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## Can Russian oil growth be sustained?

*Erik Janssen, October 2005*

### **Introduction**

Interest in Russian oil has grown significantly in recent years. Russia is increasingly viewed as an attractive alternative supplier, potentially allowing Western economies to ease their dependence on Middle Eastern countries and diversify their import portfolios. With every barrel counting in the current tight market, Russia is of crucial importance in meeting the ever-growing world demand for oil. Additional production increases from Russia are vital for satisfying world oil demand, especially given that this is one of the few non-OPEC sources with large reserves.

Russia is the world's second-largest oil producer after Saudi Arabia and during May 2005 produced 9.36 million barrels per day (mb/d).<sup>1</sup> Furthermore, Russia is the world's second-largest exporter of oil, shipping some 4.3 mb/d of crude and another 1.8 mb/d of oil products. Total exports amount to approximately 6.1 mb/d. Both exports and production have grown by about 40% since 1999, the year of the Russian economic crisis.

Europe now imports around 25% of its oil from Russia.<sup>2</sup> Russia is benefiting from the Western fears for supply disruptions from the Middle East. Russia is seen as a more stable country that never interrupted oil supply to its external customers. As a result, Russia has managed to increase its market share in Europe significantly over the years. On the back of strong production growth it has succeeded in boosting its exports and is now looking toward Asian markets, as the European market offers limited growth perspective in the short and medium-term.

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<sup>1</sup> International Energy Agency (IEA), *Oil Market Report*, 13 July 2005, <<http://omrpublic.iea.org/>>.

<sup>2</sup> Directorate General of Transport and Energy of the European Commission, see: <[http://europa.eu.int/comm/energy/oil/crude/index\\_en.htm](http://europa.eu.int/comm/energy/oil/crude/index_en.htm)>.

Energy is Russia's main export product and serves as a strategic asset through which the country can exercise geopolitical influence and revive its role as a major world power. Indeed, Russia is currently the largest oil exporter to the European Union and well-positioned to also conquer Asian markets. But is Russian oil growth sustainable? What is the long-term outlook for Russia as a major oil supplier? The aim of this paper is to establish Russia's oil potential by looking at its reserve base, production, exports and the investment climate.

### **Reserves**

A key factor influencing future Russian production is the reserve base. Determining the actual amount of reserves has increasingly become a hot issue during recent months. There are three accounting and reporting methods for establishing reserves: the first is endorsed by the Society of Petroleum Engineers (SPE), the second by the Security Exchange Commission (SEC), and the third is a Soviet/Russian classification system. The first two, applied to reserve reporting by international oil majors, differ notably from the third. Oil companies listed on the US stock exchanges must report according to the SPE/SEC principles. The third method is used by the oil industry of the former Soviet Union. Because the two Western methodologies take into account not only geological, but also economic and commercial considerations (oil prices), they are viewed as more realistic. The Russian system only takes into account technological and geological data and ignores oil prices.

The SPE classifies reserves into three categories: proved, probable and possible. For the oil industry, the proven category is the most important and is used to inform investment decisions by producers and investors. The SPE defines proven reserves as those quantities of oil, which by analysis of geological and engineering data, can be estimated with reasonable certainty to be *commercially* recoverable, from a given date forward, from known reservoirs and under current economic conditions, operating methods and government regulations.<sup>3</sup> The term *reasonable certainty* is intended to express a high degree of confidence (90% probability) that the quantities recovered will equal or exceed the estimate. An interesting feature of this definition is its inclusion of an economic condition, namely commercial recoverability. The SPE established these conditions to be contingent on historical petroleum price data, measured against associated costs of production.

The *unproven* category comprises both probable and possible reserves. In essence, these are based on data similar to the proven category, but due to economic, contractual, technical or regulatory constraints these reserves cannot be booked as proven. Possible reserves can be identified as such if subsequent economic conditions change favourably from the situation prevailing at the time of the estimate. For example, a producer could argue that given technological advances or oil price increases that particular unproven reserves can now become profitable. The categories of probable and possible indicate degrees of certainty (of 50% and 10% respectively), that reserves recovered will equal or exceed the estimates.

The Security Exchange Commission defines reserves in a similar way, but elaborates a much stricter definition than the SPE. The SEC definition states that reserves are only proven if they can be extracted under existing economic and operating conditions. Thus, prices and costs

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<sup>3</sup> Definition taken from the SPE website <[www.spe.org](http://www.spe.org)>.

apply as of the date the estimate is made. Unlike the SPE, SEC regulations prohibit booking reserves as proven unless they can be proved by actual production. The strictness of SEC rules was illustrated when the SEC forced Royal Dutch/Shell to downgrade its proven reserves by almost 20%. Shell could not support reporting some reserves proven by actual production data and thus according to SEC rules could not apply the proven category.

The SEC's conservative approach towards reserve estimation means that, in general, proven reserve figures need to be adjusted every year. The reason for this strictness is because these estimates are used by stock exchanges and investors who require maximum levels of transparency and certainty. One of the main criticisms of the SEC methodology is that it ignores possible reserves. These reserves are not visible in the balance sheets of companies but are of importance to oil investors. Possible reserves quite often can be converted into proven reserves as technological standards improve, as a company manages to bring costs down and as prices go up. This has occurred in Russia. Thus some experts argue that there is also a need to report possible reserves, as for the SPE system.

The Russian reserve accounting methodology has a completely different approach that is often viewed as grossly overstating the reserve base. The main reason for this is its incompatibility with market principles. The Russian classification system does not take into account commercial considerations in an economic environment where costs do play an essential role. As a result, investors cannot make a proper assessment of reserve amounts in a given field on the basis of the Russian system. To raise confidence with investors some Russian companies have started to use the SPE method, audited by Western firms, to determine their reserves.

The Russian system has its roots in the Soviet planning economy, for which costs were of lesser importance. It was deemed more important to ascertain geological presence. Therefore, Soviet decision-makers created a classification system that defined reserves as proven if they could be produced under prevailing technological standards. The Russian system divides reserves into the following categories in a descending scale of *geological* certainty.

*Proven reserves*

- A geologically examined reserves currently in production;
- B geologically examined reserves, which are the unused producing capacity;
- C1 geologically evaluated reserves, which according to engineering data show partial recoverability.

*Probable resources*

- C2 reserves that are presumed to exist, based on geological and geophysical data analogous to that of verified reserves;
- D1 speculative reserves, presumed to exist on basis of geological analogy to reference areas;
- D2 same as D1, but less evaluated.

The Russians define their proven reserves as the sum of categories A+B+C1 and report their reserves using this system.

The main problem is establishing the extent to which Western (SPE) and Russian reserve calculations are comparable. The Russians have argued that their definition of proven reserves

is comparable to the SPE category, as it is also supported by production data (A and B reserves). There is disagreement regarding the quantity of C1 reserves that are commensurate with SPE reserve calculations. Russian experts generally value quite a large share (75%) of C1 reserves in the proven category. Western experts are more critical. The International Energy Agency (IEA) argues that only 30% of C1 reserves can be regarded as proven under to the SPE system.<sup>4</sup> The categories lower than C1 are rarely applied and reported, as there is too much uncertainty about their recoverability to be of use to companies and investors. Table 1 illustrates the extent of disagreement on the amount of Russian oil reserves.

**Table 1 – Estimated Reserves, by different sources**

<i>Who?</i>	<i>Reserves, billion barrels</i>
<b>Oil &amp; Gas Journal</b>	60 (proven SPE)
<b>World Oil</b>	69 (proven SPE)
<b>BP</b>	72 (proven SPE)
<b>10 largest Russian oil companies combined</b>	82 (ABC1)
<b>E. Khartukov (Russian oil expert)</b>	110 (ABC1)
<b>United States Geological Survey</b>	116 (proven SPE)
<b>Wood Mackenzie</b>	120 (proven SPE)
<b>M. Khodorkovskiy (former CEO Yukos)</b>	150
<b>Brunswick UBS (Consultants)</b>	180 (proven, probable, possible SPE)
<b>Russian government (*)</b>	322 (ABCD)

(\*) The Russian government still regards reserves as a state secret and does not publish official figures, although they do speak of *prognosed reserves* of 44 billion tonnes (322 billion barrels) in their latest version of the Energy strategy for the period up to 2020.

Russian reserves are the largest source of oil beyond the reach of OPEC's control. During 2004, there was an upward trend in Russian proven oil reserve reporting. The BP figure – considered one of the most authoritative sources – was corrected to 72 billion barrels.<sup>5</sup> This was not only due to better geological examinations, but also to the growing profitability of Russian oil companies that managed to cut their production costs to internationally very competitive levels. If Russian oil company executives are correct, Russia's reserve base might grow substantially in the years to come. The upgrade in proven reserves and strong production growth were largely achieved by better management (enhanced recovery techniques) and productivity at existing or idle wells. Exploration has not been very intensive during the last decade and many regions in Russia are under-explored. If exploration is intensified it could well lead to another upward adjustment of proven reserves.

### **Reserve mobilisation**

#### *Investment climate*

Another paramount issue for Russia is the ability to mobilise reserves. In spite of a healthy reserve base and significantly increased production between 1999 and 2004, production growth

<sup>4</sup> Petrov *et al*, *Dolgosrochnye perpektivy Rossijskoj nefti* (Long-term perspectives of Russian oil), Moscow: 2003, p. 24-25.

<sup>5</sup> BP, *Statistical Review of World Energy 2005*, <<http://www.bp.com/genericsection.do?categoryId=92&contentId=7005893>>.

stagnated in 2005. Russia was unable to continue the trend of the last five years and production growth levelled off. Production has remained constant since September 2004 and hovers at 9.3 to 9.4 mb/d. The explanation for this can be found in recent political developments and the investment climate. The Russian government has shifted its policy orientation vis-à-vis the oil industry, which has resulted in a deterioration of the investment climate. In a recent report, the OECD criticised Russia, stating that “the combination of excessive regulation, frequent rule changes and inconsistent application makes it very difficult for domestic and foreign businesses to be sure they are on the right side of the law.”<sup>6</sup>

Foreign investors have been shied away by the Yukos affair, which has been viewed very negatively in Western countries. The Yukos affair began with accusations of tax fraud by the government. A back-tax claim of USD 27 billion was imposed on Yukos and its accounts were frozen. With Yukos unable to raise this amount, the Russian government sold the company’s prize asset, producer company Yuganskneftegaz, to offset the tax debts. What has worried investors is that Yugansk was sold to a state company (Rosneft), which amounts to renationalisation. The legality of the tax claims has also been disputed. To many foreign investors, the Yukos affair has demonstrated that ownership rights are vulnerable, and that the regulatory and legal frameworks still leave much to be desired.

The largest Russian oil company – Yukos – was dismantled. The redistribution of Yukos’ assets (Yugansk) to Rosneft created operational difficulties for both Yugansk and Rosneft. Yugansk was firmly integrated in the Yukos infrastructure and organisation, and the new owners are working to integrate Yugansk into the Rosneft structures. This reorganisation process – and the fact that Yugansk was unable to invest in its own operations for over a year due to the freezing of its accounts – have resulted in a drop in production that was unable to be compensated for by the growth of other oil producers such as LUKoil, Surgut, TNK-BP and Slavneft.

The development of new oil regions will require substantial investment. The Russian government assessed total investment needs for the oil industry up to 2020 at USD 250 billion.<sup>7</sup> One-quarter of that sum (USD 62.5 billion) should be invested by foreign sources, but the actual inflow of foreign direct investment is much lower. Foreign investment in Russia is much lower than for other transition economies (for example, Poland, the Czech Republic, Hungary, China). Although economic recovery since the 1998 low is strong, the Russian economy is nevertheless relatively small. Russian oil companies do not wield the financial power one might expect given the current record oil prices. Oil companies do not profit to a great extent from high oil prices because taxation has been designed so that economic rents on oil production lies with the government. Progressive taxes skim almost all revenue above an oil price of USD 25 per barrel. Although this is good for the government budget, it could have a negative effect on future production. Russian companies increasingly will be working in higher cost areas, as cheap oil fields begin depleting. As Vladimir Milov argues, the current tax structure combined with the transportation issue renders the development of expensive oil fields unprofitable.<sup>8</sup>

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<sup>6</sup> OECD, “Russia: building rules for the market”, 2005.

<sup>7</sup> Government of Russia, “The energy strategy for the period to 2020”, <[www.mte.gov.ru](http://www.mte.gov.ru)>.

<sup>8</sup> V. Milov, “Why did oil production in Russia stop growing?”, presentation June 2005, <[www.energypolicy.ru](http://www.energypolicy.ru)>.

*Foreign investment*

Some Russian politicians (mainly nationalist/communist) believe that the country does not need (or does not want) foreign equity investment and can finance its own needs. Such confidence has been boosted further recently with oil prices hitting USD 60 per barrel. This has ensured a windfall in government revenue. There is a powerful lobby in Russian politics – even within the government – that opposes selling Russia’s mineral riches to foreign parties.

The Putin administration considers equity holding in Russian companies by foreign parties as relinquishing sovereignty over its reserves and therefore only accepts foreign minority stakeholders. Many projects involving foreign participation have encountered legal problems in the past. Because of this, BP and ConocoPhillips sought formal approval from the Kremlin, before actually investing in the country. Both sought guarantees that the authorities would not launch a legal onslaught against their investments, as was the case with Yukos.<sup>9</sup>

Recent laws underline this aspect with foreign parties no longer eligible for ownership of majority stakes in new oil and gas fields.<sup>10</sup> The only feasible option for the energy industry to attract the large foreign funds needed is to obtain loans (from foreign banks). Foreign banks are eager to lend to Russia, especially since the major credit agencies (Moody’s, Fitch and Standard & Poor) have upgraded Russia’s credit rating to investment grade, on the basis of stable macro-economic performance .

Domestic oil companies have invested less in oil production in the wake of the political changes and the newly emerging uncertain climate. Investment decisions have been held back as a result of the uncertainty. Another factor has been the increasing taxes that are levied upon oil production. Also, the government has been more strict with enforcing production targets detailed in the oil companies’ licenses. Russian authorities have warned some companies that their license could be revoked.<sup>11</sup>

*Energy is politics*

During Vladimir Putin’s two terms in office, Russian energy policy has increasingly become the key component of foreign policy. Energy is considered the strategic commodity and means by which Russia can begin to recoup its lost geopolitical influence.<sup>12</sup> The Russian government wants a larger say in the decisions and planning of the oil companies. It wants to ensure that oil companies work in the geopolitical interests of the government.

An underlying assumption is that neighbouring countries, or those belonging to Russia’s proclaimed sphere of influence and interest, have an ever growing need for energy supplies. Practically all countries that surround Russia are net-importing countries. Russia knows that energy exports pave a path into gaining influence in these countries, and creating a situation of

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<sup>9</sup> Yukos CEO Khodorkovskiy did not seek approval for his planned sale of 25% of Yukos to US oil companies (Exxon/Chevron), which according to some commentators was what led to his arrest.

<sup>10</sup> See “Resources Bill going to Duma”, in *The Moscow Times*, 18 March 2005. The bill could hurt the TNK-BP oil company the most, as BP holds a 50% stake in the joint company. This would mean that TNK-BP is not a majority Russian-owned company.

<sup>11</sup> See for example “Trutnev threatens TNK-BP’s licenses,” in *The Moscow Times*, 16 September 2004.

<sup>12</sup> See the statements of Vladimir Putin in M. Brill Olcott, “The energy dimension in Russian global strategy”, James A. Baker III Institute, Rice University, October 2004, p. 16-23

dependence. Russia strategically chooses the destination of its exports, because it considers energy exports as part of its national security. This also elucidates why the state does not tolerate private projects (such as the Murmansk-pipeline and Yukos' private pipeline to China) by Russian energy companies that are aimed at exports of energy commodities.<sup>13</sup>

Putin has shifted the centre of energy coordination and decision-making back towards the state, away from the (private) business sector. This is part of a wider campaign aimed at restoring the influence of the state and reducing the power of the ruling business elite, the so-called oligarchs. The oligarchs emerged during the chaotic post-Soviet transition phase. In return for their support of former president Yeltsin (for example, the financing of his re-election in 1996) they were afforded opportunities to acquire huge riches through rigged auctions and privatisations of key assets of Russian industry. The oligarchs became increasingly powerful in economic and political spheres and some voiced political ambitions. But with Putin's accession, the close relationship between the oligarchs and the ruling political elite gradually waned. Putin's goal is to eliminate the influence of the business community in politics. More recently, the influence of the oligarchs has been significantly curtailed with Putin making it clear that they could "run their business, as long as they would not meddle in politics". Those that did were either arrested (Khodorkovskiy) or fled into exile (Berezovskiy).

#### *Production outlook*

In spite of many arguments justifying a larger state influence in the oil industry (budget dependence on energy, foreign currency income, supplying the domestic market), the government must also ensure that production will be maintained and timely investments effected. Operating environments for oil companies, be they Russian or foreign, should be transparent and more incentives should be given to companies to invest and boost exploration and production. As J. Robinson West puts it, "Russia may have large oil reserves, but without massive investment and better management, the oil from these reserves will not flow."<sup>14</sup>

Expanding Russia's production capacity is as much a question of reserves as it is of investment. But can Russia increase its capacity? The IEA predicts a moderate production growth in Russia for the medium-term (until 2010) to 10.4 mb/d.<sup>15</sup> According to Colin Campbell, Russia will produce 10 mb/d by 2010.<sup>16</sup> Michael R. Smith of Energyfiles.com puts production in 2010 at 11 mb/d.<sup>17</sup> But after 2010, the outlook is less univocal. The IEA projects a further rise to 11 mb/d in 2030. But Campbell and Smith predict that Russian production will fall from 2010 onwards, as this year will mark a midpoint of depletion, or the peak oil production.<sup>18</sup>

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<sup>13</sup> Statement by Prime Minister M. Fradkov, see "Russia's key pipeline to be built entirely by the government", Alexander's Gas & Oil, *Company News: CIS/Russia*, volume 9, issue #9, Thursday, 6 May 2004 <[www.gasandoil.com/goc/company/cnr41814.htm](http://www.gasandoil.com/goc/company/cnr41814.htm)>.

<sup>14</sup> J. Robinson West, "The future of Russian energy," *The National Interest*, 1 June 2005, <[www.keepmedia.com/pubs/NationalInterest/2005/06/01/908228](http://www.keepmedia.com/pubs/NationalInterest/2005/06/01/908228)>.

<sup>15</sup> International Energy Agency (IEA), *World Energy Outlook 2004*, p. 283, <[www.worldenergyoutlook.org/](http://www.worldenergyoutlook.org/)>.

<sup>16</sup> C. J. Campbell, "The status of oil and gas depletion in Russia", 14 December 2004, <[www.energybulletin.net/3600.html](http://www.energybulletin.net/3600.html)>.

<sup>17</sup> Michael R. Smith, presentation "World oil resources & peak oil production", <[www.energyfiles.com](http://www.energyfiles.com)>.

<sup>18</sup> The depletionists' view is that the midpoint of depletion simultaneously marks maximum or peak production. After this peak, production can no longer grow because lost reserves (through production) cannot be replaced by new discoveries. Thus, according to the depletionists, oil production peak can be predicted by the oil discovery peak. They warn that production will decline in a few years, as the world is reaching midpoint of depletion. For a

These outlooks, however, are merely a reflection of reserves: the larger the reserves, the better the production outlook. In reality, reserves are only one out of a few preconditions for production growth. This is illustrated by the major production slump in the Soviet Union/Russia during the 1990s, which was caused not by a lack of reserves, but rather by poor management and insufficient investment as a result of the economic crisis during the Soviet break-up.

A concern for Russian producers is the quality of its remaining reserves. Russia's largest producing region is Khanty-Mansiysk Okrug, in Western Siberia. Some two-thirds of total production originates in this region. Most fields in Khanty-Mansiysk are now mature and this will have consequences for future production potential. Fields in Russia's second oil province, Volga-Urals, are even more mature and production from these fields is declining gradually.

Russia will have to produce its oil increasingly from higher cost, more capital-intensive areas such as the Timan-Pechora oil province, the Arctic region, Eastern Siberia and Sakhalin. Because of harsh climatic conditions these regions are more difficult to develop. They require more sophisticated technology and thus higher investment, which drives production costs up. The very competitive low-cost fields of Western Siberia will gradually be replaced by higher cost fields. Current Russian production still comes from a few super large fields that are relatively easy to produce. The flow per well from these fields is high. In the new provinces the oil fields are much smaller and will require increasing the number of wells drilled to maintain the output of the Khanty-Mansiysk fields.

The government has decided to build a pipeline from the Angarsk refinery towards Perevoznaya Bay on the Pacific Coast, designed to allow Russian exports to energy-hungry China and also Japan. This will enable Russia to diversify export destination countries and not rely only on the European market – a major geopolitical goal of the government. Moreover, the pipeline is necessary to unlock the Eastern Siberia region where significant reserves have remained untouched because there is no infrastructure to develop and transport them to markets. The development of Eastern Siberia is a key project, fitting into Russia's strategic and geopolitical goals. The pipeline is expected to be operational in 2008.

The decision to build this USD 15 billion pipeline, however, may be a little premature. Exploration is at a very early stage and even the Ministry of Natural Resources has acknowledged that reserves in the region are only sufficient for an output of 0.6-0.7 mb/d. It has listed a number of field licenses for auction, but many of these are either small or under-explored.<sup>19</sup> To attract enough (domestic or foreign) investment it may be necessary to increase exploration. Given the current stage of exploration, risk levels may be too high for companies to step in. The pipeline's success is contingent on more oil being found in the region.

#### *Export capacity*

For Russia to uphold its role as a large exporter and producer, it is paramount to expand export capacity. Pipelines are working at full capacity and have become a major bottleneck. For now,

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discussion on depletionists (such as Campbell and Smith) and anti-depletionists (like the IEA) see the Australian Government, Bureau of Transport and Regional Economics (BTRE), "Is the world running out of oil?" Working Paper 61, 2005, <[www.btre.gov.au/docs/workingpapers/wp61/wp61.pdf](http://www.btre.gov.au/docs/workingpapers/wp61/wp61.pdf)>.

<sup>19</sup> "East Siberia oil needs \$ 20 billion", *The Moscow Times*, 25 January 2005.



Russian exports can grow because the high oil prices of around USD 60 make other transport options economically feasible, such as rail or river barge transport. However, it does not make economic sense for the Russian oil industry to continue exporting oil by train or river barge which are more than twice the cost of pipeline transport. Given the current near-record oil prices this is a tolerable arrangement, but in a situation of lower prices the economics are more questionable. New pipelines need to be built to afford additional export capacity. Minister Gref of Economic Development has stated that “with delays in achieving an increase in export capacity and pipelines, and the failure to solve a raft of structural problems GDP growth could sink to 4 or 5 percent a year.”<sup>20</sup>

Increased export capacity is good for foreign investors, who will be more interested in investing in the Russian oil industry if they can export oil rather than selling it on the less attractive domestic market, where prices are much lower than the global market.

### **Conclusion**

Russia’s future status as a leading oil exporter and producer is shrouded by a number of uncertainties. The country boasts large resources of oil. Although this is of major importance, it is not a straightforward assumption that Russia can increase oil production. To fulfil its potential, Russia will need to address a number of equally important issues impeding increased production for the (near) future.

- *Confusion about the amount of reserves*  
Russia’s potential on the basis of reserves is quite substantial. It is, however, unclear how large the reserves are exactly. The state still considers the amount of reserves to be a state secret. Further, companies do not all use the same methodology to determine and report their reserves. As a result of the three different definitions of proven reserves, there are varying reserve numbers. To prevent confusion, transparency should be increased and reserves reported should be based on the same methodology. This would benefit investors, as they would be equipped better to assess whether or not to invest.
- *The investment climate is suboptimal*  
The ability to produce the huge reserves will depend on good management and timely investments in new production facilities and infrastructure. It is essential that (foreign) investors can work in an environment where ownership rights are respected and the regulatory framework (including legal and tax issues) is transparent. Moreover, the economic rent of oil production has shifted increasingly towards the state. Although this is positive for the Russian state budget, it poses a disincentive for the oil producers. Consequently, it will have a negative effect on the production outlook.
- *Limited export capacity is a constraint to production growth*  
Export capacity should be expanded to resolve existing bottlenecks and increase profitability, so that the oil companies will also be able to export their oil commercially in the case of low oil prices.

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<sup>20</sup> “Gref says growth slowing, more oil needed,” *The Moscow Times*, 18 June 2004.

- *The role of the state could become counterproductive*  
Although there are a number of reasons for justifying increased state control over the oil sector (budget dependence, inflow foreign currency), this might have a negative effect on oil investment and production. Since the Yukos affair and the new foreign ownership restrictions law on oil field licenses, foreign investment in the oil sector has shrunk considerably. A minority share does not provide foreign investors with enough guarantees to make investments. It is uncertain if domestic Russian companies can fill the gap, considering that most of them are cash-strapped and already have considerable debts.

ANNEX I: OIL MAP OF RUSSIA

