes Needed at Gazprom", *Oil and Gas Journal*, 10 March, 2003, p. 21.
[186] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 21.
[187] - (1995), *Energy Policies of the Russian Federation*, Paris: IEA, p. 47.
[188] - (1995), *Energy Policies of the Russian Federation*, Paris: IEA, p. 56.
[189] - (2003), "Rysk energistrategi till år 2020", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/369, 29 augusti, 2003.
[190] - (2003), *Energeticheskaia Strategiia Rossii ha period do 2020 goda*, Otvershdena no 1234r, 28 Avgost, 2003, p. 10.

The Russian Minister of Energy called for a 35% increase in prices already in 2002, but the government only approved of a 15% increase.[191] The artificially low price has continued the extreme waste of gas by consumers. For example, since gas is cheaper than electricity, people use gas ovens as heaters by using them with open oven doors. Yet, a deregulation of the domestic market would not necessarily lead to a huge price increase. Some analyses have suggested that if the domestic gas market would be subject to greater competition and was made more effective, prices would actually be less than the US$40 needed to cover costs today. There are thus reasons to believe that the domestic prices will continue to be far below world market price.[192]

Low prices might seem good for customers, but that is only in the short run as a low domestic price results in several problems. First, gas-producing companies rather export gas than sell on the domestic market. If it was not for bottlenecks in export capacity, the domestic market could find itself deprioritised as companies would export rather than sell on the less profitable domestic market. Second, it is highly questionable if revenues from domestic gas sales allow gas suppliers, most notably *Gazprom*, to finance its new projects and invest money in infrastructural improvements. Hence, it leads to long-run problems of obsolete technology, infrastructure and equipment.[193] As indicated, calculations suggest that for the general welfare of Russia, a long-term price of $40USD/tcm would be best.[194]

Payment Problems in the Natural Gas Sector

Non-payments are a much greater of a problem than what it seems at a first glance. Therefore, it serves a purpose to explore some of its dimensions that can explain how the Russian gas market is working and its consequences on the energy market.

It must initially be noted that the Russian tax laws are cash-based and stipulate that taxes are accrued only when payments are received. This means that overdue taxes only are imposed on transactions where payments have been received. This becomes crucial when customers fail to pay for used gas, as it leads to gas delivering companies not paying taxes. At an aggregated level, overdue payments have risen sharply since 1995, but stabilised during the latter part of the 1990s. An analysis on the topic leads to three conclusions. First, non-payments has taken the role as subsidiser of industrial and social consumers, and this 'free supply' accounted for almost 4% of GDP between 1993-1997. Yet, the situation since then has changed. Second, *Gazprom* has had huge tax arrears that made up a significant share of total overdue taxes. Third, the structure of payments in the energy sector differs from other sectors as its proportion of non-monetary transactions is larger. On average, more that 70% of the revenues of the energy sector have been non-cash.[195] The situation is similar in Kazakhstan, and as a comparison, the tax collection rate in Kazakhstan has been about 50-60% in the energy sector and one of the most commonly used non-monetary payment is barter, which means that the gas supplier is paid in goods produced by the customer receiving the gas.[196] It is against these issues non-payments must be seen.

[191] Bakhtiari, Samsam A.M. (2003), "Russia's Gas Production, Exports Future Hinges on Dramatic Changes Needed at Gazprom", *Oil and Gas Journal*, 10 March, 2003, p. 21.
[192] - (2003), "Rysk energi – rikedom, utvecklingshinder och påtryckningsmedel", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/14338, 11 March, 2003.
[193] Bakhtiari, Samsam A.M. (2003), "Russia's Gas Production, Exports Future Hinges on Dramatic Changes Needed at Gazprom", *Oil and Gas Journal*, 10 March, 2003, p. 21.
[194] - (1995), *Energy Policies of the Russian Federation*, Paris: IEA, p. 28.
[195] Ivanova, Nadezhda and Pavlov, George (2000), "Non-payments in the Energy Sector", *Russian Economic Trends*, vol. 9, no 1, 2000, pp. 20-23.
[196] - (1999), *World Energy Outlook*, Paris: IEA, p. 123.

Causes of Non-payments and Implications for the Market

In this context, it is also interesting to canvass the roots of the problem as it illustrates the magnitude of reform needed. Problems of non-payments, which also go for oil, are embedded and constitute more than the sole explanation of lack of financial means. Five causes deserve attention here. First, in the early years of the 1990s, the *Russian Central Bank* granted soft loans for debt payments, which resulted in continuous deliveries of gas also to non-paying customers. Yet, this came to a halt in 1997.[197]

Second, financial institutions, as the *Ministry of Finance*, have had problems in following laws and regulations when it comes to relations with governmental bodies that use gas, such as industries connected to the *Ministry of Defence*. This has caused arrears with gas suppliers as these did not consider non-payments as a problem since they assumed that the government would "accept debts owed by budget spending units in lieu of taxes owed by the suppliers" and in short "[f]irms used tax offset rights instead of bank money to settle their debts".[198] *Gazprom* naturally takes a central role here. In 1996, less than 50% of the tax paid by *Gazprom* was in cash and in 1998, 15% of the huge overdue receivables of *Gazprom* were owned by various governmental bodies.[199]

Third, *Gazprom* in particular, but also other gas delivering companies have been reluctant to disconnect customers, even if the total value of cash and non-cash payments, such as money surrogates or barter, is lower than the actual cost of supply. The reason is two-fold. As gas is highly important for consumers and industries, the impact from such action is enormous, especially in a social perspective as industrial corporations are the main employers. Add to this that regional governors have informal contacts and often use these in order to prevent disconnection. The other reason is that there are certain strategic firms that cannot be disconnected, such as the defence industry. The explanation why bankrupt firms still get deliveries of gas is that the government tolerate tax arrears just because *Gazprom* fulfils an important military and social function by not disconnecting non-paying customers. This also allows *Gazprom* to shield some of its export from taxation.[200] Governmental policy recommendations stand in contrasts by stating that disconnections should be made and that laws on bankruptcy must be strengthened. One old suggestion to tackle this problem has been to create a reconstruction bank with the responsibility to detangle the web of debts and non-monetary payments.[201]

Fourth, disconnections are not always an option as obsolete technology makes disconnection impossible, unless paying customers are to be affected. There is also a complex structure of selling and reselling companies and *Gazprom* does not always have direct access to all its end-use customers. In addition, there are reasons to believe that firms on the disconnection 'immunity list' occasionally help non-paying customers to get access to energy and gas.[202]

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[197] Ivanova, Nadezhda and Pavlov, George (2000), "Non-payments in the Energy Sector", *Russian Economic Trends*, vol. 9, no 1, 2000, p. 24f.
[198] Ivanova, Nadezhda and Pavlov, George (2000), "Non-payments in the Energy Sector", *Russian Economic Trends*, vol. 9, no 1, 2000, p. 24.
[199] Ivanova, Nadezhda and Pavlov, George (2000), "Non-payments in the Energy Sector", *Russian Economic Trends*, vol. 9, no 1, 2000, p. 24f.
[200] Ivanova, Nadezhda and Pavlov, George (2000), "Non-payments in the Energy Sector", *Russian Economic Trends*, vol. 9, no 1, 2000, p. 25.
[201] - (1995), *Energy Policies of the Russian Federation*, Paris: IEA, p. 34.
[202] Ivanova, Nadezhda and Pavlov, George (2000), "Non-payments in the Energy Sector", *Russian Economic Trends*, vol. 9, no 1, 2000, p. 25.

Itera, unlike *Gazprom*, operates as a private company which means that many of the issues detailed above are of no concern. It suspends deliveries if payment discipline is low.[203]

Finally, there is a problem of corruption. In short, firms that actually have financial means can use these to bribe utility managers to tolerate non-payments.[204] It is true that consumers' gas debts have decreased over the last couple of years, but in early 2003, they owe over US$1.44 billion for past deliveries. This situation seems to be endemic and in late 2003 29 of Russia's 89 regions were up to date with their gas bill payments.[205]

There is no stability on the gas market in Russia, and if many actors would prefer the chaotic situation to remain. Shifts of usage are ongoing, although slowly, and laws on tax and prices are under way. It is too early to foresee the impact of these changes, but everything points toward an increased consumption if the general demographic and economic situation improves.

2.5.5 Exports of Natural Gas

Russian exports of gas almost doubled between 1990 and 1999, but decreased during the first years of the new millennium, as seen in *table 13*. Naturally, this rise is connected to domestic consumption, but also to a growing need in Europe during the late 1990s. Exports amount to some 200bcm today, but are expected to increase. In a positive scenario, exports could rise sharply and reach a level of 300bcm, while a more pessimistic scenario stipulates an increase to 250-260bcm.[206] Consequently, the gas share of Russia's total exports is expected to grow until 2010.[207] According to calculations made by *Fortum*, Russian exports of gas to Europe could even be tripled until 2020, but that requires four or five new pipelines to be built.[208] Yet, already the current system gives some room for exports, especially if the European gas market is liberalised.[209] If Europe is successful in diversifying its imports of gas, the relative importance on Russia might, at least according to some estimation, decrease.[210]

Export Prices on Natural Gas

Gas is more sensitive than oil to changes in demand and price vagaries.[211] This is partly explained by the fact that storage of gas differs from oil. Price of gas is volatile and as seen, it can differ up to 100% in only two years time. Since 1990, prices have fluctuated between US$1.80 and US$4.15/million btu on the world market, although this is significantly less than the Russian domestic price.[212] Presently, there is a 25% flat tax on

Table 17: Russian Gas Export Price, US$/ 1000m^3

	1995	1996	1997
To the CIS	51.5	71.4	71.4
To non-CIS	69.2	75.4	88.6

Source: - (2002), *Rossiskii Statesticheski Ezegodnik,* Moskva: Goskomstat Rossii, p. 630.

[203] - (2003), "The Gas Pipeline Remains the Most Efficient Tool of Russia's Influence in CIS and European Union", *Agency WPS*, 20 October, 2003.
[204] Ivanova, Nadezhda and Pavlov, George (2000), "Non-payments in the Energy Sector", *Russian Economic Trends*, vol. 9, no 1, 2000, p. 26.
[205] Bakhtiari, Samsam A.M. (2003), "Russia's Gas Production, Exports Future Hinges on Dramatic Changes Needed at Gazprom", *Oil and Gas Journal*, 10 March, 2003, p. 21.
[206] - (1995), *Energy Policies of the Russian Federation*, Paris: IEA, p. 304.
[207] - (1995), *Energy Policies of the Russian Federation*, Paris: IEA, p. 48.
[208] - (2003), "Rysk energi – rikedom, utvecklingshinder och påtryckningsmedel", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/14338, 11 March, 2003.
[209] Locatelli, Cahtherine and Finon, Dominique (2002), *The Liberalisation of the European Gas Market and its Consequences for Russia*, Institut d'Economie et de Politique de l'Energie, 2002, p. 8f.
[210] Götz, Roland (2004), "Schweigen für Gas?", *SWP-Aktuell*, nr 43, September, 2004, p. 4.
[211] Williams, Bob (2003), "Debate Grows over US Gas Supply Crisis as Harbinger of Global Gas Production Peak", *Oil and Gas Journal*, 21 July, 2003, p. 20.
[212] - (2003), *BP Statistical Review of World Energy – June 2003*, London: BP, p. 29.

natural gas in addition to royalties between 6-16%, which is calculated on wholesale (including costs of transport).[213] In addition, for every thousand cubic metres of gas exported, there has been an export tax of ECU2. But despite this tax, revenues from exports are many times larger than the costs involved.[214]

Problems connected to prices of gas are thus not solely a domestic issue. The CIS countries import gas at a much higher price than what domestic consumers pay, but to a strongly discounted price compared to European customers. For example, *Ruhrgas* (which owns parts of *Gazprom*) has to pay US$100/tcm, which is four times more than the domestic price in Russia and three times more than what Belarus pays. This is often considered to be an illegal subsidiary to the gas sector, in violation with competition laws. These accusations relate both to industries where gas is used as a component, for example fertilisers, but also to the general Russian industry that largely relies on gas.

Consequently, this has become a core problem for Russia when it comes to negotiations for WTO membership. Russia's standpoint is that since many states have a regulated gas market, the Russian subsidies should just be seen as natural competitive advantage. In addition, it is questionable if a deregulation of the market would change the situation as problems with bottlenecks still infringe on export capacity. In either case, the former Russian Prime Minister of 2003, Mikhail Kasyanov, has stated that subsidies are to be abolished in the future,[215] but this is yet to be seen–especially since he now is replaced. The WTO negotiations nonetheless gained momentum in mid-2004 after concessions on both sides.[216]

Transportation Infrastructure and its Political Dimension

The ongoing discussion on existing and prospected projects concerning infrastructural developments and its consequences is indeed extensive and out of the scope of inquiry for this study. However, a few things can be mentioned in order to highlight the underlying issues. Among all ongoing infrastructure projects, one of the most important is the 10,000km *Yamal-Europe pipeline*, which intends to connect the Yamal Peninsula to the European pipeline grid in Kessler, Germany. The project is still in its initial phase and only the Belarusian and Polish legs are completed. While awaiting completion, the pipeline is used for gas transport from other locations. The *Blue Stream project*, intended to transport Russian gas under the Black Sea to Turkey, is completed and about to come into operation. Slowly the European, Russian and Far Eastern gas grids are getting connected is indeed costly and amounts to over US$8 billion for the most feasible option.[217] Suggestions have also been made to build a pipeline under the Baltic Sea to Germany, with a possible extension to Sweden.[218]

Like oil, natural gas can be utilised as a tool for foreign and security policy. How this has been done and what Russia's capacity and intentions are today will be discussed in greater length in subsequent chapters of this study. In general it relates to three things that only will be briefly touched upon here. First, there is an issue of controlling the supply to the world spot market and thereby also the supply to Europe. The second point connects to the first and

[213] - (1995), *Energy Policies of the Russian Federation*, Paris: IEA, p. 32.
[214] - (1995), *Energy Policies of the Russian Federation*, Paris: IEA, p. 32.
[215] - (2003), "Rysk energi – rikedom, utvecklingshinder och påtryckningsmedel", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/14338, 11 March, 2003.
[216] - (2004), "Russian Reform: Mixed Signals", *The Economist*, 29 May, 2004, p. 30f.
[217] Bakhtiari, Samsam A.M. (2003), "Russia's Gas Production, Exports Future Hinges on Dramatic Changes Needed at Gazprom", *Oil and Gas Journal*, 10 March, 2003, pp. 24-27.
[218] - (2003), "Rysk energi – rikedom, utvecklingshinder och påtryckningsmedel", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/14338, 11 March, 2003.

relates to the ability to affect prices on gas. Third and most obvious, Russia has the power to control the gas tap for individual countries. This is a powerful lever, but also a double-edged sword. As an example, disconnecting the gas to Ukraine also brings along the problem of preventing gas to flow to Europe and thus also reducing revenues from export.[219]

When it comes to control of world prices, as discussed above, it can be said that Russia's ability to control the world market is limited, since so many factors that matter, for example the price on crude oil. In conclusion, Russia has the ability to *affect* prices by being the largest producer, but has no ability to *control* prices on the spot market. However, in bilateral relations, Russia is extremely strong and in East Europe and in the CIS Russia has the capacity to control both supply and price in the most dependent countries.

2.5.6 Imports of Russian Natural Gas

Table 13 in the beginning of this section shows that Russian gas mainly is consumed by Europe. Infrastructure for gas exports is more important than for oil as oil can be transported by rail or ship more easily than gas can be. Therefore gas dependence has a higher degree of vulnerability involved. Therefore, if dependence on Russian gas by the importers is assessed, two things must be looked at. First, how large the Russian share of the total imports is, as this show the relative dependence on Russia. Second, the share of imports of gas from Russia as a share of total needs shows the actual dependence on Russia.

General Dependency of Russian Gas

Drawing on data in *table 18* (on next page), three things can be said. First, of the 25 countries that import gas from Russia, 21 import more than 35% of its total imports from Russia and 12 imports over 90%. The most dependent countries in this aspect are the Baltic states, Bulgaria, Croatia, Finland, Greece and Slovakia as they to 100% rely on Russia as a supplier. The explanation is, naturally, geographical and historical. Second, if one looks at which states that rely on Russia for a large share of their needs, it is clear that apart from the aforementioned states, Moldova and Belarus are the most dependent ones. Third, this comparison also highlights the fact that although some states, such as Turkey, Romania and the Netherlands, import much gas from Russia, they are not *totally* dependent as they have diversified import and/or have own production. When it comes to energy dependence for the EU, it is expected to increase in the future. The table below (*table 19*) suggests a sharp increase in gas import dependency until 2020, especially for Western Europe. This situation deserves a closer look.

[219] This example is further elaborated on in the following chapter of this report.

Table 18: Share of Russian Gas for EU and CIS Countries' Consumption Needs in 2002

Country	Imports from Russia in billion m^3	Total Imports	The Russian import's share	Total consumption in billion m^3	Share of consumption needs imported from Russia
Austria	5.20	6.65	78%	8.1	64%
Belarus	17.1*	19.8*	86%	16.2*	95%
Bulgaria	2.80	2.80	100%	2.9	97%
Croatia	1.08*	1.08	100%	2.7	40%
Czech Republic	7.35	9.97	74%	8.9	83%
Finland	4.50	4.50	100%	4.1	91%
France	11.40	32.72	35%	42.8	27%
Georgia	0.2*	1.1*	18%.	1.2*	17%
Germany	31.40	81.68	38%	82.6	38%
Greece	1.59	1.59	100%	2.0	80%
Hungary	9.20	10.55	87%	11.9	77%
Italy	19.30	52.48	37%	63.6	49%
Netherlands	1.40	9.13	15%	39.3	4%
Kazakhstan	1.1*	8.3*	13%	9.7*	11%
Moldova	2.0*	2.1*	95%	2.1*	95%
Poland	7.10	7.70	92%	11.2	63%
Romania	3.50	3.70	95%	17.4	20%
Slovakia	7.70	7.70	100%	7.6	100%
Slovenia	0.60	0.97	60%	1.0*	60%
Switzerland	0.45	2.98	15%	2.8	16%
Turkey	11.60	12.27	95%	17.4	67%
Ukraine	39.7*	60.0*	66%	73.1*	54%
Estonia	n.a.	1.1*	100%	1.1*	100%
Latvia	n.a.	1.6*	100%	1.6*	100%
Lithuania	n.a.	2.6*	100%	2.6*	100%

Explanatory Remarks:
* Year 2000
Figures show trade by pipeline, in rounded figures. The figures are based on the imports from Russia divided by the consumption ratio which leaves out factors of reserves within each country. This can result in two things: 1) figures showing larger imports than consumption (Slovakia) or 2) that some countries (Finland) that import 100%, of its gas from Russia get a figure of only 91% in 2002.

Source: See appendix 1.

Europe and Russian Gas

While eschewing the general European energy debate, a few things related to three general topics of Europe's energy situation must be noted. First, the basic energy situation and needs will, no matter what, make Europe dependent on external supply. Second, the current energy policy is outdated and deregulation of the market calls for a new policy. Finally, this has

resulted in a relaunched discussion on the topic by the *EU Commission* and the issuing of a green paper on energy security.

Table 19: Expected Maximum Import Dependency of Natural Gas for EU and Western Europe, in%

	2002	2005	2010	2015	2020
EU dependency	43	53	61	68	75
WE dependency	31	36	45	54	61

Source: - (2003), *Eurogas Annual Report 2002-2003*, Brussels: Eurogas, p. 23.

As Europe only holds 2% of world reserves on natural gas, estimates suggest that these only will last some 20 years. In quantitative terms this means, according to *Eurogas'* prognoses estimate, that the total European demand for natural gas will grow from some 350 million of oil equivalent to almost 500 until the year 2020.[220] The reasons are that consumption gradually has increased, while production has stabilised and is even expected to decline. The indigenous production is expected to drop to almost half the current share and net imports are expected to remain at current level. Consequently, the additional supplies needed are still to be defined.[221] The share of natural gas in Europe's primary energy consumption varies between countries. Natural gas as a part of energy needs in Sweden is the smallest in Europe by 2%, while the Netherlands, UK and Hungary all have over 40%.[222]

Table 20: Western Europe's Suppliers of Natural Gas

Country	Share of total
Russian Federation	19.0%
Algeria	12.7%
Net others non-WE	1.6%
Indigenous Production WE	66.6%

Source: - (2003), *Eurogas Annual Report 2002-2003*, Brussels: Eurogas, p. 22.

By and large, Eurogas' standpoint on energy security for Europe primarily includes uninterrupted supplies over the years, but also competitive pricing, reduced price volatility and low green house gases emissions. Establishing long-lasting relationships is seen as especially important, not only with Russia – the main supplier of natural gas to Europe. In this context, diversification of supply is stressed.[223]

In 2002, import from Russia made up 55.6% of imported energy, 4.6% of agricultural products, 4% of chemicals and 0.7% of machinery for Europe. This shows how important Russian energy in general is to Europe. Concerning Russian-EU relations, the Economist Magazine concludes that "[t]he EU failed to see that Russia is once again driving hard bargains in the world; it is less interested in friendship than it is commercial and diplomatic gains."[224]

It must be noted that Russia is by many analysts seen as the most reliable supplier of natural gas to Europe, and there is currently nothing that indicate that this would change.[225] It must nonetheless be stressed that this concerns the *European* dimension. As the following chapter bears witness of, the situation concerning CIS states is different. There are also signs that

[220] - (2003), *Eurogas Annual Report 2002-2003*, Brussel: Eurogas, p. 7.
[221] - (2000), *Green Paper: Towards a European Strategy for the Security of Energy Supply*, Brief Presentation, 29 November, 2000.
[222] - (2003), *Eurogas Annual Report 2002-2003*, Brussel: Eurogas, p. 19.
[223] - (2001), *Eurogas Comments on the Green Paper on Security of Energy Supply*, Brussel: Eurogas, 22 March, 2001, p. 2.
[224] - (2004), "Dark Skies to the East", *The Economist*, 21 February, 2004, p. 28.
[225] Mabro, Robert (2003), "Oljemarknaden och tjärsand", *Presentation by Robert Mabro, President of Oxford Institute for Energy Studies at NOG seminar*, Stockholm: Nätverk om olja och gas, 3 December, 2003.

Russia will diversify its gas exports more in the future, even if Europe's share will continue to increase.

Some key issues of strategic character can here be pointed out. *Eurogas* supports the idea of the Green Paper[226] on "increasing quantities held in strategic petroleum reserves by reorganising them on a community basis"[227] for helping mitigate price volatility. However, no direct intervention in the market should be made beyond recommended IEA conditions and no community stock management system should be created.[228] However, this growing dependency is not seen as a major problem, as there still are some reserves in the North Sea and in other regions to explore. This makes growing dependence on external energy sources 'acceptable' provided that there are sufficient and diversified supply routes.[229] If Russia's share of European gas imports is scrutinised, as table 19 shows, it can be said that its powers are extensive.

External suppliers, such as Russia, who wish to increase exports to Europe, are naturally interested in long-term contracts as this will enable them to take on investments that are difficult to mobilise only by using means acquired on the domestic market.[230] Russia's strong situation is acknowledged by the EU, but if certain prerequisites are fulfilled, no risks are highlighted. These ought to include company level agreements, assessments of critical infrastructure projects and, as said, diversification of supply. Most notably, complementary supply could come from Norway, Algeria, the Netherlands and UK, but also from Libya, Trinidad, Tobago, Nigeria and the Middle East.[231]

In the Energy dialogue between the EU and Russia, two areas concerning gas have been found to be of mutual interest, namely the transeuropean transport system under the Baltic Sea and second the development of a second pipeline from Yamal.[232] Yet, the INOGATE project[233] of East-West energy cooperation is one aspect of promoting further integration between internal and external markets. *The Association of Gas Transmission System Operations* (GTE)[234] has assessed the problem of dependency and problems connected to supply infrastructure capacity. It concludes that of 55 cross border nodal points, two thirds have either no or limited capacity (or at least limited capacity depending on size of request). This and further operational capacity is crucial if future demands are to be met.[235]

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[226] - (2002), "Final Report on the Green Paper 'Towards a European Strategy for the Security of Energy Supply'", *Communication from the Commission to the Council and the European Parliament*, Brussel: Commission of the European Union, 26 June, 2002.
[227] - (2001), *Eurogas Comments on the Green Paper on Security of Energy Supply*, Brussel: Eurogas, 22 March, 2001, p. 3.
[228] - (2001), *Eurogas Comments on the Green Paper on Security of Energy Supply*, Brussel: Eurogas, 22 March, 2001, p. 3.
[229] - (2001), *Eurogas Comments on the Green Paper on Security of Energy Supply*, Brussel: Eurogas, 22 March, 2001, p. 7.
[230] Locatelli, Cahtherine and Finon, Dominique (2002), *The Liberalisation of the European Gas Market and its Consequences for Russia*, Institut d'Economie et de Politique de l'Energie, 2002, p. 10
[231] - (2001), *Eurogas Comments on the Green Paper on Security of Energy Supply*, Brussel: Eurogas, 22 March, 2001, p. 8f.
[232] - (2003), "Energy Dialogue with Russia: Update on Progress since the November 2002 EU-Russia Summit", *Commission Staff Working Paper*, 15 April, 2003, Brussels: Commission of the European Communities.
[233] See: *INOGATE*: http://www.inogate.org.
[234] See: *GTE*: http://www.gte.be.
[235] - (2002), "European Energy Infrastructure: Proposal for Decision of the European Parliament and of the Council – Amending Decision No 1254/96/EC Laying Down a Series of Guidelines for Trans-European Energy Networks", *Communication from the Commission to the Council and the European Parliament*, Brussel: Commission of the European Union, 20 December, 2001, p. 10-12.

The Nordics and Russian Gas
The gasification of the Nordic states greatly varies. Natural gas makes up just over 10% of total energy needs in Finland,[236] but 100% of the gas needed comes from Russia. The gas grid is limited to the southern parts of Finland and there are no immediate plans to extend it. However, there are ideas to build a pipeline from Finland to Gävle (and to Stockholm) and thereafter it could be connected to the Swedish grid reaching from Malmö to Göteborg (Gothenburg). The *Swedish Energy Agency* also recommends that Sweden should increase its usage on natural gas, which current is extremely small.[237] The south of Sweden has already set onto a course of increasing its usage of natural gas.[238] In Denmark, 24% of the energy comes from natural gas, but this is not imported from Russia.[239] In Norway, gas is of minor importance for the total energy supply. As seen in *table 18*, Estonia, Latvia and Lithuania all rely on Russia for Gas. This dependence is considered to be a vital problem for national security and great efforts are made to diversify imports. In conclusion, the Baltic States and Finland are in the hands of Russia, while other Nordic countries currently are unaffected by Russia in this aspect. Further comments concerning the Baltic States and the CIS are made in the next chapter of this report.

Asia and Russian Gas
Global demand for energy is expected to grow with most intensity in South Asia (especially India) and China; this goes hand-in-hand with a general demand for cleaner energy form delivered by grid.[240] If the former Soviet Union is excluded, the grid for natural gas in Asia is underdeveloped and does not connect to the European grid. Seen in an export perspective from Russia, it could be expected that some attention was given also this region, and not only the Western dimension. However, if various scenarios of growth and demand in Eurasia are taken into consideration, it can be stated that such policies are not prioritised.[241]

All evidence suggests that Russia aims to increase its gas exports, both relatively and in absolute volumes. Priorities as far as investments and policy regulations are concerned, point towards the international market, especially Europe. This is connected both to priorities on the energy market and to geopolitical priorities. As a conclusion it can be said that despite many suggestions of shifting towards renewable resources for energy, focus remains on hydrocarbons and this might be lucrative when it comes to state revenues, but costly for the environment.[242]

2.5.7 Conclusions - Natural Gas

Overview: The Russian gas sector is stable, but far from dynamic. *Gazprom* is the mismanaged and rigid gas monopoly, which stands for over 80% of produced gas in Russia.

[236] - (2003), *Energisituationen i Norden: Nuläge, hotbilder och åtgärder*, Eskilstuna: Statens energimyndighet, p. 143.
[237] - (2003), *Naturgasmarknadsrapport 2003:1*, Eskilstuna: Statens energimyndighet.
[238] Baltscheffsky, Susanna (2004), "Gas kan slå ut biobränslen", *Svenska dagbladet*, 18 March, 2004, p. 8 and for arguments concerning the political approach to gas in Sweden see: - (2004), "Naturgasen har blivit rumsren", *Dagens Nyheter*, 30 August, 2004, p. 2.
[239] - (2003), *Energisituationen i Norden: Nuläge, hotbilder och åtgärder*, Eskilstuna: Statens energimyndighet, p. 22.
[240] The Asian dimension is in many way more important than the European dimensions if it is seen in a long-term global perspective. See: Kiesow, Ingolf (2003), *Energy in Asia: An Outline of Some Strategic Energy Issues in Asia*, Stockholm: FOI.
[241] Klaassen, Ger, McDonald, Alan and Zhao, Jimin (2001), "The Future of Gas Infrastructure in Eurasia", *Energy Policy,* no 29, 2001.
[242] Douraeva, Elena (2003), *Opportunities for Renewable Energy in Russia*, Paris: IEA.

Prices are artificially held low for political reasons that together with lags from the USSR result in inefficiency, inertia, stagnation, lack of transparency and deprivation of means for investment. Problems of corruption, non-payments, leakages, tapping and wasting are found within the whole sector. Some US$160-170 billion are needed during the coming decades for investments. The market is by and large shielded from open competition, even if some signs of improvements are seen. State policy, as stated by Putin, bears witness of that there is no strive to privatise. This infringed on Russia's possibilities to WTO accession, both due to the monopoly and to difference in domestic and export prices. Gas is, like oil, of highest importance for the Russian state budget.

State control: Russian state control of the gas sector is even stronger than of the oil sector. *Gazprom* and most of its subsidiaries are state-owned. *Transgas*, which owns the gas pipeline grid is also state-owned. The informal power base is also important as many key positions in the gas sector are held by persons closely connected to the president or former governmental officials. Governmental bodies enjoy strong powers over the sector, especially concerning exports. The trend indicates that the state intends to keep its grip of the sector and in many ways increase it. Russia can strongly affect world supply of gas, now and in the future.

Production: Gas production has, although stagnating, been kept at high levels during the last decade and now amounts to over 600 billion cubic meters per year. It is the largest producer by a 22% share of world production (followed by the US close behind) and has potential to increase production further, but not under current conditions. Both reform and investments are needed.

Reserves: By far, Russia has the largest gas deposits, namely over 30% of world reserves. There are many problems of prospecting and classifications, but many deposits are explored albeit not taken into operation. Given this fact, Russia's long-term position as world supplier is unthreatened.

Consumption: Consumption has declined sharply since 1991, but has risen somewhat since. Gas accounts for 80% of Russia's power generation. Conversion towards gas operating energy plants is slow. Domestic prices must increase by 100% in order to reflect costs and make investments and reform possible. Consumption is expected to rise when the general industrial situation improves.

Exports: Gas exports doubled during the 1990s and now amounts to over 200 billion cubic meters per year. Gas makes up between 15-20% of total exports and is thus extremely important for Russia. If transport and production infrastructure is improved, the potential for further exports is very large. 20% of Westerns Europe's gas comes from Russia and EU's dependence of gas might increase from 43% in 2002 to 75% in 2020. Russia is likely to strengthen its role as supplier, both to Europe and Asia. Today over 10 states are dependent on Russia to more than 80%.

2.6 Aluminium

Aluminium is one of the world's most abundant metals and has excellent characteristics when it comes to durability and resistance to corrosion. It is lightweight, ductile and strong, but easy to cast. These characteristics make it an attractive metal for most kinds of production. It is used within the space and aviation industry, for cars and vessels, for packaging and kitchen utensils along with electronic transmission lines, among other things. In Russia it is seen as a strategic commodity because of its versatility and the space- and aviation industries are dependent on it for all kinds of production.[243]

2.6.1 Aluminium Overview

The metal and mineral sector in Russia has greatly suffered from Soviet lags. As with almost all commodities, the approach was focused on 'physical' factors rather than 'economic' ones, which has come to pose a problem also in the post-Soviet era as ore grades declined over time and made produced tonnage less rich (and profitable).[244] This has resulted in lags that still are some of the core obstacles in making the industry efficient. Yet, the situation has now started to change, but it greatly differs between production and domestic consumption.

Table 21: Overview of Russian Aluminium

	90	92	93	94	95	96	97	98	99	00	01	02	03	04
Production	2916	2727	2704	2668	2790	2841	2906	3005	3146	3245	3310	3376	3480	n.a.
Consumption	1983	1235	732	571	552	540	196	249	38	53	226	n.a.	n.a.	n.a.
Exports	876	1195	2178	2326	2253	2292	2710	2789	3114	3192	3085	1814	2843	n.a.
Imports	0	198	115	87	30	27	n.a.	0.7	6.4	0.4	1.1	2.0	n.a.	n.a.

Explanatory remarks: All figures in thousand tonnes per year.
Production = Mining production (primary aluminium) including subcontracted production and silumin production.
Consumption = Domestic consumption
Exports = Actual exports of primary aluminium from Russia both to CIS and non-CIS countries.
Imports = Imports to Russia.

Sources: See appendix 1.

In the context of oil and gas, it has been illustrated that ways of classifying reserves differ between countries. The situation is similar, but not identical, when it comes to metals and minerals. Yet, this and the following chapter on nickel solely rely on the American/international way of estimating reserves. *The US Geological Survey* defines 'reserve' as: "[t]hat part of the reserves which could be economically extracted or produced at the time of determination. The term reserves need not signify that extraction facilities are in place and operative. Reserves include only recoverable materials. Thus, terms such as 'extractable reserves' and 'recoverable' reserves are not a part of this classification system."[245]

'Reserve base', on other hand is explained as: "[t]hat part of an identified resource that meets specific minimum physical and chemical criteria related to current mining and production practice, including those of grade, quality, thickness and depth. The reserve base is the in-place demonstrated (measured plus indicated) resources from which the reserves are estimated. It may encompass those parts of the resources that have a reasonable potential for

[243] As an example, a modern figher plane, like JAS 39 Gripen, contains around 1000kg of aluminium.
[244] Humphreys, David (1994), *Mining and Metals in the CIS: Between Autarky and Integration*, London: RIIA/Post-Soviet Business Forum, p. 4f.
[245] - (2003), *Mineral Commodities Summaries 2003*, Washington: U.S. Geological Survey, p. 195.

becoming economically available within planning horizons beyond those that assume proven technology and current economics. The reserve base includes those resources that are currently economic (reserves), marginally economic (marginal reserves), and some of those that are currently subeconomic (subeconomic resources). The term 'geologic reserves' has been applied by others generally to the reserve-base category, but it also may include the inferred-reserve-base category; it is not a part of this classification system."[246]

It can also be noted that the regulated energy sector in Russia is closely linked to the aluminium industry due to the high usage of energy in aluminium production. For example, 70% of the energy produced by the gigantic hydropower station in Krasnoyarsk (GES) is consumed by the Krasnoyarsk aluminium plant alone.[247] A related issue is that the electricity market in Russia is controlled by the powerful *United Energy System*. Its monopolist situation is not viewed upon with great enthusiasm by the EU, which in fact is increasing cooperation and supports deregulation in this sphere.[248]

2.6.2 Production of Aluminium and Bauxite

Aluminium in its pure form is not found in ore deposits, but is made from raw materials such as bauxite, nepheline and apatite. This section will assess both the situation concerning raw materials and primary aluminium.

The Aluminium Industry in Russia

The state of things within the Russian aluminium industry is all but modern. Of 11 industries operating in 1999, 10 were created between 1930 and 1970 and have not been completely modernised since,[249] although one will be in 2004. Only recently have companies started to invest and modernise, albeit to a minor extent. The general economic situation has also improved in Russia. Non-monetary transactions and barter payments have been reduced and there are positive signs on the horizon. Despite its problems, it is among the most competitive aluminium industries in the world and is important for Russia's state revenues. As an example, throughout the 1990s it made up 3% of Russia's total industrial production.[250]

At a global level, the over-arching strategy of the aluminium industry has been to focus on semi-finished products and it can be said that currently, it accounts for about 80% of the output of the world's largest producers - *Alcoa* and *Alcan*. Russia, in contrast, has focused on producing primary aluminium as this is where Russia is very competitive, relatively speaking.[251]

There are two major industrial groups that dominate the aluminium market in Russia. One is *Russian Aluminium - RusAl*, while the other is the *Siberian-Urals Aluminium Company* - SUAL. Together they control almost 95% of the Russian market and 20% of the world

[246] - (2003), *Mineral Commodities Summaries 2003*, Washington: U.S. Geological Survey, p. 195
[247] A map is found in appendix IV.
[248] - (2003), "European Union Supports Restructuring and Liberalisation of Russian Electricity Sector", *The European Union's Delegation to Russia*, 26 November, 2003, Internet: http://www.eur.ru/en/news_528.htm, 2003-12-05.
[249] Popelov, Anatoly (1999), "Russian Aluminium Industry", *Bisnis*, Internet: http://www.bisnis.doc.gov/bisnis/isa/9904alum.htm, 2003-12-02.
[250] Ustenko, Oleg (2002), *Russia's Accession into WTO: A Case Study of the Aluminium Industry*, Moscow: CEFIR, p. 6.
[251] Ustenko, Oleg (2002), *Russia's Accession into WTO: A Case Study of the Aluminium Industry*, Moscow: CEFIR, p. 9.

market.[252] *RusAl*, which belongs to the large financial and industrial group *Sibirskiy Aluminiy Group*, operates the plants in Bratsk, Samara, Sayanal and Krasnoyarsk among others. In the 1990s, some of the plants, such as Bratsk were in bad shape due to the lack of investments, which in 2000 resulted in an efficiency rate of only 81.9% and an energy consumption even higher than usual, but things have changed somewhat since. *RusAl* has been active and raised production at almost every plant.

The least productive part of *RusAl's* operations was the *Armenian foil mill*, *Armenal*, but also there the situation has improved. In 2001, *RusAl* acquired the Novokuznetsk smelter, which resulted in control of 74% of Russia's total production,[253] which after the latest development in 2003 has risen to 75%. Yet, these deals are not finally settled as lawsuits have infringed on RusAl's expansion.[254] Nonetheless, *RusAl* is one of the most diversified companies. For example, it controls one of the largest car producers in Russia, GAZ. It has advantageous political connections and attempts to enhance its international profile.[255] In short it can be said that despite its problems with outdated technology and structures, it has managed to prioritise correctly. Many new investments have been realised.[256]

SUAL is not as large as *RusAl*, but has a similar business strategy of pursuing investments in order to increase production. In 2002, investments amounted to US$170 million.[257] It operates at the Sredni-Timan deposit in Komi and has started to build a US$100 million railway there to facilitate transportation. It has smelters in Irkutsk, Uralsk and Bogoslovsk and a rolling mill in Kamensk-Uralsk, which is one of the places that have received investments, in this case of US$25 million.[258] Its reserves are better than *RusAl's* but the location of its deposits is less advantageous, which has resulted in transport costs of as much as 60% of total production costs.[259] It has 21 companies under its command and in 2002 revenues were US$1.3 billion.[260] SUAL and *RusAl* together own all rolling mills and aim to increase production of semi-manufactured goods, and move away from solely producing primary aluminium. This is a clear break with the typical Russian strategy developed during the post-Soviet years.

Sibirskiy Aluminiy Group, *SibAl*, was the first vertically integrated aluminium company in Russia, created in 1997, although it was managed by the British trading company-mediator *Trans World Group* - TWG. The result was that the Sayansky plant became the most prominent plant in Russia and the 54th best in the world. Besides what has been said, the companies that form the group are the *Sayanskiy Aluminiyevyi Zavod*, the *Samarskiy Metallurgicheskiy Zavod*, the *Sayanskaya Folga*, *Rostar-Holding* and *Abakanvagonmash*.[261] In addition, it has banks and insurance companies. Some estimation suggests that it is the

[252] Ustenko, Oleg (2002), *Russia's Accession into WTO: A Case Study of the Aluminium Industry*, Moscow: CEFIR, p. 3.
[253] - (2001), "Aluminium: Integrated Groups in Investment Mode", *CIS Metal Review*, First Quarter, 2001.
[254] - (2003), "2 Zhvilo Firms Bow Out of Suit vs. *RusAl*, Claim Cut of USD 2.4 Billion", *Rosbalt*, 28 November, 2003, Internet: http://www.rosbaltnews.com/2003/11/28/64903.html, 2003-12-05.
[255] Ustenko, Oleg (2002), *Russia's Accession into WTO: A Case Study of the Aluminium Industry*, Moscow: CEFIR, p. 11.
[256] *RusAl*, Internet: http://www.rusal.com/pages/press_centre/official_statements.php?id=828, 2003-12-04.
[257] *SUAL Holding*, Internet: http://www.sual-holding.com/?display=overview, 2003-12-04.
[258] - (2001), "Aluminium: Integrated Groups in Investment Mode", *CIS Metal Review*, First Quarter, 2001.
[259] Ustenko, Oleg (2002), *Russia's Accession into WTO: A Case Study of the Aluminium Industry*, Moscow: CEFIR.
[260] *SUAL Holding*, Internet: http://www.sual-holding.com/?display=overview, 2003-12-04.
[261] Popelov, Anatoly (1999), "Russian Aluminium Industry", *Bisnis*, Internet: http://www.bisnis.doc.gov/bisnis/isa/9904alum.htm, 2003-12-02.

fastest growing group in Russia.[262] It can also be noted that the *Krasnoyarsk Aluminium Plant* has initiated a major restructuring, which encompassed redundancies and creating several new subsidiary companies for everything except core business.[263]

Primary Aluminium Production

As is evident in overview *table 21*, Russia has produced large quantities of aluminium since the 1990s and the fall of the USSR did not notably affect this production. After an initial 9% decrease, from 2916 thousand tonnes in 1990 to 2668 in 1994, production recovered and has since increased by 24% until 2001. Over the whole period, this is a net increase of 13%. This is remarkable as it together with palladium is the only commodity in this report where production has increased compared to the levels produced during the time of the USSR. It must be remembered that Russia, as a consequence of the fall of the USSR, lost both its domestic consumers and a large share of its reserve base. As a way of tackling the fall in consumption, aluminium production shifted from production of several products to primary aluminium but is now about to shift again. It can in this context be noted that 3000 tonnes per year was (in 1999) considered to be 100% of production capacity in Russia.[264] Nonetheless, as small but important investments continuously are made, production rose by several thousand tonnes at most plants and is expected to rise even further.

Russia vs. World Aluminium Production

The supply of primary aluminium world-wide grew in 2002 at a 3.3% on a yearly average, and in an international perspective, Russia is a key player.[265] China is the largest producer by 3.58 million tonnes, followed by Russia that produced 3.3 million tonnes in 2001. The US and Canada come behind by 2.63 and 2.58 millions respectively. If the situation over time is assessed, it is clear that Russia has kept its 13% share of the world's production since 1997. Russia's production has thus risen at the same speed (up 14%) as the general world production has. China, on the other hand, has increased its share from around 10% in 1997 to 14% in 2001, mainly at the expense of the US, which has decreased its production by 27%. Canada, Norway and Australia have also gained shares of world production, which is illustrated in the table on next page.

It can be noted that China continued to be the country that expanded most in 2002,[266] but China, like Russia, has a problem of getting good raw material for production as it lacks bauxite resources. This has resulted in poor quality of Chinese aluminium, despite high energy consumption.[267] As mentioned, Russia's costs for energy are low relatively speaking, especially in comparison to the world leader – China. In 2002, companies all over the world paid in average between US$10 and US$30/MWh for energy. Russia is at the lower end of this scale, while Chinese companies paid as much as US$34/MWh.[268] It can thus be

[262] Ustenko, Oleg (2002), *Russia's Accession into WTO: A Case Study of the Aluminium Industry*, Moscow: CEFIR, p. 11.
[263] - (2004), "Aluminium Tycoon to Equate Russia with Guinea", *RosBusinessConsulting*, 14 January, 2004, Internet: http://www.rbcnews.com/komment/komment.shtml , 2004-01-14.
[264] Popelov, Anatoly (1999), "Russian Aluminium Industry", *Bisnis*, Internet: http://www.bisnis.doc.gov/bisnis/isa/9904alum.htm, 2003-12-02.
[265] - (2003), "All Change in Aluminium Industry as Alcan Launch Hostile Bid for Pechiney", *Roskill*, Internet: http://www.roskill.com/news/newsCMS/newsItems/220703100230/viewNewsItem, 2003-12-05.
[266] For figures of China's aluminium, see: - (2003), "China's Primary Aluminium Production", *World-Aluminium*, Internet: http://www.world-aluminium.org/iai/stats/formServer.asp?form=11 , 2003-12-17.
[267] - (2003), "All Change in Aluminium Industry as Alcan Launch Hostile Bid for Pechiney", *Roskill*, Internet: http://www.roskill.com/news/newsCMS/newsItems/220703100230/viewNewsItem, 2003-12-05.
[268] - (2003), "All Change in Aluminium Industry as Alcan Launch Hostile Bid for Pechiney", *Roskill*, Internet: http://www.roskill.com/news/newsCMS/newsItems/220703100230/viewNewsItem, 2003-12-05.

concluded that despite China's active and expanding aluminium industry, Russia seems to keep its competitive advantage of lower costs and higher quality.

Table 22: World Production of Primary Aluminium, 1997-2001

Country	1997	1998	1999	2000	2001
China	2,178,000	2,435,300	2,808,900	2,989,200	3,575,800
Russian Federation	2,906,000	3,010,000	3,149,000	3,247,000	3,302,000
USA	3,603,400	3,712,700	3,778,600	3,668,400	2,637,000
Canada	2,327,188	2,374,118	2,389,834	2,373,460	2,582,746
Australia	1,495,000	1,627,000	1,718,000	1,770,000	1,797,000
Norway*	918,511	994,195	1,007,989	1,031,000	1,034,000
World total	**21,900,000**	**22,700,000**	**23,900,000**	**24,700,000**	**24,700,000**

N.B. Table shows selected states with production more than 1,000,000 tonnes in 2001. All figures are in metric tonnes. Figures differ somewhat from the overview table, but only around 1%.
* May include some super purity aluminium.

Source:
- (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme, p. 4.

The situation in the CIS, the closest competitors to Russia geographically speaking, highlights that Russia does not need to fear any strong competition. Russia is by far the major producer. The aluminium plant in Sumgait has been in extremely bad shape and by 2000 Azerbaijan's production had decreased to nil. Tajikistan, on the other hand, produced 271,000 tonnes and Ukraine produced 102,800 tonnes. As Russia at the same time produced 3.2 million tonnes,[269] this competition is of marginal importance.

Investments in the Aluminium Sector

Naturally, there are many factors affecting production levels in Russia. However, it has been said previously in this report that the pivotal factor concerning the aluminium industry is the ability to focus on investments in order to increase production by updating technology and equipment. The latest development suggests that this is the case. To mention a few key issues on this matter it can be said that *RusAl* has carried out a thorough study of its plants and decided to modernise large parts of the large Sayanogorsk and Krasnoyarsk plants. Modernisation first and foremost relates to 1) increasing power capacity, 2) installations of more electrolysers, 3) improving foundry capacity 4) upgrading of automatic systems and 5) upgrade other electrical systems. The costs are expected to be US$270 million for Krasnoyarsk and US$62 million for Sayanogorsk. Already before these improvements, it can be noted that production in 2003 rose by 4% and almost 11% respectively.[270] Moreover, *RusAl* has taken a decision to undertake the first major restructuring in 15 years – of the Sayanogorsk plant. Starting in 2004 and lasting until 2006, it will cost around US$700

[269] - (2001), "Aluminium: Integrated Groups in Investment Mode", *CIS Metal Review*, First Quarter, 2001.
[270] - (2003), "Studies Done: *RusAl* set to Launch Modernization Efforts", *Rosbalt*, 3 December, 2003, Internet: http://www.rosbaltnews.com/2003/12/03/64967.html, 2003-12-05.

million.[271] The situation is also positive for SUAL. Its figures of the third quarter of 2003 suggests that for SUAL, production is increasing, both concerning aluminium and bauxite.[272]

However, market analyses made by the investment company *Aton* suggest two things. First that energy costs will rise in Russia and, second, that the price on aluminium will fall. These important factors are considered to be so serious that the US company *Alutech's* plans to start new production facilities have been put on hold. In addition, foreign interventions on the market are difficult because of the need to import raw material (that *RusAl* and SUAL possess), but also due to the strong lobby groups of these companies.[273] Given these obstacles, the competitive advantages for Russia and its corporate climate are thus not so large that foreign actors attempt to get into the market at *any* price. A shift towards greater transparency and internationalisation can nonetheless be seen. One example of this is SUAL's attempts to adopt Western-style reporting, organisational management and accounting in addition to approaches to human resources management.[274] Yet, the US company *Alcoa* has in spring of 2004 bought two manufacturing sites in Russia (Samara and Belaya Kalitva), which is by analysts interpreted as a certain degree of confidence in the Russian aluminium sector.[275]

Russian Bauxite, Nepheline and Apatite Production

Naturally, the situation concerning bauxite and nepheline extraction underlies what is happening within the aluminium production, and thus deserves a closer look. The best option for aluminium production is bauxite, but Russia's bauxite is of low quality and very difficult to extract. Therefore, up to 40% has been based on nepheline, which has a disadvantage of needing 2-4 times more energy than bauxite does.[276] As an example of production of raw material for aluminium production, in 1999 apatite production had risen and amounted to 4112 tonnes while nepheline concentrate amounted to 857,000 tonnes.[277] One of the most important areas in this aspect is the Murmansk Oblast, which produces 100% of Russia's apatite concentrate. In addition there are over seven nepheline mines in the region.[278]

Russia vs. World Production of Aluminium Raw Materials

In a relative perspective, Russia's position is very weak in aluminium raw material production compared to primary aluminium production where it in 2001 held a second place in the world after China. The difference is large. Australia is, for example, by far the world leader by producing 53.8 million tonnes compared to Russia that only produces 9% of this – 4.8 million tonnes. Guinea, Brazil and India are also far ahead of Russia, which is followed by Venezuela and Suriname. Russia's share of world production was 3.2% in 1997, but has increased to 3.5% in 2001.

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[271] - (2003), "*Russian Aluminium* to Invest USD 700 Million in Southern Siberia Factory", *Rosbalt*, 9 July, 2003, Internet: http://www.rosbaltnews.com/2003/07/09/63309.html, 2003-12-05.
[272] *SUAL Holding*, Internet: http://www.sual-holding.com/?display=overview, 2003-12-04.
[273] - (2003), "Rising Electricity Prices May Have Led *Alutech* to Scrap Sosnovy Bor Plant", *Rosbalt*, 23 July, 2003, Internet: http://www.rosbaltnews.com/2003/07/23/63552.html, 2003-12-05.
[274] Jack, Andrew (2004), "Russian Giant Looks Westward for Leadership", *Financial Times*, 11 February, 2004
[275] Jack, Andrew and Waen, Ken (2004), "Alcoa's Buy of Russian Sites is Sign of Confidence in Sector", *Financial Times – Companies and Markets*, 7 May, 2004.
[276] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 23.
[277] - (1999), "Output of Industrial Minerals in Russia in 1999", *Quarterly Newsletter on Mineral Industries in the CIS,* Russian Committee on Statistics, no 1, 1999.
[278] "Mineral Resources of the Murmansk Oblast", *Barents Region*, Internet: http://arcticcentre.urova.fi/barentsinfo/economic/02/minMO.htm, 2003-12-02.

Table 23: World Production of Bauxite, 1997-2001					
Country	1997	1998	1999	2000	2001
Australia	44,464,000	44,653,000	48,416,000	53,802,000	53,800,000
Guinea	16,510,000	17,300,000	17,320,000	17,950,000	17,312,100
Brazil*	11,539,965	11,566,798	12,661,746	13,974,480	13,178,400
India	6,112,131	6,609,525	7,049,943	7,992,782	8,585,368
Russian Federation	3,988,000	4,092,000	4,513,000	5,000,000	4,805,000
Venezuela	4,966,794	4,825,647	4,166,450	4,360,720	4,526,485
Suriname	3,877,183	3,931,108	3,714,595	3,610,381	4,393,640
World total	**124,000,000**	**124,000,000**	**129,000,000**	**139,000,000**	**139,000,000**

N.B. Selected states with production more than 4,000,000 tonnes in 2001. All figures in metric tonnes of bauxite (including production of refractory bauxite).
* Including beneficiated and direct shipping ore.
Source:
- (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme, p. 2.

Location of Production and Extraction
Producing aluminium demands huge amounts of energy, and the costs of energy have been the guiding factor for the location of production. 80% of production capacity and melting plants are therefore located to Siberia where hydroenergy is found. However, 75% of the aluminium oxide, which is used for production of primary aluminium, is found in European Russia. This is a key problem for the Russian industry as the cost of transport reduces the competitive edge that Russia has, and relies on for competing on the world market.[279] Distances are huge and transports of metals in general are extensive. Figures from Soviet times indicate that metal transport alone accounted for almost 30% of all transport in the whole USSR.[280] *RusAl* as well as SUAL have started to devote energy and investments to the supply chain in order to handle the problems of transport. It is not only location of production and extraction that are geographically distant, but also consumers. Exports aside; domestic consumers are, within the civilian sector, mostly found in Moscow and military customers in the Urals.[281]

2.6.3 Reserves of Bauxite, Nepheline and Apatite

Generally speaking, during the Soviet era, Russia had over 50% of the common reserve base for all minerals used for aluminium production. Kazakhstan had the rest, which included 20% of known deposits of bauxite and a third of reserves currently object of extraction.[282]

As discussed before, this section relies on the USGS system of classification, and one important distinction between reserves and reserve base can be reiterated. In short, the former

[279] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 23.
[280] Humphreys, David (1994), *Mining and Metals in the CIS: Between Autarky and Integration*, London: RIIA/Post-Soviet Business Forum, p. 5.
[281] Buchanan, Sandra (2003), "Russian Metal Traders Reinvent their Supply Chain", *Metal Bulletin Monthly*, January, 2003, p. 36.
[282] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 23.

relates to what is economically feasible to extract, while the latter indicates the physical deposits.

Raw Material Reserves

As indicated, the Russian aluminium industry has had difficulties when it comes to acquiring commodities for production and this has resulted in imports of bauxite. In 1991, when incomes in hard currency fell, sustainability in production was threatened as stocks only would last for three years. Imports of aluminium oxide also fell, but later rose. When Russia could not acquire the necessary raw material for its production of primary aluminium, it imported raw material from Hungary, the Netherlands, Greece and Jamaica and used its facilities for subcontracted production.[283]

Table 24: World Reserves of Bauxite in 2003

Country	Reserves	Reserve base
Australia	4,400,000	8,700,000
Brazil	1,800,000	2,900,000
China	700,000	2,300,000
Guinea	7,400,000	8,600,000
Guyana	700,000	900,000
India	770,000	1,400,000
Jamaica	2,000,000	2,500,000
Russian Federation	200,000	250,000
Suriname	580,000	600,000
Venezuela	320,000	350,000
United States	20,000	40,000
Other countries	3,600,000	4,700,000
World total	**22,000,000**	**33,000,000**

Explanatory remarks: US system of classification, in thousand metric dry tonnes. See appendix 2 for further comments on reserves and reserve base.

Source: - (2003), *Mineral Commodities Summaries 2003*, Washington DC: U.S. Geological Survey, p. 33, 195.

Given Russia's strong position concerning production, it is remarkable that its bauxite deposits only amounts to a mere 200 million tonnes, which is less than 1% of the worlds total. It is also interesting to note that of its reserve base, 80% is commercially feasible to extract. This ratio is high. As a comparison, Australia, the main producer of bauxite, has a ratio of only 50% although Guinea, which possesses the world's largest reserves of bauxite (34%) has a ratio of 86%.

In a relative aspect, Russia only possesses the 11th largest reserves, which mainly are found in Srednie-Timansky in the Republic of Komi.[284] The explanation for the discrepancy between production and reserves of bauxite is, naturally, Russia's large reserves of nepheline. The Murmansk Oblast is the main region for production of nepheline and apatite and these reserves are considered to be sufficient for 60-100 years of production.[285] The Komi reserves have recently been explored and their potential is considered to be so important that a new factory is being built in the region in 2004. This is also one of the major investments taking place within the Russian aluminium industry today.[286] In sum, reserves and new deposits are continuously found, but any dramatic changes are not expected.

[283] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 25.
[284] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 23.
[285] "Mineral Resources of the Murmansk Oblast", *Barents Region*, Internet: http://arcticcentre.urova.fi/barentsinfo/economic/02/minMO.htm, 2003-12-02.
[286] - (2003), "Construction of Komi Aluminium Factory to Begin in First Half of 2004", *Rosbalt,* 10 June, 2003, Internet: http://www.rosbaltnews.com/2003/06/10/62952.html, 2003-12-05.

2.6.4 Domestic Consumption of Aluminium

If aluminium production in Russia has been kept at a high level, consumption is nothing like it. In 1990, aluminium consumption in Russia reached 1983 thousand tonnes, which was 68% of production. By 1999, when production had increased by 8%, consumption had fallen by 97% and was at the time only 1.6% of production and during the following years, the consumption level rose somewhat, but not much. A forecast from 1996 suggested that consumption gradually would rise until 2005 and by then be at the same level as it was in the late 1980s.[287] This has been all but right, but the explanation is simple. The fall of the USSR led, in a split second, to a crisis in the space and aviation industry at the same time as 90-95% of the demand from the overall military industry disappeared.[288] This group represented almost 50% of the primary aluminium consumers, which partly explains the gigantic fall in consumption. Machine producing industry made up 30% of aluminium consumption while wrapping and construction material industry were the third largest consumption group by 15%, the remaining part was consumed by the electronics industry.[289]

Consumption within the aerospace industry was expected to decrease even more, while auto industry has been expected to increase by almost 10 percentages from 1999 to 2003. The car industry is the only sector where an increased demand is to be found, but the electro-mechanical, construction and foil production sectors in will in contrast decrease.[290] It is difficult to estimate an average, but expansion of the auto industry is unlikely to compensate for the fall within other sectors and hence no increase can be foreseen. Figures concerning the first half of 2004 indicate that consumption has fallen by 2-3%.[291]

2.6.5 Exports of Aluminium

Naturally, increased production and fall in domestic consumption by 97% is an equation that not even Russian companies can handle domestically. Therefore, the international market was subject to an enormous increase in export volumes from Russia from 1991 and onwards. The increase was not gradual, but came sharply at the beginning of the 1990s. Between 1991 and 1994, exports rose by 266% and until 2001 by 352%. Consequently, this led to a very high stock level at *the London Metal Exchange* resulting in lower prices.[292]

Prices and Value of Aluminium

Since the 1970s, world prices on aluminium have fallen by 2.3% due to general growth and improvements.[293] Discussions among aluminium producers during the 1990s, however, resulted in a suggestion that Russia had, as most producers had, to reduce its production of aluminium in order to raise prices on the market. However, Russia did not expect other producers to carry out this agreement and thus did not reduce its production to the extent agreed upon. As an example of price volatility at the time, it can be said that in 1995, Russia

[287] Dobozi, Istvan (1996), "Russian Gas and Aluminium: Revisting the Outlook for Consumption and Exports in a Post-Depressing Economy", *Resources Policy*, vol. 22, no 1/2 , 1996.
[288] Dobozi, Istvan (1996), "Russian Gas and Aluminium: Revisting the Outlook for Consumption and Exports in a Post-Depressing Economy", *Resources Policy*, vol. 22, no 1/2 , 1996, p. 124.
[289] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 24.
[290] Ustenko, Oleg (2002), *Russia's Accession into WTO: A Case Study of the Aluminium Industry*, Moscow: CEFIR, p. 7.
[291] - (2004), "Potreblenie nikelya i aljuminiya v Rossii viroslo na 2-3%", *Mineral*, 16 August, 2004, internet: http://www.mineral.ru/Chapters/News/14138.html, 2004-09-09.
[292] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 23.
[293] - (2003), *Euromine Annual Report 2002*, Brussels: Euromine.

increased the world supply by 2.4% at a time when demand fell by 4.5%. This resulted in decreased prices by 30% in the short run.[294]

Table 25: Russian Aluminium to World Markets vs. LME "cash" price

	91	92	93	94	95	96	97	98	99	00	01	02
Exports	876	1195	2178	2326	2253	2292	2710	2789	3114	3192	3085	+2298
LME $/tonne	n.a.	1254	1139	1479	1805	1506	n.a.	1379	1362	1549	1444	1349

Explanatory remarks:
Exports = Actual exports of aluminium from Russia in metric tonnes.
LME $/tonne = London Metal Exchange "cash" price in annual average, in US$/metric tonne.

Sources:
1) Exports 1991-1997: Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished).

2) Exports 1998-2001: - (2002), *Rossiskii Statisticheski Ezegodnik*, Moskva: Goskomstat Rossii, p. 623.

3) Exports 2002: - (2003), "Russia Exported Less Aluminium, Copper in January-October 2002", *Rosbalt*, 10 December, 2002, Internet: http://www.rosbaltnews.com/2002/12/10/60701.html, 2003-12-05.

4) LME $/tonne 1992-1996: Russian estimates based on corporate statistics and Mineralmarknaden, SGU PM 1994:8, 1997:1 from: Leijonhielm, Jan (1998*), De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished).

5) LME $/tonne 1998-2003: *London Metal Exchange Historical Data*, Internet: http://www.lme.co.uk/dataprices_historical.asp, 2003-10-28, (own calculations) (mid-2003 average).

As this report bears witness of, Russia's imports of raw material are crucial for making aluminium and augmenting costs of energy and transport gradually reduces profitability within the sector. This import has been economically feasible since imports intended for processing (with subsequent re-exporting – so-called *tolling*) have been relieved of VAT and some taxes. The heaviest burden has before been a 5% import duty on alloyed aluminium and alumina. Recent developments in early 2004 however show a change in Russia's approach to taxation of the commodity sector. Russia has released a new version of its Custom Code, which abolishes tolling and imposes 18% VAT on imports. The governmental commission for protective measures has suggested that the 5% duties should be lifted during a nine month period as compensation. Analysts suggest that this compensation will be of marginal importance and that RusAl will, in contrast to SUAL, be strongly affected by the VAT and must reconsider its export schemes.[295]

Cash price on aluminium at LME in mid-December 2003 reached US$1550/tonne.[296] Although this figure is not fully comparable to annual average figures in *table 25*, it serves an indication of price development for 2003. Drawing from *table 25*, there does not seem to be any obvious correlation between Russia's exports of primary aluminium and price at LME and as the production level in Russia has been rather constant, it has no major impact on the market price. Yet, Russia is a great producer and exporter and is naturally able to affect prices, but this does not stand in proportion to its size of 30% of the world market and it has

[294] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 24.
[295] - (2004), "Russia Abolishes Tolling", *New Europe*, 18-24 January, 2004, p. 38.
[296] - (2003), "Daily Stocks and Prices", *London Metal Exchange*, Internet: http://www.lme.co.uk/dataprices_daily.asp, 2003-12-17.

no ability to *control* prices. As production capacity currently nears 100% and there are no strategic reserves, the space for manoeuvre within the aluminium sector is limited.

In the first 10 months of 2002, Russia exported 2.298 million tonnes of aluminium at a value of US$2.384 billion, which was much less than previous years. Almost all of this went to non-CIS countries.[297] During the 1990s, export sales incomes from aluminium amounted to US$17 billion. On an annual average at this period, it was equal to US$2.1 billion. Figures of mid-2004 show that Russia's aluminium exports between January to July amounted to 2.2 million tonnes[298].

The advantageous economic situation in Russian aluminium production is due to cheap energy, cheap labour and low cost of fixed capital reproduction. The problems have been related to imports of raw material, exports of finished products, instability in raw material supply and problems related to short-term contracts between manufacturer and suppliers. Yet, the value of products made abroad from Russian aluminium is twice as high as the Russian revenues, which brought forward the idea of moving towards vertically integrated companies. This would enable *RusAl* to diversify production and control the whole supply chain.[299] Moreover, *RusAl* was in 2003 given a US$100 million loan by *Credit Suisse* in order to finance further production and exports. It also has long-term loans for this reason at *Hydro Aluminium*.[300] Drawing from this, it can be concluded that priorities are on exports and that the potential for sustainable operations are considered to be so good that RusAl is able to acquire means via the international debt market. Exports are thus expected to increase in the future.

2.6.6 Imports of Russian Aluminium

As most aluminium is traded on the spot market, it is difficult to assess the destination of Russia's aluminium, especially since such information is not disclosed in official trade statistics. In general, world consumption grew by 2.2% on a year to year basis in 2002.[301] By turning to the consumers of aluminium, as shown in *table 26,* the largest importers of unwrought aluminium are Thailand, Japan, the US and Korea.

Regarding the situation in Sweden, it can be said that its production of aluminium in 2002 was 99,000 tonnes, much less than of its needs and in a comparative perspective, only around 10% of what Norway produced. When it comes to semi-finished products, Sweden imported 145,656 tonnes in 2002, while it exported 79,301 tonnes. In total Sweden consumed 197,331 tonnes.[302] If the relative consumption is looked at, it can be said that in 2001, Sweden used 21.3kg aluminium per capita, which is higher than the Western European average of 18.9, while the US and Japan, which both are large consumers of aluminium used 29 and 28kg.[303]

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[297] - (2003), "Russia Exported Less Aluminium, Copper in January-October 2002", *Rosbalt*, 10 December, 2002, Internet: http://www.rosbaltnews.com/2002/12/10/60701.html, 2003-12-05.
[298] - (2004), "Za sem mesyazev 2004 g. Iz Rossii bibezeno 2.222 mil t aljominiya, 129.5 tis.t nikel i 165 tis.t medi", *Mineral*, 9 September, 2004, internet: http://www.mineral.ru/Chapters/News/14503.html , 2004-09-09.
[299] Popelov, Anatoly (1999), "Russian Aluminium Industry", *Bisnis*, Internet: http://www.bisnis.doc.gov/bisnis/isa/9904alum.htm, 2003-12-02
[300] - (2003) "*Russian Aluminium* Receives USD 100 Million Loan From *Credit Suisse First Boston*", *Rosbalt,* 26 September, 2003, Internet: http://www.rosbaltnews.com/2003/09/26/64206.html, 2003-12-05.
[301] - (2003), "All Change in Aluminium Industry as Alcan Launch Hostile Bid for Pechiney", *Roskill*, Internet: http://www.roskill.com/news/newsCMS/newsItems/220703100230/viewNewsItem, 2003-12-05.
[302] - (2003), "Statistikk 2003", *Skanalumin*, Internet: http://www.aluminium.no, 2003-12-05.
[303] - (2002), *European Aluminium Association Market Report 2002*, Brussels: EAA, pp. 6-9.

Table 26: Main Importers of Unwrought Aluminium,* 1997-2001

Country	1997	1998	1999	2000	2001
Thailand	111,500	89,268	82,393	113,133	1,924,018
Japan	2,163,622	1,859,817	1,833,005	1,963,630	1,814,508
United States	1,153,740	1,355,321	1,359,698	1,087,624	1,380,368
Republic of Korea	605,021	497,457	730,031	683,793	722,447

N.B. Selection of states that imported more than 700.000 tonnes in 2001. All figures in metric tonnes.
* Unwrought aluminium is here separated from bauxite, alumina or scrap metals, due to Russia's large proportion of unwrought aluminium exports.

Source:
- (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme, p. 11ff.

Production of aluminium in Europe has increased by a few percent over the last couple of years to almost 4 million tonnes.[304] However, demand rises rapidly and the trend in a ten-year perspective points towards increased demand for aluminium and aluminium products.[305] For primary aluminium specifically, Europe produced 2.58 million tonnes in 2002 while demand reached 5580, hence a deficit of 3000 was evident.[306] The dependence on Russia concerning secondary aluminium is less for primary aluminium.[307]

One restraint on European imports of non-EU aluminium is that the EU has an import duty of 6% and a tariff of 1.5%.[308] This has upset consumers and the *European Aluminium Consumer Group* (FACE), conducts lobbying in order to decrease this to a mere 3%.[309] The reasons are fourfold. "First, the EU consumes 5.2 million tpa of primary aluminium, but only produces 2.3 million tpa. Second, the 6% duty protects the 2.3 million tpa (like a hidden subsidy), at the expense of independent consumers and semi-fabricators. Third, as a result, EU consumers and semi-fabricators pay a total of US$ 475 million more per year than they should for primary aluminium. Fourth, of the US$ 475 million, US$ 285 million go into the pockets of non-EU smelters."[310]

The US is also largely dependent on Russian aluminium. Between 1998 and 2001, 18% of its imports came from Russia. This is high considering that the American net imports of aluminium are 39%. The external dependence on bauxite and alumina is even greater, 100%, but these imports do not come from Russia.[311]

[304] - (2002), *European Aluminium Association Market Report 2002*, Brussels: EAA, pp. 6-9.
[305] - (2002), *European Aluminium Association Market Report 2002*, Brussels: EAA, p. 14.
[306] Conserva, Mario (2003), "The Import-Duty System for Non-Ferrous Metals in the European Union.", *Aluplanet*, Internet: http://www.aluplanet.com/eng/info_eco_doc_PO.asp?Doc=4299, 2003-12-04.
[307] For an insight on the European market of secondary aluminium, see: Blomberg, Jerry and Hellmer, Stefan (2000), "Short-run Demand and Supply Elasticities in the West European Market for Secondary Aluminium", *Resources Policy*, no 26, 2000.
[308] Conserva, Mario (2003), "The Import-Duty System for Non-Ferrous Metals in the European Union.", *Aluplanet*, Internet: http://www.aluplanet.com/eng/info_eco_doc_PO.asp?Doc=4299, 2003-12-04.
[309] - (2003), "EU 6% Duty on Primary Aluminium", *Face Aluminium*, Internet: EU 6% Duty on Primary Aluminium, 2003-12-05.
[310] - (2003), "Facts Behind the 6% Fight", *Face Aluminium*, Internet: http://www.facealuminium.com/hot_topics/duty.htm, 2003-12-05.
[311] - (2003), *Mineral Commodities Summaries 2003*, Washington: U.S. Geological Survey, p. 22, 32.

Forecast for the coming years stipulates that world demand for aluminium will grow by 2.9%, and amount to 42.2 million tonnes by 2008. The main reason would be good performance in the transportation sector (that is expected to grow by 5.2%). Asia is the geographical region where demand is expected to be largest. Europe and America are only going to grow by 2%.[312] In conclusion, it can be said that demand for aluminium is rising in the world and given the latest improvements and investments in the Russian industry, it is expected that it will increase its share of the world market. Although China is expanding and is active on the market, it does not have the competitive advantages of low energy costs and higher quality that Russia has.

2.6.7 Conclusions - Aluminium

Overview: The aluminium sector in Russia is by and large old-fashioned and far from modern, but change is under way. The sector is privatised and dominated by the companies *RusAl* and SUAL. Investments and modernisation are under way and Soviet lags, such as barter-payments and non-monetary transactions, have been reduced. Despite the general poor investment climate in Russia, international actors have shown confidence in the Russian aluminium sector and several companies have adopted western-style reporting, accounting and management models.

State control: The Russian state has no direct control over the aluminium market. The primary means of managing the sector are by tariffs, quotas, taxes, regulations and permits et cetera that are powerful enough to affect market supply and world market prices. Governmental bodies as *Rosrezerv*, enjoy strong power over the resources rather than firms operating on the market. Additionally, informal networks and political connections of key-actors can be expected to have an impact.

Production: production of primary aluminium is Russia's as cheap energy is Russia's comparative advantage, but is also a necessity due to its old-fashioned production facilities. SUAL and *RusAl* control 95% of the Russian sector and 20% of the world's production. Production has increased all since 1991 and now amounts to almost 3.5 million tonnes per year, which after China makes it the second largest producer in the world. Russian aluminium is of much higher quality, despite the fact that its raw materials are of poor quality, than China's and Russia will likely keep a premier position, even if falls in aluminium price and higher energy costs put restraints on expansion.

Reserves: Russia's bauxite reserves (less than 1% of world's total) are poor and therefore nepheline and apatite make up the lion's share of Russian production, despite a higher need for energy. New deposits are continuously found, but most often far away from production facilities that are found near hydro energy plants. Reserves will last for the overseeable future.

Consumption: Domestic aluminium consumption has fallen dramatically (97%) since 1991 and has just started increasing. The reason behind the fall was declined demand from the military-industrial complex. Future demand depends on needs in the aviation and car manufacturing industries.

Exports: As domestic consumption fell, most aluminium had to be exported. As a consequence, world supply heavily increased resulting in price falls. Main importers of

[312] - (2003), "All Change in Aluminium Industry as Alcan Launch Hostile Bid for Pechiney", *Roskill*, Internet: http://www.roskill.com/news/newsCMS/newsItems/220703100230/viewNewsItem, 2003-12-05.

aluminium are the US (18% of needs comes from Russia); Thailand and Japan, but European demand is also increasing, although aluminium trade between the EU and Russia not has been free from problems.

2.7 Nickel

Nickel is the fifth most common element in the earth. Its characteristics include: "hard, malleable, ductile, high melting point, low electrical and thermal conductivity, does not tarnish, resists corrosion by alkalis, forms an adherent oxide film, forms alloys readily (both as solute and solvent), ferromagnetic at room temperature, readily deposited by electroplating, exhibits catalytic behaviour, heat resistant."[313] A few major applications for nickel are electroplating, construction, chemical production, food preparation, water cleaning and computer equipment. Its strategic nature is seen in the fact that it is used for alloys with stainless steel and super alloys.

2.7.1 Nickel Overview

In line with other commodities discussed here, the fall of the USSR had great impact on the nickel industry even if this was not as dramatic as with aluminium. Production, consumption and exports did not fall dramatically, but gradually decreased over time. These over-arching trends are shown in the overview table below.

Table 27: Overview of Russian Nickel

	90	92	93	94	95	96	97	98	99	00	01	02	*03**
Production	329	245	185	179	192	213	260	250	260	270	278	264	*240*
Consumption	114	113	90	49	47	43	38	38	49	75	93	n.a.	n.a.
Exports	138	176	95	105	133	169	222	214	211	197	189	207	n.a.
Imports	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.9	0.4	1.6	3.8	n.a.	n.a.

Explanatory remarks: All figures in thousands metric tonnes per year.
Production = Mining production including recycled nickel from scrap metals (1997-2000).
Consumption = Calculated Russian domestic consumption.
Exports = Actual exports of nickel from Russia to both CIS and non-CIS countries.
Imports = Imports to Russia. (Incomplete figures).
* Prognoses
Sources: See appendix 1.

There is no point in reiterating what has previously been said about estimating reserves. A detailed explanation of the system utilised concerning nickel, the USGS system, is found in previous chapter concerning aluminium, and in appendix two. It can nonetheless be said that one must also be aware of seasonal effects. True, production in mines is not necessarily affected by the Russian winter, but transportation is. Nickel is, for example, shipped via the port of Dudinka and when this port is frozen or flooded, the nickel does not reach its customers. If the winter is more severe than usual, the problems become greater than expected and the whole nickel market reacts by change in prices. Additionally, smuggling of nickel occurs and is usually done in the form of scrap metals, which is difficult for customs services to monitor. This factor is a crucial aspect when relying on statistics.

2.7.2 Production of Nickel

To 40%, nickel is found in sulphide deposits while 60% are found in laterite, although it can also be found in manganese.[314] For Russia, however, nickel from laterite is of minor importance.[315]

[313] - (2003), "Nickel", *Eurometaux*, Internet: http://www.eurometaux.org/content/showmetal.asp?level=1&menuid=145&metal=Nickel, 2003-12-08
[314] - (2003), *Mineral Commodities Summaries 2003*, Washington: U.S. Geological Survey, p. 117.
[315] Levine, Richard M. and Wallace, Glenn J. (2000), "The Mineral Industry of the Commonwealth of Independent States – 2000", *U.S. Geological Survey Minerals Yearbook 2000*, Reston: USGS, p. 3, 17.

The Nickel Industry in Russia
The situation on the metal and mineral market in Russia has during the last couple of years been turbulent and is fringed by problems concerning ownership, lawsuits and accidents connected to mergers and acquisitions.

Nickel production in Russia is almost totally synonymous with the leading producer – the *Norilsk Nickel Metal and Mining Kombinat*. It is by far the world's largest nickel producer and it has 96% of the domestic market. As Russia is the world's most prominent producer, *Norilsk Nickel's* market share in fact amounted to 18.24% in 2001. It accounts for 4.3% of Russia's total exports and makes up 1.9% of its GDP. Of Russia's industrial output, *Norilsk Nickel* contributes 2.8%. Within the sector of non-ferrous metals, it accounts for as much as 27.9%.[316] 55% of *Norilsk Nickel's* nickel comes from the Oktiabrsk underground mine and the remaining comes from the Komsomolsk (25%) and Taimyrsk (15%) mines.[317] These are running low on nickel and new mines are under way. As an example of the political importance of *Norilsk Nickel*, it can be said that its head in 2000 was elected governor of the Taymyr region.[318] This resulted in political complications as rumour had it that he intended to change local laws and regulations so that taxes paid by *Norilsk Nickel* would stay in the region and thus benefit the company.[319]

Concerning *Norilsk Nickel's* subsidiary companies and partners, it has several that it delivers nickel to, for example for processing. As an example, *Severonikel* gets 60% of its feed from Norilsk while the rest comes from *Pechenganikel*. It utilises obsolete refining methods and equipment, which results in huge waste of energy. Energy costs in 2001 amounted to 30% of its total costs, but there are some indications of change. The situation at the *Yuzhpolimetall* mine is better than for *Severonikel* and in 2001 it increased its production on a year to year basis by 49%.[320]

Russian Production of Nickel
The overview *table, number 27*, shows Russia's nickel production over the last decade and it can, in all important, be seen as a u-shaped curve. Between 1990 and 1994, production fell from 329,000 to 179,000 tonnes – a fall by 46%. The main reason for this fall was not decreased demand, but problems in production.[321] Yet, the situation has changed and production has recovered. Until 2002, the net decrease (since 1990) has only been about 20% as Russia produced 264,000 tonnes of nickel in 2002. *Norilsk Nickel*, specifically, produced 223,000 tonnes of nickel from own ores in 2001 and 218,000 in 2002. This decline is interesting to note as sales rose from 240,000 to 241,000 tonnes during the same period.[322] Geographically speaking, the Norilsk region is the one that expands most when it comes to nickel extraction in Russia. Despite a general increase, production in both the Urals and in

[316] - (2003), "About Norilsk Nickel", *Norilsk Nickel*, Internet: http://www.nornik.ru/page.jsp?pageId=about&lang=E, 2003-12-08.
[317] Levine, Richard M. and Wallace, Glenn J. (2000), "The Mineral Industry of the Commonwealth of Independent States – 2000", *U.S. Geological Survey Minerals Yearbook 2000*, Reston: USGS, p. 3, 17.
[318] See map in appendix IV.
[319] - (2001), "Norilsk Cathode Deliverable on LME", *CIS Metal Review*, First Quarter, 2001.
[320] - (2001), "Norilsk Cathode Deliverable on LME", *CIS Metal Review*, First Quarter, 2001.
[321] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 25.
[322] - (2003), *OJCE MMC Norilsk Nickel Annual Report 2002*, Norilsk Nickel.

Murmansk has declined over the last couple of years.[323] As will be mentioned below, new mines must be taken into production if the production level is to increase more than marginally. It is so; nickel mining in Russia is not made at alluvial sites, but in very deep mines. This is essential since it is costly and not easily made. Thus results in inertia on the nickel market and long-term extraction strategies and investments are crucial for production in the long perspective.

Russia vs. World Production

As said, in a comparative perspective, Russia is the primary producer of nickel in the world, thanks to *Norilsk Nickel* that enjoys such a strong position that Russia would still be the main producer only by relying on it and excluding subsidiary producers. In 2001, Russia had a 19% share of the world's total production, followed by Australia and Canada by 17% and 16% respectively. If change is looked upon, it is interesting to note that Russia has kept its level of production constant, but in relation to its competitors, it has lost two percentages while Australia has gained six since 1997.

Investments in the Nickel Sector

Norilsk Nickel's plan for 2003 were to increase output by 9.2% compared to 2002, which in volume is about 20,000 tonnes, in order to meet growing demand, most notably in China. The main reason for the increase is the positive global market trends.

Table 28: World Mine Production of Nickel in 1997 and 2001

Country	1997 in tonnes	1997 share of total	2001 in tonnes	2001 share of total
Russian Federation	235,000	21%	235,000	19%
Australia	123,400	11%	206,000	17%
Canada	190,529	17%	193,917	16%
New Caledonia	136,459	12%	117,464	9%
Indonesia	71,100	6%	102,100	8%
Others	339,512	31%	387,519	31%
Total	**1,096,000**	**~100%**	**1,242,000**	**~100%**

N.B. Rounded figures in metric tonnes of metal content.

Source:
- (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme, p. 197, (own calculations).

Some estimation suggests that it will take two or three years to meet the current shortage and since it will take time for new planned production to start delivering, there is a positive situation for the Russian nickel producers.[324]

It is also interesting to note that one week after this announcement was made, the deputy director of *Norilsk Nickel* held a presentation in London where he stated that it was to increase production by 36.4% in 2003.[325] In short, Russia's production of nickel is expected to increase during the coming years. Not mainly due to its new investments, but due to favourable market conditions resulting from increasing demand for stainless steel and a general economic recovery of the global market in the coming years.[326] Russia has some, but not much surplus production capacity, so it is able to meet increased demand if necessary, at least in the short run. In the long-run perspective, new mines must be taken into production.

[323] - (2002), "Promishlennost metallov platinovoi gruppi", *Gosudarstvenni doklad 'o sostoianii mineralno-sirevoi bazi Rossiiskoi Federatsii'",* Informatsionni-analiticheskii tsentr "mineral", Internet: http://www.mineral.ru/Chapters/Production/Issues/16/Issue_Files.html, 2003-10-28.
[324] - (2003), "Norilsk Nickel Says it May Branch into Titanium", *New Europe*, 12-18 October, 2003.
[325] - (2003), "Norilsk Nickel Presents Gold Projects in Irkutsk", *New Europe*, 19-25 October, 2003.
[326] - (2003), *OJCE MMC Norilsk Nickel Annual Report 2002*, Norilsk Nickel.

2.7.3 Stockpiles and Reserves of Nickel

'Reserves' refers to ore deposits of nickel while stockpiles to what is called 'strategic stockpiles'.

Strategic Stockpiles

As with many metals important for the military industry, Russia has a strategic reserve, or stockpile of nickel. It is meant to serve as buffer that can be used in time of trouble where needs are greater than the ability to produce, as in wartime. The US, nowadays consider this to be of limited importance and, in contrast to Russia, sold off its stockpiles of nickel in 1999. Currently, the US only holds some 6000 tonnes of nickel scrap metal that is contaminated by low-level radioactivity.[327]

Although its purpose is not strategic, *Norilsk Nickel* has stocks of 60,000 tonnes of nickel in various places that can be used to tackle fluctuations on the market. Two recent examples can be given. First, in April 2003, *Norilsk Nickel* released 18,000 tonnes due to the "prevailing market condition" in order to create stability.[328] Second, in mid-2003, a strike at Inco made worse the shortage of nickel on the world market. As a result, *Norilsk Nickel* sold off stocks of 24,000 tonnes held in storages in the Netherlands.[329]

Table 29: World Reserves of Nickel in 2003

Country	Reserves	Reserve base
Australia	22,000,000	27,000,000
Botswana	490,000	920,000
Brazil	670,000	6,000,000
Canada	5,200,000	15,000,000
China	3,600,000	7,600,000
Colombia	900,000	1,100,000
Cuba	5,600,000	23,000,000
Dominican Republic	690,000	1,000,000
Greece	490,000	900,000
Indonesia	3,200,000	13,000,000
New Caledonia	4,400,000	12,000,000
Philippines	940,000	5,200,000
Russian Federation	6,600,000	9,200,000
South Africa	3,700,000	12,000,000
Venezuela	610,000	610,000
Zimbabwe	15,000	260,000
Other countries	1,300,000	5,100,000
World total	**61,000,000**	**140,000,000**

N.B. US system of classification (see appendix two). Figures in metric tonnes.

Source: - (2003*), Mineral Commodities Summaries 2003*, Washington DC: U.S. Geological Survey, p. 117, 195.

Reserves of Nickel

When it comes to ore reserves of nickel, Russia possesses large amounts, but in relation to its position in production, only modest ones. As the table above bears witness of, Australia has the greatest reserves of 22 million tonnes while Russia, in second place, only has some 6.6 million tonnes. Canada, Cuba, New Caledonia and China also possess huge reserves. *Table 29* shows the countries with the largest nickel reserves in the world.

When it comes to the reserve base, the possession of ore content economically feasible to extract, it is considered to be small. It can be noted that for Russia, its reserves that are economically feasible to extract amount to around 72%. This is an average ratio. Australia has a better ratio of over 80% but Cuba's is much worse (24%). It can therefore be concluded that

[327] - (2003), *Mineral Commodities Summaries 2003*, Washington: U.S. Geological Survey, p. 116.
[328] - (2003), "Norilsk to Release 18.000 MT of Stockpiled Nickel", *WMS Nickel Internet Marketing System*, 8 April, 2003, Internet: http://www.wmc-nickel.com/news.asp?ArtLimit=1#, 2003-12-10.
[329] - (2003), "Norilsk to Release the Remaining 24.000 tonnes of Nickel", *WMS Nickel Internet Marketing System*, 11 June, 2003, Internet: http://www.wmc-nickel.com/news.asp?ArtLimit=1#, 2003-12-10.

in a natural resources aspect, Australia has great potential to increase its production and given the two facts that only two percentages differ between Russia and Australia and that the trend points toward increased production for Australia, Russia's leading role might be threatened on the nickel market.

Location of Nickel Reserves
Known nickel reserves in Russia are mainly found in three regions. The Norilsk region is, naturally, the greatest by having 69% of reserves. 20% is found the Murmansk Oblast and the remaining 11% are found in the South and Central Urals.[330] As the mines Oktiabrsk and Komsomolsk are running low on nickel, *Norilsk Nickel* initiated development of two new mines – Skalitsy where extraction started in the late 1990s, and Gluboky – a deep mine, which is in its initial phase.[331] There are no major exploration projects under way, but in 2001, as an example, *Norilsk Nickel* signed a contract with the regional authorities in Voronezh to explore the region for nickel and precious metals. In early 2001, 100 deposits were found and *Norilsk Nickel* has reallocated people there from its arctic divisions.[332]

2.7.4 Domestic Consumption of Nickel

It is no surprise that Russia's domestic consumption of nickel fell in the wake of the collapse of the USSR. As is shown in the overview table, consumption in 1990 amounted to 114,000 tonnes but gradually fell to 38,000 in 1997-1998. This fall was 74%. The situation changed after that and in 2001 it reached 93,000 tonnes. The net decrease has thus only been 35%. It must be noted that these figures are much higher than what consumption really has been. It is impossible to tell exactly how large the actual consumption really is, but the discrepancy is mainly explained by two things, besides what already has been said. First, some of what is noted as consumption has been put in strategic stocks.

Second, some consumption is shielded from official statistics and can have been used by the military industry or exported outside the regulated channels. During the first half of 2004, consumption dropped another 2-3%.[333] Nevertheless, the reason for the fall mainly related to the general situation and decreased demand within the military industrial sector.

Table 30: Detailed Russian Exports of Nickel, 1997-2001

Quality	1997	1998	1999	2000	2001
Ore	64	-	250	1648	3756
Mattes, sinters etc.	9800	12,000	16,200	18,400	13,600
Unwrought	218,722	212,186	207,448	188,484	182,949
Unwrought alloys	3135	1948	3837	8469	6740
Scrap	16,900	10,700	5400	7400	7300
Oxides	544	845	350	33	-

N.B. All figures are in metric tonnes (where 'unwrought' nickel excludes all electro-plating anodes). Concerning mattes and scrap, they are estimates by BGS, based on known imports by certain countries

Source:
- (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme, p. 199.

[330] - (2002), "Promishlennost metallov platinovoi gruppi", *Gosudarstvenni doklad 'o sostoianii mineralno-sirevoi bazi Rossiiskoi Federatsii'",* Informatsionni-analiticheskii tsentr "mineral", Internet: http://www.mineral.ru/Chapters/Production/Issues/16/Issue_Files.html, 2003-10-28.
[331] Levine, Richard M. and Wallace, Glenn J. (2000), "The Mineral Industry of the Commonwealth of Independent States – 2000", *U.S. Geological Survey Minerals Yearbook 2000*, Reston: USGS, p. 3, 17.
[332] - (2001), "Norilsk Cathode Deliverable on LME", *CIS Metal Review*, First Quarter, 2001.
[333] - (2004), "Potreblenie nikelya i aljuminiya v Rossii viroslo na 2-3%", *Mineral*, 16 August, 2004, internet: http://www.mineral.ru/Chapters/News/14138.html, 2004-09-09.

The prospects for change are debated, but since nickel is used in a great variety of applications and, after all, is relatively inexpensive, it can be expected that a rise in demand will follow general improvement of the economic climate in Russia.

2.7.5 Exports of Nickel

As with aluminium, when domestic consumption decreased, increased volumes went as exports to international markets. Exports initially fell in 1993 but later recovered and it was not until 1994 exports of nickel from Russia experienced an increase resulting from the fall in consumption. This rise went on until 1999 when the level dropped somewhat. In 2001, the exports level was 38% higher than in 1991. Strong demand in 2002 and 2003 is explained by the increase of demand for stainless steel, where nickel is an important part. China and the US are the main producers of stainless steel and thus this is where Russia's nickel went.[334] China is indeed expansive in this field. Figures from mid-2003 show that its increase in nickel import from previous year was 221.3%.[335] Mid-2003 figures of Russian exports actually show that compared to the same period previous years, exports have fallen by 37%.[336] For mid-2004, Russia's exports have risen by 4%[337] and exports reached 165 thousand tonnes between January and July.[338] Yet, this is a dubious foundation for analysis since annual data strongly differ from quarterly ditto for example. One reason is, as mentioned, the problems of shipping in winter time. Russia produces and exports a variety of nickel qualities, but it is no surprise that it focuses on unwrought nickel, which makes up a large proportion of all produced nickel. In 1997, this figure was 94% but in 2001 only 85%. *Table 30* above illustrates how the situation has been during the last couple of years.

Table 31: Russian Nickel to World Markets vs. LME "cash" price

	91	92	93	94	95	96	97	98	99	00	01	02	*03**
Exports	138	176	95	105	133	169	222	214	211	197	189	207	
LME $/tonne	n.a.	6988	5280	6337	8234	7496	n.a.	4619	6067	8641	5948	6772	*16,000*

Explanatory remarks:
Exports = Actual exports of palladium from Russia, in metric tonnes.
LME $/tonne = London Metal Exchange "cash" price in annual average, in US$/metric tonne.
* Prognoses

Sources:
1) Exports 1998-2001: - (2002), *Rossiskii Statesticheski Ezegodnik*, Moskva: Goskomstat Rossii, p. 623.

2) LME $/tonne 1992-1996: Russian estimates based on corporate statistics and Mineralmarknaden, SGU PM 1994:4, 1997:1 from: Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, unpublished.

3) LME $/tonne 1998-2002: - (2003), "London Metal Exchange historical data", *LME*, Internet: http://www.lme.co.uk/dataprices_historical.asp, 2003-10-28, (own calculations).

4) LME $/tonne 2003: - (2004), "Metals Producers Enjoy Good 2003", *New Europe*, 11-17 January, 2004, p. 38.

[334] - (2003), *OJCE MMC Norilsk Nickel Annual Report 2002*, Norilsk Nickel.
[335] - (2003), "China Reports May-2003 Nickel Figures", *WMS Nickel Internet Marketing System*, 23 June, 2003, Internet: http://www.wmc-nickel.com/news.asp?ArtLimit=1#, 2003-12-10.
[336] - (2003), "Russia Reports Jan-Apr 2003 Nickel Export Figures", *WMS Nickel Internet Marketing System*, 5 June, 2003, Internet: http://www.wmc-nickel.com/news.asp?ArtLimit=1#, 2003-12-10.
[337] - (2004), "Eksport nikelya iz Rossii v pervom polgodii 2004 g. viros na 4%", *Mineral*, 19 August, 2004, internet: http://www.mineral.ru/Chapters/News/14181.html, 2004-09-09.
[338] - (2004), "Za sem mesyazev 2004 g. Iz Rossii bibezeno 2.222 mil t aljominiya, 129.5 tis.t nikel i 165 tis.t medi", *Mineral*, 9 September, 2004, internet: http://www.mineral.ru/Chapters/News/14503.html , 2004-09-09.

Prices and Value of Nickel

It has already been indicated, in the context of *Norilsk Nickel*, that nickel accounts for a large proportion of Russia's state revenues and is a key metal in industrial production that only can be substituted to minor extent without problems of economic losses or reduction in quality. Prices on nickel vary on a day-to-day basis and are sensitive to changes in production and react on all action taking place on the market. It is therefore problematic to analyse the situation on the basis of yearly data, as in *table 31* above, which shows Russian nickel exports versus price at *the London Metal Exchange*. These figures show the volatility of prices that can vary over 100% in just a few years time. Although the market is more stable than the palladium market, actors attempt to use stockpiles to handle fluctuations on the market, which benefited neither producers nor consumers. As the Russian state has limited influence over the market, it can be assumed that attempts to affect prices on the market are derived mainly from ordinary market forces.

Change in prices between 2001 and 2002 was 13.9% and in fact, nickel was the only base metal where price increased this year.[339] Prognoses for 2003 suggested that LME prices on nickel would be as high as US$8706/t, and this has proven to be right. In the beginning of the fall of 2003, nickel was sold at a price of US$8660/t, which was 29% more than previous year,[340] but by mid-fall prices reached a level of US$13320/t.[341] In mid-December cash nickel price at the *London Metal Exchange* was as high as US$14150/t.[342] In the long-run perspective. Hpwever, since the 1970s, nickel prices on the world market have decreased by 1.7%. However, this has nothing to do with decreased demand. Contrastingly, it is the natural growth of the nickel industry that, based on investments, has become more productive.[343] It can be concluded that *Norilsk Nickel*, as the key producer, has the ability to affect market prices by changes in production and by utilising its stockpiles, but there are no evidence that it can control world market prices in the same way as its prominent domestic position makes possible.

2.7.6 Nickel Imports by and from Russia

Globally, usage of nickel increases by 4% per year, which is faster than average GDP growth and market analysts consider this to be an important indication of that the positive trend is going to continue also in the future.[344] Most commodities covered hitherto have only been treated in the context of imports

Table 32: Detailed Russian Imports of Nickel, 1997-2001

Quality	1997	1998	1999	2000	2001
Ore	628,682	129,544	17,729	307,322	30,422
Unwrought	1246	2096	412	1837	3836
Scrap	2903	3158	4021	3971	3677

N.B. All figures are in metric tonnes (where 'unwrought' nickel excludes all electro-plating anodes).

Source:
- (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme, p. 202.

[339] - (2003), *OJCE MMC Norilsk Nickel Annual Report 2002*, Norilsk Nickel.
[340] - (2003), "Norilsk Nickel Says it May Branch into Titanium", *New Europe*, 12-18 October, 2003.
[341] - (2003), *Nickel Internet Marketing System*, Internet: http://www.wmc-nickel.com/, 2003-12-1.5
[342] - (2003), "Daily Stocks and Prices", *London Metal Exchange*, Internet: http://www.lme.co.uk/dataprices_daily.asp, 2003-12-17.
[343] - (2003), *Euromine Annual Report 2002*, Brussels: Euromine.
[344] Kirman, Ivor (2003), "The Future and Nickel", *Presentation by the President of Nickel Development Institute at ALTA 2003 Nickel/Cobalt Conference*, Perth, Australia, 20 May 20, 2003, Internet: http://www.nidi.org/index.cfm/ci_id/12229.htm, 2003-12-10.

by other states from Russia. This is the focus also here, but an initial comment will be made concerning Russia's modest imports of nickel.

Russia's Nickel Imports
Naturally, Russia is not a main importer of nickel, but has actually imported some over the years. The imports, at least for *Yuzhpolimetall*, come from Kazakhstan and has increased somewhat.[345] Note that figures differ between official statistics presented earlier in the overview table and the one presented here.

Importers of Russian Nickel
It is clear that the US is the largest nickel importer in the world. In 2001, America's imports amounted to over 115,000 tonnes compared to only just above 81,000 for the second largest importer – Germany. Italy and the UK are behind, followed by Taiwan, China and France.[346] If the situation over time is looked at, it can be said that China and the UK has dramatically increased their consumption of nickel since 1997 while the US has decreased its imports. China further increased its imports in 2003, which was one reason for the dramatic rise in price.[347]

Table 33: Main Importers of Unwrought Nickel, 1997-2001

Country	1997	1998	1999	2000	2001
United States	122,832	122,517	108,758	123.279	115,319
Germany	62,752	77,030	79,030	94,153	81,674
Italy	41,065	46,414	45,687	46,241	50,142
United Kingdom	17,706	12,538	15,669	18,825	47,030
Taiwan	41,888	38,803	55,578	55,588	37,710
China	1117	4983	4498	1,1951	37,406
France	32,807	39,221	36,956	40,991	34,347
Belgium-Luxembourg	32,253	27,872	36,987	31,107	33,851

N.B. All figures are in metric tonnes (where 'unwrought' nickel excludes all electro-plating anodes). States presented in table are selected on the criteria that they imported more than 30,000 tonnes in 2001. Here, unwrought nickel is separated from scrap metals, alloys and ore due to Russia's large proportion of unwrought nickel exports.

Source:
- (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme, p. 202ff.

Naturally, all these countries do not import their nickel from Russia. It therefore serves a purpose to look at where Russia's nickel goes. This is not visible in official trade statistics, but *Norilsk Nickel*, which after all accounts for 96% of Russia's production, has presented an overview of the destination of its exported nickel. As the table below shows, Europe is the largest export market for *Norilsk Nickel* by having a 73% share. Asia gets 12% while North America only receives 10%.[348]

[345] - (2001), "Norilsk Cathode Deliverable on LME", *CIS Metal Review*, First Quarter, 2001.
[346] - (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme, p. 202ff.
[347] - (2004), "Metals Producers Enjoy Good 2003", *New Europe*, 11-17 January, 2004, p. 38.
[348] - (2003), *OJCE MMC Norilsk Nickel Annual Report 2002*, p. 50.

Exploration and production within Europe have also declined over time and in 1999 they only accounted for 1.8% of the total value of non-fuel mineral products in the world. Despite this, the EU does not have a common mineral policy, but has instead focused all its attention to issues of sustainable development.[349] This focus has resulted in a situation where all scrap metal nickel is recycled and up to 80% of end-use nickel is recovered and reused by industries. However, this is not only for environmental reasons, it is also economically preferable to recycle nickel.[350] In a socio-economic context, the EU is greatly dependent on nickel also due to the fact that the overall nickel industry employs over one million people. Mining is taking place in Finland and Greece, smelting in Finland, Greece and Austria while refining is in the UK, France and Finland. By and large, trading is done without any major restrictions.[351] As the EU produces 40% of the world's stainless steel[352] and imports huge quantities of nickel from Russia, it can be concluded that Russia's role is of paramount importance. An approximate calculation suggests that Europe's dependence on Russian nickel amounts to 38% of its needs.[353]

Table 34: Distribution of Norilsk Nickel's Sales of Nickel in 2002

Region	Share of total
Russian Federation	4%
Europe	73%
North America	10%
Asia	12%
Other	1%

Source: - (2003), *OJCE MMC Norilsk Nickel Annual Report* 2002, p. 50.

For America, which does not possess any nickel mines in operation, this share goes hand in hand with the fact that of its imports of nickel between 1998 and 2001, 12% came from Russia, while 40% came from Canada, 13% from Norway and 10% from Australia.[354] If this is recalculated to the Russian export share of the overall consumption needs in the US, it amounts to a mere 5.5%; hence far less than for Europe. As will be shown later in this report, the US is a main importer of palladium, which for example is used

Table 35: Swedish Imports of Nickel, 1997-2001

Quality	1997	1998	1999	2000	2001
Mattes, sinters etc.	4372	6289	5700	5756	6124
Unwrought	14,113	20,039	2,1667	28,583	24,547
Unwrought alloys	661	1546	1185	687	942
Scrap	21,064	17,967	9570	21,901	13,495

N.B. All figures are in metric tonnes (where unwrought nickel excludes all electro-plating anodes).

Source:
- (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme, p. 203.

[349] - (2003), *Euromine Annual Report 2002*, Brussels: Euromine .
[350] Whiteway, Patrick (2003), "Designing for Reuse", *Nickel Magazine*, no 3, vol. 18, June, 2003, p. 3.
[351] - (2003), "Nickel in the EU: Socio-economic Impact", *Nickel Forum*, Internet: http://www.nickelforum-eura.org/index.cfm/ci_id/11856.htm, 2003-12-10.
[352] - (2003), "Nickel Forum FAQ", *Nickel Forum*, Internet: http://www.nickelforum-eura.org/index.cfm/ci_id/12254.htm, 2003-12-10.
[353] This figure has been reached by taking the half year data of Europe's demand for 2002 in relation to Norilsk Nickel's export to Europe, which is 73% (of its total of 241), divided by two (to get an approximate half year figure). The margin of error of this calculation is naturally large, especially since Norilsk Nickel accounts for 96% of Russia's total, but it at least provides some indication. Data from: - (2003), "Current Statistics", *International Nickel Study Group*, Internet: http://www.insg.org/curstats.htm, 2003-12-10, and: - (2003), *OJCE MMC Norilsk Nickel Annual Report 2002* .
[354] - (2003), *Mineral Commodities Summaries 2003*, Washington: U.S. Geological Survey, p. 116.

for catalytic converters. The latest developments concerning hydrogen and catalysts have made possible the usage of nickel for this purpose. If the outcome proves to be operational, further increase in nickel consumption is expected from countries producing catalysts.[355]

Sweden's imports are shown in *table 35*, and in this context, two things can be said. First that unwrought nickel and nickel from scrap are the major qualities imported and, second, all qualities but scrap have an increasing trend.[356] The reduction of imports of scrap metal has been especially notable in the case of imports from Russia.[357]

Thus, Russia enjoys a strong international position on the nickel market, although this position is not primarily related to Russia as a state, but to *Norilsk Nickel* as a market actor. Europe is the region most dependent on Russia's nickel, but there is nothing in this report that indicates that the supply would be threatened.

2.7.7 Conclusions - Nickel

Overview: Russia's nickel market has, as the whole metal market has, been plagued by problems of corruption, ownership disputes, lawsuits and general instability. Nickel is found at deep levels, which makes exploration and extraction costly and difficult. The main producer is *Norilsk Nickel*, which is the world's largest nickel producer and it has 96% of the domestic market and almost 20% of the international market. Some, but few, investments are made and the share of aging technology is increasing. The market is sensitive to most actions within the sector, including seasonal effects. *Norilsk Nickel* alone makes up almost 2% of Russian GDP and is hence important for state finances.

State control: The sector is privatised and *Norilsk Nickel* acts as an independent and market-orientated company. *Norilsk Nickel's* and the state's interest sometimes converge and sometimes not. State control is both related to laws and regulations, which is enough to affect world supply and impose restrictions when considered necessary, and to the overall Russian policy of state control over natural resources. Thus state control is long-term and strategic in nature. Actions affecting world market price on nickel in the short run are connected to *Norilsk Nickel* and in the long run to Russia as a state.

Production: After an initial decline, Nickel production is almost back at the levels of the early 1990s, namely close to 300 thousand tonnes per year. Unlike other commodities, the initial fall was not a consequence of decreased demand, but instead of problematic production. Closely ahead of Canada and Australia, Russia is the world's largest nickel producer. Russia is expected to strengthen its position as a result of increased international demand, despite lack of investments.

Reserves: Russia's nickel reserves are substantial and amounts to some 6-7 million tonnes, which however is not much compared to Australia's 22 million tonnes. Norilsk Nickel has just initiated production at two deep mines, but no major exploration projects are under way. In a long-term perspective, new explorations are necessary if production levels are to be kept.

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[355] - (2003), "Hydrogen from Renewable Biomass: A New Nickel Catalyst Could Lead to and Inexpensive Way to Produce Hydrogen", *Nickel Magazine*, vol. 19, no 1, October, 2003, p. 8f.
[356] - (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme.
[357] Tollin, Sven F (2003), "Overview of the Nickel Containing Scrap Market", *International Nickel Study Group - Presentation by INSG Chief Statistician at INSG Meeting*, Hague, October 2003, Internet: http://www.insg.org/presents.htm, 2003-12-10.

Consumption: During the 1990s, consumption fell even more than available data (74%) suggest. Decline in production within the military-industrial field was the main explanation. Increased demand is expected when the general economic climate improves.

Exports: Russia has increased nickel exports since the early 1990s, and now exports over 200 thousand tonnes per year. 73% of *Norilsk Nickel's* nickel goes to Europe and 10% to the US. This means that around 12% of the US' imports come from Russia. Exports are expected to increase in the future due to increase in global demand.

2.8 Palladium

Palladium belongs to the platinum group of metals (PGM) and is produced from ore. In addition to mining and alluvial extraction, palladium is also a recovered by-product from copper refining and nickel production. PGM ore in Russia is palladium dominant by having 64-71% palladium and 16-25% platinum. [358]

There are five main applications where palladium is used: 1) the largest share of palladium is used by the auto industry for making catalytic converters, 2) chemical usage includes palladium as catalyst for organic synthesis, for production of nitric acids and fabrication of laboratory equipment, 3) cast or unwrought palladium is sometimes used, like platinum, for jewellery, 4) palladium is used within the electronics industry for making conductive pastes and, 5) dental restorative material is often made of palladium together with various silver-gold-copper alloys.[359] For Russia, palladium is seen as a strategic commodity for several reasons, but mainly because there are few suppliers, it is precious and used for some high-tech electronic equipment.

Table 36: Usage of Palladium in 2002-2003

Application	02	03
Auto catalysts	64%	65%
Chemical	5%	4%
Dental	16%	14%
Electrical	15%	17%
Jewellery	5%	4%
Other	2%	2%
Total	**~100%**	**~100%**

Source: - (2003), "Palladium Supply and Demand", *Johnson Matthey*, Internet: http://www.platinum.matthey.com/uploaded_files/market_data/Pd%2094%2003.pdf, 2004-03-18 (own calculations).

2.8.1 Palladium Overview

Table 37: Overview of Russian Palladium, 1991-2010

	91	92	93	94	95	96	97	98	99	00	01	02	03	*05**	*10**
Production	67	59	55	46	48	52	59	71	76	89	93	95	~95	*105*	*119*
Alt. data	82	85	82	87	85	80	80	80	85	94	84	84	n.a.	*n.a.*	*n.a.*
Sold Stocks	-	-	-	16	46	94	69	100	84	77	64	n.a.	n.a.	*n.a.*	*n.a.*
Supply	67	65	75	103	131	174	149	180	168	162	135	60	95	*100*	*105*
Alt. data	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	160	168	171	162	140	n.a.	n.a.	*n.a.*	*n.a.*
Consumption	n.a.	n.a.	12	n.a.	7	n.a.	8	n.a.	5	n.a.	4	n.a.	n.a.	*5*	*8*
Exports	67	65	75	103	128	143	100	105	70	110	120	n.a.	n.a.	*n.a.*	*n.a.*

Explanatory remarks: All figures in thousand metric tonnes per year.
Production = Mining production including recycled palladium from scrap metals.
Alt. data = Alternative figures for palladium production, see sources in appendix one.
Sold stocks = Palladium from strategic reserve stocks sold to world markets by the Russian State Treasury - Gokhran.
Supply = Production (including recycled palladium from scrap metals) and palladium from stocks (reserves) offered to world markets and to the domestic market that are estimates of sales by the mines of primary platinum group metals (where palladium is separated from platinum). See: http://www.platinum.matthey.com.
Consumption = Domestic consumption. This is occasionally excluded from 'supply' prior to statistical presentation, which causes an immeasurable discrepancy in presentation.
Exports = Actual exports of palladium from Russia.
* Prognoses
NB. Russian imports of PGM is close to none. See: UNCTAD Statistical information: *UNCTAD*, Internet: http://r0.unctad.org/infocomm/anglais/platinum/images/dataxm.htm, 2003-10-27
Figures may not add up due to rounding.
Sources: See appendix 1.

[358] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 29.
[359] - (2003), *Mineral Commodities Summaries 2003*, Washington: U.S. Geological Survey, p. 126.

Already during the Cold War, South Africa and the Soviet Union dominated the PGM market. Russia inherited this position and is today the second largest producer of palladium in the world. The table above gives an overview of Russia's palladium situation.

Methodological Considerations of Palladium Assessments
Reliable and complete data on palladium production, exports and supply is hard to attain as it often is excluded from Russian industrial statistics. When it comes to reserves and information about unexplored ore deposits or levels of depletion, it is even more difficult as it is regarded as state secrets, much due to the traditional strategic nature of the metal. Without this information it is impossible to make estimates on future production or estimates of production/reserves ratio or investment needs. Thus analyses and forecasts, even by prominent organisations, must be used carefully. Additionally, awareness of irregularities in presentation is crucial. As there often is a discrepancy between official figures and independent estimates, alternative data is occasionally presented in the tables below.

The overview *table, number 37*, reveals how the situation has changed over time. Given the fact that data on palladium is shrouded in great secrecy, a certain but unknown amount are absent from the statistics presented here. This may relate to military usage and military exports, not available via public sources, but also to bilateral deals that may or may not be separated from platinum sold on the spot-market for commodities, such as the *London Platinum and Palladium Market* or the *London Bullion Market*. In all, this makes an assessment easier and more difficult at the same time. The market and actors constitute a more coherent entity compared to commodity sectors, but secrecy prevents a thorough analysis from being made.

However, there is an ongoing discussion on declassification of data for precious metals and gemstones in Russia. *The Russian Ministry of Finance* and *Norilsk Nickel* have pushed for such actions. In November 2003, Putin signed a bill to disclose information on PGM reserves and stocks, although only for private firms. Reserves held by *Gokhran* or the *Central Bank* will still be secret, but officials from the *Ministry of Finance* said that this might change in a few years time.[360] Disclosure would primarily relate to sales figures and reserves held by firms. The idea is to offer data on an annual basis and not group data into clusters on the basis of regions or companies.[361] The bill has been approved by the Duma, but by early fall of 2004, new obstacles had emerged and the final results are yet to be seen. The impact is expected to be greatest on the gemstone market, partly because the current situation prevents Russia from acting on the diamond market, but it will also affect the PGM market.[362] Nonetheless, the result is to be seen during 2004, though a few figures are made public even today.

2.8.2 Production of Palladium

Production of palladium in Russia refers not only to ore production, but also to recycled palladium and production from scrap metals. Official production figures show that since 1994, production has constantly risen. The fall in production in 1992 is partly explained by a strike at *Norilsk Nickel* and problems of attaining spare parts and equipment for production.[363]

[360] - (2003), "Russia's Putin Signs PGMs, Gems into Law", *Norilsk Nickel*, Internet: http://www.nornik.ru/news/digest.jsp?digestId=510&mode=anonce&lang=E, 2003-12-09.
[361] - (2004), "Secrecy Bill to Benefit Alrosa, Norilsk Nickel", *New Europe*, 29 February – March 6, 2004, p. 38.
[362] - (2003), "PGMs, Gemstones Data May be Declassified in Fall", *New Europe*, 12-18 October, 2003.
[363] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 29.

True, alternative figures show a constant level over the last decade, and it is difficult to say which is the correct version as arguments support two different estimates. One argument is that as Russia traditionally has preferred to give a view of itself as producing more than it actually has. Hence, figures would be smaller than as presented in official statistics. The second argument is that if some palladium is shielded from official statistics, for military, political or economic purposes, the real figure would be larger than what statistics reveal.

The Palladium Industry in Russia

Norilsk Nickel RAO (*Norilsk Mine and Metal Kombinat*) and its subsidiaries stand for almost 100% of Russia's palladium production, which makes it the largest palladium producing company in the world. Consequently its impact on the market is paramount. Its alluvial extraction takes place in the regions of Khabarovsk and Kamchatka, while the mines are found in four clusters. Two clusters, which are currently being mined out, are found in Minchegorsk and near the city Nikel in the Murmansk Oblast. Two large clusters, still in operation, are found in Norilsk and Talnakh on the Taymyr peninsula in the northern part of the Krasnoyarsk Kray. In addition, *Norilsk Nickel* has several daughter companies located all around Russia for production, refining, melting and transportation.[364] Produced palladium is of top-notch quality, much due to cooperation between *Norilsk Nickel* and Canadian/Finnish company *Outokumpo*.[365] It is interesting to note that in 2002 the largest palladium producer in the US, *Stillwater Mining Company*, had 51% of its shares bought by *Norilsk Nickel* for US$ 341 million.[366] This has strengthened *Norilsk Nickel's* position and made possible a strong base on the North American market.

Traditionally, there were strong restrictions imposed on the metal producing firms in Russia. During the Yeltsin regime, privatisation led to something like anarchy, which caused great revenue losses for Russia when *Norilsk Nickel* and *Almazjuvelirexport* sold off the lion's share of palladium stocks and by that made huge profits, without having to increase production.[367] Russian annual production rate of palladium of today amounts to 90-100 tonnes (2.8-3 million ozs) and there are no indications that this will change in any drastic way during the coming years. Producers and government have long since forgotten the misdeeds of the 1990's. Production levels have been constant during the last couple of years and fluctuations in market supply and price are mainly explained by the changes in the strategic reserves. Today, the PGM-sector is once again centralised under the *Ministry of Finance* and is considered to be stable.[368] It can nonetheless be noted that supply figures of 2003 show that Russia only supplied 46.7% of world supply.[369] Of the world's actual mine production, Russia in 2003 accounted for 40%. It is crucial no note the differences in supply and production, as the former include stock sales. Sales hence exceed production and have between 2002 and 2003 increased by 53% for Russia.[370]

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[364] Bond, Andrew R. and Levine, Richard M. (2001), "Noril'sk Nickel and Russian Platinum-Group Metals Production", *Post-Soviet Geography and Economics*, vol. 42, no 2, p. 80.
[365] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 29. For further information, see: - (2000), *Outokumpo Annual Report 2003*, Outokumpo.
[366] - (2002), *Norilsk Nickel Acquires 51% of Stillwater Mining Company*, Moscow: Norilsk Nickel, 21 November, 2002.
[367] - (2002), *Platinum Yearbook – 2002 Edition/2001 in Review*, Standard Bank of London, p. 25.
[368] - (2002), *Platinum Yearbook – 2002 Edition/2001 in Review*, Standard Bank of London, p. 25.
[369] - (2003), "Palladium Supply and Demand", *Johnson Matthey*, Internet: http://www.platinum.matthey.com/uploaded_files/market_data/Pd%2094%2003.pdf, 2004-03-18.
[370] - (2004), *Platinum 2004*, London: Johnson Matthey, p. 15.

2.8.3 Reserves and Stockpiles of Palladium

As with commodities discussed previously, this section deals both with the strategic stockpiles and with ore reserves.

Strategic Stockpiles

The strategic stocks are, as indicated, stockpiles held for strategic reasons by the Russian state. Stocks have cumulatively grown since the Second World War until 1993 when stocks peaked and contained some 800-900 metric tonnes. *Table 38* shows held reserves versus sold reserves between 1993 and 2010. The table indicates that held reserves have decreased since 1993. Prognoses made suggest that it will stabilise at a level of some 160 thousand tonnes. The reason behind this sell-off was Russia's urgent need for hard currency during the Boris Yeltsin regime.[371] This is not longer a reason, but the economic aspect is still important.

Table 38: Russian Strategic Stockpiles of Palladium, 1993-2010

Stocks	93	94	95	96	97	98	99	00	01	05*	10*
Held	884	868	822	728	659	559	475	398	334	160	160
Sold	-	16	46	94	69	100	84	77	64	-	-

Explanatory remarks: All figures in thousand metric tonnes per year.
Held stocks = Stockpiles of palladium prior to annual sale.
Sold stocks = Palladium from strategic reserve stocks sold on world market by Gokhran.
* Prognoses

Sources:
1) Held stocks: - (2002), *Platinum Yearbook – 2002 Edition/2001 in Review*, Standard Bank of London, p. 23, (own calculations) (884 metric tonnes in 1993 minus annual sale).

2) Sold stocks 1998-2001: Pearson-Taylor, Justin (2002), "Platinum Group Metals: Russia to Bring More Certainty to PGM Markets", *SCMB Securities Presentation to Standardbank*: Internet: http://www.standardbank.com, 2003-10-27.

3) Sold reserves 1994-1997: calculated on the basis of 'alternative data' provided in table 37. According to Pearson-Taylor (2002), 17million ounce (~547 metric tonnes) has been taken from strategic reserves between 1993 and 2001. This figure supports the aforementioned calculation, which adds up to 550.

Today, Russia's strategic palladium reserve holds approximately 320-330 tonnes (ten million ozs) and further sell-offs are expected until the year 2005. Standard Bank's estimates suggest that the Russian government would be 'comfortable' by having some 160 tonnes (five million ozs) in stocks and at the current pace this figure is reached in 2005. As a comparison, it is not only Russia that has started to sell off strategic metals. The *US Defence Logistics Agency*, after a change in philosophy by the US government, started to sell off such metals as palladium, zinc and chromium a few years ago.[372] If one looks at Russia's strategic reserves today and at prognoses of the near future, it can be concluded that Russia will still be able to affect the palladium market for years to come by using the strategic stocks as a market tool.[373] This situation resembles the situation for nickel but has much greater impact.

[371] - (2002), *Platinum Yearbook – 2002 Edition/2001 in Review*, Standard Bank of London, p. 23.
[372] Buchanan, Sandra (2003), "Strategic Metals for Sale", *Metal Bulletin Monthly*, May, 2003, p. 46.
[373] - (2002), *Platinum Yearbook – 2002 Edition/2001 in Review*, Standard Bank of London, p. 23.

Thus, if strategic reserves cannot be sold off more than once, they will still play a role in the near future. However, in the long run, developments in the prospecting of ore deposits become more important. Therefore, when it comes to Russian palladium production, three things can be said. First, *Norilsk Nickel* has invested in a new plant in 2002 that will make possible a yearly production of 30-40 tonnes of palladium from scrap metals. It also has plans to start producing its own catalysts.[374] In addition, extensive investments in new mines, technology and ore exploration are also undertaken.[375] What currently is most important is the release of *Norilsk Nickel's* 'Production Plan to 2015', which tells that focus will be on increased efficiency and reduction of costs rather than on expansion of mine output.[376] This leads to the issue of ore reserves.

Table 39: World Reserves of PGM in 2003

Country	Reserves	Reserve base
South Africa	63,000	70,000
Russian Federation	6200	6600
United States	900	2000
Canada	310	390
Other countries	800	850
World total	**71,000**	**80,000**

Explanatory remarks: US system of classification, in metric tonnes.

Reserves = see appendix 2.
Reserves base = see appendix 2.

Source: - (2003), *Mineral Commodities Summaries 2003*, Washington DC: U.S. Geological Survey, p. 127.

Ore Reserves

Russian estimates suggest that it has no less than 10% of world PGM resources,[377] while *table 39* indicates only some 8-9%. This is partly due to different methods of classification, but the discrepancy should not be exaggerated. It is clear, however, that new deposits hardly would change the positions more than marginally, as the difference in ore reserves between South Africa, Russia and the US is large. Nonetheless, Russian estimates of the prospects of finding new PGM deposits are positive, as there are areas with potential, for example in the regions of Fedorovo-Panskoye and in the Norilsk[378] and Talnakh fields.[379]

World PGM reserves data do usually not separate platinum from palladium within each country, but knowing that Russian PGM contains around 65-70% of palladium, one gets an indication of ore reserves.[380]

2.8.4 Domestic Consumption of Palladium

Russia uses four to five tonnes of palladium every year and this consumption, together with PGMs in general, goes to production of catalysts, electronics and glass. In contrast to western consumers, Russia does not use it for dental restorative materials. Figures of Russia's domestic consumption over time as shown in *table 37* tell that it gradually has decreased, which by and large is connected to the general decline of industrial production. No sharp increase in consumption is visible and if the situation is to change, two factors can serve as

[374] - (2002), "Norilsk Nickel to Produce PGMs from Scrap", *Norilsk Nickel News,*5 February, 2002, Internet: http://www.nornik.ru/news, 2002-03-07.
[375] See: Bond, Andrew R. and Levine, Richard M. (2001), "Noril'sk Nickel and Russian Platinum-Group Metals Production", *Post-Soviet Geography and Economics*, vol. 42, no 2.
[376] - (2003), *Platinum 2003*, London: Johnson Matthey, p. 20.
[377] - (2002), "Promishlennost metallov platinovoj gruppi", *Gosudarstvennij doklad 'o sostojanii mineralno-sirevoj bazi Rossijskoj Federatsii',* Informatsionni-analiticheskii tsentr "Mineral", Internet: http://www.mineral.ru/Chapters/Production/Issues/16/Issue_Files.html, 2003-10-28.
[378] See map in appendix IV.
[379] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 30.
[380] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 30.

indicators. The first is if the military industry receives orders for products with palladium content, and the second is if the car industry strives to increase production of catalytic converters. The latter of these factors is currently seen as most plausible.

2.8.5 Exports of Palladium

Exports figures illustrate that after an increase from 67 to 143 tonnes between 1991 and 1996, exports gradually decreased. The fall in 1996 was much due to decreased demand by Japan which imports 60-70% of its palladium from Russia.[381] In fact, Russia had great problems in delivering palladium during the second half of the 1990s. Russia failed to deliver any palladium at all for every first six month of each year between 1997 and 1999 for example. The reason has most often been bureaucratic inertia.[382] This resulted in the greatest cut-back in Russian shipments since 1991.[383]

Moreover, the sharp drop in Russia's palladium supply in 2002 is explained by the fact that *Norilsk Nickel* suspended all its sales of palladium on the spot market. *Gokhran* did not sell off any of the strategic reserves at the time either. This drop was unexpected as *Norilsk Nickel* had large unsold stocks from 2001. However, the explanation is that Russia used the accumulated stocks to pay off a governmental loan from the *Ministry of Finance* and, second, it paid for the acquisition of *Stillwater* by a combination of cash and palladium. In all, the amount spent is estimated to be approximately equivalent to six months of production.[384] Additionally, when prices rose in the mid-1990s, many producers in the car industry switched to usage of platinum instead, as it was cheaper than palladium at the time.

Domestic consumption and production levels actually have little impact on exports. Instead, the bulk of palladium exported since 1994 has come from strategic stocks. When the Russian government regained control of the strategic stocks, exports subsequently decreased. Recent development also shows that demand fell even further in 2002 compared to 2001 and prices fell over 44% at *the London Platinum and Palladium Market*. The main reason according to *Norilsk Nickel* was declining demand from the North American auto industry, much due to their shift towards usage of technology with lower palladium loadings.[385]

There are strong requirements for trading in palladium on the commodity markets. Strict specifications relate to purity, form, weight, appearance and markings. Each plate or ingot must, for example, bear the marking of the producer, its weight and an individual number.[386] Despite these requirements, this has occasionally caused irregularities in trade statistics and there are thus reasons to question some of Russia's exports because of problems in measuring re-export and origin. In 1997, for example, Switzerland delivered some 37 tonnes of palladium, bearing Russian markings, which led to this being noted as Russian exports, which it was not.[387]

[381] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 30.
[382] - (2000), "Platinum and Palladium: Price vs. Supply", *Pincock Perspectives*, no 6, May, 2000, p. 3
[383] - (2003), *Platinum 2003*, London: Johnson Matthey, p. 9.
[384] - (2003), *Platinum 2003*, London: Johnson Matthey, p. 9.
[385] - (2003), *OJCE MMC Norilsk Nickel Annual Report 2002*, Norilsk Nickel, p. 34.
[386] - (2002), *Platinum Yearbook – 2002 Edition/2001 in Review*, Standard Bank of London, p. 28.
[387] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unspublished), p. 30.

Export Policy and Quotas

In the late 1990s, there was much confusion in Russia on PGM export regulations as Article 19 of *the Russian Federation Law on Priority Budget and Fiscal* Measures granted export only to 'state organs'. However, this did not primarily affect palladium sales as it was taken care of by Presidential decrees[388] but recentralisation of the PGM-sector has resulted in Kremlin's strengthened grip of palladium-producing companies and as far as exports are concerned, a co-ordinated export policy has been developed. Russia's gradual decrease of palladium export is partly a result of this policy and partly a result of decreasing stocks. The impact on the market has not been substantial, even if prices have fallen sharply. This is explained by factors such as reverse speculation, falling electronics production and automakers worries in the US.

Hence, re-centralisation has led the Russian government to impose export quotas for all platinum group metals. This was not only disadvantageous for producers as reconciliation of market forces and the government in Russia has led to co-operation instead of conflict. In 1999, for example, the government rewarded *Norilsk Nickel* with a ten-year palladium export quota.[389] In May 2002, Norimet, the company responsible for *Norilsk Nickel's* sales of palladium in London, gained the right to sell PGMs without explicit consent from the official PGM Export Agency - *Almaz*. This is one indication of *Norilsk Nickel's* attempts to move towards long-term sales contracts; although it intends to continue operations on the spot market.[390]

Finally, the production level of palladium is not the only key factor behind Russia's export to world markets. What also counts is Russia's strive for WTO membership, which has resulted in many self-imposed restrictions on exports. Despite these regulations and restrictions, things are not as clear as they appear and this is shown in Russia's never-ending contribution to the confusion on the palladium market. In 2001, there was much unclear information on Russia's production capacity and stockpiles, for example if *Gokhran* and other palladium suppliers had any authority at all to export. Such problems enhanced the confusion, and have almost become a trademark of Russian palladium sales on world markets.[391]

Prices and Value of Palladium

Unlike the mid-1990's, Russia's economic situation as of the year 2003 is not in bad shape. Revenues from oil and a fairly stable overall market situation have ensured a high GDP growth. Given the high price and strategic nature of palladium as a commodity, there are reasons to believe that Russia might use this as a financial tool for increasing state revenues from export. In fact, the opposite is true. PGM as a whole was just a small proportion of Russia's $105 billion export revenue in 2000. On the one hand, *Norilsk Nickel's* contribution to Russia's state revenues from PGM exports was only 2.5%, which means that *Norilsk Nickel's* role not should be exaggerated. Sales of palladium from strategic stocks, on the other hand, makes up the lion's share of revenues from PGM to the state, but seen in a comparative perspective, it only amounted to 2% of Russia's total export revenues. It has therefore been concluded that Russia has no obvious macroeconomic *need* to sell palladium.[392] Even if the importance of PGMs is presently small compared to oil and gas, 2% is not *that* small for a

[388] Bond, Andrew R. and Levine, Richard M. (2001), "Noril'sk Nickel and Russian Platinum-Group Metals Production", *Post-Soviet Geography and Economics*, vol. 42, no 2, p. 87.
[389] - (2002), *Platinum Yearbook – 2002 Edition/2001 in Review*, Standard Bank of London, p. 25.
[390] - (2003), *Platinum 2003*, London: Johnson Matthey, p. 19.
[391] - (2002), *Platinum Yearbook – 2002 Edition/2001 in Review*, Standard Bank of London, p. 14, 25.
[392] - (2002), *Platinum Yearbook – 2002 Edition/2001 in Review*, Standard Bank of London, p. 25.

state with a strained budget. It must also be remembered that the costs of selling off strategic stocks are extremely small compared to other fields where investments first must be made.

When it comes to Russia's ability to affect market prices on palladium, *Standard Bank* concluded in 2001 that "[o]nce again it was the scale and pattern of Russian supplies which dominated and were responsible for bouts of exceptional price volatility".[393] Past events thus show that Russia's actions on the market have a substantial impact, but this is not to say that the outcome of these actions necessarily will be as preferred or expected by Russian actors. As an example, Russia's attempts to operate tactically on the market in the early 2000s led to disturbance at the *Tokyo Commodity Exchange*, which is considered to be the only effective futures market for palladium. Evidently, this led to a serious questioning of the trust of the only market for transferring price risk for palladium. According to *Forbes*, this has resulted in increasing price volatility and heightening of needs to carry inventory and, in addition, all Russia's moves will consequently be felt on the spot market.[394] There is no evidence of this being in the interest of neither Russia as a state nor *Norilsk Nickel* as a company.

Table 40: Russian Palladium to World Markets vs. LBM "cash" price, 1991-2010

	91	92	93	94	95	96	97	98	99	00	01	02	*05**	*10**
Supply	67	65	75	103	131	174	149	180	168	162	135	60	*100*	*105*
Exports	67	65	75	103	128	143	100	105	70	110	120	n.a.	*n.a.*	*n.a.*
% of World's total supply	55	54	56	63	66	71	66	69	67	67	59	37	*n.a.*	*n.a.*
LBM $/gram	2.9	2.83	3.94	4.49	4.86	4.12	5.74	9.14	11.5	21.9	19.4	10.8	*n.a.*	*n.a.*

Explanatory remarks: Figures in metric tonne.
Supply = Production (including recycled palladium from scrap metals) and palladium from strategic stocks offered to world markets and to the domestic market that are estimates of sales by the mines of primary platinum group metals (where palladium is separated from platinum). In metric tonnes. See: http://www.platinum.matthey.com.
Exports = Actual exports of palladium from Russia in metric tonnes.
% of World's supply = (Russian supply/total supply*100=Russian share of world supply in% for each year).
LBM $/gram = London Bullion Market "cash" price in annual average, in US$/gram.
* Prognoses
Sources: See appendix 1.

Naturally, Russia could reduce supply to the spot market by decreasing exports and withholding stocks. The rationale for doing so would be threefold: 1) it could be related to industrial demand or priorities of the military sector contra exports, 2) it could be used as collateral for Western loans, or 3) it could be saved until *Gokhran* decides to a sell-off at a time when prices are high. *Jennings Capital* suggests that withholding exports in order to increase prices is unlikely as Russia has learned its lesson of substitution within the market. Russia thus has the ability to affect world palladium processes by dumping large amounts on the market. But this is, also, unlikely as it has been done before with negative result for Russia,[395] at least if one assumes that Russia has learned its lesson and does not repeat the same mistake twice. The industrial factor is hard to evaluate, but at this time there is nothing that shows that it would be the case. The same thing goes for the rationale of collateral for loans, especially since Russia's financial situation has improved since 1998.

[393] - (2001), *Platinum Yearbook – 2001 Edition/2000 in Review*, Standard Bank of London, p. 4.
[394] - (2000), "Long Term Luster", *Forbes.com*, Internet: http://www.forbes.com/global/2000/0612/0312084a.html, 2003-11-17.
[395] - (2001), "Palladium and Platinum Commodity Review: Volatile Metal Prices Create Uncertainty", *Jennings Capitals Inc Research Report*, 16 October, 2001, p. 1.

Apparently, the table above does not indicate a strong correlation between market price and the amount, or share of, Russian supply even if most analysts agree that it is so. One reason is that prices change on a daily basis. Daily or monthly statistics is therefore a better measurement of this correlation than yearly data is. As an example, in January 2002, palladium prices were noted to be US$440/oz at its highest level and US$365 at its lowest.[396] In mid-December 2003, the monthly average palladium price was US$201.9/oz.[397]

In a long perspective, some prognoses of prices suggest that they gradually will decrease and be fixed around US$550/oz in 2005.[398] Naturally, prices have the characteristic of being both an indication of the equilibrium of supply and demand, but also something that affects supply and demand in itself. This bears importance as past price fluctuations show that consumers of palladium and platinum try to replace the commodity in question, if prices increase too much. Evidently, manufactures of electronics have started to reduce the "palladium content of conductive pastes used to form the electrodes of multilayer ceramic capacitors by substituting base metals or silver-palladium pastes that contain significantly less palladium"[399]. New technology, within the fields of dental recovery, electronics or auto producing runs the risk of undermining the general demand for palladium in the future. Considering the quantities demanded within these sectors, it will have a paramount impact and thus must be taken into the equation.

Finally, as far as regulations, restrictions and taxes are concerned, the current 8% flat tax on metals, based on the producing company's prices, might increase. If the governmental plan is to increase state revenues in times when prices change rapidly, a system similar to oil taxation would be best. This includes taxation based on quarterly average prices of the commodity in question.[400] When it comes to powers to affect market stability, it can be said that if Russia realises the benefits of stability, it could negotiate long term supply contracts with the West, especially since stockpiles are not as high as before and as, in addition, investments are needed. There are however reasons to believe that Russia will remain "confusing and enigmatic".[401]

Table 41: Main Suppliers of Palladium to World Markets in 2002

Region	Share of total
Russian Federation	36.7%
North America (US and CA)	18.9%
South Africa	41.2%
Others	3.2%

Source: - (2003), "Palladium Supply and Demand 1993-2002", *Johnson Matthey*, Internet: http://www.platinum.matthey.com/uploaded_files/market_data/Pd%2093%2002.pdf , 2003-10-27, (own calculations).

Russia and World Supply

According to *New Europe*, Norilsk Nickel had 50% of the world palladium market in 2003.[402] This figure contrasts other figures and differs by some 13 percentages. No matter the case, Russia as a whole naturally has held a large share of world supply, which in fact increased between 1991 and 1996, although it gradually has fallen

[396] - (2003), *Platinum 2003*, London: Johnson Matthey, p. 46.
[397] - (2003), "Current and Historical: Johnson Matthey Base Prices", *Platinum Today*, Internet: http://www.platinum.matthey.com/prices/current_historical.html, 2003-12-17.
[398] - (2001), "Palladium and Platinum Commodity Review: Volatile Metal Prices Create Uncertainty", *Jennings Capitals Inc Research Report*, 16 October, 2001, p. 1.
[399] - (2003), *Mineral Commodities Summaries 2003*, Washington: U.S. Geological Survey, p. 127.
[400] - (2003), "Russia Contemplates New Precious Metals Tax", *Platinum* Today, 5 November, 2003, Internet: http://www.platinum.matthey.com/media_room/1068037203.html, 2003-11-11.
[401] - (2001), "Palladium and Platinum Commodity Review: Volatile Metal Prices Create Uncertainty", *Jennings Capitals Inc Research Report*, 16 October, 2001, p. 1.
[402] - (2003), "Norilsk Nickel Presents Gold Projects in Irkutsk", *New Europe*, 19-25 October, 2003.

since. South Africa is the prime supplier of 41.2% while Russia in 2002 had 36.7%. Other suppliers are Zimbabwe, Colombia and Australia, and to an even lesser scale: Bulgaria, China, Ethiopia, Indonesia and the Philippines. Several states re-export palladium, for example, Germany, Switzerland, the UK and USA.[403]

Despite declined sales in terms of dollars, *Norilsk Nickel* sees the future market as promising. As the price of palladium has dropped, especially in relation to platinum, consumers have a favourable situation. For producers the recent price falls have resulted in a cumulative effect that, according to *Norilsk Nickel*, will take at least two years to overcome.[404]

Environmental aspects might not take any key positions in Russia, but international or regional laws on the topic will affect the international market. In this context, it can be mentioned that palladium is much better than platinum as material in catalytic converters; as it is more effective in removing hydrocarbon pollutants of exhaust fumes. This becomes important when strict hydrocarbon emission standards are imposed. In 2000 in the US, for example, the *Stage III Clean Air Act Emission Standards* for new cars put the standards at such a level that palladium-only converters were needed to meet the new regulations.[405]

Political priorities always take a central role in Russia. For metals and minerals, the case is fairly clear as it shows two things. First, the Russian state wants to be in control, which is shown in the desperate attempt to regain control over exported quantities in the mid-1990s and imposing export quotas. This is due both to political-strategic reasons, but also to economic ones. The second thing is that a series of actions underscore an understanding of market economy principles for example: 1) generous export quotas, 2) market dialogues, 3) allowing Norimet to sell palladium independently of *Almaz*, 4) declassifications of PGM data.[406]

Additionally, it has been debated to what extent the 'Soviet planned economy heritage' has left Russia with embedded lags that infringe on industrial companies' ability to act on the international market. Analyses generally suggest that ownership of the Russian metal and mineral industries has passed on to individuals who are receptive to Western style industry management. This indicates that market orientation will be the guiding principle hereinafter.[407] Even if it is so, it must be noted that *Norilsk Nickel*, as the world leading producer, does not anymore operate by itself on the market. There are thus reasons to say that Russia as a state and *Norilsk Nickel* have joint powers to affect the market. As it seems, neither production levels nor domestic consumption are of pivotal importance for market prices. Instead, sell-offs from strategic reserves and export quotas are key factors, as they control a huge amount of palladium supplies to world market. In conclusion, this means that it is essential to monitor the approach to palladium sales also by the Russian state bank or Gokhran.

[403] - (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme
[404] - (2003), "Palladium Revival to Impact Global Market", *New Europe,* 28 September- 4 October, 2003.
[405] Bond, Andrew R. and Levine, Richard M. (2001), "Noril'sk Nickel and Russian Platinum-Group Metals Production", *Post-Soviet Geography and Economics*, vol. 42, no 2, p. 88.
[406] Indeed there might be other underlying reasons for these actions but the outcome is nonetheless something which looks like market principles.
[407] Bond, Andrew R. and Levine, Richard M. (2001), "Noril'sk Nickel and Russian Platinum-Group Metals Production", *Post-Soviet Geography and Economics*, vol. 42, no 2, p. 77.

2.8.6 Palladium Imports from Russia

It is not always possible to trace each country's imports of palladium, as it goes via commodity markets or is included in a general PGM category. However, the main consumers of palladium are Europe by 34.4%, Japan by 27.4% followed by North America by 19.9%. Most notably, Japan, the US, Switzerland and Germany import large quantities of palladium.[408] Even if the US produces palladium domestically, it must import 66% of its consumption needs and 44% of this import comes from Russia.[409] In short, America's dependence on Russia is rather large.[410] Although not from Russia, Sweden has imported PGMs at an annual value of £5-7,000,000 each year between 1997 and 2000. In addition to this, some 1000 kg of PGM scrap metal was imported in 2001, which is a decline from 7000kg in 1999.[411] Details of imported palladium quantities are found in *table 45*, in appendix 3.

Concerning consumption usage, Europe uses 87% of imported palladium in the auto industry for catalytic converters while other applications, such as for dental or electronics, only take minor roles. The same goes for the US. Japan, in contrast, uses some 35-40% for auto catalysts, which is the same share as on dental applications.[412] The auto industry's large proportion of market consumption has, as mentioned, great impact on the market. This also concerns its own inventory. As an example, in 2002, *Ford Motor* announced a massive write-off of its precious metals inventory, which was of some two million ozs. This consequently led to dumped prices.[413]

Table 42: Main Consumers of Palladium in 2002

Region	Share of total consumption	Norilsk Nickel Distribution
Europe	34.4%	64%
Japan/Asia	27.4%	23%
North America	19.9%	13%
Others	18.4%	-

Source:
1) - (2003), "Palladium Supply and Demand 1993-2002", *Johnson Matthey*, Internet: http://www.platinum.matthey.com/uploaded_files/market_data/Pd%2093%2002.pdf , 2003-10-27, (own calculations).

2) - (2003), *OJCE MMC Norilsk Nickel Annual Report 2002*, p. 51.

As a conclusion of this section: *Virtual Metals'* forecast of what will happen on the future palladium market holds three things. First, the world palladium market is oversupplied and will continue to be so. This situation will be enhanced by further Russian reserves sell-offs and increased supply from recovered industrial recycling. Second, consumption growth is expected to be some 2.8% per year until 2010. Third, Russian primary and secondary supply, (where stock sales are excluded), will grow by 34%. This supply is considered to be insensitive to lower pricing. Finally, stricter legislation and regulations in Europe will make secondary palladium prices inelastic. Secondary supply is currently extremely low, but is expected to increase heavily by some 45% per annum.[414]

[408] - (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme, p. 220f.
[409] - (2003), *Mineral Commodities Summaries 2003*, Washington: U.S. Geological Survey, p. 126.
[410] Detailed figures on certain palladium consumers import is found in table 45 in appendix 3.
[411] - (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme, p. 220.
[412] - (2003), "Palladium Supply and Demand 1993-2002", *Johnson Matthey*, Internet: http://www.platinum.matthey.com/uploaded_files/market_data/Pd%2093%2002.pdf , 2003-10-27, (own calculations).
[413] - (2003), *Platinum Yearbook – 2003 Edition/2002 in Review*, Standard Bank of London, p. 4.
[414] - (2003), *Palladium: Market Summary*, Virtual Metals Research and Consulting Ltd.

2.8.7 Conclusions - Palladium

Overview: The palladium/precious metals market in Russia has slowly moved from being one of state control via chaos and anarchy back to state control again. It is now stable but still unpredictable and enigmatic. Market data is incomplete and notoriously unreliable. Laws and regulations are unclear and change continuously. Secrecy concerning stocks and reserves has been total, but gradually change, at least for firms (albeit not for state reserves). The company *Norilsk Nickel* and it subsidiaries stand for close to 100% of the palladium market in Russia. In addition it owns the refineries, melting plants and transportation firms. Investments are continuously made and many improvements can be seen. Produced palladium is for example of top-notch quality. No foreign operators exist. Instead, *Norilsk Nickel* has acquired other large international firms, for example the largest in the US. The financial importance of palladium is debated, but it has made up almost 2% of Russia's total export revenues and has at times been crucial for getting hard currency.

State control: Despite being privatised, the precious-metals market is centralised and state control is very strong and shielded from insight. Governmental bodies such as the *Ministry of Finance* and *Gokhran* together with *Gosbank* and others are not only behind laws and regulations, but also own large palladium stocks. Export quotas have been imposed and a coordinated export policy developed. By that the state has been able to affect the market directly, resulting in supply fluctuations and price volatility. Several issues on the market have been decided by presidential decrees and *Norilsk Nickel* can do few things without state approval. Palladium is a strategic resource of even higher importance than nickel and aluminium. Secrecy has even further enhanced Russia's position vis-à-vis other actors.

Production: Palladium in Russia comes from both extraction and recycling and has reached almost 100 thousand tonnes per year in the early 2000s, which is doubling in 10-years time. World supply is not only dependent on production, but mostly to governmental sell-offs of strategic stocks. *Norilsk Nickel* strives for increasing efficiency and reducing costs rather than increasing mine output. Production is likely to remain at current levels.

Reserves: Data on palladium ore reserves are by and large secret, but some estimation suggests that Russia has some 10% of world reserves of platinum-group metals, which in Russia is palladium dominant. South Africa is nonetheless far ahead of Russia in terms of reserves. Russia's strong position is largely related to its strategic stocks, which may amount to some 3-400 thousand tonnes. Stocks and reserves suggest that Russia still will be able to affect the market in years to come.

Consumption: As a result of general industrial decline, palladium consumption has fallen. It is unclear how much it is now, but official figures point to some 5,000 tonnes per year. Unless military production increases, consumption will stay at low levels.

Exports: Stock sell-offs have resulted in great impact on the market. Exports have reached levels of 120 thousand tonnes, which is higher than production levels. An assessment of Russia's strength depends on what figures one looks at. Between 40 and 50% of world supply comes from Russia, which can be seen in relation to its modest ore reserves in comparison to South Africa. Russia's behaviour is unpredictable and unreliable. Its attempts to control the market have back-fired. Yet, Russia is able to strongly affect the palladium spot-market. Many states are totally dependent on Russia. Japan imports 60-70% of its needs from Russia and the US 20%. 44% of Europe's palladium imports come from Russia. There are risks for oversupply, although Russia is expected to strengthen its position as world supplier.

3 COMMODITIES AND SECURITY

At great length the previous chapter described the situation for five of Russia's strategic commodities in terms of assets and the development on their respective markets. By this, the first aim of this report was fulfilled. Consequently, it is time to turn to the second aim, namely: *to discuss the complex and tangled web of political and economic issues and roles played by these strategic commodities, with special emphasis on Russia's intentions and capabilities to use commodities as security levers in its foreign relations.*

In other words, it is time to look at the political reasons for using commodity policy. This is done in three steps. Initially, Russia's political priorities, goals and notions of security are looked at. This gives an understanding of *why* energy and commodity policy might be used for other purposes and *how* it could be done. Second, a small selection of cases are scrutinised in order to find out *whether* such actions have been taken. Finally this chapter discusses a variety of dimensions and factors that are connected to the sectors mentioned above, indicating how it could be *explained* and why this analysis cannot be complete.

3.1 The Russian Notion of Security

The meaning of security is debated, and it serves no purpose to detail the academic discourse here. However, an indication of Russia's notion of security can be seen in its concepts and doctrines.[415] The Security Concept is a form of compass or a blueprint that outlines Russia's place in the international community and the priorities of the Russian Federation, which in short shows over-arching goals and its national interest. The concept is approved by the president and enjoys the status of a decree. It "[…]is a system of views on how to ensure in the Russian Federation security of the individual, society and state against external and internal threats in any aspect of life and activity. The blueprint defines the most important directions of the state policy of the Russian Federation."[416]

Concerning the general national interest, it states that: "Russia's national interests are the combined and balanced interests of the individual, society and the state in economic, domestic political, social, international, informational, military, border, ecological security. They are long-term in nature and define the main goals and strategic and short-term goals of the state's domestic and foreign policy. The national interests are secured by institutions of state authority, which may also act in coordination with public organizations operating on the basis of the constitution and legislation of the Russian Federation."[417]

There are also subsidiary concepts, such as information or foreign policy concepts that point out sectors of special importance. As the security concept, by necessity, is vague in nature and only points out the direction, a roadmap on how to reach these goals is required. This is the

[415] For an introduction to the topic, see: Leijonhielm, Jan and Nilsson, Per-Olov (2000), "Ryskt strategiskt tänkande: det ryska säkerhetskonceptet och militärdoktrinen i nya versioner", *Strategiskt forum*, no 6, April 2000.
[416] - (2000), *Russian National Security Concept 2000*, From: the Russian Permanent Representation to the Council of Europe, Internet: http://www.russiaeurope.mid.ru/RussiaEurope/russiastrat2000.html, 2004-01-05 Original: Kontseptsiia Natsionalnoi Bezopanosti Rossiiskoi Federatsii, Utvershdena, Ukazom Prezidenta, Rossiiskoi Federatsii, ot 17 dekabria 1997 g. no 1300, (v redaktsii Ukaza Prezidenta, Rossiiskoi Federatsii, ot 10 ianvaria 2000 g. no 24), From Internet: http://www.scrf.gov.ru/Documents/Decree/2000/24-1.html, 2004-01-07.
[417] - (2000), *Russian National Security Concept 2000*, From: the Russian Permanent Representation to the Council of Europe, Internet: http://www.russiaeurope.mid.ru/RussiaEurope/russiastrat2000.html, 2004-01-05.

role of doctrines, for example the military doctrine,[418] which details the strategy to be used in order to reach the goals and serve the national interest. Naturally these public documents do not account for the full strategy, but at least give an official indication of the impression Russia wants to give. Yet, a previous analysis by FOI suggests that there is a major discrepancy in the Russian notion of security. Documents, such as the ones mentioned above,[419] show adherence to a wider security agenda where everything from cultural and religious to military and territorial aspects are included. However, when it comes to prioritising, traditional security threats directed at the Russian state take much more central roles than 'soft security' relating to the Russian nation, such as religion and culture, do.[420]

Political power is, ultimately, the most important factor in this context as it controls underlying mechanisms and factors such as energy requirements, mineral sources, financial requirements, industrial demand, transportation and military requirements. The political power is even stronger in states that are not working under market mechanisms.[421] It has been said above that commodity policy nowadays basically falls within the sphere of economic security, which in turn falls within the sphere of national security and national interest. Economic security thus deserves a closer look.

3.1.1 Economic Security

Economic security also consists of many issues and has many dimensions. Therefore, the following elaborations on the topic will pin-point three issues of Russia's economic security. Together they will give an idea of the background against which Russian commodity policy must be seen.

Promoting Economic Growth

Economic growth is seen in Russia as a prerequisite for implementing its national interests, let it be by improving living conditions for the citizens or creating opportunity for further industrial development. Russia aims to increase production within the agricultural and industrial sphere, to increase exports and to make the natural monopolies of the state more efficient. Realising this is seen as a responsibility both for the state as such, and for the private sector. Attracting investments is on the top of the agenda, but unlimited foreign intervention has been seen with great scepticism. The Russian state and Russian corporations must at the end of the day control the market. Putin has moreover stated that property rights should be strengthening. When it comes to exports, industrial products are seen as more advantageous to export than commodities, as revenues from industrial output are more stable and have greater margins than revenues from the commodity sector.[422] As seen in the previous chapter, the general market development within the commodity sector is progressing only slowly, and most actions taken have actually strengthened the influence of the state and imposed limitations on the market.

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[418] - (2000), *Russian Military Doctrine 2000*, Original: Voennaia Doktrina Rossiiskoi Federatsii, Utverzhdena, Ukazom Prezidenta, Rossiiskoi Federatsii, ot 21 aprelia 2000 g. No 706, From: National Security Council of the Russian Federation http://www.scrf.gov.ru/Documents/Decree/2000/706-1.html, 2004-01-08.

[419] The most important documents are found at the website of the National Security Council of the Russian Federation, see: http://www.scrf.gov.ru/Documents/Documents.htm.

[420] Sjölund, Joakim (2002), *Ekonomisk säkerhet – till vilket pris? En studie av den ryska synen på ekonomisk säkerhet*, Stockholm: FOI, p. 50f. Analysis made on the basis of the Russian security concepts of 1997 and 1999 together with official statements.

[421] Szuprowicz, Bohdan O. (1979), *How to Avoid Strategic Mineral Shortages: Dealing with Cartels, Embargoes and Supply Disruptions*, Toronto: John Wiley and Sons, pp. 4-6.

[422] Sjölund, Joakim (2002), *Ekonomisk säkerhet – till vilket pris? En studie av den ryska synen på ekonomisk säkerhet*, Stockholm: FOI, pp. 26-29.

Extending Russian International Influence
The second economic interest concerns Russia's ambition to extend its economic reach and influence for political, not primarily economic, reasons. International economy is seen as a political tool and Russia strives to deepen its economic-institutional influence and increase its industrial exports, most notably within the arms sphere. The reason is found in the fact that there is a positive correlation between arms trade and political influence. The CIS states are the prime objects for such actions. The way of doing this is first and foremost by active trade policy and to increase the competitive edge of industrial production, partly by protection of producers.[423]

Ensuring Russia's Economic Independence
Naturally, as within all fields, Russia prefers to see a situation where it may conduct policy without interference from other actors. Economic independence is prioritised and its necessity is explained by historic factors. In the Russian view, it is therefore required that the state takes special responsibility for sectors that are considered as especially important in terms of self-sufficiency, such as the commodity sector. Exactly which commodities are especially important is not specified but a few are detailed in chapter 2. Besides this, production of groceries and food enjoy special attention. When it comes to industrial production, Russia also aims to reach parity with the most developed countries and intends to focus on military technology.[424]

The previous chapter explicitly shows that the three priorities outlined above have been central on the commodity sector. Naturally there is more to it than this, and the situation encompasses several conflicting dimensions that are discussed at greater length in the last section of this chapter, but first some tools for reducing dependence must be brought to attention.

3.1.2 Reduction of Dependence

During the Cold War, the Soviet Union pursued a global approach aimed at getting access to various resources, most notably scarce commodities. One reason was a need of resources, but also to make sure that ideological competitors were not granted access. It is within this context that theories of dependence and methods of reducing dependence grew up. A few ways to reduced dependence are listed below.[425]

1) Materials substitution
2) Alternative sources of supply
3) Development of domestic resources
4) New exploration programs
5) Antarctic and Polar resources
6) Ocean resources
7) Orbital and space resources
8) Recycling and waste recovery
9) Stockpiling

[423] Sjölund, Joakim (2002), *Ekonomisk säkerhet – till vilket pris? En studie av den ryska synen på ekonomisk säkerhet*, Stockholm: FOI, pp. 34-37.
[424] Sjölund, Joakim (2002), *Ekonomisk säkerhet – till vilket pris? En studie av den ryska synen på ekonomisk säkerhet*, Stockholm: FOI, p. 40f.
[425] For a detailed account of these methods, see: Szuprowicz, Bohdan O. (1979), *How to Avoid Strategic Mineral Shortages: Dealing with Cartels, Embargoes and Supply Disruptions*, Toronto: John Wiley and Sons, pp. 196-217.

10) Conservation programs
11) Product redesign
12) Change in environmental restrictions
13) Materials management policies
14) Investment and tax incentives
15) Special trade agreements
16) Foreign aid programs
17) Military action

Obviously, not all of these proposals make their way onto the political agenda, but as this report underscores, number 1-4 and 8-14 are ever present for the commodities discussed hitherto. If palladium becomes too expensive, consumers within the auto industry try to use platinum instead for usage in catalytic converters. If Russia exploits Georgia's dependence on Russian gas, Georgia will make great efforts to import gas from Azerbaijan. If Russian oil becomes too expensive for Ukraine, it may devote more resources to extract its own oil reserves. If the market is volatile, stockpiles are created and trade agreements are negotiated. There are also popular beliefs that military actions are taken in order to secure uninterrupted oil supply to world markets, which is something that the recent war in Iraq is said to be. In short, the importance of dependence reduction does not show any tendencies to decrease. One issue that Russia puts much emphasis on for reducing its own dependence is the strategic stockpiles, which calls for a closer look.

3.1.3 The Idea of Strategic Stocks

One central tool for handling commodity policy in relation to economic security is strategic stocks. Its rationale is found in several spheres and although Russia's approach to strategic stocks is not made public, this section will discuss some of them in a general perspective.

Rationale of Holding Stocks

Traditionally, strategic stocks were meant to guarantee access to commodity input for the military-industrial complex in times of war.[426] The US policy statement of *the Strategic and Critical Materials Stockpiling Act of 1946* states the rationale by saying: "It is the policy of the Congress and the purpose and intent of this act to provide for acquisition and retention of stocks of…materials within the United States and thereby decrease and prevent wherever possible a dangerous and costly dependence of the United States upon foreign nations for supplies of…materials in times of national emergency."[427] This rationale implies that costs of holding stocks were motivated by security reasons. In all important, the idea has been true also for Russia. Gradually, the rationale has widened and can also be seen as economically and politically motivated where the costs of holding stocks can bee seen as an insurance against future economic losses and political-social problems, such as unemployment.[428] As seen in previous chapter, this is also the case in Russia.

Types of Stocks

The stocks can be of several types, buffer, economic or military. Military stocks refer to the traditional type; that is stocks held for needs in times of national emergency so that the MIC

[426] Many definitions and approaches exist. The UK, as one example, includes its unextracted assets in the North Sea as a "strategic reserve". This difference in concepts must be noted when international comparisons are made.
[427] Szuprowicz, Bohdan O. (1979), *How to Avoid Strategic Mineral Shortages: Dealing with Cartels, Embargoes and Supply Disruptions*, Toronto: John Wiley and Sons, p. 223.
[428] Szuprowicz, Bohdan O. (1979), *How to Avoid Strategic Mineral Shortages: Dealing with Cartels, Embargoes and Supply Disruptions*, Toronto: John Wiley and Sons, p. 220f.

can operate also in wartime. The question is: for how long are the stocks supposed to last? The US initially decided three years, but later considered one to be enough.[429] Russia's stocks are supposed to last for one to two years. Economic stocks mainly concern civil materials and aim to facilitate management of market fluctuations, disrupted supply and inflation. Buffer stocks, finally, are found at corporate level to meet shortages.[430] The previous chapter showed that Russia's stocks fall within all these three categories.

Costs of Holding Stocks

However, there are reasons to believe that the costs of holding economic stocks are much higher than the additional costs of buying commodities when an industry needs it rather than when prices are low. Buffer stocks are nevertheless considered to be advantageous, as failure to produce and supply industrial products due to materials shortages may result in revenue losses. It is also possible to construct a positive tax incentive system where firms do not have to pay tax for stocks held, as was the case in Sweden during the 1970s. The alternative cost of holding stocks must also be considered. Additionally, there are costs involved in storage, maintenance and administration. When an assessment of costs was made in the US in the 1970s, the costs were divided as follows: material acquisition – 89.6%, stockpile maintenance – 8.1%, administrative costs – 1.9%, operations and machining – 0.3.[431] Costs of holding stocks have traditionally not been a crucial factor in Russia, but at several occasions, Russia has sold off stocks to get hard currency and several prominent businessmen, among them Vladimir Potanin, have called for being relieved of the economic burden that stocks actually bring about. In a rare interview, the head of the Russian authority responsible for the holding of stocks, *Rosrezerv*, declared in 2002 that the structure of Russia's strategic stocks was similar to the one used during the Soviet period and that the approximate value was about four billion USD, or roughly equivalent to the US levels[432].

Planning Problems

Some of Russia's problems concerning planning and management of stocks have been mentioned in previous chapter, but planning also involves targeting industries and companies that are supposed to use commodities in stocks and there are several other aspects that must be accounted for. Other problems are:[433]

1) Conservation of 'austerity' measures adopted by the government during wartime
2) Shifts in the composition of personal consumption expenditures
3) Investment expenditures
4) 'Material consumption ratios" measuring the physical amount of an item consumed for each output
5) Substitution possibilities for each material
6) Potential foreign suppliers of the materials
7) Political and economic reliability of foreign suppliers
8) Transportation losses

[429] Jordan, Amos A. and Kilmarx, Robert A. (1979), "Strategic Mineral Dependence: The Stockpile Dilemma", *The Washington Papers*, no 70, Washington: SAGE/CSIS, p. 45.
[430] Szuprowicz, Bohdan O. (1979), *How to Avoid Strategic Mineral Shortages: Dealing with Cartels, Embargoes and Supply Disruptions*, Toronto: John Wiley and Sons, p. 225.
[431] Szuprowicz, Bohdan O. (1979), *How to Avoid Strategic Mineral Shortages: Dealing with Cartels, Embargoes and Supply Disruptions*, Toronto: John Wiley and Sons, p. 222.
[432] *Trud*, 8 August, 2002.
[433] Jordan, Amos A. and Kilmarx, Robert A. (1979), "Strategic Mineral Dependence: The Stockpile Dilemma", *The Washington Papers*, no 70, Washington: SAGE/CSIS, p. 48.

Substitution is to some extent possible for the metals discussed, but is indeed costly and unfavourable for several reasons. Oil and gas can only be substituted in the long-run perspective and are highly dependent on transport infrastructure. Especially concerning gas, diversification of imports is impossible in the short run. When it comes to supply reliability, it is shown in this report that Russia is so far considered a reliable supplier of gas by customers in Western Europe, while CIS countries have an opposite view.

3.2 Commodities, Security and Political Reasons

Commodity policy could have several political reasons. These relate to military, social, economic and political issues and some are pinpointed below.

3.2.1 Possible Reasons

1) The *military reason* is important. The MIC has always been top priority in Russia, and will most probably continue to be so during the foreseeable future. As a result, certain commodities are considered to be strategic in nature, such as the ones discussed in this report. This poses a challenge for the state when it comes to establishing a suitable trade-off between state control and implementation of market mechanisms. Export quotas have already been mentioned, but there is an ongoing discussion on having quotas for ensuring that the MIC can function, even without having to operate under market conditions. In addition, stocks of certain metals and fuels are held both for economic and strategic reasons. The revenues from export of commodities, most notably oil and gas, are also of paramount importance for financing such things as production and procurement of military material, military reform and maintenance of equipment. Yet, money made from certain commodities are not earmarked for the MIC.

2) There might be *economic reasons* and incentives, beyond what is normal in a profit-seeking sector, for example by controlling world supply and affecting world market prices. Similarly, the state can impose laws and regulations, such as tariffs on export, in order to maximise state income from commodities. These actions become 'abnormal' when tendencies of monopolisation, expropriation and excessive control are seen.

3) There are *social reasons*. One example of this was given in the context of natural gas. Gas suppliers have occasionally been given orders from above not to terminate gas deliveries due to problems of receiving payments from its customers. The reason, beside those found within the military sphere, is that large social problems may emerge when energy and heating disappear, or when the only employer in a region is unable to operate, which causes unemployment and additional social problems.

4) There are also strictly *political reasons*. Recent examples of the relation between the regime and *Yukos* suggest that actions directed at the oligarchs easily win popular support, especially before an upcoming election.

5) One of the most important ways to use commodity policy is as a non-military tool for *foreign policy*. In the name of national interest, it can relate to several roles, for example in relation to the three goals of creating growth, reduce dependence and extending influence or just to put pressure on a state for reaching an agreement within a totally different sphere.

Since this report mainly focuses on the international dimension and Russia's international role, two points deserve further attention, first possible manipulation of world markets and, second, Russia's policy towards individual states.

3.3 Manipulation of Commodity Markets

It is known today that the Soviet Union manipulated the commodity markets on several occasions. One example was during the 1960s and 1970s when a UN resolution prohibited imports of chromium from Rhodesia. Allegedly, the USSR bought large quantities of Rhodesian chromium, despite the resolution, in order to use it domestically and was by that able to sell its own low-quality chromium to the West at a price which had increased by 188%. Another case was when the USSR bought huge quantities of cobalt from Zaire during the time of the civil war when foreign actors could not trade with Zaire. Again, the USSR resold it to the West at much higher a price.[434] Assumingly there were further cases that were never discovered and most analysts agree that manipulation of statistics were great in scale. Whether post-Soviet Russia has manipulated, or tried to manipulate, world commodity markets is difficult to say as there are several types of manipulation and the word could have several meanings. In addition, many activities are shielded from insight which prevents observers from assessing the situation. First, there is the 'legitimate' way of managing supply and export in a way that aims to maximise revenues to the state. This is occurring frequently and Russia has, at several times, tried to act 'tactically' on the market. As the palladium section shows, the attempts have also back-lashed.

Second - when it comes to 'illegitimate' manipulation, facts are missing. No in-depth analysis has been made on the topic and there are few obvious occasions of manipulation. However, this is not to say that it does not exist, but instead that if it exists, it is subtle.

The variety of actors has increased over the years and this further complicates the situation. Besides the Russian government and traditional actors on the market, new international actors have great impact. American and Japanese pension funds, just to mention one example, trade without being consumers, which in turn affects stocks and prices and destabilises the 'natural flow' of the commodities. These actors are becoming so important that their impact on stocks and price is larger than the official supply to the LME is. Additionally, the strategic stocks have occasionally been the object of organised crime, which have blurred the effects derived from official exports. The levels of this are uncertain, but it has been proven that the Russian aluminium sector in particular has had problems with organised crime. When proportions of illegal trade escalate, the risk of it affecting world markets also increases. However, this kind of illegal export is mainly directed toward individual customers and not to the spot-market. Its impact on prices is therefore very small.[435] Another similar factor is scrap metal, which often is object of criminal activities, especially smuggling and unregulated trade.

Yet, there are a few indications that could be seen in the light of manipulation. One is that the general secrecy connected to commodities has little strategic rationale today in the post-Cold War era. At the same time, it gives additional political and economic manoeuvring space when controlling supply. There are also reasons to believe that incoherent statistical information serves a purpose. As some exports are shielded from official statistics, a

[434] Jordan, Amos A. and Kilmarx, Robert A. (1979), "Strategic Mineral Dependence: The Stockpile Dilemma", *The Washington Papers*, no 70, Washington: SAGE/CSIS, p. 27f.
[435] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 42.

possibility to act outside the standard procedures also emerges. There are hence three main channels for acting on the commodity market. The first is actions on the world spot-market; the second is official bilateral deals while the third is unofficial trade and smuggling. The third type naturally poses the greatest uncertainty when commodity policy is assessed and it has also been a tool for tax evasion. As has been shown above that black market trade with export quotas is one way of avoiding taxes and tariffs. Naturally, this is facilitated if the shielded exports are of significant proportions.[436] However, it has been shown that, in the quasi-regulated market of Russia, it is not always clear whether it is the Russian state or individual companies that act, but since the anarchy of the mid-1990s, the state has regained control of the market and it is unlikely that major agreements can be closed without the approval of Moscow.

As of the year 2002, Russia's share of the world market for crude oil was almost 11%, for natural gas 22%, for aluminium 13.2%, for nickel 24.8% and for palladium 51.6%.[437] As indicated, these large shares make it possible for Russia to *affect* the markets, but not necessarily to *control* them. Affecting and controlling the oil market is naturally more difficult than the palladium market, not only because of Russia's relative share, but also because the global size and mechanisms of the oil market differ from the palladium market. Even if Russia takes actions in order to affect the market, the outcome is not necessarily what has been planned or expected. States that import a large share of their needed commodities, from Russia or elsewhere, are nonetheless highly affected such actions - even if the outcome of the actions has failed in Russia's opinion, which is worth noting when commodities are in focus.

3.4 Energy Policy against Individual States

Basically, extending Russia's influence concerns its relations to world markets and specific regions where Russia's interest is seen as important or even vital. This influence could, as seen above, be boiled down to two things, first the ability to *control*, and second the ability to *affect*. As for commodity markets, it has been shown that Russia indeed has the ability to affect the market situation, given its dominant position. Importers of Russian commodities are thus affected by changes in supply or prices. At the same time it is questionable if Russia is able to control the market, despite its relative strength. When it comes to exerting influence by commodity policy towards certain states, instead of the commodity markets as such, its outcome depends on the relative strength of the states, but also on the level of dependence and vulnerability.

Given a certain political objective, a limited number of tools are available for reaching these goals. In times of war and conflict, military means are usually used. In peacetime, however, there are but a few tools at hand. If restrictions are imposed, the options at hand are reduced further. As an example, even if using the gas tap to exert pressure on a state might prove to be effective, it also generates negative perceptions by the international community, which also may have an effect on future relations between the international actors and Russia. Therefore, Russia must, at least theoretically, consider these negative implications to be of less importance than the political objectives it aims to reach. Action can be taken either covertly or in public. If it is done covertly, the negative implications are strongly reduced. As usages of the oil tap would be obvious, major actions are hard to conduct covertly. However, it is not

[436] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 42f.
[437] See table one at the beginning of this report.

always necessary to actually take actions if *threats* of actions are enough to reach the objectives. In such a case, negative implications are reduced to only concerning the actors involved. It can thus be concluded that an opportunity for utilising commodity policy by threats exists.

The second way to use the oil or gas tap is to do it openly. The greater magnitude of such actions, the greater the negative implications become. This is especially important if it is seen in the light of attempts to operate on new markets or joining the WTO. At the same time, it must be said that Russia's striving for WTO membership is not to be characterised as a deep commitment, and it is questionable if Russia manages to enter the WTO without seriously restructuring of its commodity sectors.

It can, additionally, be assumed that only very important political objectives could provoke such actions or that the situation concerning Russia's relations with its neighbours and the international community are so bad that Russia consider the negative implications to be of only marginal importance. Russia is today dependent on the West for loans among other things, but some states are to 100% dependent on Russia, for example for natural gas, which basically makes them vulnerable.

Two things can therefore be assumed: first that energy policy to be used than metal policy and, second, that such actions are more likely to be conduced towards the CIS states rather than West Europe. The foundation of the assumption is that the effect from such action would be greatest in states largely dependent on Russia. In addition these states sometimes having an unfavourable relation to Russia. Voices are also occasionally heard that this is frequently done against some of the former Soviet republics.[438] Therefore, this report intends to review a few examples, namely the cases of Georgia, Moldova, Ukraine and The Baltics.[439]

3.4.1 Georgia

Georgia is largely dependent on foreign suppliers when it comes to energy. Around 50% of its electricity comes from Russia, while remaining needs are covered by Armenia or is produced domestically by hydropower. Domestic production is however only enough to cover needs during spring- and summer time. It has no own deposits of gas and has to rely on Russia, which has been problematic due to the constrained political relations between the states.[440] The energy infrastructure is in poor condition. It and its actors have been plagued by sabotages, strikes, murders, kidnappings, accidents, mismanagement, unfavourable weather conditions and lack of maintenance, which to some extent explains why black-outs have occurred so frequently. Only 20% of Tbilisi's residents have installed gas and the condition of the system is so poor that over 50% is wasted through leakages. This also affects electricity,

[438] For more info on the countries that transit Russia's energy,s ee: Sarna, Arkadiusz (2003), "The Oil and Gas in the 'Transit Countries' of the Former USSR", *The Resources Wealth Burden: Oil and Gas Sectors in the Former USSR*, Warsaw: OSW/CES, p. 31ff.

[439] N.B. Forms of spelling and usage of geographical names should not be seen as having a political connotation in this report. Inconsistencies in this matter are apologised for. For more information on investment climate in the CIS's energy sector or the impact of energy wealth, see: Łabuszewska, Anna (ed) (2003), *The Resource Wealth Burden: Oil and Gas Sectors in the Former USSR*, Warsaw: Ośrodek Studiów Wschodnich.

[440] For an overview of the Georgia-Russian relations, see: Nygren, Bertil (Forthcoming 2004), "Russia's Relations with Georgia under Putin: the Impact of September 11th", *Dimensions of Russian Security Policy*. Hedenskog, Jakob et al (Eds), (draft), or: Normark, Per (2001), *Russia's Policy vis-à-vis Georgia: Continuity and Change*, Stockholm: Swedish Defence Research Agency/FOI.

as 24% of Georgia's power comes from gas.[441] All energy sectors have huge problems of corruption and officials and politicians have recently come under investigation for mismanagement and embezzlement; calls for impeachment of politicians have also been heard.[442] The situation for oil is different as Georgia imports Caspian oil from Azerbaijan in addition to its own modest assets, and thus Russia has but a minor role in this sector. The well-integrated gas and electricity sectors are thus most interesting to look at.

Currently, Georgia imports less than its needs of gas, at a price between US$50-60/tcm. In 2002, it consumed 900mcm, but this was not enough to cover all needs, which resulted in cold apartments and problems within certain industries.[443] In 2003, 705.9mcm was imported by *Itera*, long the exclusive supplier to Georgia.[444] It now faces competition by *Gazprom*/*Gazexport* that in 2003 delivered 256.8mcm (of which 72.7mcm was only transit gas). Georgia has a debt of some US$100 million to *Itera*,[445] and was for a long time uneager let *Gazprom* into the market.[446] In 2003 it shifted position and signed a 25-year gas supply contract, motivating the deal with *Itera's* inability satisfactorily to supply Georgia with gas and its numerous and intentional cut-offs.[447] The rationale of *Gazprom* attempting to operate on a market with notoriously non-paying consumers can be explained by a long wish to outflank *Itera* in Georgia. To tackle this problem, *Gazexport* planned to focus its initial export to the recently acquired power station *RAO EES Rossii*, and gradually entrench its position on the market.[448] The latest blow to *Itera's* already pressured position is that *Gazprom* does not allow *Itera* to transport gas in its pipelines from Turkmenistan.[449]

A review of Georgia's energy situation during the last years reveals that Russia is gaining substantial influence over Georgia by acquiring important energy infrastructure and corporate power. Three signs of this were seen as late as in 2002-2003. First, *Gazprom* is pursuing an active strategy of acquisitions of energy grid and companies on the market step-by-step extend its control of the gas sector.[450] Second, after the *American Energy System* (AES), which partly owned the Georgian energy company *Telasi*, withdrew from Georgia, the Russian UES replaced it and thus became a monopolist in the electricity sector.[451] Third,

[441] This fact together with the integrated sectors of electricity and natural gas motivates why also electricity is mentioned in this section.
[442] Many example can be given, for one see: Tashkevich, Christina (2004), "Prosecutors to take on Energy Sector: Accident at Enguri Darkens Georgia", *The Georgian Messenger*, 21 January, 2004, p. 1, 3.
[443] Gularidze, Tea (2003), "Shah-Deniz Gas Increases Georgia's Hopes for Energy Independence", *Civil Georgia*, 31 October, 2003, Internet: http://207.218.249.154/cgi-bin/detail.pl?id=5334, 2003-11-13.
[444] - (2003), "The Gas Pipeline Remains the Most Efficient Tool of Russia's Influence in CIS and European Union", *Agency WPS*, 20 October, 2003.
[445] - (2003), "The Gas Pipeline Remains the Most Efficient Tool of Russia's Influence in CIS and European Union", *Agency WPS*, 20 October, 2003.
[446] - (2003), "Gazprom Says Shah-Deniz Project is Long-term Perspective", *Civil Georgia*, 29 September, 2003, Internet: http://www.civil.ge/cgi-bin/newspro/fullnews.cgi?newsid1064839637,81294, 2003-11-19.
[447] Arzanova, Anna (2004), "Gazprom and Itera Duke it out over Caucasus", *The Georgian Messenger*, 21 January, 2004, p. 4.
[448] - (2003), "The Gas Pipeline Remains the Most Efficient Tool of Russia's Influence in CIS and European Union", *Agency WPS*, 20 October, 2003.
[449] Alkhazashvili, M. (2004), "Gazprom Takes Root in South Caucasus", *The Georgian Messenger*, 10 February, 2004, p. 3.
[450] Sepashvili, Giorgi (2003), "Georgia-Gazprom Deal Signed", *Civil Georgia*, 25 July, 2003, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=4642, 2004-01-16, Also: Tsereteli, Mamuka (2003), "Russia Energy Expansion in Caucasus: Risk and Mitigation Strategy", *Central Asia-Caucasus Analyst*, 27 August, 2003.
[451] - (2003), "Russian Company Seals Controversial Takeover of Tbilisi Electricity Distribution", *Civil Georgia*, 8 February, 2003, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=4694, 2004-01-16.

although *Itera's* position is threatened by *Gazprom*, there are reasons to believe that *Itera* let Georgia's debt rise in order to facilitate take-over of important infrastructure, which led to the Georgian authorities losing control over the sector.[452] In this context, the question arises whether Russia has used the leverages illustrated above, for example by turning off electricity and gas in order to reach any political objectives.

Drawing on Georgian news, it can be said that during the last couple of years, electricity cut-offs, which are not deliberate often have other explanations than political ones. Most officials actually put forward the explanations outlined above rather than blaming Russia.[453] Cut-offs of gas, resulting in electrical black-outs, stand in contrast. Sabotages have occurred,[454] and deliberate cut-offs by Itera occur frequently.

However, some unexplained cut-offs have occurred at politically important occasions, according to former President Shevardnadze.[455] Often the official reason has been Georgia's debts,[456] but in the past, cut-offs seem to have coincided with special occasions, such as elections, bilateral negotiations or Russian bombardment of Georgian territory.[457] One such occasion was in January in 2001 when the Georgian-Russian relation was particularly strained and Russia attempted to halt Georgia's orientation away from Russia. At the time, Georgia implicitly supported Chechnyan guerrillas, was active in GUUAM, aspired for NATO membership and advocated the BTC-pipeline. Russia therefore took actions by imposing a unilateral visa regime, cutting off gas supply and neglecting agreements on military withdrawal.[458] In 2003, several gas cut-offs (three only during the first eight months) were made by *Itera* that claimed Georgia's non-payment as a reason.[459] It is interesting to note that Georgia and *Itera* agreed in 2002 to postpone debt payments for seven years, which would guarantee uninterrupted supply.[460] If Georgian officials and observers are to be believed, there was a clear political rationale behind these cut-offs.[461]

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[452] Bakhtadze, Revaz (2002), "Russian Energy Giant Takes over Georgian Gas Distribution System", *Civil Georgia*, 16 August, 2002, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=2490, 2004-01-16.
[453] Based on a review of articles in *Civil Georgia* 2001-2004.
[454] Gularidze, Tea (2003), "Heartwarming Putin", *Civil Georgia*, 24 January, 2003, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=3058, 2004-01-22.
[455] - (2003), "Shevardnadze Calls for 'Revising the Contract' with the U.S. Energy Company", *Civil Georgia*, 10 January 2003, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=5034, 2004-01-19.
[456] - (2003), "Itera to Cut Gas Supply to Georgia Because of Debt", *Civil Georgia*, 28 August, 2003, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=4833, 2004-01-19.
[457] Cornell, Svante E. (2001), "The Caucasus under Renewed Russian Pressure: Realities on the Ground and Geopolitical Imperiatives", *Analysis of Current Events*, vol. 13, no 3, September 2001, p. 10 and: Bakhtadze, Revaz (2002), "Russian Energy Giant Takes over Georgian Gas Distribution System", *Civil Georgia*, 16 August, 2002, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=2490, 2004-01-16.
[458] Baran, Zeyno (2001), "Georgia under Worst Pressure since Independence", *CSIS Georgia Update*, 10 January 2001, Internet: http://www.csis.org/ruseura/georgia/gaupdate_0101.htm, 2004-01-22.
[459] - (2003), "Itera to Cut Gas Supply to Georgia Because of Debt", *Civil Georgia*, 28 August, 2003, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=4833, 2004-01-19.
[460] - (2002), "Itera Agrees to Postpone Georgia's Gas Debt Payment", *Civil Georgia*, 3 December 2002, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=2820, 2004-01-22.
[461] For example of such claims, see: Jashe, Salome (2001), "Transit of Energy Resources: Guarantee for Energetic Independence", *Civil Georgia*, 31 December, 2001, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=964, 2004-01-22 and Bakhtadze, Revaz (2002), "Russian Energy Giant Takes over Georgian Gas Distribution System", *Civil Georgia*, 16 August, 2002, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=2490, 2004-01-16.

If the Georgian politicians and officials see a risk in extended influence by Russia,[462] it would be unwise to give away powers to *Itera*, *Gazprom* and UES. Yet, such a policy has been promoted by Shevardnadze. The reason can partly be found in Shevardnadze's attempts to avoid social destabilisation during cold seasons. [463] Protest rallies are common in Georgia, and gas and electricity cut-offs during wintertime indeed induce such actions. Another reason is the fact that Shevardnadze's family basically has controlled Georgia's energy sector, as Shevardnadze has appointed several officials and executives himself. In short it means that he and his family have had much to gain from such actions.[464] However, as far as electricity is concerned both Georgian officials and Russian representatives claim that the reasons of UES' actions are not political, but strictly economically motivated.[465] This position was further strengthened in early 2004, when the elected President Mikhail Saakashvili approved of further acquisitions by the UES.[466]

Against this background it is easy to understand the pivotal importance of the *South Caucasus gas pipeline* that is planned from Azerbaijan via Georgia to Turkey. The agreement on building this was reached on 30 October 2003 and in 2006 it is expected to transport some 8.4bcm per year. As a transit country, Georgia is entitled to five per cent for free each year, which corresponds to 800mcm, almost the current consumption, and another 500mcm at reduced price (US$55/tcm).[467] Another pipeline between Baku via Tbilisi to Erzerum is also planned. In short, these pipelines will enable Georgia to gasify the whole country, to strongly reduce costs for gas, and, finally and most importantly, be relieved of dependence on Russia for gas. In contrast to these two pipelines, which both enjoy the blessing of Washington, *Gazprom* and Georgia have also agreed on rehabilitating the pipelines for gas transit from Russia to Armenia and Turkey. As the profitability of these can be questioned, there are reasons to believe that geopolitical considerations are prioritised.[468] In either case, Georgia would be able to control the flow of gas by controlling the transit system and Russian cut-offs would thus also affect these countries and in the end, Russia would lose money. Hence, if gas transit from Russia via Georgia to Armenia is taken into the equation, it is difficult to see that Russia would turn the tap off for a long period of time as it would also affect their ally in the South Caucasus. However, if a pipeline between Armenia and Iran would be built – the situation changes.

[462] For example, Speaker of Parliament, Nino Burjanadze quoted in: Gularidze, Tea (2003), "Georgian Authorities, UES Chief Pledge for Cooperation", *Civil Georgia*, 7 August, 2003, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=4724, 2004-01-16 or Chairman of the Parliamentary Committee of Economy, Demur Giorkhelidze in: Sepashvili, Giorgi (2003), "Georgia-Gazprom Deal Signed", *Civil Georgia*, 25 July, 2003, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=4642, 2004-01-16.
[463] Bakhtadze, Revaz (2002), "Russian Energy Giant Takes over Georgian Gas Distribution System", *Civil Georgia*, 16 August, 2002, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=2490, 2004-01-16.
[464] Gularidze, Tea (2003), "Energy Scandals Continue as Blackouts Persist", *Civil Georgia*, 31 March, 2003, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=3430, 2004-01-22.
and - (2003), "New Energy Minister Approven", *Civil Georgia*, 15 August, 2003, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=4770, 2004-01-19.
[465] Gularidze, Tea (2003), "Georgian Authorities, UES Chief Pledge for Cooperation", *Civil Georgia*, 7 August, 2003, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=4724, 2004-01-16.
[466] - (2004), "Russia's UES Ready to Increase Investments in Georgia", *Civil Georgia*, 23 January, 2004, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=6075, 2004-01-24.
[467] Gularidze, Tea (2003), "Shah-Deniz Gas Increases Georgia's Hopes for Energy Independence", *Civil Georgia*, 31 October, 2003, Internet: http://207.218.249.154/cgi-bin/detail.pl?id=5334, 2003-11-13.
[468] Gularidze, Tea (2003), "Government Posed to Yield to the US Pressure on Gazprom Deal", *Civil Georgia*, 6 September, 2003, Internet: http://207.218.249.154/cgi-bin/eng/detail.pl?id=4354, 2004-01-16

In conclusion it can be said that Russia's acquisitions, as detailed above, are by most observers in Georgia seen as the best leverage Russia has on Georgia.[469] It is difficult to see any results of Russia's commodity policy, at least in the short run, as Georgia has continued to pursue its westward security orientation and opposed Russia's offer of security guarantees.[470] It is however clear that Russia has strengthened its energy leverage and increased its ability to influence Georgia if it so wishes.

3.4.2 Ukraine

When the USSR disintegrated, Russia found that it could not export gas or oil to the West as easily as before, due to the fact that pipelines were on territory belonging to Belarus and Ukraine which consequently imposed tariffs on the Russian transit. Indeed this decreased Russia's revenues, but it also became a two-sided leverage and eventually caused transit interruptions and led to disputes related to the future of energy relations with Ukraine.[471] Currently, the energy sector of Ukraine is in poor condition. Outdated technology and infrastructure have resulted in inefficient usage of energy. Despite a history of self-sufficiency and Ukraine's own assets of oil and gas, for example in the Azov Sea, it has become dependent on Russia and now imports some 70% of its gas and 90% of its oil from either Russia or Turkmenistan.[472] Yet, the situation in Ukraine differs from the situation in Georgia in several aspects. The electricity grid is, since an agreement in Dnipropetrovsk in 2001, connected to the Russian grid,[473] but it has been relatively spared from cut-offs. Unlike the Georgian grid, the ownership of the energy market is not solely concentrated to the state, to the US and to Russia but is instead controlled by influential financial-political groups, or clans that have strong links to prominent politicians and officials, such as President Kuchma.[474]

The Russian-Ukrainian energy relations naturally connect to the overall relations between the states, which have fluctuated between positive and negative over the years.[475] The hard security issues of nuclear weapons, the Sevastopol naval base, the status of the Azov Sea, the transit of energy and the recent construction of a Russian dike at the Kerch Strait are a few examples of issues that have filled the relations with tension over the years.[476] Russia is the strongest of the adversaries, but it is nonetheless dependent on Ukraine for transit of gas, as three pipelines carry 90% of Russia's gas exports to Europe over Ukrainian territory.[477]

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[469] For one example, see: Giragosian, Richard (2004), "Georgia's Great Expectations", *RFE/RL Newsline,* 6 January, 2004, Internet: http://www.rferl.org/newsline/2004/01/5-NOT/not-060104.asp, 2004-01-22.
[470] See chapter three in: Larsson, Robert L. (2003), *Georgia's Search for Security: An Analysis of Georgia's National Security Structures and International Cooperation*, Occasional Paper, no 1, 2003, Tbilisi: Georgian Foundation of International and Strategic Studies.
[471] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 21.
[472] Figures on import differ over time and between different sources.
[473] Woronowycz, Roman (2001), "Kuchma and Putin Meet in Dnipropetrovsk", *The Ukrainian Weekly*, no 7, vol. LXIX, 18 February, 2001, Internet: http://www.ukrweekly.com/Archive/2001/070102.shtml, 2004-01-23.
[474] Åslund, Anders (2003), "Left Behind, Ukraine's Uncertain Transformation", *The National Interest* (reposted at *Ukrayinska Pravda*), 21 October, 2003, Internet: http://www2.pravda.com.ua/en/archive/2003/october/21/1.shtml **,** 2004-01-26.
[475] See: Bukkvoll, Tor (1997), *Ukraine and European Security*, London: Royal Institute of International Affairs.
[476] See, for example: - (2003), "Kerch Strait Faces Ecological Distaster due to Russian Dike", *Public Radio News*, 27 November, 2003, Internet: http://www.news.org.ua/reports/?id_numb=1064, 2004-01-23.
[477] Makhnonos, Maryna (2002), "Ukraine and Russia Ok Gas Consortium: National Deputies of Opposition Protest Deal", *The Ukrainian Weekly*, 13 October, 2002, no 41, vol. LXX, Internet: http://www.ukrweekly.com/Archive/2002/410203.shtml, 2004-01-26.

Gazprom's position is also very strong[478] and Ukraine's financially weak position has induced problems as far as payment of imported gas is concerned. Russia and *Gazprom* claimed in 2001 that Ukraine owed between US$2-3 billion for gas,[479] but the debt was later settled at US$1.4 billion. In addition, Ukraine was accused of tapping of Russia's transit gas, but this dispute has been settled.[480] Payment in cash at international levels has been virtually impossible due to the high amounts. The situation is not much better domestically, as over 70% of the gas is paid for in barter form.[481]

Also in the case of Ukraine, a few things underscore Russia's ambition on the energy market. First, even if acquisition of infrastructure is not easily made, as privatisation of gas infrastructure is prohibited, it has not stopped *Gazprom* from attempting to gain influence by exchanging debts for infrastructure. Second, an alternative to privatisation was seen when a gas consortium was created by *Gazprom*, *Ruhrgas* and Ukraine, which obviously resulted in decreased domestic control of the sector.[482] Third, although Ukraine has tried to diversify its gas imports, it is still in the hands of Russia for two vital reasons, Russia owns the pipeline system that is supposed to transport gas from Turkmenistan and, second, Gazprom signed a contract with Turkmenistan in April 2003, entitling it to buy all gas produced in Turkmenistan for the coming 25 years. Fourth, Russia has been expected to use revenues from this deal to build pipelines bypassing Ukraine, which some analysts claim will result in total energy dependence on Russia when Ukraine's nuclear plants close.[483]

However, Ukraine does not plan to reduce its nuclear power capacity. In fact - it plans new reactors. Examples of bypassing are: *the Yamal*, *the Blue Stream* and *Suchodolnaya-Rodionovskaya pipelines*. An additional pipeline from Yamal (*Yamal 2*) to the Southern parts of Europe is also planned.[484] Additionally, problematic issues of control connected to the *Odessa-Brody pipeline* are still not solved and Russia's agenda has differed from Ukraine's when it comes to usage of the pipeline.[485] The Ukrainian government has nonetheless approved of connecting the pipeline to the Polish system,[486] and it will be used in its reverse direction.

In Ukraine, incidents related to commodity policy have coincided with Russian pressure on Ukraine over certain issues. Three occasions can be pinpointed as examples. First and most

[478] - (2003), "The Gas Pipeline Remains the Most Efficient Tool of Russia's Influence in CIS and European Union", *Agency WPS*, 20 October, 2003.
[479] Levyveld, Michael (2001), "Russia: Gazprom Claims Ukraine is Diverting Gas", *RFE/RL Newsline*, 7 June, 2001, Internet: http://www.rferl.org/features/2001/06/07062001104746.asp, 2004-01-23.
[480] - (1999), "Russia Halts Oil, Electricity Supplies to Ukraine[…]", *RFE/RL Newsline*, 13 December, 1999, Internet: http://www.rferl.org/newsline/1999/12/131299.asp, 2004-01-24, and: - (1999), "[…] while Ukraine Denies Stealing Russian Gas", *RFE/RL Newsline*, 13 December, 1999, Internet: http://www.rferl.org/newsline/1999/12/131299.asp, 2004-01-24.
[481] Maksymiuk, Jan (2000), "Ukraine's Cabinet Wants Cash for Energy", *The Ukrainian Weekly*, no 22, vol. LXVIII, May 28, 2000, Internet: http://www.ukrweekly.com/Archive/2000/220005.shtml, 2004-01-23
[482] Leijonhielm, Jan (ed), (2003), *Rysk militär förmåga i ett tioårsperspektiv: en förnyad bedömning 2002*, Stockholm: FOI, p. 78f and Hedenskog, Jakob (2004), *The Ukrainian Dilemma: Relations with Russia and the West in the Context of the 2004 Presidential Elections*, Stockholm: FOI.
[483] - "Mittelfristige Perspektiven des deutschen und europäischen Energiebedarfes (bis 2020) und die außenpolitischen Dimensionen der europäisch-russischen Energiepartnerschaft", p. 122 (draft).
[484] See the sections on oil and gas in previous chapter of this report.
[485] For information on the initial plans for the pipeline, see: Woronowycz, Roman (2002), "Odesa-Brody Pipeline awaits Oil", *The Ukrainian Weekly*, no 17, vol. LXX, 28 April, 2002, Internet: http://www.ukrweekly.com/Archive/2002/170203.shtml, 2004-01-26.
[486] - (2004), "Ukrtransnafta and Pern set up Venture for Odessa-Brody", *New Europe*, 25-31 January, 2004, p. 38.

importantly, in 1993, Russia gave Ukraine an ultimatum demandeding that it was to give up its remaining nuclear weapons to Russia in addition to transfer the Black Sea fleet to Russia.[487] One week before negotiations were to be held between Presidents Yeltsin and Kravchuk, in the city of Massandra, 25% of Ukraine's gas supply was cut-off, officially due to non-payments.[488] If Ukraine gave in to Russia's demands, the energy debt was to be annulled. Refusal would result in further cut-offs. Kravchuk initially agreed on the demands, but later changed his mind, under severe political pressure, saying that he had only agreed on examining possibilities of an agreement on the topic.[489] Second, at one time in 1995, Russia raised its export price on gas for Ukraine above world market price at the same time as it proposed that Ukraine would join the CIS Custom Union. This has been interpreted as a covert threat, but since the Customs Union never came about, the impact of the Russian attempts was nil.[490] Finally, the usage of the debt *per* se, as a tool for promoting the creation of the *Gas Consortia* gives *Gazprom* additional powers over Ukraine, which to some extent fall within this category of commodity policy.[491] It can be concluded, even if the situation differs, that similar to the case of Georgia, Russia has devoted attention to acquisition of infrastructure and has actually been rather successful, even if the situation has not been detailed here. However, when it comes to its attempts to utilise energy policy as leverage on specific occasions, the outcome has been insignificant.

As it seems, cooperation is making its way onto the agenda and a cooperation agreement between Russia, Ukraine and Germany, signed in 2002, can be seen in the light of rapprochement. The core of the agreement was that Russia would not build a pipeline trough Belarus, but would instead rely on Ukraine for transport of gas to Germany. No matter the reasons, it shows that Russia has halted its striving to bypass Ukraine in all aspects. It was also an important part of a general strategic partnership between Russia and Ukraine.[492] On 27 August 2003, an agreement was also reached between Russia and Ukraine on gas transport to Europe. Russian gas will be relieved from custom fees usually imposed by Ukraine. *Gazprom* will as a result in 2004 transport 110bcm via Ukraine to Europe, for which it pays US$109/tcm for every 1000 km transported. The Ukrainian state-owned company *Naftogaz* (*Neftegaz*) Ukraine is also guaranteed a transit of at least 24bcm at a price of US$50/tcm. This is supposed to be the payment for transit fees.[493] Development concerning energy transit in 2004 suggests that Russia becomes increasingly dependent on Ukraine as it has agreed on

[487] For details of the agreement, see: Felgenhauer, Tyler (1999), "Ukraine, Russia and the Black Sea Fleet Accords", *Woodrow Wilson Case Study,* no 2, 1999, Internet: http://www.wws.princeton.edu/~cases/papers/ukraine.html, 2004-01-23.
[488] Bukkvol, Tor (2001), "Off the Cuff Politics: Explaining Russia's Lack of a Ukraine Strategy", *Europe-Asia Studies, vol.* 53, no 8, December 2001 (reposted at *CDI Johnson's Russia List*), Internet: http://www.cdi.org/russia/johnson/6022-10.cfm , 2004-01-23.
[489] - (1993), "More Divergent Interpretations of Massandra 'Agreements'", *RFE/RL Newsline*, no 171, 7 September, 1993, (reposted at *Friends and Partners*, Internet: http://www.friends-partners.org/friends/news/omri/1993/09/930907.html, 2004-01-24 .
[490] Balmaceda, Margarita Mercedes (1998), "Gas, Oil and the Linkages between Domestic and Foreign Policies: the Case of Ukraine", *Europe-Asia Studies*, vol. 50, no 2, p. 260.
[491] Woronowycz, Roman (2002), "Ukraine, Germany and Russia Agree to Cooperate on Gas Supply", *The Ukrainian Weekly*, no 24, vol. LXX, 16 June, 2002, Internet: http://www.ukrweekly.com/Archive/2002/240208.shtml, 2003-12-10.
[492] Woronowycz, Roman (2002), "Ukraine, Germany and Russia Agree to Cooperate on Gas Supply", *The Ukrainian Weekly*, no 24, vol. LXX, 16 June, 2002, Internet: http://www.ukrweekly.com/Archive/2002/240208.shtml, 2003-12-10.
[493] - (2003), "Ryskt-ukrainskt avtal om gasexport", *Sveriges ambassad i Moskva/Utrikesdepartementet*, Diarienr 2003/45963, 3 September, 2003.

some long-term transit deals.[494] In conclusion it can be said that the situation has improved during the last couple of years, even if Russia on several occasion has tried to put pressure on Ukraine by using energy leverage in addition to attempts to gain influence within the sector.

3.4.3 Estonia, Latvia and Lithuania

Despite being separate and sovereign states, Estonia, Latvia and Lithuania share some common features when it comes to energy relations with Russia, and therefore they are treated here together. All three states have energy security as central elements of their security concepts and energy independence is something which is highly prioritised, especially when it comes to the Russian dimension.[495] Each of the Baltic states took on a strategy in the 1990s to reduce its dependence on Russia and have been remarkably successful in most cases. As an example concerning goods exports, all three states set out to reduce their dependency on Russia in the early 1990s and between 1991 and 1994, Estonia reduced its dependence (of only having Russia as a consumer) from 90% to 21%, Latvia to 29% and Lithuania to 46%. Since then, the reduction has continued even further and was as low as 7% a few years ago.[496]

Besides some modest possessions of shale oil in Estonia and crude oil in Lithuania, natural resources are missing and, as shown in the previous chapter, all are dependent on Russia for gas and oil and to some extent also for electricity. The infrastructural situation is far better than what has been the case in the states discussed above. Unlike other post-Soviet states, none of the Baltic States have built-up debts to *Gazprom*, but Russian attempts to acquire energy infrastructure nevertheless exist, although it differs in style. The business-climate in the region is positive and progressive economic development has resulted in stable economic situations in the states that consequently have been able to pay for consumed oil and gas. Unproblematic payments and a gas price between US$80-85/tcm have made *Gazprom* able to buy stakes in Baltic energy infrastructure.[497] Yet, *Gazprom* is not the only powerful Russian actor in the region; *Itera*, *Transneft*, *Yukos* and *Lukoil* also participate in the energy competition. As the market economy of the Baltic States is far more developed than for example in the Caucasus, it must be noted that there is a fine line between what is to be seen as business operations in accordance with market mechanisms and what can be seen as politically motivated actions.[498] Nonetheless, a few examples of Russian acquisitions, or attempts thereof, can be given.

The most recent example is the Latvian oil port of Ventspils at the Baltic Sea. As said in previous chapter, Russia needs shipping ports in the Baltic Sea as the port of Primorsk is plagued by thick ice in wintertime. Ventspils, the largest port in the Baltics, is therefore of interest, in this case notably for the state-owned company *Transneft*. Its strategy to attain control over Ventspils has been a blockade by staging a cut-off of oil supply to the port. This blockade has been going on since 2002 and the official reason has been that Ventspils' tariffs

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[494] - (2004), "Ukraine wants to Benefit a Russia's Expense", *RosBusinessConsulting*, 27 January, 2004, Internet: http://www.rbcnews.com/komment/komment.shtml , 2004-01-27.
[495] Svensson, Charlotte (2003), *Ekonomi och säkerhet i de baltiska staterna: en studie av relationen mellan säkerhetstänkande och ekonomiska beroenden*, Stockholm: FOI, p. 32f, 38f, 42ff.
[496] Oldberg, Ingmar (2003), *Reluctant Rapprochment: Russia and the Baltic States in the Context of NATO and EU Enlargements*, Stockholm: FOI, p. 55.
[497] - (2003), "The Gas Pipeline Remains the Most Efficient Tool of Russia's Influence in CIS and European Union", *Agency WPS*, 20 October, 2003.
[498] Stranga, Aivars (1997), "Baltic-Russian Relations: 1995-Beginning of 1997", *Small States in a Turbulent Environment: The Baltic Perspective*, Lejiņš, Atis and Ozoliņa, Žanteta (eds), Riga: Latvian Institute of International Affairs, pp. 212-217.

are too high, compared to tariffs at Primorsk.[499] Initially activities as Ventspils dropped by 99%,[500] but has over time recovered thanks to extensive oil deliveries, by railway, from Russian companies that defy *Transneft's* actions, for example *Yukos*. By spring of 2003, volumes had raised and the port handled 288,000 barrels of oil per day compared to 340,000 when *Transneft* supplied oil by pipeline.[501] Analysts claim that even if economic reasons initially motivated the blockade, it has become political and largely relates to Russia's strategy of increasing oil exports, especially at a time when the oil price is high, and controlling energy infrastructure.[502] *Transneft* states that the port must be in its control before investments can be made, but it will not participate in an open tender. Instead it awaits a direct contact from Latvian authorities. This policy is approved of by Russia but several Russian independent oil companies have objected and filed official complaints to Moscow. In addition, Latvian authorities have contacted the Commission of the EU, pointing out Russian aggressive policy as 'politically coloured', but those complaints have been met with little understanding.[503] The situation is still not completely solved.

Other examples of acquired infrastructure are *Transneft-Produkt's* investments in *Latrostrans*, the Latvian pipeline company and *Itera's* and *Gazprom's* investments in *Latvijas Gaze*.[504] *Gazprom*, in addition, owns 40% in the Estonian company *Eesti Gas* and 34% in the Lithuania's *Lietuvos Dujos*. In 2003, *Gazprom* also acquired the Kaunas heat and power station.[505] Lukoil's subsidiary company *Nikoil* has on one occasion suggested that it could link the Russian oil fields by pipeline to *Mažeikių Nafta* in Lithuania, in order to secure uninterrupted supply. *Nikoil's* self-proposed reward for this would be a mere 33% stake of the whole Lithuanian oil sector. Lithuania declined the offer.[506] Also, After several years of economic losses and political turbulence Mažeikių came under *Yukos'* control when *Yukos* bought shares from *Williams International* and by that doubled its stake in the refinery (to 53.70%).[507] This also meant that a related pipeline and the *Butinge oil terminal* fell into *Yukos'* hands. Despite Lithuania's reluctance to sell out critical infrastructure, the acquisition was seen as positive as the Russian state only owns 0.07% of *Yukos*, as 13.5% of *Lukoil*, which previously had been interested in the refinery.[508] A polish analysis underscores the tools of transit fees and "[…]informal personal and business ties between Russian companies and managers of companies in the energy sectors in these countries, dating back to the USSR

[499] Valentinas, Mite (2003), "Moscow Halts Oil Exports to Latvia's Ventspils, Seeks Ownership", *RFE/RL Special Report*, 19 January, 2003, Internet: http://www.rferl.org/features/2003/01/10012003180849.asp, 2004-01-27.
[500] Lelyveld, Michael (2003), "Moscow Seeks Takeover of Latvian Oil Port", *RFE/RL Special Report*, 12 February 2003, Internet: http://www.rferl.org/features/2003/02/12022003171518.asp, 2004-01-27.
[501] Lelyveld, Michael (2003), "Riga Fights to Maintain Control of Oil Port", *RFE/RL Special Report*, 7 March, 2003, Internet: http://www.rferl.org/features/2003/03/07032003180852.asp, 2004-01-27.
[502] Valentinas, Mite (2003), "Moscow Halts Oil Exports to Latvia's Ventspils, Seeks Ownership", *RFE/RL Special Report*, 19 January, 2003, Internet: http://www.rferl.org/features/2003/01/10012003180849.asp, 2004-01-27.
[503] Lelyveld, Michael (2003), "Moscow Seeks Takeover of Latvian Oil Port", *RFE/RL Special Report*, 12 February 2003, Internet: http://www.rferl.org/features/2003/02/12022003171518.asp, 2004-01-27.
[504] Svensson, Charlotte (2003), *Ekonomi och säkerhet i de baltiska staterna: en studie av relationen mellan säkerhetstänkande och ekonomiska beroenden*, Stockholm: FOI, p. 20.
[505] - (2003), "The Gas Pipeline Remains the Most Efficient Tool of Russia's Influence in CIS and European Union", *Agency WPS*, 20 October, 2003.
[506] Pasukeviciute, Irma and Roe, Michael (2001), "The Politics of Oil in Lithuania: Strategies after Transition", *Energy Policy*, no 29, 2001, p. 388.
[507] - (2004), "Investor Relations", *Mažeikių Nafta*, Internet: http://www.nafta.lt/en/content.php?pid=12, 2004-01-27.
[508] Lelyveld, Michael (2002), "Vilnius Faces Hard Choices in Oil Deal with Russian Company", *RFE/RL Special Report*, 20 August, 2002, Internet: http://www.rferl.org/features/2002/08/30082002155647.asp, 2004-01-27.

times, based on mutual benefits, and the presence of pro-Russian lobbies that determine the results of privatisation procedures and other key undertakings. To a smaller or greater degree, this applies to all countries in this area."[509]

As far as political reasons for commodity policy are concerned, in 1991, shortly after Lithuania's declaration of independence, Russia totally cut off energy supply in order to make a political statement on the issue. Indeed, the situation improved over time, but Lithuania was later 'penalised' by Russia for not entering the CIS, and therefore had to pay much higher price for gas than what the CIS countries had to pay. Also, supply to the Mažeikių refinery was frequently cut-off during the period of negotiations.[510] Second, simultaneously with the proposals by *Nikoil* to Mažkeikių, *Lukoil* again threatened to cut off the oil supply unless an agreement was reached.[511] A third example is the gas cut-offs that coincided with the adoption of Estonia's law on aliens, which affected the situation for the ethnic Russians living in Estonia.[512] Border disputes have also been a crucial factor in the Baltic-Russian relations that have come to encompass an energy dimension,[513] but as the Baltic states have given up territorial claims and changed laws affecting ethnic Russians in a favourable direction, Russia has lost the official rationale for such cut-offs. The most serious remaining issue consists of Russian accusations of maltreatment of Russian citizens in Latvia.

Drawing from what has been said, it is clear that the Russian actions on the Baltic markets can be characterised as an unclear mixture of sanctioned governmental policy and aggressive corporate-based market operations. Russia is in great need of access to the sea and is willing to go great lengths in order to gain control over important infrastructure. Dimensions of dependence, interdependence and independence become intertwined and although a discrepancy can be seen concerning Moscow's agenda vis-à-vis independent energy companies, Russia nevertheless managed to enhance its influence over the Baltic energy markets.

3.4.4 Moldova

The situation in Moldova resembles the situation in Ukraine or Georgia, as it is a weak and poor state in the hands of Russia. Despite close historical ties to Romania, due to ethnic kinship and language,[514] the Russian relation is still the central one. About 40% of Moldova's exports, consisting of wine, tobacco and food, go to Russia and in return Moldova imports 98% of its energy needs. Moldova's infrastructure is also in extremely poor condition. The most important issue, which overshadows the whole energy sector, is Moldova's energy debt. In 2001, Moldova owed more than US$600 million (US$500 of this debt is for Transnistria) only to *Gazprom*, and over US$861 million in total.[515] At the same time, it owed US$5

[509] Paszyc, Ewa (2003), "The Russian Energy Policy", *The Resources Wealth Burden: Oil and Gas Sectors in the Former USSR*, Warsaw: OSW/CES, p. 24.
[510] Pasukeviciute, Irma and Roe, Michael (2001), "The Politics of Oil in Lithuania: Strategies after Transition", *Energy Policy*, no 29, 2001, p. 385.
[511] Pasukeviciute, Irma and Roe, Michael (2001), "The Politics of Oil in Lithuania: Strategies after Transition", *Energy Policy*, no 29, 2001, p. 388.
[512] Oldberg, Ingmar (2003), *Reluctant Rapprochment: Russia and the Baltic States in the Context of NATO and EU Enlargements*, Stockholm: FOI, p. 51.
[513] Jarlsvik, Helén and Hagström, Eva (1996), *Ryska minoriteter i Rysslands 'nära utland': implikationer för inom- och mellanstatliga relationer i regionen*, Stockholm: FOA.
[514] Johansson, Andreas (2003), *Whither Moldova? Conflicts and Dangers in a Post-Soviet Republic*, Stockholm: FOI.
[515] Lieven, Anatol and Wallander, Celeste (2001), "Make Russia a Better Neighbor", *The New York Times,* 14 March, 2001, Internet: http://www.nytimes.com/2001/03/14/opinion/14LIEV.html, 2004-01-28.

million to the Ukrainian company *Ergoalians* and US$32 million to Romania for energy.[516] The situation improved for some time, but in mid-2003, the debt amounted to US$1.137 billion.[517] Payment for gas used recently is however not as bad as pay-off of the overall debt. If Transnistria is excluded, Moldova paid for almost 85% of consumed gas in 2003.[518]

Russian acquisitions in Moldova have occurred in the same fashion as in other post-Soviet states. However, Russia through *Gazprom* already controls the gas sector by owning over 50% of the sole gas importer and supplier - *Moldovagaz*.[519] *Gazprom* has in addition acquired several electric energy companies in order to increase its manoeuvring space in Moldova. It operates both by itself and by is subsidiary company, *Gazexport*, in the region and one advantage of that is that *Gazexport* can operate as an ordinary company. In this context it means that it can refuse to sell to non-paying customers in Moldova. As a result, Moldova has, so far, no debt to *Gazexport*, which reflects *Gazexport's* policy of only selling to customers that can pay.[520] Nonetheless, on one occasion in 1998, Moldova's government saw its debt as impossible to pay off and even planned to hand over its whole gas supply system to *Gazprom*.[521] In spite of the upcoming winter, Moldova backtracked and attempted to settle the debt by payment in agricultural barter instead, something which has been common in the case of Belarus.[522]

Also in the case of Moldova gas cut-offs and threats thereof are common. In 1998, *Gazprom* threatened to cut off Moldova's gas supply due to non-payments and a contractual dispute. As a response, Moldova threatened to cut-off the transit gas to Bulgaria, Turkey and Greece and as this would result in economic losses for Russia, the cut-off never came about.[523] If Moldova was unable to pay for consumed gas in cash, *Gazprom* would instead take over some of Moldova's energy generating systems. Analysts see a direct link between this incident and the following negotiations with Russia on the topic of Russian troops in the break-away region of Transnistria. Chişinău has no or limited control over the region and as Russia holds its hand over the territory, the problems related to it have proven to be fertile ground for the disputes between Russia and Moldova.[524]

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[516] Tomiuc, Eugen (2001), "Romania Criticizes Chişinău's Decision to Cancel Sale of Energy Networks", *RFE/RL Special Report*, 31 August, 2001, Internet: http://www.rferl.org/features/2001/08/31082001114919.asp, 2004-01-28.
[517] - (2003), "Moldova's Gas Debt Growing", *Moldova Azi*, 23 May, 2003, Internet: http://www.azi.md/news?ID=24176, 2004-01-28.
[518] - (2004), "Moldova pays for 85% of Russian Gas", *New Europe*, 22-28 February, 2004, p. 39.
[519] - (2000), "The Moldovan Energy Picture", *American Embassy in Chişinău/US Department of Commerce*, October 2000, (reposted at *Bisnis*), Internet: http://www.bisnis.doc.gov/bisnis/country/001219molden.htm, 2004-01-28.
[520] - (2003), "The Gas Pipeline Remains the Most Efficient Tool of Russia's Influence in CIS and European Union", *Agency WPS*, 20 October, 2003.
[521] - (1998), "Moldovan Government Caves in to Gazprom", *Jamestown Monitor*, no 191, vol. 4, 16 October, 1998, Internet: http://www.jamestown.org/publications_details.php?volume_id=21&issue_id=1402&article_id=14280, 2004-01-28.
[522] - (1998), "Moldova Faces Winter Showdown with Gazprom", *Jamestown Monitor*, no 185, vol. 4, 8 October, 1998, Internet: http://www.jamestown.org/publications_details.php?volume_id=21&issue_id=1396&article_id=14217, 2004-01-28.
[523] Levyveld, Michael (1998), "IMF Rescue Does Little for Gazproms Suppliers", *RFE/RL Newsline*, 23 July, 1998, (reposted at *Balkan Info*), Internet: http://www.b-info.com/places/Bulgaria/news/98-07/jul23a.rfe, 2004-01-28.
[524] - (1998), "Gazprom, Cutting Moldova Off, May Let her off the Hook", *Jamestown Monitor*, no 212, vol. 4, 16 November, 1998, Internet:

In the winter of 1999, also, Gazprom cut off gas supply to Moldova while claiming Moldova's continuously rising debt as a reason.[525] The same thing happened in February 2000.[526] Not much evidence has been seen about Russia putting forward any particular political demands in relation to the aforementioned cut-offs, but most observers generally believe that issues such as the Russian base, the situation for the Russian ethnic minority and Russia's energy strategy of gaining influences, play important roles and guide *Gazprom's* actions. Moldova's debt also officially legitimises the cut-offs. Hence, a case in point is Transnistria, which has close links to Russia.[527] During the cut-offs mentioned above, Transnistria has received gas all the time, which has raised doubts on the economic reasons for Russia's and *Gazprom's* actions. The official explanation given was that the configuration of the pipeline system makes cut-offs of Transnistria impossible without also affecting supply to states like Romania and Bulgaria; something which Russia most often refrains from doing.[528] Assumingly, this is true, but it also enhances the room for Russia to put pressure on Moldova, claiming the debt as a reason. Simultaneously it avoids possible negative effects deriving from the action taken.

Finally, it must be noted that Russia faces competition when it comes to aspirations of ownership of energy infrastructure. Moldova has for example sold off two of its electricity networks to Ukraine, and Romanian companies have also showed interest in taking over Moldovan companies and networks. President Voronin of Moldova also sees Romania as a possible alternative to Russia when it comes to diversifying energy imports.[529] Kazakhstan is another option for reducing Russia's influence, and negotiations on cooperation were initiated in 2003.[530] The debt remains the key issue, but Moldova seems to focus on payments, both at individual and state level, and it is doubtful to what extent it is able to diversify its energy imports.

3.4.5 Long Run and Short Run Energy Policy

The examination of the cases above is far from thorough and it would be exaggregated to say that the full picture is given. A selection of cases is a natural delimitation, but lack of complete and reliable information also makes analysis difficult. Firm conclusions of what Russia has or has not done, in the context of commodity policy, are somewhat difficult to draw. It is interesting to note that the findings concerning *Gazprom's* actions are almost identical to those found by the *Centre for Eastern Studies* in Warsaw. In a report from late 2003, it concludes that a change has occurred. A few years ago, *Gazprom's* action were characterised as 'unscrupulous', when a large series of gas cut-off, for example in Bulgaria, were made. In addition *Gazprom* drove local companies into debts with the purpose to take

http://www.jamestown.org/publications_details.php?volume_id=21&issue_id=1423&article_id=14496, 2004-01-28.

[525] Johansson, Andreas (2003), *Whither Moldova? Conflicts and Dangers in a Post-Soviet Republic*, Stockholm: FOI, p. 29.

[526] - (2000), "Russia Halts Gas Supply to Moldova", *Moldova Azi*, 25 February, 2000, Internet: http://www.azi.md/news?ID=2749, 2004-01-28.

[527] See: Gribincea, Mihai (2001), *The Russian Policy on Military Bases: Georgia and Moldova*, Oradea: Cognito Publishing House, 2nd ed.

[528] - (2000), "The Moldovan Energy Picture", *American Embassy in Chişinău/US Department of Commerce*, October 2000, (reposted at *Bisnis*), Internet: http://www.bisnis.doc.gov/bisnis/country/001219molden.htm, 2004-01-28.

[529] Tomiuc, Eugen (2001), "Romania Criticizes Chişinău's Decision to Cancel Sale of Energy Networks", *RFE/RL Special Report*, 31 August, 2001, Internet: http://www.rferl.org/features/2001/08/31082001114919.asp, 2004-01-28.

[530] - (2003), "Moldova Seeks to Import Natural Gas from Kazakhstan", *Moldova Azi*, 15 September, 2003, Internet: http://www.azi.md/news?ID=25785, 2004-01-28.

them over as repayments. Furthermore, it concludes that gas blackmail now exclusively is done against insolvent customers. *Gazprom* today utilises the market framework by exploiting term of contracts, for example. In addition, it relies on informal lobbies and networks.[531]

The research for this report generates two important results. First, by drawing on the cases above it can be concluded that commodity policy takes two forms - short run and long run. Short-run commodity policy for political reasons is most difficult to verify for an external observer. It encompasses policy used on single occasions, such as using the gas tap, or threats thereof during bilateral negotiations, just to mention one example. True, only a few clear and coherent evidence of Russia taking such measures has been given above, but everything points in that direction and analysts as well as officials involved state that this is the case. It can therefore be said that to the extent it exists, it is rather subtle. It can further be said that debts to Russia play an important role, which officially legitimises some of cut-offs, at least in the Russian view. Another conclusion is that none of the Russian 'demands' or issues on the agenda that have been raised in connection any particular occasion of energy cut-off, has been realised, as far as is known. This shows that energy policy as a foreign policy tool is very blunt. At 'best' it can be a factor of annoyance.

By contrast, long-run commodity policy is clearly and frequently being used by Russia for political reasons and it takes many forms. Two contradictory processes are evolving in the former Soviet space. Russia as a state and Russian firms attempt to attain control over important infrastructure, for example energy grids, refineries and ports. The more successful Russia is in this aspect, the more influence it gets and the less dependent it becomes. These are two core goals concerning economic security and national interest for Russia. At the same time, neighbouring states attempt to reduce their dependence on Russia by building parallel structures, such as ports that Russia does not control. Yet, the general conclusion must be that Russia, step-by-step and according to its general strategy increases its capacity to use the energy lever. Russian dependence on transit and usage of energy companies that operate independently are the only main factors of inertia in this context.

The second important result is that both the cases above and the whole of the previous chapter give indications of how Russian commodity policy can be understood and what infringes on this understanding. The following section therefore aims to sum up some of the indications that have been identified hitherto.

3.5 Understanding Russian Commodity Policy

It cannot be stressed enough that the purpose of the following section is not to point out facts or give an explanation to the individual cases above. This study makes no claim, what so ever to give a full picture or attempt to speculate on the magnitude of its importance. Instead the aim of this section is twofold. First, it is a way to facilitate understanding of interrelated issues and outline the complexity of the Russian commodity sector. Second, even if these issues are often obvious and logical they are not seldom also contradictory and elusive, which are key reasons why analysis is difficult. Therefore, the second aim is to highlight areas of uncertainty in this analysis. These aspects can be divided into three broad dimensions, here labelled: 'mental', 'political-economic' and 'structural'.

[531] Paszyc, Ewa (2003), "The Russian Energy Policy", *The Resources Wealth Burden: Oil and Gas Sectors in the Former USSR*, Warsaw: OSW/CES, p. 22.

3.5.1 'Mental Dimensions'

'Mental dimensions' here refers to abstract issues that not are easy to pin-point but that implicitly and to an uncertain degree have an impact on the whole situation in a state. The commodity sector also has elements of this.

Nationalism and Culture

Russia is a country where its historical experiences play an important role. Much has been said about Russia's history and it stands clear that isolationism and autarky always have been central elements. External threats have strengthened the view that self-sufficiency is necessary. Some analysts argue that in times of troubles, the Russian nation[532] has turned to what is believed to be 'genuinely' Russian values in order to seek unity. The Russian Orthodox Church, the land and forests have been mentioned as examples by various scholars.[533] Therefore, the land and territory and what comes from them become symbols that there might be a reluctance to 'sell out'. This can be seen in two things discussed in this report: First when it comes to giving foreign companies exclusive concession rights of oil, and second, concerning sell-offs of palladium from strategic stocks.

Strategic Stocks

Russia's policy of managing its strategic stocks is not made public, but it is a key issue for its actions on the market.[534] The Soviet Union had a strict approach to its stock of metals, but sell-offs of during the troublesome 1990s, where some ingots or bullions had old markings, bear witness of the change in approach. Judging from what has been said in previous chapter, it can be assumed that Russia has let go of the strict policy of the Soviet era, but still sees a minimum level of stocks of strategic commodities as essential.[535]

Market Psychology

It goes without saying that psychology is a strong factor in a market economy. The value of stocks, options, shares and futures are measured both by objective factors and the subjective factors of expectations. For Russia, this has little impact domestically, for example when it comes to natural gas, as that market is controlled by the state. In contrast, on the international spot market where palladium and nickel are traded, psychology has great impact. Rumours from *Norilsk Nickel*, *Gosbank* or *Gokhran* concerning sell-off from strategic stocks have an immediate effect on palladium prices. Russia's approach to using this, and thus also the Russian approach to using its strategic stocks for political and economic reasons, sheds light on the topic. Regretfully, if a clear and formulated approach exists, it is not made public.

In addition to Russia's actions on the commodity markets, there are other aspects of perception. No matter if Russia uses energy cut-offs for foreign policy purposes or not, it nonetheless has an impact. It is a well-known fact that political actions not always are based on the true nature of things, but also on how they are perceived.[536] Thus, even if Russia is

[532] For a thorough discussion on the creation of the Russian nation, see: Hosking, Geoffery (2003), *Ryssland: folk och imperium 1552-1917*, Lund: Historiska media.

[533] See, for example: Kochan, Lionel and Abraham, Richard (1999), *The Making of Modern Russia*, 2nd ed, London: Macmillan, and concerning the Russian conception of its territory: Trenin, Dmitri (2002), *The End of Eurasia: Russia on the Border between Geopolitics and Globalization*, Washington D.C.: Carnegie Endowment for International Peace.

[534] A general discussion on the idea of strategic stocks is found earlier in this chapter.

[535] Leijonhielm, Jan (1998), *De ryska råvarornas roll på världsmarknaden: en studie för ÖCB av FOA*, Stockholm: FOA, (unpublished), p. 42f.

[536] As an example, see: Jervis, Robert (1979), *Perception and Misperception in International Politics*, Princeton: Princeton University Press.

'innocent' of what it is accused of, there might be common beliefs that it is not, for example by people in Georgia eager to find a scapegoat in the traditional enemy. These perceptions are hence acted upon and constitute the foundation for further action, reaction and interaction. Russia must therefore be aware of this issue and the signals it submits, on the spot market and towards individual states and organisations.

Security, Dependence, Independence and Interdependence
One fundamental mental aspect is the notion of national interest and the security related to it. What is more important for this study; however, are not the details, but the aggregated approach to security. It has been said that Russia focuses on what can be called traditional, or modern, security at a time when most states adheres to a post-modern agenda. Globalisation and integration projects, such as the European Union, show that territory is not always the most important aspect of security. Discrepancies in view, like this one, become important when Russia moves closer to international organisations and by commodity trade integrates into western economies. This is closely linked to the concepts of independence and interdependence. As shown, it is clear that Russia puts strong emphasis on independence in political as well as economic contexts, and this brings along a dilemma. Integration in international structures and economies by necessity brings along elements of interdependence. As it seems, Russia is reluctant to acknowledge this, which makes its behaviour somewhat contradictory. This is shown in Russia's manoeuvring around the issue of WTO accession and the politics surrounding the pipeline diplomacy in the case of Ukraine.

Internationalisation
Internationalisation is something which connects to the issues discussed above. Russia has several peculiarities, stemming from its historic legacy that reaches from the ancient Rus, via the Mongol Yoke and Tsars to the Soviet empire. Most states have such peculiarities but it becomes a problem only when they stand in conflict to international norms and regulations. Russia holds several of these and since its political agenda stipulates subjugation of international norms to national interests, a limitation to what is possible to achieve in terms of integration emerges. Introduction of mechanisms for reducing political and economic risks by Tax-Royalty Agreements and Producing Sharing Agreements is one example of this. Together with ideas of independence and autarky, tendencies of political aversion towards internationalisation under market conditions are visible. International pressure bears witness of the dilemma Russia is facing. Struggling with this dilemma is one of the explanations behind the fact that Russia has in several ways entrenched its position in the middle of a transition period from command economy to market economy in the same way as the democratic development has come to a halt and reversed after a decade of progress.

3.5.2 'Political-Economic Dimensions'

Political-economic dimensions primarily refer to the politics encapsulating commodity policy, but also to the mechanisms of a market economy.

Marketisation
Russia is slowly undergoing a process of marketisation as a step towards creating a full-fledged market economy. Currently, this process lacks real momentum,[537] and today the Russian commodity sector, as seen in previous chapter, operates under a strange mixture of market and command economy. It has seriously infringed on Russia's ability to attract foreign

[537] See: Leijonhielm, Jan (ed), (2003), *Rysk militär förmåga i ett tioårsperspektiv: en förnyad bedömning 2002*, Stockholm: FOI, pp. 89-99.

capital, but also on its ability to operate on the international commodity markets. A political reluctance to privatisations can be seen, especially in the natural gas sector. The fundamental aspect of privatisation and marketisation is transfer of power to entities that operate under other premises than a state-controlled command structure does. This power also relates to freedoms of action and choice. Although such a process exists, after a few years of virtual anarchy in the beginning of the 1990s, the state refuses to give up all the powers that should be given up if a market economy is to be implemented. This is seen in the strict control imposed by tariffs, taxes, concession rights and quotas, which explain some of the peculiarities of the Russian commodity market. Another sign is the attack on *Yukos* and efforts to transfer parts of the energy company UES to state ownership in 2004. Domestic pricing is another aspect that previous chapters tell of.

During the early and mid-1990s, and even today to some extent, Russia lacked laws and regulations necessary for a market economy to work. In combination with what has been called 'predatory capitalism',[538] a legal grey zone was created that has proven to be fertile ground for open conflict between the state and private companies. No matter if these conflicts have their roots in general illegal activities, economic crimes or politics, it leaves room for interpretation, which can be used to legitimise political actions that infringe on the freedom of the market mechanisms Russia actually has managed to create. The jailing of Khodorkovsky in 2003, which still is not completely solved, is a striking example. At one time, even such actions as expropriation were proposed.[539]

Party and Governmental Politics
It cannot be ruled out that party politics or actions to gain popular support prior to an election play a role also in this context. Domestic and international press pointed out this as an obvious rationale for the arrest of Khodorkovsky. The aspect of commodities as national symbols becomes important when political discussions are held on topics of giving up control to foreign enterprises. If statistics on commodities are manipulated, changed or forged, there might also be political reasons behind it.

Geopolitics and Power Policy
Power policy and its multi-facetted characteristics could also give some understanding of commodity policy. Factors of geography are difficult to avoid when conducting commodity policy. If short-run commodity policy is used for political reasons, for example in the disguise of pipeline diplomacy, it can be expected that the politics around it must be understood in order to grasp the complexity of the issue. One example of this are the bilateral negotiations held by Russia and Ukraine on the topic of energy policy and the status of Sevastopol or the Azov Sea. Even if full insight into the negotiations would be given, it is not for certain that the full picture emerges. Academic research often shows that many premises are shielded from insight and explanations can be found at several levels.[540]

3.5.3 'Structural Dimensions'

Structural dimensions refer to issues that give an understanding of commodity policy on the basis of webs of relations and the structure in which the policy is formed.[541]

[538] Hedlund, Stefan (1999), *Russia's 'Market' Economy: A Bad Case of Predatory Capitalism*, London: UCL
[539] The progess of the trial can be seen at: http://www.khodorkovskytrial.com/ .
[540] For one example of the fact that explanations of political phenomena can be found at several levels, see: Allison, Graham T. (1999), *Essence of Decision: Explaining the Cuban Missile Crisis*, New York: Longman.
[541] The academic structure and agency discourse has evolved during decades within the political science discipline. It encompasses numerous dimensions and aspects, but this is not the place to discuss it further.

Criminal Structures and Vladimir Putin

The role played by organised criminal structures is larger that what it first seems, even if it is not the focus of this report. The metal industry is notorious for its connection to various structures, especially when it comes to trade and smuggling of scrap metals. Naturally, many criminal structures are local or regional and cannot affect the whole sector. However, by controlling certain bottlenecks, they enjoy great powers that even state structures must act in symbiosis with. One frequently mentioned example is the Tambov maffia that operates in S:t Petersburg. Some sources claim that there are connection between these groupings, the companies *Surgutneftegaz* and *Kineks* (that basically controls the flow of oil and petrochemical products in S:t Petersburg) and Vladimir Putin himself.[542]

Many allegations of Putin's misdeeds and involvement in corruption during his time in S:t Petersburg exist. One of the most important ones in this context is related to natural resources. During the 1990s, Putin was involved in distributing licences to export natural resources and precious metals. At one time, a group of lawmakers, deputies from the Lensovet, under the direction of Marina Saliye and Yuri Gladkov, undertook an investigation of Putin that resulted in accusations of corruption and misuse of power. Among other things, they found an episode of Putin granting export licensing in return for shipments of food that never arrived. The commission advised Anatoly Sobchak to release Putin from his duties.[543] These examples show that an understanding of Russia's commodity policy lies beyond what can be read in the energy strategy.

Connections between Actors

The roles of the actors on the commodity markets are often a mixture of several roles. The state itself manages the sector and completely controls some of the actors, for example *Gazprom* on the regulated gas market and *Rosneft* on the deregulated oil market. In addition, it owns shares in other companies, controls the energy grid and cooperates with private actors such as *Norilsk Nickel*, although most states have elements of this mixture of roles. It becomes problematic when opposing views regarding the ends and means of commodity policy emerge. As an example, *Gazprom* has the burden of being a state tool to a greater extent than *Itera* does, as it must provide non-paying customers with gas. Having this limitation at the same time as it is supposed to make profit naturally puts it in an awkward position, which partly explains why it hinges on the border to bankruptcy.

It can also be said that several individuals have pivotal roles in the commodity sector, both on the political side and in the private sphere, such as the powerful energy oligarchs or the leaders of *Norilsk Nickel* and *RusAl*. Complex ownership structures and mixtures of command economy and market forces give room for alliances between the actors. Self-interests that stand in contradiction to public policy can therefore create shadow structures and relations of both an active and passive nature. One example, given in the previous chapter, shows that when the central governmental decided that some firms cannot have its natural gas disconnected for non-payments, either for social or military reasons, a black market was created, in this case in such way that a 'non-disconnectable' firm sold or gave gas to other companies, to which they had a special relation.

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[542] See: Kirillov, Denis and Vaysberg, Valeriy (2004), "Svoj sredi chuzjikh, chuzjoy sredi svoikh: O prezidenta est ne tolko novoye pravitelstvo, no i starie druzya po neftyanomi biznesi", *Russkiy Fokus/Kompromat,* 3 January 2004, internet: http://www.compromat.ru/main/putin/druzya.htm, 2004-10-01.

[543] - (2000), "Too Hot to Handle: About the Secret Dossier of Putin's Criminal Misdeeds", *The Exile*, 9 November, 2000, resposted at *Johnson's Russia List/CDI*, 10 November, 2000, internet: http://www.cdi.org/russia/johnson/4630.html##4, 2004-10-05.

Bureaucratic Structures

The Russian bureaucracy, its powers, inertia, corruption, self-interests and structure undoubtedly plays significant roles in especially two spheres that are of central importance here. Concerning energy, several institutions share the responsibility of the sector (se the chapter on oil for further explanations). The *Ministry for Energy* is naturally the one responsible for the whole sector, while the FEK that is in charge of tariffs and regulations. MVK controls access to shipping ports, pipeline permits and export by granting access to firms wishing to export oil. In addition, there is the CDU, which is the governmental unit for fuel and energy. Another sphere, concerning the management of strategic stocks is the relations between the *Russian Central Bank - Gosbank*,[544] the *Gokhran* of the *Ministry of Finance*[545] and the *Rosrezerv*[546] that controls the general strategic reserves. These structures, their agendas, regulations, organisational competition, composition and corruption must be taken into consideration if Russia's commodity policy is to be understood.

'Rogue Policy'

It has been briefly touched upon that local and regional political leaders as well as corporate leaders can have the powers to conduct commodity policy that stands in contrast to what has been granted by Moscow. This falls into the general problems of centre-periphery relations in Russia. It can also be stressed that, as in the case in the region of Taymyr, that when the head of the main employer in the region – *Norilsk Nickel*, also became governor, the manoeuvring space on the commodity market dramatically increases for him as the actor in control. This shows that the Russian central regime does not even have control of the domestic sector and therefore all actions on the market that seem to be conducted in the name of the state in fact may be grounded in the corporate or even private spheres. This kind of behaviour is more commonly found in the commodity sector than in other sectors, and the base metal sector to a notable extent had elements of 'rogue actions'. Regional leaders have for example been found making contracts with foreign states and multinational companies without approval from Moscow.

Moreover, there is a similar tendency of corporate foreign policy that is not geographically bound. It has been said before that the *United Energy System* and *Gazprom* have central roles in Russian foreign policy, but recently *Lukoil* has challenged them as key players in the foreign policy field. One typical incident was in early 2004, when *Lukoil* announced that it would invest huge sums in the energy sector in Kazakhstan. This became something that Russia as a state could use in the negotiations that followed, which symbolises the attempts to gain control over its neighbouring states by further integration. Another aspect is *Lukoil's* involvement in the post-war Iraqi oil sector.

[544] For more information, see Gosbank web site: http://www.cbr.ru/ .
[545] For more information, see Gokhran web site: http://www.gokhran.ru/ .
[546] For more information, see Rosrezerv web site: http://www.rosreserv.ru/ (Note the spelling of the web-site)

3.5.4 Additional Factors

Again, as commodity policy has two faces, one shortrun and one longrun, each of these also has peculiarities that shed light on the commodity sector.

Shortrun Factors

When it comes to shortrun factors affecting the commodity market, one notable factor is seasonal effects. Energy needs naturally differ depending on season, which means at least two things. First, domestic and international markets demand large quantities of oil and gas and Russian energy suppliers are in a strong position. Second, states that depend on Russia for energy and gas are even more vulnerable for pressure by commodity policy. Moreover, the metal sector also has seasonal effects. Extraction and demand aside, transport is also difficult during wintertime. As one example, *Norilsk Nickel* supplies the world market by shipments from the port of Dudinka in the Russian north. In wintertime, the port is frozen, and cold winters or flooding in the spring delay spring-time shipments, which has a clear impact on world supply and therefore also prices.

Longrun Factors

Long run factors affecting the commodity sector are numerous and developments in important regions are of paramount importance. China and South-East Asia energy needs will increase, as does the US and European need. The situation in the Middle East and the American position will also influence the situation. Russia is faced with the problem of handling and taking advantage of this situation. There are also environmental factors to consider, even if these are given little attention today. However, if Russia is to integrate into European structures, measures need to be taken. By Russia's strengthened position concerning infrastructure in the south-western parts of the former Soviet territory, it is clear that Russia reaches the dependent states of Eastern Europe via a back door and thus establishes a base for further expansions. This receives less attention than the northern dimension in the European energy debate.

This relates to an additional point, which is technological evolution. True, technology for improving the Russian commodity sector already exists today, although funds are needed. Another leap could facilitate usage of energy saving in the industrial sphere and facilitate extraction, production and transport. One example is Liquied Natural Gas (LNG). In the long perspective, it has been discussed whether Russia runs the risk of getting the 'Dutch Disease'. As it seems, Russia runs this risk, but analyses made suggest that focus on natural resources *per se* does not render any problems. Instead, the general economic and political developments are most important.[547] The above analysis nonetheless suggest that Russia has to restructure much of its commodity sector and make sure sustainable development is created, which includes moving away from raw material exports dependence.

3.6 Suggestions for Further Research

As indicated in the introduction, this report refrains from coving all aspects of Russia's commodity and policy. A few things have been found to deserve further attention. These suggestions include: 1) the geostrategic dimension and international energy relations in Eurasia, which includes pipeline diplomacy, 2) more cases of Russia's usage of the energy

[547] Åslund, Anders (2004), "Russia's 'Curse'", *Moscow Times*, 16 January, 2004, Internet: http://www.moscowtimes.ru/stories/2004/01/16/006.html, 2004-01-30, Aslo see: Paczyński, Wojciech (2003), "Oil and Gas Wealth: the Impact on Development Prospects of CIS Countries", *The Resources Wealth Burden: Oil and Gas Sectors in the Former USSR*, Warsaw: OSW/CES, p. 50ff.

lever, 3) several other commodities and their roles, 4) the financial impact on spot markets by Russian metals, 5) Russia's attempts to navigate between OPEC, the US, China and the EU, 6) analysis at micro level in order to reveal which firms/sectors are affected by Russia's actions, 7) a review of occasions where Russia has imposed sanctions against some state and whether it is possible to utilise energy and metal trade for this reason, 8) a comparative analysis of Russia's actions and other major energy and metals suppliers, and finally and most important 9) a security analysis of individual states', for example of Sweden's, dependence and relations on and to Russia.

3.7 Conclusions on Commodity and Security Policy

In its energy strategy, Russia states that it aims to utilise energy policy for security purposes. This idea connects to the general notion of security striving, by non-military means, to extend Russia's influence abroad, to secure its independence and create growth. The analysis made here on Russia's hydrocarbons and non-ferrous metals, confirms that Russia is true to its statement.

The previous chapter shows that state control over the individual sectors is strong. This facilitates usage of the energy and metal levers when conducting both domestic and foreign policy. The political rationale for doing so is found in several spheres, for example the political, economic, financial, security, social and military ones.

Explanations of policy are found to be complex and encompassing multiple levels, reaching from nationalism and the collective perception of Russia as a great power to individual actors, their connections and priorities.

Due to Russia's actions on the non-ferrous metals markets, claims of manipulation or dubious behaviour have been heard. Hard evidence is missing, but its impact on the markets is substantial. No clear cases of Russian attempts to cut of gas to the West have been seen, but a review of cases in Georgia, Ukraine, Moldova, Estonia, Latvia and Lithuania shows at least six things.

First, Russia has, by turning off oil or gas on several occasions, tried to use the energy weapon against the states listed above with the aim to reach a policy goal that has varied depending on the occasion, for example in order to enforce concessions in ongoing negotiations.

Second, Russia has in all important failed to reach its goals by using the energy tool. In addition, several negative effects have been visible, both in economic and political terms as well as concerning perceptions of Russia. This has not prevented Russia from renewed attempts. As it seems, actions today are first and foremost directed at insolvent customers. This has partly legitimised actions, but evidence point to other reasons as well.

Third, it not always is clear whether it is solely private firms or Kremlin's wish that are behind these actions. It is clear, however, that most often priorities are the same and that minor actions on the market are taken care of by firms, while strategic issues are decided by the Russian state.

Four, and most importantly, Russia's has a long-term strategy of reintegrating the former Soviet space with Russia once again. Russia does not conquer, but acts, directly or via state-owned or state-controlled (or semi-controlled firms), under market conditions. Infrastructure

is a means for doing so. Investments, hostile take-overs, acquisitions and joint ventures are made either according to market mechanisms or under political and economic pressure, for example oil and gas cut-offs.

Five, transport systems for energy carriers, such as pipelines and ports, are the single most important tools Russia has and wants to have in an energy/security context. By that it has strengthened (and continuously attempts to strengthen) its capacity to control energy transport and transit even further, resulting in improved security levers both on the CIS and on Europe, as well as in other places.

Finally, as a consequence, dependent states become even more dependent on Russia. Russia may have failed in reaching short-term policy goals by its energy policy, but its over-arching strategy is slowly but steadily being fulfilled. Long-term contracts, for example with Turkmenistan, have been realised. Infrastructure of significant importance in most states have been acquired, by formal and dubious means. Russia has retained its transit monopoly in most cases. Reserves also within the CIS have been brought within Moscow's reach, for example in Kazakhstan. The importance of foreign states, such as the Baltic states, as transit countries for Russian energy has been decreased. True, the policy has backfired, for example the relations with Ukraine and Belarus have been much less successful, and new pipelines are built bypassing Russia. In conclusion, Russia is not strong enough to fully control neither states nor the energy sectors. But it can strongly affect them, as their dependence on Russia continuously grows.

4 CONCLUSIONS AT AGGREGATED LEVEL

As said above, the *objective* of this study is to shed light on Russia's situation concerning commodities and raw material in a broad perspective. Consequently, the *first aim* was to canvass the situation of the past, present and near future concerning Russian production, consumption, possessions of reserves and export volumes for the strategic commodities: crude oil, natural gas, aluminium, nickel and palladium. The *second aim* was to assess and discuss the complex and tangled web of political and economic issues and roles played by these strategic commodities, with a special emphasis on Russia's intentions and capabilities to use commodities as security levers in its foreign relations.

Conclusions concerning the individual commodities are found in sections 2.4.7, 2.5.7, 2.6.7, 2.7.7 and 2.8.7 while some conclusions concerning the cases of Russia's usage of the energy lever are found in section 3.7. Thus, while avoiding a reiteration of what has been said so far, it is time to pin-point the *aggregated* findings of this study.

4.1 Conclusions Common for all Commodities

1) First it can be said that of all the issues pinpointed below, *all but a few have existed in one form or another since 1991*, which is something previous work by FOA/FOI bears witness of. This means that developments since early 1998 have not been revolutionary but have evolved along the same lines as before, despite the severe financial crisis in mid-1998. The commodity sectors are thus battling against the same foes as before, but on a more stable ground, even if differences between the sectors exist.

2) Concerning *costs*, obsolete technology and extraction techniques not only pose an efficiency problem for the commodity sector but are also one of the key factors behind the rising costs. In relation to this, costs of input, most notably for energy, are increasing and gradually reducing Russia's competitive advantages within the energy and metal sectors.

3) *New infrastructure is required*, which demands major investments. The process has started, but is slow and so far insufficient. Awareness of the the needs, however, exists but lack of funding is the key obstacle. Occasionally, political and corporate forces set their priorities differently, for example concerning pipeline routes, which is something that prevents crucial infrastructure projects being realised.

4) *The metal content of extracted ore is less than it used to be*, which partly connects to problems of obsolete technology. Mines and alluvial sites are becoming depleted and extraction has to take place in deep shafts, which is costly. Similarly, newly prospected oil and gas fields contain relatively small amounts of hydrocarbons compared to those found in the 1980s. However, this trend is the same as for explorations conducted in Norway and the North Sea, to mention just two examples.

5) *Aggregated trends are similar for all commodities*. Production declined during the 1990s compared to the Soviet period, but is now increasing again. Domestic consumption also fell dramatically, and has not yet completely recovered. Exports are mainly directed towards the West instead of towards the CIS countries. This development is, naturally, linked to both domestic and international processes at large. The Yeltsin era was characterised by financial crises, unclear policies, and laws and regulations that resulted in a lack of control of the commodity sector. As the situation improved, and Putin became president, stability was enhanced and the anarchical development came to a halt.

6) The commodity sector is facing and causing severe *environmental problems* that receive little attention. Yet the reduction of energy waste is making its way onto the agenda, mostly thanks to the possibilities of saving money. In addition, the environmental safety of pipelines is being prioritised and is considered to be successful by international standards.

7) *New laws are required* if the commodity market is to work properly. The needs relate to everything from laws concerning corporate finance and export quotas to general improvements of the investment climate and taxation.

8) The *strategic aspect* of strategic commodities is both increasing and decreasing. This means that the high level of secrecy connected to data on certain strategic metals - in this report most notably palladium - is gradually decreasing, and the current trend also points to greater transparency. The strategic stock, or reserves, have had the function of buffers in case of crises and war, but are now taking on a role as a tool for operating on the commodity market. The geo-strategic aspect of energy is still at the top of the agenda and this report shows its importance, in particular in relations between Russia and former Soviet republics.

4.2 Conclusions at Aggregated Policy Level

As indicated in the first chapter of this report, the two key issues in the context of security and commodities are *capacity* and *intentions*.

4.2.1 Russia's Capacity

Russia remains strong on the commodity markets. This fact thus becomes both a rationale for the report and a conclusion of it is true for all the studied commodities in this report - although the relative importance varies. As for oil and gas, they remain by far the most important factors regarding dependence and possible tools for foreign and security policy. Russia has great capacity to affect individual states by using the energy lever; no less than 10 countries are dependent on Russian gas to more than 80%. This means that total control is out of reach in most cases. At best/worst, Russia can annoy and destroy.

Step-by-step Russia today takes long-term action to strengthen its control over the energy sector in individual states. The present study illustrates this in some post-Soviet states, but there are several more examples. Ownership of infrastructure is the key. This is accomplished through state ownership of transport facilities for oil and gas by *Transneft* and *Gazprom*. By utilising existing and new infrastructure, Russia strives to *reintegrate* (not re-conquer) its former space with Russia.

Given Russia's estimated production capacity in a longer perspective and Europe's increasing demand for imported oil and gas, it seems inevitable that dependence will continue to grow, but perhaps not at a constant rate. In a 5-10 year perspective, Russian oil exports will, in the likely case of high oil prices, grow by at least 35% annually to perhaps 9 million barrel/day. Russia will also, probably, be seen as a stable supplier. Recent signs of instability in Saudi Arabia and a continued presumed unstable situation in the Middle East as a whole will doubtless underpin this view.

Regarding non-ferrous metals, Russian aluminium will, as has been stated, continue to increase its share of the world market. Russian nickel will continue to be of very large importance to European steel and car makers, even if a larger share than today of Russian exports probably will go to Asia. Russian palladium exports will also continue to play a major

role, and Russia will have a sufficient capacity to influence supply and prices. A slow substitution process concerning the use of palladium will probably affect this capacity to some extent, but supposedly not to a major extent in a five-year perspective.

The combined effect of world dependence on Russian energy and strategic metals supplies is thus far greater than any other nation can muster today and in the foreseeable future.

4.2.2 Russia's Intentions

It has been established in this report that Russia has used, and most probably intends to use, commodities as a political tool. Thus Russia's actions confirm what has been stated in its energy strategy. This is especially clear in the CIS context and in the case of Latvia, but it remains to be seen whether this tool will be used against other western countries, where consequences will be much more damaging regarding trust in Russia as a reliable supplier.

The results from the use of the commodity tool could in Moscow's view also be discouraging as the outcome in political terms, as far as we know it, has been a disappointment. Russia does not on the other hand seem to take negative perceptions, held by the international community, into consideration when acting within former Soviet territory. Indeed Russia takes actions to reduce its own dependence, but simultaneously agrees on long-term plans for transit over foreign ground.

A clear and long-term trend can be seen concerning Russia's intentions to increase its capacity to affect markets and, most notably, individual states. One such measure is the striving to obtain energy infrastructure in Estonia, Latvia and Lithuania. Even if the actors in the first place are private companies, these may in the future become the property of the state or controlled by it. Recent policy towards *Yukos* and UES points in this direction. Privatised firms and the state often have converging interests and act in harmony. Geostrategic priorities and security policy set the framework that private actors have to work within. Profitseeking companies both become tools and obstacles to state policy.

It remains to be seen whether the government, or rather the president, has a long-term strategy of renationalisation. This question is intimately linked to another factor, the very far-reaching authority of the president and consequently of the presidential administration. Renationalisation of the metal producers has so far not been on the agenda, but as the owners of the concerned industries in many cases are in a situation where their acquisition of these industries and the legality behind it may be re-examined, they have no guarantee to rely on. Russian domestic policy is often carried out through intimidation.

The Russian constitution gives the president almost unlimited power to conduct policy as he sees fit and thus increases the unpredictability of Russian politics. The extensive power of the executive branch in combination with a parliament which today represents no opposition and adopts new laws in a very short time underlines this unpredictability. In the *Duma*, opposition has after the latest elections melted down to a negligible factor. The *Federation Council* earlier consisted of heads of regional and partly independent legislatures and governors, but is today filled by officials who formally represent the regions but in fact are hand-picked by the presidential administration, which is not consistent with the constitution.

In September 2004, President Putin announced that he, in order to unite the country in the fight against terrorism, will further strengthen his own powers by appointing governors and abolish single-mandate-districts in the Duma, thus reversing the democratic development

once again. The Russian Parliament lacks oversight, cannot investigate the behaviour of any agency of the executive branch or impeach ministers. This absence of a system of checks and balances is further enhanced by the infringement on democracy in many areas in Russia. Freedom of the press and meeting is under constant pressure.

The fundamental uncertainty regarding the use, abuse or misuse of presidential powers has been discussed lately in several fora.[548] The problem is classic: the lack of accountability allows the ruler to use his powers to build democracy one day and destroy it the next. The magnitude of the uncertainty is visible when the way in which presidents are elected in Russia today is looked at. A ruling elite can exploit an opportunity to choose a new president and manipulate the election in a state. The last three elections in Russia have all been criticised by the OSCE in this respect, and a new president may thus reflect the interests of a power group, whose ulterior motives we know very little about.

It is a well-known fact that President Putin's pro-Western policy has met with resistance from parts of the political community and the power ministries on the grounds that Russia has received too little in exchange for its commitment to join the West in the fight against terrorism and its acceptance of the American military presence in Russia's backyard. Criticism from the US as well as the EU has lately been outspoken, not to say harsh in regard to the lack of democracy, the war in Chechnya and Russian behaviour in former Soviet republics. Should these trends continue, there is a growing risk of the next president being more anti-Western, which in turn could induce attempts to use the commodity weapon. Even if this is a blunt instrument, it may be used in a scenario where Russia is again being isolated from the West, which is increasingly depending on Russian supplies of commodities. In such a scenario, Russia could feel that it has nothing to lose from exerting pressure by threats of cutting off commodity supply.

[548] See for example Berglöf, Erik et al (2003), *The New Political Economy of Russia,* Cambridge: MIT Press.

SOURCES

This report divides the sources and literature relied on into eight categories. The first is books and the second is material that has been presented for an audience, such as conference papers, presentations and proceedings. The third is 'documents', which for example refers to policy papers from the EU, embassy reports or documents issued by various NGOs/IGOs. The fourth category is reports and working papers from various organisations such as institutes, think-tanks or universities. The fifth category is articles from journals, newspapers and magazines, including those online newspapers that are downloadable as PDF-versions of the paper edition. The sixth category encompasses statistics, yearbooks and annual reports. The seventh category is articles and press-releases posted on the internet. The date at the end of these notes, year-month-day, denotes the date when the data was downloaded. The final category is related to this and consists of internet web sites mentioned throughout the study. Sources are listed alphabetically by author (where available) or title.

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APPENDIX I – TABLE FOOTNOTES

As the data presented in tables of this report comes from a great many sources, the footnotes or sources used for each table occupy a significant amount of space, this appendix intents to hold the notes for the overview tables which are especially bulky.

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APPENDIX II - GLOSSARY

Abbreviations and Acronyms

AES	American Energy System
Bd	Barrels/day
Bcm	Billion cubic meters
BP	Beyond Petroleum
Btu	British thermal units
CDU	Central Dispatch Unit
Cif	Cost, insurance, freight (for prices)
CIS	Commonwealth of Independent States
EU	European Union
FACE	Federation of Aluminium Consumers in Europe
FEK	Federal Energy Comission
FOA	Försvarets forskningsanstalt, sedermera FOI
FOI	Totalförsvarets forskningsinstitut
IEA	International Energy Agency
GAZ	Gorkiy Auto Zavod
GDP	Gross Domestic Product
GES	Gidria Elektricheskaya Stanziya
GTE	Gas Transport to Europe
IGO	International Governmental Organisations
INOGATE	Interstate Oil and Gas Transport to Europe
INSG	International Nickel Study Group
LME	London Metal Exchange
LNG	Liquid Natural Gas
LBM	London Bullion Market
Mcm	Million cubic meters
NATO	North Atlantic Treaty Organization
NGO	Non-governmental organisation
Oz	Ounce (Conversion factor: Troy ounce: (traditional unit of weight for precious metals). One troy ounce = 31.1034807grams, 32.150746568 troy oz = 1 kilogram.)
PGM	Platinum Group Metals
P/R	Production/Reserve ratio
PSA	Producer Sharing Agreement
RusAl	Russian Aluminium
SibAl	Siberian Aluminium
SUAL	Siberian-Urals Aluminium Company
Tcm	Thousand cubic meters
TRA	Tax/Royalty Agreements
TRACECA	Transport Corridor Europe Central Asia
TWG	Trans World Group
UES	United Energy System
UHL	Unconventional Hydrocarbon Liquids
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
VIC	Vertically Integrated Company
ÖCB	Överstyrelsen för civil beredskap

Terminology and Methodology[550]

Metals

Alloys = Chemical compositions formed of various metal complexes. Metals feature various degrees of capability in forming Alloys: some of them are alloyed in all possible ratios, others - only in certain ones; third - are fully incapable of forming homogenous systems. Formation of solid Alloys takes place by way of cooling of genuine molten metals in each other. Examples of Alloys: bronze, brass.[551]

Alumina = Aluminium oxide, Al2O3 - white crystalline substance, non-soluble in water. Aluminium oxide is raw material for obtaining aluminium; it is produced of aluminium-containing minerals, mostly bauxites; is used as abrasive mineral. Alumina is absorbent and catalyst in production of refractory materials etc.[552]

Aluminium = Alumina, Al, atomic weight is 26.9, metal, not found in free state, however, it is widely spread in compounds with oxygen or silicon acid in the form of alumina, clay, with potassium in the form of feldspar. Discovered by Veler (1827); method of production is developed by Deville (1853). It is obtained by heating the compound (dried and powdered) of sodium chloride and chlorous Aluminium, AlNaCl4 common salt and fluorspar or cryolite with sodium in special furnaces, and also by electrolytic method of cryolite at a high temperature. Pure A. has the colour close to that of silver, it is tenacious and forgeable, soluble in hydrochloric acid and alkalis, it melts at about 700 C. Specific weight is 2.56-2.67. It is used for manufacturing chemical and physical instruments and small articles of various kinds.[553]

Alluvial deposits = Material, typically sands and gravels, transported by a river and deposited at points on the river's flood plain. These deposits can contain economically viable mineral resources. In the Kondyor and Koryak areas of eastern Russia alluvial deposits are mined for platinum group metals.[554]

Bauxite = Rock consisting mostly of alumina hydrates (boehmite, gibbsite, diaspore) and various impurities: iron oxides and hydroxides, carbonates, minerals of silicon dioxide (quartz and others), clayish materials etc. Bauxite is the basic mineral feed for aluminium industry, for obtaining high-alumina refractory materials, cements, synthetic corundum and others. [555]

Bullion = *Precious metals* such as platinum, palladium, gold and silver in bulk form, i.e. in the form of bars, *ingots* or *plate* rather than in coin, *grain* or *sponge*.[556]

Commodity = A physical substance traded on a commodity market. Examples of hard commodities include platinum, copper and oil, whereas soft commodities include grain, cotton and rubber.[557]

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[550] All explanations are direct quotes from respective source.
[551] - (2003), "Glossary", *RusAl*, Internet: http://www.rusal.com/pages/site_tools/glossary.html, 2003-12-04.
[552] - (2003), "Glossary", *RusAl*, Internet: http://www.rusal.com/pages/site_tools/glossary.html, 2003-12-04.
[553] - (2003), "Glossary", *RusAl*, Internet: http://www.rusal.com/pages/site_tools/glossary.html, 2003-12-04.
[554] - (2003), "Trading Glossary", *Platinum Today*, Internet: http://www.platinum.matthey.com/pgm_prices/1048091126.html, 2003-12-17.
[555] - (2003), "Glossary", *RusAl*, Internet: http://www.rusal.com/pages/site_tools/glossary.html, 2003-12-04.
[556] - (2003), "Trading Glossary", *Platinum Today*, Internet: http://www.platinum.matthey.com/pgm_prices/1048091126.html, 2003-12-17.

Johnson Matthey Base Price = The Johnson Matthey Base Price is the company's quoted selling price for *platinum group metals* set by our trading desks in the USA, Hong Kong and London, based on market *offer prices*. The price is for metal in *sponge* form, ex-JM refinery, and is normally available to our customers for several hours following the setting – an advantage not offered by any other price setting or fixing. The JM Base Price is set 5 times a day Monday – Friday, in the US, 09:00 and 15:00 EST, 09:00 and 15:00 in Tokyo and 09:00 Zurich time. If markets move sharply higher or lower between these times, prices may be adjusted accordingly. The Johnson Matthey Base prices are also published in Platt's Metals Week and American Metals Market.[558]

Non-Ferrous Metals = Industrial name for all metals except iron. They may be divided into groups as follows: light metals (aluminium, magnesium and others), heavy metals (lead, copper and others), refractory metals (molybdenum, chromium and others), noble metals (gold, platinum and others), dispersed metals (gallium, indium and others), rare-earth metals (scandium, lanthanum and others), radioactive metals (radium, uranium and others).[559]

Ore = Mineral formations with such content and forms of occurrence (lump size, type of chemical compounds and others) of metals that provide for a process capability and economic expediency of extracting them.[560]

Platinum Group Elements/Platinum Group Metals (pge/pgm) = The six metallic elements platinum, palladium, rhodium, ruthenium, iridium and osmium.[561]

Precious Metals = The six platinum group metals, gold and silver.[562]

Reserve = That part of the reserves which could by economically extracted or produced at the time of determination. The term reserves need not signify that extraction facilities are in place and operative. Reserves include only recoverable materials; thus, terms such as "extractable reserves" and "recoverable" reserves are not a part of this classification system. [563]

Reserve base = That part of an identified resource that meets specific minimum physical and chemical criteria related to current mining and production practice, including those of grade, quality, thickness and depth. The reserve base is the in-place demonstrated (measured plus indicated) resources from which the reserves are estimated. It may encompass those parts of the resources that have a reasonable potential for becoming economically available within planning horizons beyond those that assume proven technology and current economics. The reserve base include those resources that are currently economic (reserves), marginally economic (marginal reserves), and some of those that are currently subeconomic (subeconomic resources). The term "geologic reserves" has been applied by others generally

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[557] - (2003), "Trading Glossary", *Platinum Today*, Internet: http://www.platinum.matthey.com/pgm_prices/1048091126.html, 2003-12-17.
[558] - (2003), "Trading Glossary", *Platinum Today*, Internet: http://www.platinum.matthey.com/pgm_prices/1048091126.html, 2003-12-17.
[559] - (2003), "Glossary", *RusAl*, Internet: http://www.rusal.com/pages/site_tools/glossary.html, 2003-12-04.
[560] - (2003), "Glossary", *RusAl*, Internet: http://www.rusal.com/pages/site_tools/glossary.html, 2003-12-04.
[561] - (2003), "Trading Glossary", *Platinum Today*, Internet: http://www.platinum.matthey.com/pgm_prices/1048091126.html, 2003-12-17.
[562] - (2003), "Trading Glossary", *Platinum Today*, Internet: http://www.platinum.matthey.com/pgm_prices/1048091126.html, 2003-12-17.
[563] - (2003), *Mineral Commodities Summaries 2003*, Washington: U.S. Geological Survey.

to the reserve-base category, but it also may include the inferred-reserve-base category; it is not a part of this classification system.[564]

Silumin = Cast alloys of aluminium with silicon and some other elements (copper, manganese, magnesium). [565]

Tokyo Commodity Exchange (TOCOM) = The Japanese *futures exchange*, which has offered platinum contracts since 1984 and palladium contracts since 1992. Unlike *NYMEX*, trading of these contracts is conducted electronically and not by open outcry. TOCOM trading also differs in that the exchange does not act as the counterparty for all members through the clearing process.[566]

Troy ounce = The traditional unit of weight for *precious metals*. One troy ounce = 31.1034807grams, 32.150746568 troy oz = 1 kilogram.[567]

Energy - Comments on Oil Reserves According to BP

"All numbers are, at best, informed estimates. Within the broad concept of oil 'reserves' there are several key distinctions: *proven reserves, oil in place* and *ultimately recoverable resource.*

Ultimately recoverable resource (URR) is an estimate of the total amount of oil that will ever be recovered and produced. It is a subjective estimate in the face of only partial information. Whilst some consider URR to be fixed by geology and the laws of physics, in practice estimates of URR continue to be increased as knowledge grows, technology advances and economics change. Economists often deny the validity of the concept of ultimately recoverable reserves as they consider that the recoverability of resources depends upon changing and unpredictable economics and evolving technologies.
The ultimately recoverable resource is typically broken down into three main categories: cumulative production, discovered reserves and undiscovered resource.
Cumulative production is an estimate of all of the oil produced up to a given date. Discovered reserves are typically defined in terms of a probability distribution, and are classified in terms of proven, probable and possible reserves.

Proven reserves are usually defined as "the estimated quantities of oil which geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under current economic and operating conditions", ie having a better than 90% chance of being produced. Proven reserves are the proportion of *oil in place* that is technically and economically recoverable, given today's economics and technology. Probable reserves have been variously designated as "indicated" or P50 reserves - reserves not all of which are yet proven but which are estimated to have a better than 50% chance of being technically and economically producible. Possible reserves have been designated as "inferred" or P10 or even P20 reserves - including reserves which, at present, cannot be regarded as 'probable', but are estimated to have a significant, but less than 50% chance of being technically and economically producible. Undiscovered resource is also defined typically in

[564] - (2003), *Mineral Commodities Summaries 2003*, Washington: U.S. Geological Survey
[565] - (2003), "Glossary", *RusAl*, Internet: http://www.rusal.com/pages/site_tools/glossary.html, 2003-12-04.
[566] - (2003), "Trading Glossary", *Platinum Today*, Internet: http://www.platinum.matthey.com/pgm_prices/1048091126.html, 2003-12-17.
[567] - (2003), "Trading Glossary", *Platinum Today*, Internet: http://www.platinum.matthey.com/pgm_prices/1048091126.html, 2003-12-17.

terms of a probability distribution with estimates of "yet-to-find" resource based on geological, technological and economic factors.

The reserve numbers published in the BP Statistical Review of World Energy are an estimate of *proven reserves*, drawn largely from data compiled by the Oil and Gas Journal. The reserves figures published by the Oil and Gas Journal are "based on survey responses and updates released by individual countries, which in many cases are not released every year-if ever. OGJ changes a particular reserves figure only when it receives not only evidence that a change is necessary but also a reliable, new estimate." - Oil and Gas Journal (Dec 23 2002). In reality different countries use different methodologies and the data have varying levels of reliability. Precise comparisons between nations and analyses of time series should be treated with great caution.

Proven reserves can fall as oil is produced and increase in face of successful exploration, advances in the technology of discovery and recovery and cost reductions. The level of reported proven reserves has continued to rise over long periods of time as reported discoveries, additions and extensions have exceeded depletion of proven reserves."[568]

Regional Definitions According to BP[569]

North America:
USA (excluding Puerto Rico), Canada and Mexico.

South and Central America:
Caribbean (including Puerto Rico), Central and South America.

Europe:
European members of the OECD plus Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, Former Yugoslav Republic of Macedonia, Gibraltar, Malta, Romania, Slovenia, Yugoslavia.

Former Soviet Union:
Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.

Europe and Eurasia:
This includes all countries listed above under the headings Europe and the Former Soviet Union

Middle East:
Arabian Peninsula, Iran, Iraq, Israel, Jordan, Lebanon, Syria.

North Africa:
Territories on the north coast of Africa from Egypt to Western Sahara.

[568] - (2003), "Oil Reserves", *BP*, Internet: http://www.bp.com/genericarticle.do?categoryId=108&contentId=2004232, 2004-03-17 (Passages concerning coal omitted).
[569] - (2003), "Regional Definitions", *BP*, Internet: http://www.bp.com/genericarticle.do?categoryId=108&contentId=2006444, 2004-03-17.

West Africa:
Territories on the west coast of Africa from Mauritania to Angola, including Cape Verde.

East and Southern Africa:
Territories on the east coast of Africa from Sudan to Republic of South Africa. Also Botswana, Madagascar, Malawi, Namibia, Uganda, Zambia, Zimbabwe.

Asia Pacific:
Brunei, Cambodia, China, China Hong Kong SAR*, Indonesia, Japan, Laos, Malaysia, Mongolia, North Korea, Philippines, Singapore, South Asia (Afghanistan, Bangladesh, India, Myanmar, Nepal, Pakistan and Sri Lanka), South Korea, Taiwan, Thailand, Vietnam, Australia, New Zealand, Papua New Guinea and Oceania.

Australasia:
Australia, New Zealand.

OECD members (Organization For Economic Co-operation and Development)
Europe: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Republic of Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom. Other member countries: Australia, Canada, Japan, Mexico, New Zealand, South Korea, USA.

OPEC members (Organization of the Petroleum Exporting Countries)
Middle East: Iran, Iraq, Kuwait, Qatar, Saudi Arabia, United Arab Emirates (Abu Dhabi, Dubai, Ras-al-Khaimah and Sharjah). North Africa: Algeria, Libya. West Africa: Nigeria. Asia Pacific: Indonesia. South America: Venezuela. (Since Ecuador and Gabon have withdrawn from OPEC, they are excluded from all OPEC totals.)

European Union members
Austria, Belgium, Denmark, Finland, France, Germany, Greece, Republic of Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, UK.

Other EMEs (Emerging Market Economies)
South and Central America, Africa, Middle East, Non-OECD Asia and Non-OECD Europe. Country. groupings are made purely for statistical purposes and are not intended to imply any judgement about political or economic standings.

*Special Administrative Region

A Note on BP's Methodology

BP states concerning its data that: "[s]tatistics published in this [BP Energy Survey] Review are taken from government sources and published data. No use is made of confidential information obtained by BP in the course of its business

Reserves - Generally taken to be those quantities that geological and engineering information indicates with reasonable certainty can be recovered in the future from known reserves under existing conditions.

Reserves/Production (R/P) ratio - If the reserves remaining at the end of any year are divided by the production in that year, the result is the length of time that those remaining reserves would last if production were to continue at that level.

The oil reserves estimates with the exception of Azerbaijan and Kazakhstan and Egypt (for 2001), are those published by the Oil and Gas Journal, plus an estimate of natural gas liquids for USA and Canada. Reserves of shale oil and oil sands are not included.

The gas reserves estimates with the exception of Azerbaijan and Egypt (for 2001) are those published by the Oil and Gas Journal.

Annual changes and shares of total in the tables showing oil consumption, production, refining and trade movements could be calculated on either a volume (barrels per day) or on a weight (tonnes) basis. We have elected to use a weight basis when performing calculations on overall oil production and consumption data. We have used a volume basis when manipulating the oil product consumption, reserves history, refining and trade data.

Percentages: Calculated before rounding of actuals.

Rounding differences: Because of rounding, some totals - including the 2002 share of total - may not agree exactly with the sum of their component parts."[570]

[570] - (2003), "Data Definitions", *BP*, Internet: http://www.bp.com/sectiongenericarticle.do?categoryId=108&contentId=2006879, 2004-03-17 (Emphasis added and passages concerning coal omitted).

APPENDIX III – ADDITIONAL STATISTICS

Some statistics of marginal importance, which this report nonetheless rely on, is presented below instead of in the respective chapter in order to facilitate reading. An overview of all tables is found after the index in the beginning of this report.

Table 43: Russian/CIS Trade in Natural Gas in 2000 and 2001

	2000		2001	
Russia vs.	Imports	Exports	Imports	Exports
Belarus	-	17.1	-	17.0
Georgia	-	0.2	-	-
Kazakhstan	3.4	1.1	3.8	1.1
Moldova	-	2.0	-	2.1
Ukraine	-	39.7	-	28.7
Turkmenistan	9.1	-	-	-
Total	**12.5**	**60.1**	**3.8**	**48.9**

Explanatory Remarks:
All figures in billion m^3. Figures may not add up exactly due to rounding.

Source: - (2002*), Rossiskii Statesticheski Ezegodnik*, Moskva: Goskomstat Rossii, p. 622ff.

Table 44: Russian Oil Production vs. Refinery Capacity, 1992-2002

	92	93	94	95	96	97	98	99	00	01	02
Crude production	8038	7173	6419	6288	6114	6227	6169	6178	6536	7056	7698
Crude exports	142	128	127	122	126	127	137	135	145	162	154
Refinery capacity	6611	6611	6671	6273	6284	6119	5793	5645	5597	5545	5553

Explanatory remarks: Figures in '000 barrels/day
Crude production = Extraction of crude oil including gas condensate - NGL (Natural Gas Liquids, approximately 8-10 million tonne per year, 1990-2002).
Crude exports = Exports of crude oil.
Refinery capacity = Atmospheric distillation capacity on a calendar-day basis.

Source:
- (2003), *BP Statistical Review of World Energy – June 2003*, London: BP.

Table 45: Example of Palladium Import Quantities for Main Consumers in 2002

Country	1997	1998	1999	2000	2001
Japan	103,376	80,976	87,885	87,189	54,162
United States	148,377	174,615	19,7001	172,796	159,600
United Kingdom	25,190	27,272	21,775	34,022	19,724
Germany	31,700	29,400	22,400	34,400	25,200
Switzerland	65,435	78,486	93,200	87,714	94,074

Explanatory Remarks:
All figures are in kg.

N.B. Statistical information on the subject is often incomplete and incoherent. Three key points: 1) Data is sometimes presented in weight quantities and sometimes in value (presented in USD or Stirling Pound). 2) Data on palladium is not always separated from PGM in general. PGM include unwrought, partly worked and alloys. The table above relies on data where palladium is separated from PGM and do not include waste and scrap metals.

Source*:* - (2003), *British Geological Survey: Mineral Statistics 1997-2001*, Nottingham: BGS Minerals Programme, p. 220f.

Table 46: Russian/CIS Trade in Crude Oil, 2000-2001

	2000		2001	
Russia vs.	Imports	Exports	Imports	Exports
Belarus	-	12.0	-	11.8
Georgia	-	-	-	-
Kazakhstan	5.9	1.0	3.8	2.4
Moldova	-	-	-	-
Ukraine	-	4.0	-	9.4
Turkmenistan	-	-	-	-
Total	**5.9**	**17.0**	**3.8**	**23.6**

Explanatory Remarks:
All figures are in metric tonnes. Figures may not add exactly due to rounding.

Source: - (2002), *Rossiskii Statesticheski Ezegodnik*, Moskva: Goskomstat Rossii, p. 622ff.

Table 47: OECD Importers of Crude Oil with >15% from ex-USSR in 1999-2001*

Country	1999	2000	2001
Austria	21%	29%	26%
Belgium	16%	17%	16%
Czech Republic	88%	91%	84%
Finland	47%	47%	52%
Germany	31%	33%	34%
Greece	10%	25%	29%
Hungary	100%	100%	100%
Italy	21%	22%	26%
Poland	90%	91%	90%
Turkey	14%	12%	20%
Belarus	n.a.	98%	n.a.
Kazakhstan	n.a.	99%	n.a.
Ukraine	n.a.	68%	n.a.

* For CIS countries import share only from Russia.

Sources:
1) OECD countries: - (2002), *Oil, Gas, Coal and Electricity: Quarterly Statistics/Fourth Quarter 2001*, Paris: IEA.

2) CIS Countries: - (2002), *Rossiskii Statesticheski Ezegodnik*, Moskva: Goskomstat Rossii, p. 622ff and: - (2000), *World Petroleum Supply and Disposition, 2000*, Energy Information Agency/US Department of Energy, Internet: http://www.eia.doe.gov/emeu/international/petroleu.html#IntlTrade , 2003-11-13.

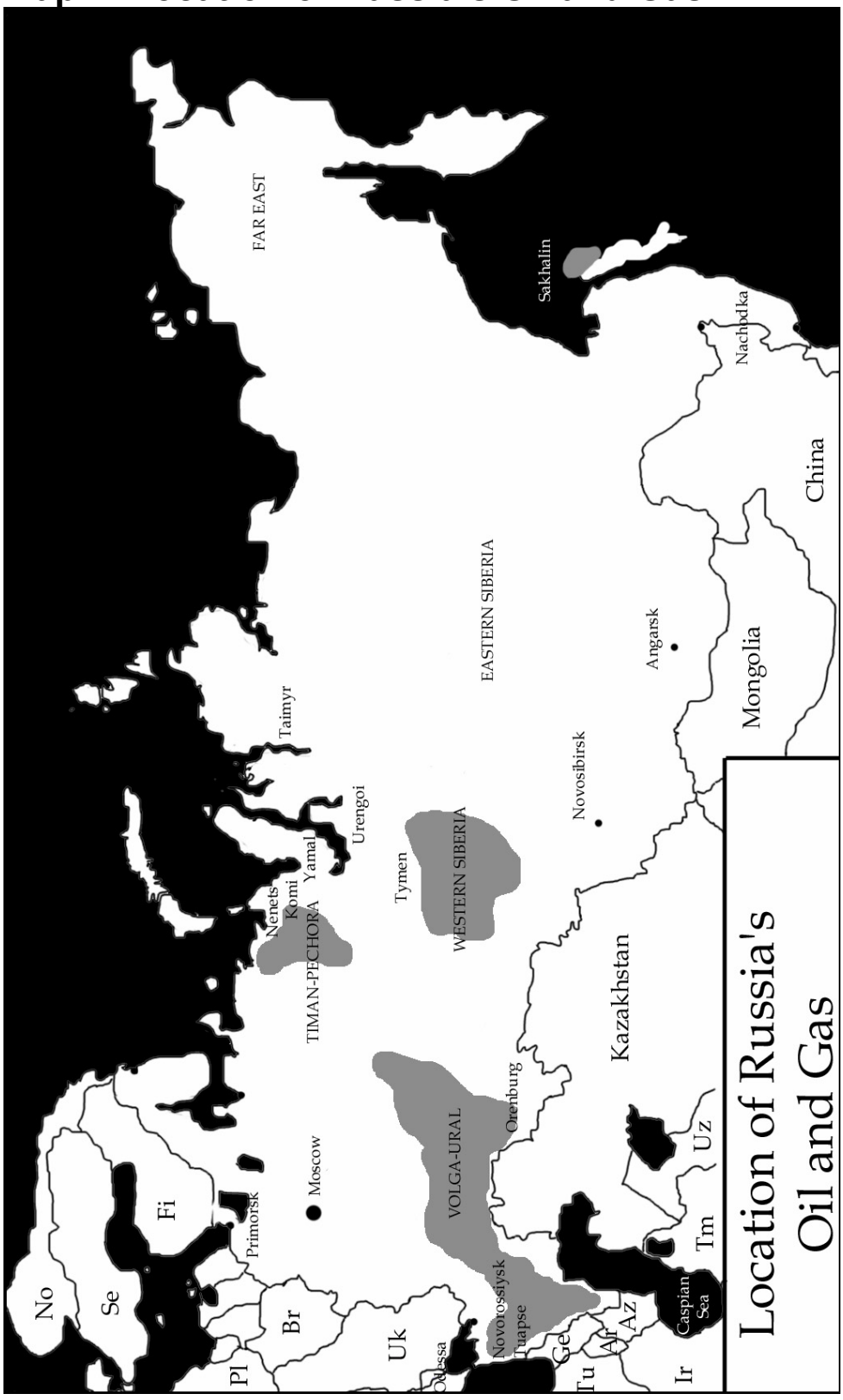
Table 48: Russian Estimates of Natural Gas Reserves in 2000

Total Initial Gas Reserves*	
Proven + probable	46.9
Possible	16.1
Hypothetical	161.0
Cumulative Production	
Western Siberia	9.6
Other Regions	2.5
Subtotal Cumulative Production	12.1
Total	**236.1**
Proven + probable reserves	
BY STATUS: (End of 2000)	
In operation	17.7
Tested for production	4.0
Prepared for development	17.2
Under appraisal	7.6
Under depletion	0.4
BY REGION: (In 769 fields)	
Western Siberia	36.1
European Russia	4.1
Eastern Siberia + Far East	3.2
Marine Shelf	3.5
BY DEPTH, M:	
<1500	19.5
1500-3000	20.5
3000-5000	6.9
Prepared for Development or under Appraisal	
Western Siberia (Nadym-Pur-Taz)	7.2
Yamal Peninsula	10.4
Barents Sea	3.3
Eastern Siberia + Far East	2.7
Other regions	1.2
Total	**24.8**

N.B. All figures in trillion m^3
Russian system of classification (see explanation in appendix 2).
Source:
Bakhtiari, Samsam A.M. (2003), "Russia's Gas Production, Export Future Hinges on Dramatic Changes Needed at Gazprom", *Oil and Gas Journal*, 10 March, 2003, p. 21.

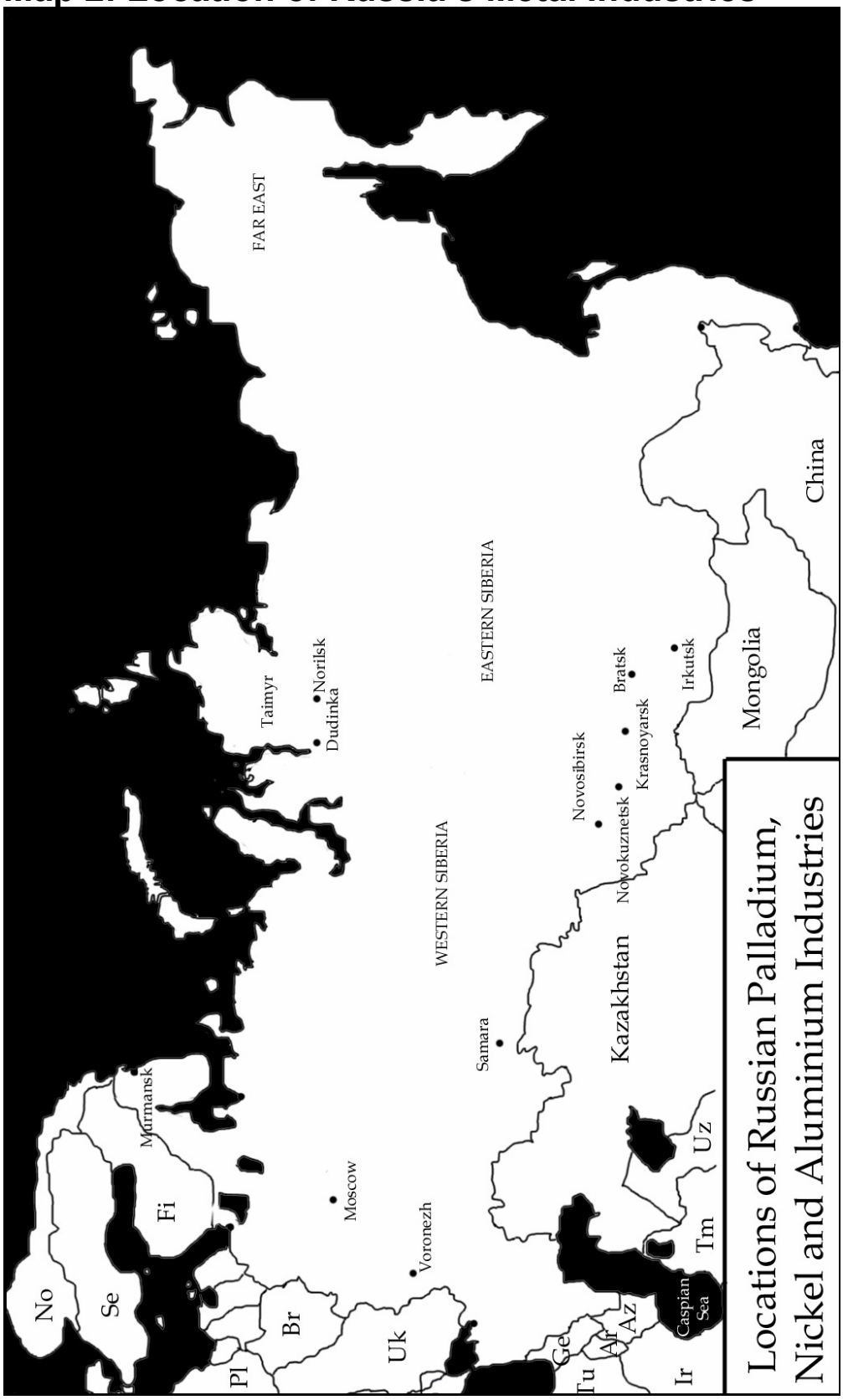
APPENDIX IV - MAPS

Map 1: Location of Russia's Oil and Gas



N.B. Maps shows places important for the oil and gas industries in Russia and that are explicity mentioned in the report. Grey areas show location of Russia's proven oil deposits.

Map 2: Location of Russia's Metal Industries



N.B. Map only shows locations of metal industries mentioned in the report.

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