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Energy Resources, Economy and Sustainability of Russia^{*} A comprehensive analysis in a domestic and international context

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Abstract

Russia is one of the world's largest energy resources countries. Proved reserves and production of energy resources in Russia are at compete for the first place all over the world. Besides, market dominance by the SOEs with deep ties of the government, Russia's role as a colonial power of the former communist bloc and resources supply country, vast territory across Europe and Asia and installed pipelines like a mesh also highlight the features of energy resources in Russia. Meanwhile, energy resources industry which forms a core of Russian economy lays in a dilemma between energy resources development and environment preservation. This has become more apparent in the Russian Arctic, where there are numerous oil and gas development projects which pose a tremendous threat to the environment there. Energy resources in Russia have a great impact on sustainability of its economic system domestically and on sustainability of our earth system internationally throughout energy trades and policy negotiations with other economies. In this context, this working paper tries to explore domestic and international aspects of Russian energy resources for comprehensive understanding of the thematic issues. At the same time, this working paper projects the sustainability of Russian economy under the international sanction and other external factors.

JEL Classifications: N50; O13; P28; Q56

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1. Background

In this increasingly globalized world, sustainability has been taken up a matter for discussion on international political economy within several disciplines. With growth of world economy led by emerging markets, each country sets energy resources acquisition for stable energy supply as a prioritized matter of their national policy, which might deteriorate the priority of other environmental perspectives. Governments and their state-owned enterprises (SOEs) in resource-rich countries, drastically growing their nationalism, come to dominate the market and enhance political powers in a global context. By the same token, energy resources are a main source of funds for resource-rich countries and their economies.



Figure 1. Natural Resources Rents-to-GDP ratio (Y: 2013, %)

Note: Country Code—AGO:Angola, ARE: United Arab Emirates, AZE: Azerbaijan, BDI:Burundi, BFA: Burkina Faso, BHR: Bahrain, BOL: Bolivia, BRN: Brunei, BTN: Bhutan, CAF: Central African Republic, CHL: Chile, COD: Democratic Republic of the Congo, COG: Congo Republic, DZA:Algeria, ECU: Ecuador, ERI: Eritrea, ETH: Ethiopia, GAB: Gabon, GHA: Ghana, GIN: Guinea, GNB: Guinea-Bissau, GNQ: Equatorial Guinea, GUY: Guyana, IRN: Iran, IRQ: Iraq, KAZ: Kazakhstan, KWT: Kuwait, LAO: Laos, LBR: Liberia, LBY: Libya, MNG: Mongolia, MRT: Mauritania, NER: Niger, NGA: Nigeria, OMN: Oman, PNG: Papua New Guinea, QAT: Qatar, RUS: Russian Federation, SAU: Saudi Arabia, SLB: Solomon Islands, SSD: South Sudan, SUR: Suriname TCD: Chad, TKM: Turkmenistan, TTO: Republic of Trinidad and Tobago, UZB: Uzbekistan, VEN: Venezuela, YEM: Yemen, ZMB: Zambia.

Source: compiled by the author with reference to World Bank (2015), IEA (2015a), IEA (2015b), CIA (*The World Factbook*)

In the 1940s to 1950s, there was a common sense, to a greater and less extent, that abundant natural resources were an important factor to drive economic growth of developing countries where capitals were seriously insufficient. In other words, developing countries with much labor force has put their priority on export of primary products and inflow of foreign investment as a way of solution for chronic capital shortage. However, through from the 1980s to 1990s, a question on existence of natural resources in abundance was brought up, which could lead to low economic growth. Sachs and Warner (1999, 2001) found that the more dependent on natural resources a country is, the lower economic growth was achieved through their investigation on 95 developing countries where the ratio of resource export per GDP was high from 1970 to 1990. Especially, in the 1970s when commodity prices were soaked, both of investment from foreign investors and expenditure in host resource countries increased, as a result of which their terms of trade were improved. However, with the end of resources boom, severe fall of foreign currency revenue couldn't manage to cover expanding foreign debt, which led these resource-rich countries to debt-laden as shown in Table 1.

Country	2000s	1990s	1980s	1970s	Country	2000s	1990s	1980s	1970s
Conngo, Dem.	187.4	198	75.49	19.51	Chile	49.46	44.31	93.08	43.27
Conngo, Rep.	164.2	302.5	140.6	58.07	Ukraine	48.1	19.6	N/A	N/A
Sierra Leone	120.4	182.4	92.91	31.27	Macedonia	48.03	37.27	N/A	N/A
Zambia	112.1	218.2	192.2	68.84	Armenia	45.91	30.11	N/A	N/A
Kyrgyz Rep.	98.09	58.15	N/A	N/A	Yemen, Rep.	43.82	124.6	N/A	N/A
Togo	90.71	101.6	109.7	43.09	Malaysia	43.05	44.33	56.24	19.35
Cote d'Ivoire	90.68	174.4	134.3	39.21	Peru	42.52	61.19	76.44	50.78
Mozambique	90.05	252.5	130.4	N/A	Romania	40.82	17.95	2.62	N/A
Guinea	88.34	92.72	101.1	N/A	Poland	40.76	47.63	N/A	N/A
Sudan	87.14	166.3	75.53	29.48	Nigeria	39.01	118.1	77.01	9.43
Kazakhstan	85.4	17.18	N/A	N/A	Geogia	38.91	39.36	N/A	N/A
Argentina	80.15	39.25	55.62	18.82	Russia	38.35	41.43	N/A	N/A
Bulgaria	73.35	99	22.66	N/A	Kenya	37.88	79.73	62.98	37.71
Zimbabwe	68.06	63.05	31.7	7.82	Vietnam	37.62	172.4	327.1	N/A
Tajikistan	67.8	66.25	N/A	N/A	Morocco	36.5	76.9	97.84	33.74
Tunisia	66.99	62.05	58.26	38.39	Uzbekistan	33.65	15.06	N/A	N/A
Jamaica	66.02	86.2	133.6	61.52	Turkmenistan	32.14	49.26	N/A	N/A
Jordan	65.7	143.7	81.95	28.03	Colombia	31.58	35.12	36.38	28.3
Mongolia	63.42	61.61	N/A	N/A	Venezuela	31.48	56.85	59.23	19.11
Angola	63.06	246.1	93.65	N/A	Brazil	31.16	29.12	39.95	21.34
Papua N.G.	61.32	70.82	68.62	40.87	Egypt	29.2	58.37	113.2	46.94
Cameroon	60.98	95.19	40.97	24.21	Algeria	25.09	65.4	39.73	36.33
Gabon	60.29	94.77	51.02	50.65	Mexico	22.54	39.94	56.03	25.36

Table 1. External debt stocks per GNI (%)

Niger	59.5	83.03	64.46	13.72	Senegal	21.89	N/A	N/A	N/A
Bolivia	58.48	76.84	92.62	52.05	Azerbaijan	20.06	11.63	N/A	N/A
Indonesia	57.5	80.13	45.61	40.24	South Africa	16.86	17.75	N/A	N/A
Ecuador	56.55	93.23	90.38	28.72	I. Islamic Rep.	9.33	19	4.6	N/A

Source: compiled by the author with reference to Odsuren and Ono (2011), World Bank (2015).

Even in recent years, discussion whether abundance of natural resources is a heaven sent gift or curse from infernos has not been converged into one point. However, it arguably generates social and economic hindrancesto prevent economic growth of countries. ¹ Some representative affairs are as follows;

Fragile Economic Structure: 1) High volatility of natural resources and severe dependence on its export, 2) Acquisition of foreign currency, substantial revaluation of its own currency, weak competitiveness of other industries, 3) Low employment opportunity through the activation of resource export.

Widening Gaps: Profit distributed to limited stakeholders and widening income gaps while plundering the expected profit of the future generations from natural resources.

Frequent Warfare: Source of disputes and warfare because of natural resources as high valued goods. *Weak Democracy*: Rent-seeking behavior of governments, corruptions, briberies, lack of transparency and accountability cannot cultivate well-democratic social system.

In this context, one of the most typical examples is Russia and its political economy. Russia is one of the world's largest energy resources countries. Proved reserves and production of energy resources in Russia are at compete for the first place all over the world. Besides, market dominance by the SOEs with deep ties of the government, Russia's role as a colonial power of the former communist bloc and resources supply country, vast territory across Europe and Asia and installed pipelines like a mesh also highlight the features of energy resources in Russia.

Meanwhile, energy resources industry which forms a core of Russian economy lays in a dilemma between energy resources development and environment preservation. This has become more apparent in the Russian Arctic, where there are numerous oil and gas development projects which pose a tremendous threat to the environment there. However, energy resources in the Russian Arctic are ray of hope for the country facing on depletion of main fields in West Siberia.

To make matters worse, there has still been astonishingly high energy intensity in Russian economy. Scaling up energy intensity across the country is indispensable to improve the competitiveness of its industries and the comfort and health of residents there, limit the consumption of energy, and mitigate negative effects on the environment. At the same time,

¹ Auty ed.(2001), Brunnschweiler (2008), Brunnschweiler (2009), Collier (2010), Egorov, Guriev and Sonin (2006), Lewis (1989), Mehlum, Moene and Torvik (2006), Polterovich, Popov, Tonis (2007), Robinson, Torvik and T. Verdier (2006), Rodriguez and Sachs (1999), Ross (1999), Ross (2003), Sachs and Warner (1995), Sachs and Warner (1999), Sachs and Warner (2001), Torvik (2002), Wantchekon (1999) Van der Ploeg (2006), etc.

Russia cannot ignore a global trend aiming at the realization of low-carbon society in this century.

As described above, energy resources in Russia have a great impact on sustainability of its economic system domestically and on sustainability of our earth system internationally throughout energy trades and policy negotiations with other economies. In this context, this working paper tries to explore domestic and international aspects of Russian energy resources for comprehensive understanding of the thematic issues. At the same time, this working paper projects the sustainability of Russian economy under the international sanction and other external factors.

2. Energy Resources in Russia: In a Domestic Context

Russia is one of the largest countries in terms of its surface area and natural resources. When it comes to oil and natural gas production, Russia has occupied one of the top places and been regarded as an important player in international energy market (more details in next chapter). Meanwhile, E&P industries in Russia, as a core part of its economy, has recently confronted dilemma between development and environment from the perspective of adoption to international society oriented for low-carbon society. In this point of view, big piles of researches have been conducted from various disciplines². These great previous works can be converged to discussion on 1) severe dependence of the economy on its oil and gas sector (Dutch disease), 2) rent-seeking of monopolized/oligopolized stakeholders, 3) low development of economy and society³. Here, let's trace its historical pathways in a brief note.

7th November 1917 — October Revolution(Октябрьская революция) generated the first socialistic country in the world, so called, the Soviet Union (*Союз Советских Социалистических Республик, СССР*). In the 1930s, after the War Comminism (*Военный коммунизм*) and New Economic Policy (*НЭП*), there has already been the soviet socialist economic system. Its basic characteristics are, as K. Marx advocated, an abolishment of private ownership of means of production and a communistic economic regime including an adjustment of demand-supply on the basis of plan, which led to state ownership of means of production based on plan.

In the Oil, Gas and the Mining sector, beginning with nationalisation of Baku assets in 1921 led by V. Lenin, there remained control by governments; Exploration by Мингео and Госгеолком, Development/Production/Transportation by Миннефтегазпром, Refinery by Миннефтехимпром, Selling by Госснаб СССР. Infrastructures owned by government and not re-innovated through industrial investment which was allocated for enlargement of the oil and gas production in the West Siberia. In addition, domestic energy prices were vertically controlled, not taking production/transportation cost into account, but it didn't become

 $^{^2}$ Goldman(2008), Grace(2005), Kuznetsov (2012) , Stulberg(2007) Hellman, Jones, Kaufmann(2000), Frye and Shleifer(1997), Lane(1996), Hoffman(2002), etc.

³ Nurkse(1958), Beblawi and Luciani eds.(1987), etc.

apparent in the 1970s when high export price and government subsidy appeared as a source of its insufficiency. However, after the mid-1980s when international price plunged into a dive, oil production and sales had gradually manacled⁴.

There existed severe environmental problems in Soviet Union while, theoretically, market failure did not happen in socialist economic system, because of inefficiency of industries as resource and energy-wasted and quantitative expansion policy of production led by the government⁵. Economic priority on natural resource development and military industry, and obligations of quantitative norma of production by Миннефтепазпром and Миннефтехимпром, imposed on energy resources-relevant companies⁶.

With the start of market transition after collapse of CCCP, Russian economy resigned in the midst of economic chaos. Transformation from the centrally-planned economy to the market-oriented economic system was started in hand of the shock therapy led by the West, generated hyperinflation and crash of its national economy. (ex. hyperinflation beyond 2500%, GDP in 1995 declined by 55% of 1990. Natural resource industry was not an exception; its production level fell into 59 % of the 1980s.

In the Oil, Gas and the Mining sector, Мингео, Госгеолком, Миннефтегазпром, Миннефтехимпром, Госснаб СССР were integrated to Минтопэнерго. Presidential Address to the Federal Assembly generated lots of vertically-integrated oil and gas companies Роснефть in 1991, Лукойл, Юкос and Сургутнефтегаз in 1993, and finally their number reached to 14 in 1995. Using the scheme of Shares-for-loan auction, ownership of vertically-integrated oil and gas companies transferred from government to олигархи.

Liberalisation of prices soon after starting market transition in the early of 1990s, devaluation of rubles (девальвация) after the financial crisis on August, general increase of oil price in international energy market. Some infrastructures were devolved to private sectors, but there still remains ones owned by government.

In an resource and environmental context, one of the most important and essential changes was an introduction of onerous system for use of unnatural resources as indicated, for example, Закон РФ от 11 октября 1991г. N. 445-1 $\ll O$ планте за землю \gg , Закон РФ от 19 октября 1991г. N. 2060-1 $\ll O f$ охране окружающей природнй среды \gg , Закон РФ от 21 февраля 1992г. N. 2391-1 $\ll O$ недрах \gg and so on. However, environmental improvement without effective policies and decline of resource production happened due to transformational recession which resulted in 'improvement without policies', so that low prioritized rank of environmental preservation had continued as well. In this context, two directorates related to environmental issues were integrated to Минприроды and, finally, resource production revived. Most of these components stated above are continuous from Soviet era via transition period except reorganisation of the related Ministry. (ex. Минприроды Минэкономразвития,

⁴ Grace (2005)

⁵ Goldman, 1972

⁶ Most of researches on Soviet oil and gas industry conducted from the perspective of the West, but Robert E. Ebel (1961) "*The Petroleum Industry of the Soviet Union*", Robert E. Ebel (1971) "*Communist Trade in Oil and Gas*", Robert W. Campbell (1976) "*Trends in the Soviet Oil and Gas Industry*", Margaret Chadwick, David Long, Machiko Nissanke(1987) "*Soviet Oil Exports*" from Soviet side.

Минэнерго), Reorganisation of Oil, Gas and the Mining Sector.: Converged to state-owned with powerful actor such as Роснесть(Oil) and Газпром (Gas).

Experiencing an economic tailspin in the1990s, Russian economy revived with steep rise in crude oil price from the beginning of the 2000s. In this context, a 'national champions' industrial policy for the resource industries could be described to bear fruit. In a recent momoent, as the Figure 2 and Figure 3 indicate, Russian economic structure is seriously dependent on rents from mineral commodity and its export. There seems to be a strong correlation between growth of Russian economy and the export values of hydrocarbons.



Figure 2. Natural Resources Rents-to-GDP ratio in Russia (Y: 2013, %)

Source: compiled by the author with reference to Федеральная служба государственной статистики

(Росстат)



Figure 3. Economic development rate and export values of oil/gas in Russia

Source: compiled by the author with reference to IMF (2016), World Bank (2016), Центральный Банк

PΦ (2016a, 2016b, 2016c).

At the same time, Russian economy and its federal finance severely count on natural resources and immense wealth from its exploration and export, as the Figure 4 describes⁷. For the sake of stable economic growth and risk hedge for oil price decrease, the government established 'Стабилизационный фонд Российской Федерации (stabilisation fund of Russian Federation)' on 1st January 2004. On 26th April 2007, Federal Law No.63⁸ amended the Russian Federation's Budget Code to create the Резервныйфонд (the Reserve Fund) and the Фонднационального благосостояния (National Wealth Fund) by splitting the Fund.







$$T_{\rm H} = a \times K_{\rm AB} \times K_{\rm q}$$
(a=775Rb/t -Y:2015, 856Rb/t -Y:2016, 918Rb/t-Y:2017)
For oil, $K_{\rm AB} = 3.8 - 3.5 \times \frac{N_{\rm AB}}{V_{\rm AB}} \cdots (0.8 < K_{\rm A} < 1.0)$
 $K_{\rm AB} = 0.3 \cdots (K_{\rm A} > 1.0)$
 $K_{\rm AB} = 1.0 \cdots (K_{\rm A} < 0.8)$
 $K_{\rm q} = (\Pi - 15) \times \frac{P}{261}$
For natural gas, $E_{\rm YT} = \frac{0.2051 \times K_{\rm FII} \times (\Pi_{\rm F} \times \Pi_{\rm F} \times \Pi_{\rm K} \times (1 - \Lambda_{\rm F}))}{(1 - \Lambda_{\rm F}) \times 42 + \Lambda_{\rm F} \times 35}$
 $T_{\rm F} = 0.5 \times T_{\rm p} \times (\frac{P_{\rm F}}{100}) \times (\frac{1}{O_{\rm F}})$

⁸ Федеральный закон от 26 апреля 2007 г. N 63-ФЗ "О внесении изменений в Бюджетный кодекс Российской Федерации в части регулирования бюджетного процесса и приведении в соответствие с бюджетным законодательством Российской Федерации отдельных законодательных актов Российской Федерации" Source: compiled by the author with reference to OECD (2015), IMF (1999), Министерство Финансов Российской Федерации (2016), Федеральная служба государственной статистики (Росстат), Институт экономического анализа (ИЭА), Центральный Банк РФ.

3. Energy Resources in Russia: In an International Context

Russia is a leading driver in world energy and a major player in international energy markets. Crude oil production in Russia accounted for 540 .72 million ton in 2015. This is the third place only behind Saudi Arabia (568 million ton) and the United States (567.25 million ton). Crude oil export was above 153.8 billion USD. At the same time, natural gas production in Russia was 573.3 bcm, the second largest producing country. Its export value accounted for 60.4 billion USD. From this point of view, Russia is an important player in an international energy market.





Note: Production (Y:2015), Export (Y:2014) Source: compiled by the author with reference to BP (2016), UNCTAD (2016).

Originally, Russia energy exports have been oriented towards the EU and the FSU to make use of geopolitical and geocommercial advantages. The EU imports a large amount of crude oil, natural gas from Russia. At the same time, the EU also serves as a main destination of Russian natural gas. In this regard, Ukraine has played an important role as a transit country of Russian gas to European countries.





At the same time, Russian gas also accounts for approximately a third of gas origin for domestic consumption in Ukraine. Considering previous gas disputes and current political situation, it is indispensable for Ukraine to compensate its energy supply with other energy sources. In most cases, it is an appropriate pathway for Ukraine to foster its renewable energy markets, especially unlock potentials of biomass energy in the country⁹.

In the same context, however, reflecting the international political issues on Crimea, supply-demand relationships between the EU and Russia have been changed in a recent moment. Russia's eastward are being more accelerated. The drastic emerging demand on energy in Asia-Pacific region, especially in China, from this century is also a driving force to promote this eastward.

Source: Gazprom; Naftogaz; IEA's estimate and figure shown in the presentation of Eyl-Mazzega and Yagoto at the Standing group for Global Energy Dialogue held on 20-21 May 2015.

⁹ Please refer to the OECD (2015) Fostering investment in the Biomass Sector of Ukraine, OECD, Paris.



Figure 7. Origin of Ukraine's gas supplies, 2014 (42 bcm)

Figure 8. Energy demand and growth rate of demand for natural gas in the world



Source: compiled by author with reference to IEA (2015a), IEA (2015b), IEA (2015e).

Facing on undesired situation in Europe, Russia needs to find other reliable partners in an international context on one hand. On the other hand, China has great appetite for energy sources to further develop its economy. In this context, China's interest in incorporating vast surrounding into China's sphere of influence with good political, economic and cultural connection are clear within its energy strategy and cooperation scheme with Central Asian countries where oil and natural gas are abundant.

In recent years, China's penetration into this region has progressed so rapidly. Investment is acutely needed in Central Asia and China sees Central Asia as its backbone to ensure energy security, switch from coal to gas, and the frontier for investment and trade. Chinese efforts to create a web of bilateral trade/investment agreement as well as regional cooperation

framework are also bearing fruits to support the initiative by creating a business-friendly environment and infrastructure for China. A kind of win-win relationship between China and Central Asia provides a strong incentive for both to move forward with the Initiative.

This mutually complementary relationship is already evident. Chinese FDI stock in Kazakhstan, Kyrgyzstan and Turkmenistan shows that China has already overtook Russia. In the case of Tajikistan, their deference becomes much fewer. Certainly the Initiative will further facilitate the trend of increasing Chinese investment into this region. But here, an important question to be asked is, how does Russia react to China's apparent inroad into Central Asia?



Figure 9. Inward FDI by China and Russia in Central Asian countries (stock-base)

Source: Russia- Russian Central Bank (2013), Прямые инвестиции из Российской Федерации за рубеж по инструментам и странам-партнерам в 2010-2014 годах. China: Ministry of Commerce of People's Republic of China, National Bureau of Statistics of People's Republic of China, State Administration of Foreign Exchange (2013), 2013 年度中国对外直接投资统计公报.

Initially, Russia was careful about China's move and stood rather against the Silk Road Initiative and AIIB. Russia viewed them as China's "soft power" or "marshall plan"¹⁰. In an attempt to counterbalance, Russia led the Eurasian Development Bank (EDB) to provide loans to these countries, so that Russian power in this region may not be overshadowed by rapidly increasing Chinese capital and investment. One Russian newspaper "Rossiyskaya Gazeta" also pointed out that the Initiative made Russia more cautious about the lack of transparency and certainty about Russian position in the China-led regional integration efforts¹¹. Russia may also be anxious about the risk of putting the Trans-Siberian Railway in an outdated position.

However, several high-level meetings between Vladimir Putin and Xi Jinping were held recently, in an apparent effort to disperse these anxieties¹². Then, eventually, Russia applied and became a founding member of China-led AIIB on 14th April 2015. To note, according to the Ministry of Finance of Russian Federation, the purpose of Russia's participation in AIIB is

¹⁰ Vedomosti (Ведомости, Russian business daily), 18th March 2015 and 24th June 2015.

¹¹ Российская Гозета,27th March 2015.

¹² Nezavisimaya Gazeta (Независимая газета), 20th January 2015.

to attract financial capitals for investment projects in Russia, primarily, Eastern Siberia and Far East, rather than to contribute for fundraising and cement its position in the AIIB, which is difficult due to the international sanctions¹³

Moreover, the reality on the ground also goes in line: Over a decade, gas pipeline negotiation between Russia and China continued, but not reached an understanding, due to a price formula for the deliveries and its route. However, on 21st May 2014 Gazprom and CNPC finally agreed on the gas supply contract of 38 bcm/a for 30 years, starting form 2018. This agreement was signed in Moscow on 13th October 2014.

The cooperative relationship between the both countries is most evidently observed at the Russia-China summit in Moscow on 8th May 2015. Russia and China signed 32 joint statements in total¹⁴. Two countries will deepen the comprehensive strategic partnership and promote mutually beneficial cooperation as is stipulated in the statement No. 16. Remarkably, they also singed the statement No.15, which enshrines a close cooperation between Eurasia Economic Union (EEU) and Silk-road Economic Belt. It is quite important to point out that capital of AIIB will be utilised for this purpose (China is not a member to EEU).

It still remains to be seen, but the emerging analysis is that Russia is increasingly seeing China as an opportunity, not a threat, in the area of bilateral as well as regional energy cooperation. While for the time being, a set of sanctions against Russia don't affect Russian energy export to European market, the creation of Energy Union on 26th-27th June 2014 and the statement of objections to Gazprom by the European Commission on 22nd April 2015, among others, may have displeased Russia. In return, Russia hopes that the world sees Russia is not isolated, by showing how Russia is close to China.

In fact, despite the rapid encroachment of China into the deeper part of Central Asia, Russia appears to be more cornered to keep China on their side to counter balance the damages caused by the international sanctions¹⁵, rather than giving a caution to China that Central Asia is under Russian sphere of influence and thus China should not try to over-take Russia in its presence in the region. China is taking advantage of weakening Russia with the faltering economy under the sanctions and lowered oil price. The continuous international sanction and low oil prices can be regarded as a negative factor for Russia and its energy resources in an international context

¹³ Ministry of Finance of Russian Federation - press release on 14th April 2015

¹⁴ They can be categorised as follows: *Finance & Investment* -10, *Energy* -8 (including 2 Mineral-related), *Manufacturing* -5, *Infrastructure* -2, *Space Industry* -2, *Information and Mass media* -2, *General & Others* -3.

^{-3. &}lt;sup>15</sup> This is also apparent at the public level: the view of the Russian public underlines this sentiment, too. Russia Public Opinion Research Centre (WCIOM) published the result of the public survey about Russia's "friends" and "enemies" on January 2015. The result revealed that China was ranked the first as Russia's "friend", followed by Belarus and Kazakhstan. Compared with the previous survey of 2008, the ratio of Russian people with favourable impression on China increased more than twice from 23 % to 51%.

4. Sustainability of Russian Economy

In this chapter, this paper tries to analyse and provide some preliminary projections on sustainability of Russian economy both on the basis of above two chapters.

To begin with, facing on depletion of oil and gas strata in West Siberia, Russia is required to newly develop ones in East Siberia, Far East and the Arctic region where environmental risks are considerably high. This accelerates Russian shift towards Asia Pacific region as a main destination of own energy resources. This can be also found that Russian economy is seriously hit by low oil price while its energy investment is increasing, mainly to export more oil and gas to Asia. (Takahashi, 2016)

Next, it is needed to note that energy resources development causes environmental and humanitarian concerns ...through its waste-intensive industrial specificity, designated areas and regions are seriously contaminated. (VanDeveer, 2015, p.361). In fact, Russian energy industries are a main contaminator on the environment. They contaminated almost 60% of air pollution, 20% of surface water pollution and 70 % of CO2 emission. From a macro perspective, energy intensity of Russian economy is at a critically high level, compared with other economies. Russia will be tested by this urgent challenge given to sustainability.







Source: compiled by the author with reference to International Energy Agency (2015a), (2015b).

Thirdly, world history so far demonstrates that environmental movement of civil society (residents, NGOs, NPOs, etc.) is evoked, in most cases of the West, towards environmental improvement in a country or region. However, this is currently not applicable to Russia. Environmental movement in Russia is still weak, rather its institutional arrangement¹⁶ might be adverse against the world trend. The most typical example describes the situation where members of the Green Peace Russia and two journalists were arrested at the Prirazlomnaya in the Russian Arctic, as 'Piratstvo' -Ук РФ Статья 227 – "Пиратство").

Besides, its overall influence is limited by a combination of political opposition and public apathy (Oldfield, 2002, p.117). Richness of energy resources in the region are reflected in its residents' incomes and thus sometimes it incentivizes unconsciousness for the environment.



Figure 11. Energy resources production and air pollutants by federal districtsOil Production (incl. gas condensate)Gas Production (incl. APG)

¹⁶Федеральный закон Российской Федерации (Фз РФ) от 10 января 2006г. N 18-ФЗ "О внесении изменений в некоторые законодательные акты Российской Федерации", Фз РФ от 20 июля 2012 г. N 121-ФЗ "О внесении изменений в отдельные законодательные акты Российской Федерации в части регулирования деятельности некоммерческих организаций, выполняющих функции иностранного агента", Фз РФ от 23 мая 2015 г. N 129-ФЗ "О внесении изменений в отдельные акты Российской Федерации"



Air Pollutants Emission from Stationary Sources

Source: compiled by the author with reference to Rosstat and other governmental materials.

Moreover, Russian economic structure seriously depends on energy resources and thus it enhances its vulnerability to any external factors. One example is that current low energy prices in the market attacked federal budget and stabilization fund in the country. This energy-dependent economic structure should be more diversified for the country's sustainable development for the future.



Figure 12. Crude oil prices 1998-2016, USD/bbl

Source: Tabata (2016). Primary data source from the IMF.

There is a risk factor to threaten the sustainability of Russia in an energy and political context. In the Soviet period, all Central Asian countries were under the control of Communist Party of the Soviet Union (CPSU), and energy sector governance was not an exception¹⁷. After the Soviet era, the Central Asian countries were in the middle of great power's competition for sphere of influence, as some refer it as "*The New Great Game*". China is now of one of its major players with its accelerating inward into the region. Extensive webs of bilateral trade and investment agreements were created as well as the various frameworks for regional cooperation such as CIS (Commonwealth of independent States), Eurasian Economic Community, Common Economic Space, Eurasian Economic Union, Economic Cooperation Organization, Collective Security Treaty Organization, Shanghai Cooperation organization, Central Asia Regional Economic Cooperation, Interstate Oil and Gas Transportation to Europe.

	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan	Russia	China
Kazakhstan		IF/NIF	IF/N	N/N	IF/IF	N/IF	N/IF
Kyrgyzstan	IF/NIF		IF/NIF	N/N	IF/IF	IF/N	N/IF
Tajikistan	IF/N	IF/NIF		N/N	IF/N	IF/NIF	N/IF
Turkmenistan	N/N	N/N	N/N		N/IF	N/IF	N/IF
Uzbekistan	IF/IF	IF/IF	IF/N	N/IF		N/IF	N/IF
Russia	N/IF	IF/N	IF/NIF	N/IF	N/IF		N/IF
China	N/IF	N/IF	N/IF	N/IF	N/IF	N/IF	

Figure 13. Bilateral cooperation (BTA/BITs) among Central Asia, Russia and China

Note: BTA: Bilateral Trade Agreement, BITs: Bilateral Investment Treaties, IF: In force, NIF: Signed, but not in force, N: None.

	CIS	EurAsES	CES	EEU	ECO	сято	SCO	CAREC	INOGATE	WTO
Kazakhstan	٠	•	•	•	•	•	•	•	•	
Kyrgyzstan	•	•	×	•	•	•	•	٠	•	•
Tajikistan	•	•	×	×	•	•	•	•	•	•
Turkmenistan	•	×	×	×	•	×	0	٠	•	×
Uzbekistan	٠	•	×	×	•	×	•	•	•	
Russia	•	•	•	•	×	•	•	×	•	•
China	×	×	×	×	×	×	•	•	×	•

•: member, \bigcirc : observer/attendance, \times : non-member,: accession process

Note: CIS: Commonwealth of Independent States, EurAsES: Eurasian Economic Community, CES: Common Economic Space, EEU: Eurasian Economic Union, ECO: Economic Cooperation Organization, CSTO: Collective Security Treaty Organization, SCO: Shanghai Cooperation Organisation, CAREC: Central Asia Regional Economic Cooperation, INOGATE: Interstate Oil and Gas Transportation to Europe, WTO: World Trade Organization..

Source: compiled by author with reference to UNCTAD-DIAE, governments' website.

¹⁷ For example, all oil and natural gas pipelines from Central Asia and the Caspian Sea got oriented toward only Russia without alternative pathways, their prices and the amount of exports were also set by CPSU and related ministries.

With the rampant corruption, underdevelopment in many part of the region, and the diverse level of economic development among the countries, China will be tested to see if China is genuinely interested in bringing the prosperity into the region. If not, there might be a possibility that China's advancement would be labelled as a neo-colonialism, as was the case in some African countries. More or less, China's inward into the region should weaken Russia's position in its previous backyard.

Finally, it still remains to be seen, but the emerging analysis is that Russia is increasingly seeing China as an opportunity, not a threat, in the area of bilateral as well as regional energy cooperation. While for the time being, a set of sanctions against Russia affect to a small extent Russian energy export to European market, the creation of Energy Union on 26th-27th June 2014 and the statement of objections to Gazprom by the European Commission on 22nd April 2015, among others, may have displeased Russia. In return, Russia hopes that the world sees Russia is not isolated, by showing how Russia is close to China. Russia should squarely face various problems in a domestic and international context for realising its sustainability in this century.

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