

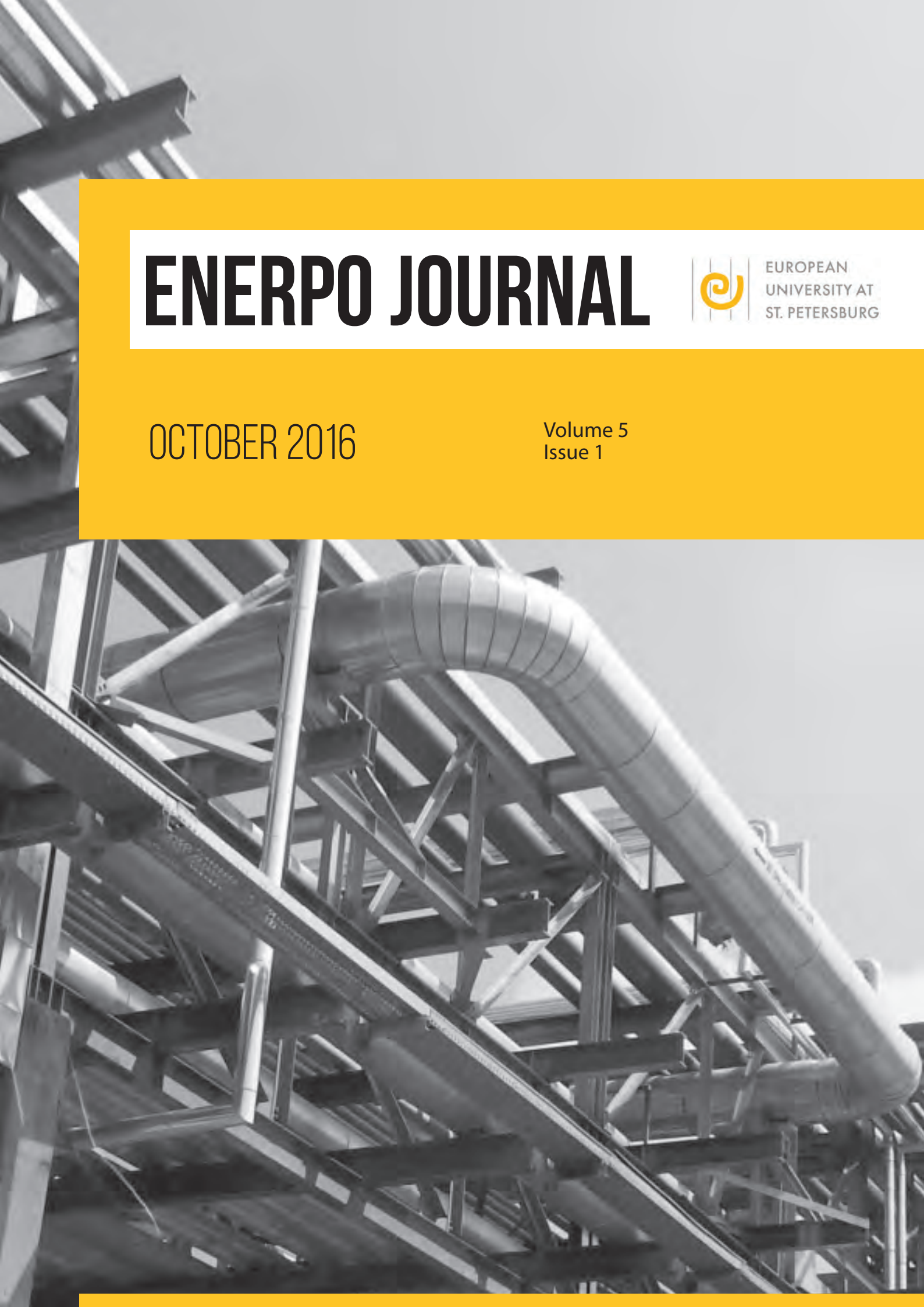
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Key words: Russia; Eastern Siberia; Far East; Irkutsk project; Kovytkta gas deposit; Gazprom; China; South Korea

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Key words: sanctions; Iran; oil

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Emissions trading schemes, or cap-and-trade, provide a market-friendly approach for countries to reduce their CO₂ emissions. Cap-and-trade works by quantifying the CO₂ itself into permits, and then setting a limit, or cap, on emissions by reducing the number of permits over time. The permits are tradable, allowing for supply and demand forces to create a market, where countries or firms that exceed their emissions must purchase more permits or pay heavy fines, while those that reduce emissions can profit from unused permits. Therefore, an overall reduction in emissions is ensured. Since the Kyoto Protocol, cap-and-trade has been encouraged as a strategy to meet emissions reduction targets, and many countries have already ratified the Paris Agreement, the aspirant successor to the Kyoto Protocol. As the Paris Agreement enters into force, regions and countries, including some of the major polluters, have already implemented cap-and-trade, or have projects in development, such as China's national ETS set to begin in 2017. Identifying the features and limitations of existing emissions trading schemes could serve as a lesson for countries considering carbon pricing methods as a means of reaching their individually committed goals under the Paris Agreement. This paper will look at five particular emissions trading schemes, including the largest, and most well-known program, the European Union Emissions Trading Scheme. Though cap-and-trade is far from flawless, this paper concludes that it is superior to a carbon tax, and that it should be taken seriously by policymakers as a viable strategy to reduce emissions.

Key words: emissions trading; cap and trade; climate change; UNFCCC; Paris Agreement; Kyoto Protocol; grandfathering; European Union ETS; China ETS

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This article presents an assessment of the political and economic arguments against Europe's current largest natural gas infrastructure project, Nord Stream 2. The pipeline project connects Russia directly with Germany, Europe's largest gas consumer and Russia's most important customer, via the Baltic Sea. This article views the project in the context of European energy security. The European Union members are currently deeply divided in the question of EU energy security in general and natural gas supply security in particular. This paper argues that the liberalization process of European gas markets (one of the strategies), is the preeminent way to achieve gas supply security in Europe. The case of Nord Stream 2 is almost symbolic of the gas supply security problem and how deep the dispute runs across the continent. Nord Stream, next to the Greek bailout, the refugee crisis and 'Brexit', could become another step towards EU disintegration. The aim of this article is to overview the European dispute around Nord Stream 2 based on the five most noteworthy arguments against this project. Considering these arguments, this article delivers an explanation as to why Nord Stream 2 is not as bad as it appears to be, and why the project is benefitting European energy security.

Key words: Nordstream 2; energy security; EU; Gazprom



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RUSSIA'S NATURAL GAS EXPORT POLICY IN ASIA PACIFIC IN THE 1990S: UNFULFILLED POTENTIAL

Olga Gerasmichuk

Abstract

The economic and technological rise of Asia Pacific countries in the early 1990s generated a growing demand for Russian hydrocarbons, particularly for natural gas. To benefit fully from this situation, Russia, historically oriented towards European gas markets, decided to develop the Asian dimension of its gas policy from its gas fields in East Siberia and the Far East. Their focus has been mainly on three key countries in the region, namely Japan, China and South Korea. Russia and the Asian countries, understanding that their geographical proximity and economic considerations foster a mutually beneficial relationship, cooperated to create the Kovytko project, prompting the construction of a transnational gas pipeline for subsequent gas deliveries to the countries of the region. However, the hardening of the Russian government's position vis à vis the project, and Gazprom's gradual takeover of gas resources in the Irkutsk region, and more generally of the East Siberia, significantly reduced the efforts made by Russia Petroleum and its Asian partners in this direction. This article discusses Russian attempts throughout the 1990s to involve Asia Pacific countries in close gas cooperation, with a particular emphasis on the Kovytko project development, and the construction of a long-distance natural gas pipeline connecting Russia, China, and South Korea.

Key words: Russia; Eastern Siberia; Far East; Irkutsk project; Kovytko gas deposit; Gazprom; China; South Korea

"The Asia Pacific region occupies a particular place in the system of Russia's long-term energy policy priorities. This region constitutes a very promising energy market, constantly growing, in which Russia could become a major player. Given the role that energy plays in the economy of the countries of the region, one can assume with certainty, that the expansion of the cooperation in the energy field will become the mainstay of Russia's relations with the countries of the region and will give a new life to the stable economic development of Russian Eastern Siberia and Far East."

Elena Telegina
Deputy Ministry of Energy of Russian Federation (1998-99)¹

Despite the Russian Federation's hopes to increase cooperation with Asian countries in the field of natural gas, at least in contrast to its business with European countries, the late 1990s proved disappointing. Gazprom succeeded in adapting to Europe's new geopolitical and economic constraints, and therefore was able to preserve its position as Europe's main natural gas supplier. At the end of the decade in Asia, however, Gazprom's business in Asia ultimately failed to achieve concrete results or bring any substantial profits, neither for Russia nor for its Asian partners. However, these decisions made at the turn of the century had wider implications for Russia's gas export policy, led by President Vladimir Putin, and Alexei Miller, the new CEO of Gazprom. Expectations of growing cooperation with Asia is evidenced by the energy projects, such as the construction of a LNG liquefaction plant on Sakhalin Island in February 2009, as well beginning development of the "Power of Siberia" gas pipeline in September 2014 after a long awaited commercial contract was signed in Moscow. These developments gave Russia the means to finally be present, although modestly, in Asian energy markets.

This article discusses Russian attempts throughout the 1990s to involve Asia Pacific countries in close gas cooperation, specifically the development of the Kovytko project and the construction of a long-distance natural gas pipeline connecting Russia, China, and South Korea.

THE FIRST RUSSIAN ENERGY PROJECTS IN THE EAST

Throughout the 1990s, Russian cooperation with Asia Pacific countries in energy limited itself to feasibility studies in the Eastern Siberia and Far East regions, as well as studies estimating transportation costs for export of these resources. Many natural gas export routes were proposed, ranging from bilateral projects between Russia and China to multilateral projects such as the construction of the Irkutsk pipeline (Russia, China and South Korea) or the transnational gas pipeline that linked Russia, Mongolia, China, South Korea and Japan. This period will be remembered for many long negotiations, inter-governmental exchanges, and cooperation agreements. However, none of these projects materialized with a signed commercial contract.

First drafts of energy projects in the Russian East were made prior to the break-up of the USSR. In 1989, a group of Russian gas sector researchers, including Soviet academician Mikhail Styrikovich wrote, "The development of natural gas production and use in Far East and profitability of such exports to Japan, China and South Korea in the 2000s and beyond."²

1 Telegina, E., 1999. Геополитические интересы России в свете энергетической безопасности (Russia's Geopolitical Interests in Light of Energy Security), Нефть России (Neft Rossii) [online] November. Available at: <<http://www.oilru.com/nr/65/397/>> [Accessed 21 January 2016].

2 Mastepanov, A., 2013. Энергопартнерство в Северо-Восточной Азии (Energy partnership in Northeast Asia), Независимая Газета (Independent Newspaper) [online] 12 February http://www.ng.ru/energy/2013-02-12/11_korea.html [Accessed 5 August 2016].

This paper examined the possible options for the large-scale development of gas deposits in Yakutia and offshore in Sakhalin Island. Moreover, it estimated the costs of natural gas exports both in liquefied form and via pipeline network towards Asian Pacific countries. Based on this document, the Soviet Ministry of Geology, the Soviet Ministry of the Oil and Gas Industry, the State Gas Consortium Gazprom, the Soviet Academy of Science and the Technological Academy prepared the concept of natural gas development in Yakutia and on Sakhalin, as well as the development of mineral resources. The project is better known as the “Vostok Plan”.³ The project expected that the region could produce about 15.7 million tonnes (21.35 bcm⁴) of gas per year by 2005 to meet domestic needs, and possibly an additional 13.3 Mt (18.09 bcm) of gas for export to Asia.

Interestingly, Russian and Western experts have diverging views regarding natural gas exports routes proposed in the Vostok project. Alexei Mastepanov indicates that one of the proposed gas export routes could deliver gas deposits in Yakutia and Sakhalin Island to the Northeast regions of China and further to the Korean peninsula. Keun-Wook Paik insists that the People’s Republic of China did not participate in this project. Alternatively, Keun-Wook Paik insists that the People’s Republic of China did not participate in this project. According to Paik, the gas pipeline would deliver Sakhalin deposits to South Korea through the territory of North Korea. Thus, according to Paik, 13.3 Mt (18.09 bcm) of natural gas foreseen for the exports were to be distributed in the following way: 6 Mt (8.16 bcm) were to be delivered to Japan, 6 Mt (8.16 bcm) to South Korea and 1.3 Mt (1.76 bcm) to North Korea.⁵ Tsuneo Akaha, in his book titled “Politics and Economics in the Russian Far East: Changing Ties with Asia-Pacific”, discusses the other export route proposed in the “Vostok Plan”: thus, a gas pipeline project delivering Yakutia deposits through North and South Korea to supply natural gas to Japan.⁷ However, none of the aforementioned export projects materialized; the dissolution of the Soviet Union tabled the Vostok project.

3 *Ibid*

4 billion cubic meters. All units converted to billion cubic meters with BP conversion factors
<http://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy/using-the-statistical-review/conversion-factors.html>

5 Mastepanov, A., 2014. О диверсификации экспортных поставок российского газа и восточной энергетической политике России (On the diversification of Russian gas export markets and Russia’s eastern energy policy), Russian Institute of Energy Strategy [pdf] Available at: http://www.energystrategy.ru/press-c/source/Mastepanov_ep3-14.pdf [Accessed 05 August 2016]. p.35

6 Paik, K.W., 2012. Sino-Russian Oil and Gas Cooperation: The Reality and Implications, OIES Paper: WPM 59, Oxford Institute for Energy Studies, [pdf] April. Available at: <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2015/04/WPM-59.pdf> [Accessed 10 August 2016].

7 Akaha, T., 2002. Politics and Economics in the Russian Far East: Changing Ties with Asia-Pacific, London: Routledge, p. 116

THE COOPERATION ADVANCES BUT FACES THORNY POLITICAL ISSUES

Despite the collapse of the USSR, Asian countries have not lost interest in Russian gas. On the contrary, rapid economic and technological advancement, coupled with their lack of domestic resources, make attaining new sources of supply essential for Asian countries, and the new energy projects in the Russian Far East are attractive. However, many of the initiated projects were being developed slowly due to tense political relations inherited from Soviet times, and to an imprecise and fluctuating Russian legislative and regulatory framework. Furthermore, as these projects were conducted by a small group of independent energy companies supported mainly by local administrations, and not by Moscow, they did not benefit from the same magnitude of financial aid that major companies such as Gazprom enjoyed. As Table 1 shows, this strategy is entirely oriented to European gas markets since the late 1960s, and Asian markets are virtually absent until the negotiations in the second half of the 1990s.

September 1993	China National Petroleum Corporation (CNPC) via its 100% subsidiary, Daqing oil field, in partnership with Canada’s MacDonald Petroleum entered into negotiations to explore oil and gas fields in the Irkutsk region. Consequently, Daqing oil field had gained permission to drill some exploratory wells in two virgin fields.
June 1994	The Russian government and the Administration of the Sakhalin region signed with «Sakhalin Energy Investment Company Ltd.» a Production Sharing Agreement (PSA) to develop Piltun-Astokhskoie and Lunskoie gas fields within the Sakhalin-2 LNG project.
November 1994	CNPC and MINTOPENERGA signed an agreement, aiming to construct a transnational long-distance natural gas pipeline running through Inner Mongolia and Hebei Province, and terminating in Shandong Province
July 1995	Gazprom proposed to CNPC two routes of natural gas export to China 1. From gas fields in Western Siberia to western provinces in China via Xinjiang (Altai Project) 2. From gas fields in East Siberia, and notably, from Kovykta gas field, to China’s northeastern provinces (Baikal Project)
December 1996	The Consortium of South Korea’s energy companies conducted a preliminary feasibility study (FS) on the Kovykta gas field to prove if the project would be economically profitable to South Korea.
June 1997	Russia and China signed a governmental agreement to export natural gas and electricity from East Siberia to China. This agreement envisaged 25 bcm per year of gas export to China over 30 years.
August 1997	Gazprom and CNPC signed a cooperation agreement, to study the possibility of natural gas supply from Russia to China, notably from Western Siberia through the western section of Russian-Chinese border, as well as at the implementation of relevant projects.
December 1997	A multilateral memorandum between 5 countries (Russia, South Korea, China, Japan and Mongolia) was signed in Moscow, calling for a coordinated approach to improving reserve estimates, further developing fields, defining the market for produced gas, and carrying out a feasibility study on natural gas fields in Siberia and for the transnational pipeline project.
February 1999	Russia Petroleum and CNPC signed two general agreements in gas sector: 1. A feasibility study on the Irkutsk region’s natural gas export to north-eastern provinces in China via a long-distance pipeline; 2. A preliminary FS on western Siberia’s gas export to Shanghai via a transnational pipeline passing through the Xinjiang Autonomous Region
October 1999	Gazprom and CNPC signed a Protocol calling for the joint research in the field of underground gas storage facilities (UGS).
November 1999	KOGAS joined the Russia Petroleum-CNPC agreement on carrying out a FS on the Kovykta gas project in Irkutsk region.
November 2000	Russia Petroleum, CNPC and KOGAS signed in Beijing a new trilateral agreement for a feasibility study. The projected total production volume was around 30-50 bcm, and gas output and exports to China and South Korea amounted to 20 bcm and 10 bcm respectively.

Table 1. A Brief Review of Russia and Asia Pacific Countries Gas Cooperation in the 1990s

Sources: Paik (2012), Mastepanov (2014), various issues of Moscow Times

The territorial conflict that exists between Russia and Japan from the end of the Second World War is perhaps one of the best illustrations of a political issue repeatedly impeding the progress of energy projects. The unresolved question of the Northern Territories⁸ and the inability of both sides to finally sign a peaceful agreement have remained a serious stumbling block in the relations between two countries. In fact, Tokyo refused to separate political issues from those within the economic field, and pushed a deal to exchange capital, which Russia desperately needed at the time, in exchange for the return of Kuril Islands. In 1992, Moscow's official position hardened, and was evidenced when Russian President Boris Yeltsin's cancelled his visit to Japan, originally scheduled in September. The Russian government explained that Yeltsin's cancelled visit was due to the rigidity and stiffness on the part of Japanese partners on the Kuril issue. However, many Russian experts explain Russia's tightened position by the fact that Yeltsin wanted at any price to avoid the risk of opening negotiations with the Japanese on the eve of parliamentary elections or give the Communists and Ultra-nationalists the pretext of a possible restitution of Kuril Islands.⁹ This situation resulted in a cooling of relations between Tokyo and Moscow, compelling Russia to shift its focus instead on China and South Korea, partners that the Kremlin qualified as less difficult.¹⁰

THE DEVELOPMENT OF THE KOVYKTA GAS DEPOSIT AND THE CONSTRUCTION OF THE IRKUTSK-CHINA-SOUTH KOREA GAS PIPELINE

The early 1990s saw the emergence of some energy projects in the Russian Far East, where China played a central role.

In November 1994, the Russian energy company Mintopenergo signed a Memorandum of Understanding (MOU) on the construction of a long distance gas pipeline with China's CNPC (China National Petroleum Corporation), to link gas fields of the Irkutsk region in Eastern Siberia to the Chinese Shandong province, through the territories of Inner Mongolia and the Hebei region. According to this document, Russia committed to supply gas to the coastal cities of Eastern China, by exporting 20 bcm of natural gas per year.¹¹

8 Northern Territories is the Japanese term used to refer to the South Kuril Islands (Iturup, Kunashir, Shikotan and Habomai), specifically the territories disputed with the Russian Federation, dating back to the end of WWII, after the Manchurian Strategic Offensive Operation, when Russian forces annexed the islands. They were incorporated into the USSR and today remain part of Russia. The islands are still a matter of disagreement between Moscow and Tokyo

9 Kimura, H., 1996. *The Russian Decision-Making Process Toward Japan*. *Japan Review*, 7, 61-81.

10 Eggert, K., 1992. *Москва делает ставку на сближение с Сеулом и Пекином (Moscow bets on closer ties with Seoul and Beijing, Известия (Izvestia), 15 September [Accessed 05 December 2015].*

11 Paik, K.W., 2012. *Sino-Russian Oil and Gas Cooperation: The Reality and Implications*, OIES Paper: WPM 59, Oxford Institute for Energy Studies, [pdf] April. Available at: <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2015/04/WPM-59.pdf> [Accessed 10 August 2016].

Two years later, Russia and China established a Joint Commission, responsible for the development of bilateral cooperation in the energy field. On June 27, 1997, during the visit of Viktor Chernomyrdin to Beijing, the two countries signed a range of energy agreements, including an intergovernmental agreement on natural gas and electricity exports from the Irkutsk region to China.¹² This agreement focused on the possibility of building a 3,000 km gas pipeline, which would transport 25 bcm of gas annually for a period of 25-30 years.

China's eagerness to take an active part in the development of resources in Russia's East Siberia, explains its interest in exploiting the Kovykta gas deposit. Other countries in the region, such as South Korea, have subsequently joined this project, although the level of their participation remains profoundly unclear.¹³ In December 1996, the Consortium of South Korean energy companies, including KOGAS, proceeded on an eight-month feasibility study on the Kovykta gas field, which proved that the project would be economically viable for South Korea.¹⁴

The Kovykta deposit is one of the largest natural gas deposits in the Irkutsk region, qualified by local authorities as a "hope for the Eastern Siberia's revival."¹⁵ In 1997, its reserves were estimated at 869.6 bcm of gas and 400 Mt of condensate.¹⁶ These estimates have gradually increased with time, reaching 1.596 trillion cubic meters of gas in 2001.

The development of the Kovykta gas deposit was at the core of the project, but the plan later envisaged the construction of a plant to separate natural gas from condensate, as well as the construction of a gas pipeline starting from Irkutsk and running to China, and then via Yellow Sea to the coast of South Korea. This pipeline would have a total distance of 4,500 km and an estimated cost of 7-8 billion USD.

It should be noted that this trilateral partnership finds its roots in the political will of Russia, China and South Korea to mutually benefit from their individual economic needs and geographical proximity.

12 *Коммерсант (Kommersant)*, 1997. *Особая привилегия Виктора Черномырдина (Viktor Chernomyrdin's special privilege) Газета Коммерсант (Kommersant)*, [online] 01 July. Available at: <http://www.kommersant.ru/doc/180257> [Accessed: 01 February 2016].

13 *Финансовые известия (Financial News)*, 1995. *Сеул станет участником проекта освоения газового месторождения в Сибири (Seoul will participate in the development of a gas field project in Siberia)*, 65 (194), 14 September, p. 8 [Accessed: 05 December 2015].

14 Ahn, S.H., 2010. *Framing Energy Security Between Russia and South Korea? Progress, Problems and Prospects*. *Asian Survey*, 50 (3), 592.

15 Chernobilets, A., & Kuznetsova, D., 2005. *Ковыкта под газом (Kovykta under gas)*. *Эксперт (Expert)*, [online] 18 April. Available at: <http://expert.ru/siberia/2005/15/> [Accessed 03 February 2016].

16 Скважина (Skvazhina), 2000. *Независимое нефтяное обозрение: Ковыктинское газоконденсатное месторождение (An independent oil review: Kovykta gas condensate field)*. Скважина (Skvazhina) [online] Available at: <http://www.nefte.ru/projekt/r7.htm> [Accessed 05 July 2016].

17 *Российский нефтяной бюллетень (Russian Oil Bulletin)*, 1997. *Проблемы Ковыкты: 3 большие 2 средние и одна маленькая (Kovykta's problems: 3 big, 2 medium, and 1 small)*, 83, [Accessed 05 December 2015].



Figure 1. Kovykta gas field¹⁷
Source: Olga Gerasimchuk

The dynamic South Korean economy transformed Seoul into a trading partner far more attractive than Pyongyang. Indeed, Russian interests in South Korea were not solely driven by a certain synergy between the energy abundant Russian Siberia and the highly industrialized South Korea, but also from its experience and potential in both financial and technological terms. As for China, the main importer of Kovykta gas, it had the most to gain from the success of the project. In fact, in 1997 China had become a net importer of natural gas and was seeking a broader diversification of its supply portfolio with the aim to keep more control over its energy dependence. Moreover, China was looking for a more environmentally friendly energy source. It was driven by the dramatic deterioration of its environment, provoked by a massive use of cheap but poor quality coal that was inducing growing health risks for its population. Such pragmatism was further strengthened by the thaw in Russia-China political relations. Indeed, the break-up of the USSR led to a situation where the old ideological clashes ceased to poison Moscow-Beijing relations, and therefore they agreed to seek cooperation rather than confrontation.¹⁹

In 1996, the three countries focused their efforts primarily on assessment studies aiming to prove the profitability of the Irkutsk project. Following the feasibility study

18 Referred to as both Kovykta and Kovyktinskoye in Russian

19 Skosirev, V. 1992. Оттепель по-китайски: идеологические разногласия перестали играть ключевую роль в отношениях между Пекином и Москвой (Thawing relations with China: Ideological differences becoming less significant in Beijing-Moscow relations, *Известия (Izvestia)*, 272, 17 December, p. 4 [Accessed 05 December 2015].

conducted by CNPC, Chinese geologists came to the conclusion that East Siberian gas reserves appeared to be less significant than previously claimed by the Russians, taking into the account the amount that would be absorbed by Russia's domestic consumption. CNPC then began to explore the possibilities of combining gas resources of the Irkutsk region with those of Sakha Republic.

Since the 2nd half of the 1990s, the Irkutsk project acquired international dimension for two reasons. First, Russian energy strategy underwent a significant evolution, and gradually shifted from its exclusively European orientation. Indeed, Moscow seeks for wider integration with Asia Pacific countries in the development of its projects in the East. Secondly, there was growing interest from Japanese energy companies for the project. In fact, Tokyo undertook a dynamic policy of energy supply diversification, aimed at reducing the country's dependence on Middle Eastern imports to the fullest extent possible, prompting Japanese JNOC and Sumitomo to join the project. This is how the multinational consortium was created and gathered Russia, China, Mongolia, South Korea and Japan into the Irkutsk project. The Irkutsk gas pipeline route underwent some modifications accordingly. It would

now pass through the territory of Mongolia and, after crossing China and South Korea under the Yellow Sea, end up in Japan (Figure 2).

In December 1997, the five-country consortium agreed to conduct a joint feasibility study of the Kovykta deposit. However, this initiative broke down on December 24, 1998. One reason was that China was opposed to Mongolia's participation as a transit country, although this export route was presented as the most competitive one in terms of prices. As Se Hyun Ahn explains, "Chinese leadership was concerned that, along with Mongolia, the Chinese autonomous region of Inner Mongolia could also benefit from substantial transit fees, and that members of the Mongolian minority might seek broader autonomous rights, which could lead to unrest. The Chinese were also concerned that the Mongolians would cut gas supply transiting to China."²¹ Some friction existed within Russian-Japanese relations. Japan preferred to play a dominant role by offering to finance a large part of the project's feasibility study. Russia and China expressed their concerns against this coordinating role of Tokyo, who was finally left without leverage, mainly because the country was not able to provide a more important outlet market for

20 Zhiznin, S., 1999. Формирование энергетической дипломатии России (Creating Energy Diplomacy in Russia), *Дипломатический Вестник (The Diplomatic Newspaper)* [online] Available at: http://archive.mid.ru/bdomp/dip_vest.nsf/99b2ddc4f717c733c32567370042ee43/ccdee81ba3f237fbc3256886005242c2!OpenDocument [Accessed 29 March 2016].

21 Ahn, S.H., 2010. Framing Energy Security Between Russia and South Korea? Progress, Problems and Prospects. *Asian Survey*, 50 (3), 592.

Russian gas. Faced with numerous disputes between the members, the multinational consortium finally shattered and the transnational gas pipeline project was abandoned.

In the early 2000s, South Korean KOGAS proposed to Russia that a future pipeline pass through the territory of North Korea. Seoul believed that if the gas pipeline crossed North Korea, Pyongyang could benefit from important transit fees. This would in turn contribute to promoting economic prosperity and political stability on the Korean peninsula. However, this proposal was also unsuccessful. Russia strongly opposed it due to the high political risks. As a result, Russia, China and South Korea returned to the original pipeline export route: Irkutsk-China-South Korea.

GAZPROM DEFINES ITS GAS STRATEGY IN THE EAST

The international attention that the project had acquired towards the end of the 1990s, coupled with the unrealized potential of gas in of the region, generated a growing interest from major Russian energy companies, such as the Tyumen National Company (TNK), Surgutneftegaz and Gazprom. Since, the conquest of Asia Pacific energy markets was a strategic task for all of these companies, the competition grew.²²

For Gazprom, the question of control over the Kovykta deposit became a key objective in its attempts to get a foothold in Asia Pacific markets. Indeed, virtually absent until the 2nd half of the 1990s in the East, Gazprom decided to develop an Asian component to its energy export strategy. This was the point when Gazprom began to delineate the contours of its strategy in the region. In June 1997, Rem Vyakhirev, CEO of Gazprom, announced, "Natural gas demand in

Asia Pacific region is estimated to grow at 2.6% per year, and will be met, to a large extent by LNG exports from the Middle East, Australia and Indonesia.

But gas deliveries by ship are expensive and less competitive compared to those made by pipelines. From this perspective, it would be more advantageous to develop gas fields ... and to transport Russian gas via pipelines to China, South Korea and other importers."²³

In order to meet the growing demand for natural gas from the countries of the region, Rem Vyakhirev envisaged to see the great Eurasian landmass connected by a gas pipeline grid. The same year, he announced Gazprom's intentions to continue the development of a Eurasian transcontinental gas pipeline system calling it an "unprecedented system in terms of length and flow, that will be launched by the construction of pipelines in the south of Eastern Siberia from polar fields of the Tumen region, linking the east and west pipeline systems of Russia". It was expected that such a powerful system of arteries with the heart of production in Western

Siberia would enable Gazprom to thwart other suppliers of the region, such as Australia and Indonesia, by providing a cheaper alternative to LNG.

Gazprom's leadership did not, however specify how and when such a project would be materialized, but announced its intention to promote both gas exports from Western and Eastern Siberia to China. Beginning in late 1998, two gas export projects have emerged: the Altai project, aiming for gas exports from fields in Western Siberia to the east coast of China, via Xinjiang region; and the Baikal project, which planned to export gas from Eastern Siberia and, more precisely, from the Kovykta deposit to the northeastern regions of China (Figure 3).



Figure 2. Proposed gas pipeline routes from Eastern Siberia to Asia Pacific countries

Source: *The Geopolitics of Energy into the 21st Century, CSIS Strategic Energy Initiative (2000)*

22 Ahn, S.H., 2010. *Framing Energy Security Between Russia and South Korea? Progress, Problems and Prospects. Asian Survey*, 50 (3), 592.

23 Peach, G., 1997. *No Gas: Gazprom is Great, The Moscow Times [online] 17 June. [Accessed 27 January 2016].*

24 Paik, K.W., 2012. *Sino-Russian Oil and Gas Cooperation: The Reality and Implications, OIES Paper: WPM 59, Oxford Institute for Energy Studies, [pdf] April. Available at: <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2015/04/WPM-59.pdf> [Accessed 10 August 2016].*



Figure 3. Altai and Baikal gas export projects

Source: Ekho Rossii Journal (2015), adapted by the author

GAZPROM'S FIRST STEPS IN ATTAINING CONTROL OVER THE KOVYKTA GAS FIELD

During this period, many problems arose between the companies involved in the region.

Russia Petroleum and its main stakeholder British Petroleum Amoco (30% of shares), which was granted an exploitation license over the Kovykta deposit, were at the core of various controversies.

The first issue related to the authority, empowered to grant this license. In fact, in 1993 it was the local Geology Commission and not the Ministry of Natural Resources, which issued a license for exploitation. The second issue concerned the extent of the concession area granted. According to Viktor Kaluzhnyi, Energy Minister at that time, the license issued by the local geology commission to Russia Petroleum gave it the right to exploit the resources in a territory of 2,000 square kilometers, but afterwards was ostensibly expanded to 9,000 square kilometers. The competent authorities of the Ministry of Natural Resources were therefore expected to check whether this expansion was legal.²⁵ In this respect, the Ministry of Energy did not rule out the possibility of withdrawing the license. In addition, the company was accused of inefficient management, leading to significant delays in development of the Irkutsk region's production.

25 Drozdov, E., 2000. Экспансия «БП» на Ковыкте (BP's expanding in Kovykta), Независимая Газета (Independent Newspaper) [online] 05 April. Available at: http://www.ng.ru/economics/2000-04-05/4_bp.html [Accessed 05 July 2016].

The main struggle between Russian energy companies centered on the takeover of the Kovykta deposit, as well as some other important surrounding gas fields. In 1998, Russia Petroleum addressed the Ministry of Natural Resources to obtain additional licenses for carrying out geological assessment studies on the Khanginskoye and Ust-Kutskoye gas condensate fields, located close to Kovykta. Thus, Russia Petroleum aimed for an extension of its initially granted concession area by 3,040 square kilometers to the east. The acquisition of supplement licenses would enable the company to respect both its commitments towards domestic consumers (as for gasification of the region), and its contractual obligations with its Asian partners regarding Siberian gas exports. However, the local administration preferred to grant these two promising gas fields to one of its competitors, the Tyumen National Company. This decision is symptomatic of interference of the Ministry of Energy and other bodies close to the Russian government in a project of such a magnitude, with the main objective to allow a Russian state company to supplant Western firms, or those using Western capital.

In his interview to Nezavisimaya Gazeta on June 20, 2000, Howard Meyson, CEO of BP Amoco's Russian division said, "We understand that business and power in your country are closely linked. And we consider that if a major Russian energy company was present in Russia Petroleum's capital, this would be, of course, very helpful in resolving the issues related to Russian side."²⁶

26 Pravosudov, S., 2000. Ховард Мейсон: «Мы понимаем, что в вашей стране бизнес и власть тесно связаны» (Interview with Howard Meyson: «We understand that in your country, business and government are closely linked»), Независимая Газета (Independent Newspaper) [online] 20 June. Available at: <http://www.nefte.ru/projekt/r7-8.htm> [Accessed 05 December 2015].

In the early 2000s, the Irkutsk project began to take concrete shape. On November 2, 2000, Russia, China and South Korea signed an agreement on natural gas exports from the Kovykta field to China and South Korea for an annual amount of 20 bcm and 10 bcm respectively. This agreement did not exclude gas exports to the other countries in the region.

In 2003, TNK and BP created the new company TNK-BP, which acquired 62% control of Russia Petroleum's capital. In 2004, the company began to prepare the Kovykta gas deposit for commercial exploitation and further exports beyond Russian confines. However, the problems were not over. In September 2004, the Ministry of Natural Resources announced its firm intention to withdraw Russia Petroleum's exploitation license over Kovykta. The company was namely accused for considerable delays in the gas fields' development. Rumors circulated, attributing the numerous troubles of TNK-BP to Gazprom's plans to take over entire control of the project.

At the beginning of the 2000s, Gazprom was granted a coordinator status for the Program for Eastern Siberia and Far East energy fields' development, and had an alternative vision on how to use Kovykta gas.²⁷ It namely proposed to use it primarily for the domestic needs of the Irkutsk region, and in case of surplus, to export excess quantities to European markets. For this purpose, Gazprom proposed to connect the existing gas pipeline network to the Unified Gas Supply System (UGSS). Gazprom proposed to build natural gas processing plants with the aim of separating various valuable products from natural gas produced in this region, such as helium, and then exporting all of these products instead of unprocessed natural gas. Such a bold and extensive change in strategy increased the project cost from 12 billion USD (2005 estimates) to 17-25 billion USD. In addition, Gazprom senior executives were convinced that the existing Russia Petroleum Consortium could not realize a project of such magnitude.

The gasification of the Irkutsk region was finally set up, thus illustrating a strong willingness of Russia to use Kovykta natural gas essentially for domestic consumption. Consequently, the Irkutsk export project of gas residual capacities to Asia Pacific was suspended in 2004.²⁸

CONCLUSION

The collapse of the Irkutsk project with its insufficient resource base, as well as the Russian government's financial and legislative difficulties put an end to Russia's plans to enter Asian markets in the early 2000s. Competition between Russian energy companies for access to Kovykta gas field and a right to export towards Northeast Asian countries is an example of of an incoherent policy, where the short-term considerations outweighed a long-term vision on how to enter and strengthen Russian positions in new, quickly growing energy markets.

During the 2000s, Gazprom failed to bring any significant shift in its Asian gas policy, although such potential existed. In March 2011, Gazprom finally won the rights to the Kovykta gas field; the acquisition of the exploitation license over the deposit gave it the right to geological assessment studies and subsequent commercial gas production. It is expected that natural gas from Kovykta deposit would supply, from 2022, Russian Far East regions and China. The combination of two gas production centers, with gas pumping from Kovykta and Chayanda fields, should constitute a serious resource base for future exports to China, providing a chance to broaden Russia's presence in Asian gas markets, provided that Gazprom will take into account the lessons from the past.

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27 Grivach, A., 2005. «Газпром» взял курс на восток (Gazprom goes East), *Время Новостей (Vremya Novostei)* [online] 07 September. Available at: <http://www.vremya.ru/2005/164/8/133808.html> [Accessed 05 August 2016]

28 Yun, J.W., 2015. *International Cooperation for the Construction of South Korea – North Korea – Russia Pipeline Natural Gas (PNG): Effectiveness and Restrictions. The Journal of East Asian Affairs*, 29(1), 72.

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CAN IRANIAN OIL RECOVER?

THE SECTOR'S PAST, PRESENT AND FUTURE

Zachary Waller

Abstract

Since sanctions were lifted in early 2016, Iran has been working to re-enter the global economy. This paper takes a long-term view of the sanctions, asking what has historically motivated the West to take such coercive, or even punitive action. It argues that the sanctions had a debilitating effect on crude oil production and the Iranian economy as a whole. Reversing this trend is a sizable challenge, as Iran must now compete with other oil producers to regain market share in a low oil price environment. However, the paper concludes optimistically, that production is on the upswing and European banks have incentive to support Iranian oil growth.

Key words: Iran; Sanctions; Oil Embargo; United States; European Union; Nuclear Program; OPEC

On June 28, 2012, the United States imposed strict sanctions on the Islamic Republic of Iran for its nuclear program. Just a few days later, on July 1, 2012, the European Union joined the United States, putting an oil embargo in place against Iran. While the pair already had sanctions in place against Iran, the new round was intended to be particularly crippling, targeting strategic sectors of the Iranian economy. These new sanctions were designed to put Iran on the absolute fringe of the global economic system.

Fast forward to 2016 and we see enormous changes. After months of negotiations with Iran, the US and the EU agreed last year to lift most of their sanctions in exchange for serious curtailing and oversight of Iran's nuclear program. Iran, once a pariah, is now slowly being welcomed back into the world economy.

While many are happy the sanctions have been lifted, important questions still remain. Iran, isolated for so long, now has to re-integrate itself into the global economy. While the country has been remarkably resilient in the face of crippling sanctions, things changed while Iran was sanctioned and the country lost out on much of the trade it had previously, particularly with regard to oil. Can Iran regain its spot as one of the world's leading oil exporters?

In order to answer this question, I will start by examining the history of the situation—why sanctions were put in place, what they targeted, and why they were lifted. Next, I will move on to look at the effects of the sanctions. Lastly, I will examine how Iran has managed since sanctions were lifted and look toward the future.

1 Zirulnick, A., 2011. *Sanction Qaddafi? How 5 nations have reacted to sanctions*. *The Christian Science Monitor*, [online] 24 February. Available at: <<http://www.csmonitor.com/World/Global-Issues/2011/0224/Sanction-Qaddafi-How-5-nations-have-reacted-to-sanctions/Iran>>.

HISTORY

Sanctions were first introduced against Iran in 1979 in the wake of the Iranian hostage crisis.¹ These sanctions, put in place by the United States, were expanded significantly over time and eventually became the policy of the United States' European partners and the European Union. While sanctions against Iran were put in place for various reasons (some of the chief reasons being the hostage crisis and Iran's sponsorship of terrorism), in the past decade, sanctions imposed on Iran have primarily targeted the country's nuclear program.

In 2005, the International Atomic Energy Agency (IAEA) released a report, accusing Iran of "many failures and breaches of its obligations to comply with its NPT Safeguards Agreement" and found a "history of concealment of Iran's nuclear activities."² The report went on to state that an "absence of confidence that Iran's nuclear programme is exclusively for peaceful purposes [has] given rise to questions that are within the competence of the Security Council."³ It was following this report that the "United States spearheaded international efforts to financially isolate Tehran and block its oil exports to raise the cost of Iran's efforts to develop a potential nuclear-weapons capability and to bring its government to the negotiating table."⁴

2 IAEA, 2005. *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*. IAEA, [online] 15 November, pp. 2. Available at: <<https://www.iaea.org/sites/default/files/gov2005-77.pdf>>.

3 IAEA, 2005. *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*. IAEA, [online] 15 November, pp. 2. Available at: <<https://www.iaea.org/sites/default/files/gov2005-77.pdf>>.

4 Laub, Z., 2015. *International Sanctions on Iran*. Council on Foreign Relations, [online] July 15. Available at: <<http://www.cfr.org/iran/international-sanctions-iran/p20258>>.

In the winter of 2011, the United States and the European Union announced a new wave of sanctions against Iran – some of the harshest yet – to take effect the following summer.⁵ While sanctions had heretofore been directed against various sectors of the economy, the new round of sanctions went right for the throat. The US decided to “target Iran’s central bank” and “subject any bank, company or government that does business with Iran’s central bank to U.S. sanctions.”⁶ As a result of these new sanctions, individuals and companies had to “choose between doing business with Iran and doing business with the United States.”⁷ As if that were not harsh enough, the European Union decided at the same time to impose an oil embargo against Iran (with some exceptions for pre-existing contracts).⁸

By forcing a choice between doing business with the United States and doing business with Iran, the United States put Iran in one of the toughest economic situations a country could be in. Given that the United States is one of the most important players in the world economic system, few chose to do business with Iran over the United States. Additionally, the sanctions effectively forced Iran out of the world financial system, as the world financial system is dominated by the United States. With world banks afraid to lose access to the United States or be sanctioned by the American government, Iran found it extremely difficult to both secure access to credit and send and receive money.

In 2013, however, things began to look up slightly for Iran. Iranians elected Hassan Rouhani to replace the outgoing Mahmoud Ahmadinejad as President of Iran. Rouhani, who ran on a moderate platform, “stressed the need to find a way out of the impasse with the West on the nuclear issue and to end Iran’s diplomatic isolation” as part of his campaign. Once elected, Rouhani, who himself earned his PhD at Glasgow Caledonian University in Scotland, chose the Western-educated Mohammad Javad Zarif to be his foreign minister. Zarif, who holds a PhD from the University of Denver, completed his entire post-secondary education in the United States and speaks fluent English. Also tapped for a cabinet position (as chief of staff) was Mohammad Nahavandian, who earned his PhD at the George Washington University and is a permanent resident of the United States. With a team of Western-educated leaders – many of whom had significant experience in the United States – taking office, it seemed the time was right for Iran to make a move and come to an agreement to get sanctions lifted.

5 Hargreaves, S., 2012. U.S. tightens oil sanctions on Iran. CNN, [online] 31 March. Available at: <http://money.cnn.com/2012/03/30/news/international/Iran-sanctions/>.

6 Ibid.

7 Ibid.

8 Borger, J., 2012. EU agrees Iran oil embargo. The Guardian, [online] 4 January. Available at: <https://www.theguardian.com/world/2012/jan/04/eu-iran-oil-embargo-ban>.

This was finally realized on April 2, 2015. After months of negotiations, Iran, the United States, the United Kingdom, Russia, France, China, Germany, and the EU agreed on a comprehensive framework for a deal to lift the sanctions. Following more negotiations, that deal was reached on July 14, 2015. Per the agreement, economic sanctions related to its nuclear program would be lifted in exchange for significant reductions in the amount of nuclear fuel Iran is allowed to produce and the amount of centrifuges the country is allowed to keep. (Terrorism-related sanctions remain in place, as do the United States’ primary sanctions, which prohibit American businesses from doing business with Iran. However, the United States will no longer punish foreign entities who do business with Iran).

EFFECTS

The main target of the most recent round of sanctions was the Iranian oil industry. By targeting the central bank, the United States intended to punish Iran’s oil industry, as the country uses the central bank “to facilitate its oil trade.”¹⁵ The EU, in the meantime, sought to target the oil industry directly, via its embargo. So what effects did these sanctions have on Iran’s oil industry and economy as a whole?

Prior to this round of sanctions going into effect, Iran was exporting over 2.5 million barrels of crude per day. Just before the deal lifting the sanctions was reached, Iran was exporting just north of 1 million barrels per day, mostly to China, India, Japan, and South Korea¹⁶ (Iran lost many of its European buyers, like Greece, Spain, and Italy, due to the sanctions).¹⁷ That means other producers (largely Saudi Arabia) supplied the world market with the remaining 1.5 million barrels per day while Iran was under sanctions. This

9 Bakhsh, S., 2013. Rouhani’s Surprising Election. Viewpoints, 28, pp. 1. Available at: https://www.wilsoncenter.org/sites/default/files/rouhanis_surprising_election_0.pdf.

10 Galpin, R., 2013. From Glasgow student to president of Iran. BBC, [online] 2 August. Available at: <http://www.bbc.com/news/uk-scotland-23554836>.

11 The Daily Star, 2013. Iran’s Rouhani reveals cabinet of technocrats. The Daily Star, [online] August 4. Available at: <http://www.dailystar.com.lb/News/Middle-East/2013/Aug-04/226206-iran-rowhani-takes-oath-after-vowing-to-ease-sanctions.ashx>.

12 Ibid.

13 Gordon, M., & Sanger, D., 2015. Iran Agrees to Detailed Nuclear Outline, First Step Toward a Wider Deal. The New York Times, [online] 2 April. Available at: <http://www.nytimes.com/2015/04/03/world/middleeast/iran-nuclear-talks.html>.

14 Ibid.

15 Hargreaves, S., 2012. U.S. tightens oil sanctions on Iran. CNN, [online] 31 March. Available at: <http://money.cnn.com/2012/03/30/news/international/Iran-sanctions/>.

16 Paivar, A., 2016. What lifting Iran sanctions means for world markets. BBC, [online] 16 January. Available at: <http://www.bbc.com/news/business-35317159>.

17 Raval, A., 2016. Commodities explained: Iran’s return to the global oil market. Financial Times, [online] 21 January.

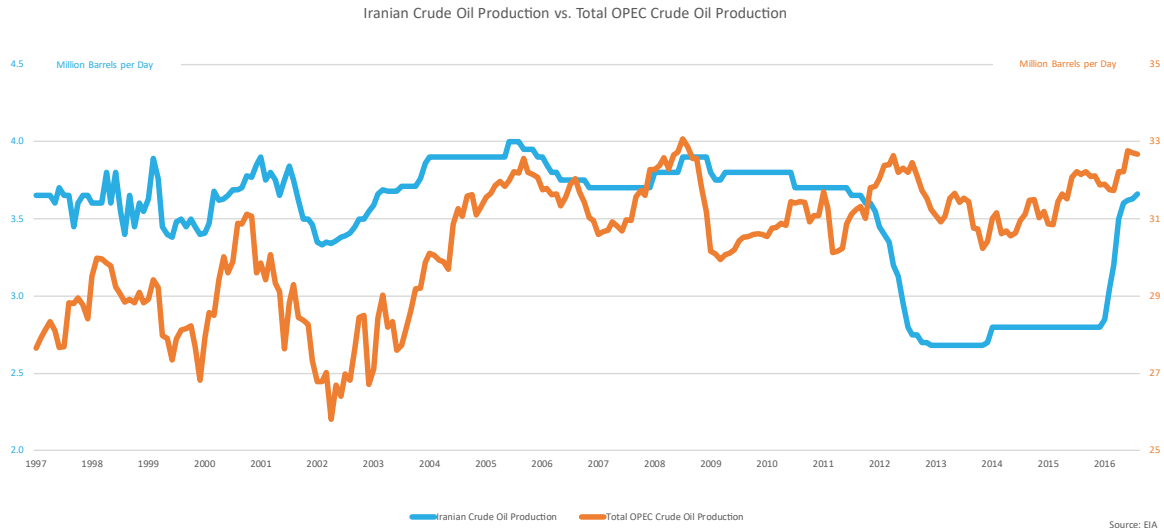


Figure 1
Source: EIA

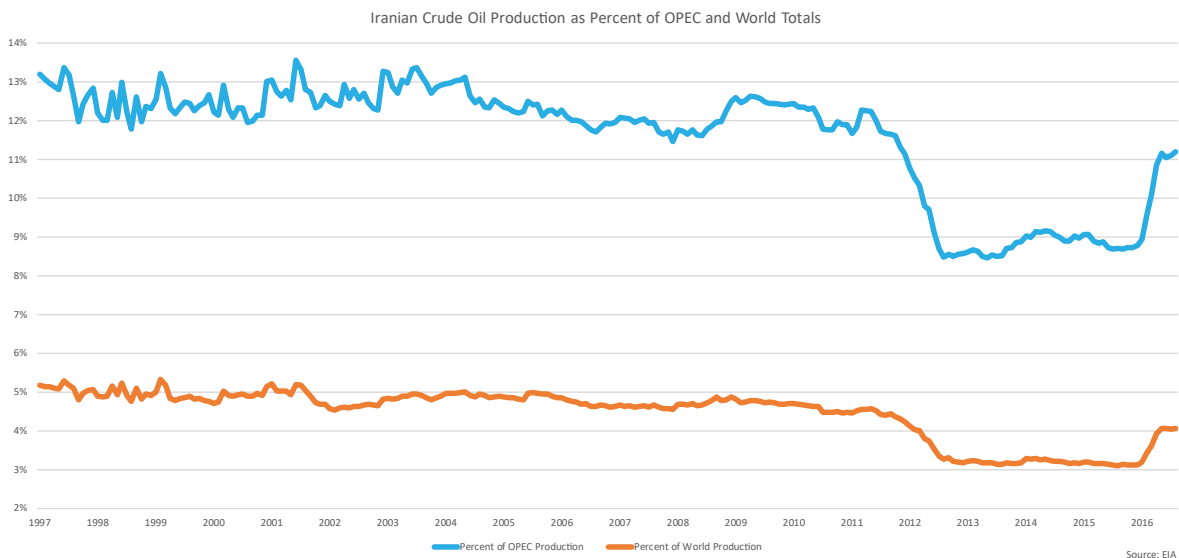


Figure 3
Source: EIA

continues to create large problems for Iran, as it must work diligently to gain back market share in a low oil price environment. Fortunately for Iran, its oil production costs are remarkably low, just slightly more expensive than Saudi Arabia's.¹⁸

The Iranian economy as a whole also suffered tremendously under the sanctions. Just before sanctions were lifted, Iran's economic growth rate was at zero and Iran had 50 billion USD of foreign reserves frozen around the world.¹⁹ Additionally, it is estimated the cost of trading with Iran increased 15% under sanctions and, with the sanctions lifted, Iran will save approximately \$15 billion per year in cheaper trade.²⁰

18 Faucon, B., Kantchev, G., & Said, S., 2016. OPEC Officials: May Discuss Oil Freeze at June Meeting. *The Wall Street Journal*, [online] 21 April. Available at: <<http://www.wsj.com/articles/opec-secretary-general-says-cartel-may-discuss-oil-freeze-at-june-meeting-1461234875>>.

19 Paivar, A., 2016. What lifting Iran sanctions means for world markets. *BBC*, [online] 16 January. Available at: <<http://www.bbc.com/news/business-35317159>>.

WHAT THE FUTURE HOLDS

Iran suffered a major setback due to its loss of oil market share under the most recent sanctions. In order to regain some of this market share, Iran has announced plans to increase production dramatically, planning to raise exports by almost 1 million barrels per day to 2.5 million within a year of the sanctions being lifted.²¹ Iran has also refused to join a production freeze agreement between other leading oil producers, stating it will only consider doing so after its own production has reached 4.2 million barrels per day, the rate it was at before the latest sanctions were put in place.²²

More than increasing production dramatically, Iran will need to offer incentives to get buyers to switch to its oil. In order to lure buyers away from Saudi Arabia, Russia, and other producers, the country is likely to offer sweeteners such as

“Oil-for-goods deals, crude-for-product swaps, deferred payment or pledges to make investments in foreign refineries.”²³ Some of the buyers Iran hopes to woo now that it can sell its oil on the world market are former buyers Greece, Spain, and Italy, as well Sri Lanka and South Africa. Iran will also be looking to increase the amount of oil it sells to existing buyers. While some analysts have doubts as to whether or not Iran will be able to meet the production targets it has set out, the country is, so far, right on schedule. In August, 2016, Iran exported over 2.11 million barrels of oil per day²⁴ and the country expects to reach pre-sanction levels of production around the end of 2016 or beginning of 2017.²⁵ If Iran is able to keep this pace up, it should increase oil export revenues by over \$10 billion from 2015.²⁶

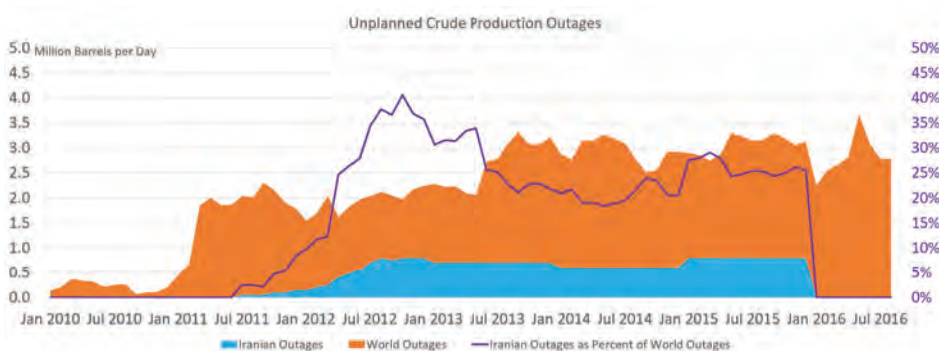


Figure 2

Source: IEA

While the future is looking bright for the Iranian oil industry, there are still a few dark spots. The largest of these is the question of financial sanctions and American primary sanctions. Unfortunately for Iran, many banks and companies are unsure as to how to proceed with regard to doing business in and with the country. Banks in particular are worried, as they do not want to run afoul of American regulators. While sanctions have been lifted, many banks are proceeding with extreme caution due to the hefty fines levied against European banks by the US for bypassing sanctions on Iran, Cuba, and Sudan—\$14 billion in total over the last 10 years.²⁷ Additionally, with primary sanctions remaining in place, American companies are unsure what to instruct their foreign subsidiaries to do with regard to Iran and European companies with American subsidiaries are unsure how they are affected.²⁸ However, a number of European banks, British and German banks in particular, are very eager to get to work with Iran and are pushing the US for clarity on what they can engage in now with regard to Iran.²⁹

²⁰ Ibid.

²¹ Ibid.

²² Faucon, B., Kantchev, G., & Said, S., 2016. OPEC Officials: May Discuss Oil Freeze at June Meeting. *The Wall Street Journal*, [online] 21 April. Available at: <<http://www.wsj.com/articles/opecc-secretary-general-says-cartel-may-discuss-oil-freeze-at-june-meeting-1461234875>>.

²³ Raval, A., 2016. *Commodities explained: Iran's return to the global oil market*. *Financial Times*, [online] 21 January.

²⁴ Geiger, J., 2016. *Iran Bumps Up Crude Exports To Highest Level In Five Years*. *Oil Price.com*, [online] 16 September. Available at: <<http://oilprice.com/Latest-Energy-News/World-News/Iran-Bumps-Up-Crude-Exports-To-Highest-Level-In-Five-Years.html>>.

CONCLUSION

As evidence suggests,, the Iranian oil industry is making quite the comeback. Since sanctions were lifted, oil exports have more than doubled³⁰ and the country is getting closer to reaching pre-sanction levels of production. What is holding the country back is largely confusion related to the lifting of sanctions, particularly on the part of banks. In order for Iran to reach its potential, it needs to gain greater access to the world financial system, which will only happen once European banks are confident they will no longer be punished by the United States for doing business with Iran. Nevertheless, the country as a whole is slated to see large economic gains this year. If these problems can be cleared up and Iran adheres to the nuclear deal it signed to get the sanctions lifted, there is no reason the Iranian oil industry could not get back to its pre-sanctions place as one of the world's leading oil exporters. In fact, it is already well on its way there.

²⁵ Calcuttawala, Z., 2016. *Inside OPEC: What Does Each Member Want?* *OilPrice.com*, [online] 26 September. Available at: <<http://oilprice.com/Energy/Crude-Oil/Inside-OPEC-What-Does-Each-Member-Want.html>>.

²⁶ Paivar, A., 2016. *What lifting Iran sanctions means for world markets*. *BBC*, [online] 16 January. Available at: <<http://www.bbc.com/news/business-35317159>>.

²⁷ Pomfret, R. *Exploiting Energy and Mineral Resources in Central Asia, Azerbaijan and Mongolia*. July 2010, p. 7.

²⁸ Ciaretta, A. and S. Nasirov. *Development Trends in the Azerbaijan Oil and Gas Sector: Achievements and Challenges*. *Energy Policy*, 2011, Vol. 40, p. 288.

²⁹ Bagirov, S. *Azerbaijan's Oil Revenues: Ways of Reducing the Risk of Ineffective Use*. Jan 2007, p. 26.

³⁰ Tan, F. & Tsukimori, O., 2016. *Iran crude exports hit five-year high near pre-sanctions levels: source*. *Reuters*, [online] 16 September. Available at: <<http://www.reuters.com/article/us-iran-oil-exports-idUSKCN11MOXL>>.

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CARBON AS COMMODITY IS CAP-AND-TRADE'S MARKET APPROACH FLAWED?

Michael Roh

Abstract

Emissions trading schemes, or cap-and-trade, provide a market-friendly approach for countries to reduce their CO₂ emissions. Cap-and-trade works by quantifying the CO₂ itself into permits, and then setting a limit, or cap, on emissions by reducing the amount of permits over time. The permits are tradeable, allowing for supply and demand forces to create a market, where countries or firms that exceed their emissions must purchase more permits or pay heavy fines, while those that reduce emissions can profit from unused permits, and an overall reduction in emissions is ensured. Since the Kyoto Protocol, cap-and-trade has been encouraged as a strategy to meet emissions reduction targets, and many countries have already ratified the Paris Agreement, the aspirant successor of the Kyoto Protocol. As the Paris Agreement is well underway to entering into force, regions and countries have already implemented cap-and-trade or are in their planning phases. Identifying the features and limitations of existing emissions trading schemes could serve as a blueprint for countries considering emissions trading to consider the most effective strategy. This paper will begin with a short history of cap-and-trade, and an overview of noteworthy emissions trading schemes, including the largest, and most well-known emissions trading scheme, the European Union Emissions Trading Scheme. Though cap-and-trade is not without its flaws, this paper concludes that it can still be effective, and that it is still superior to alternative options like a carbon tax.

Key words: emissions trading; cap and trade; climate change; UNFCCC; Paris Agreement; Kyoto Protocol; grandfathering

Scientists say September 2016 will be remembered in history as the month when global CO₂ levels failed to drop below 400 ppm (parts per million), and that CO₂ levels are not likely to recover in our lifetimes.¹ To understand the significance of passing the 400 ppm threshold, note that CO₂ levels prior to the Industrial Revolution were around 280 ppm, and scientists estimate the last time CO₂ levels passed 400 ppm was roughly 4.5 million years ago.² Moreover, recent data reveals that July 2016 was the hottest month on record since global temperatures have been recorded.³ Policymakers are slowly coming to realize how destructive, and costly, the consequences of climate change will be. Addressing climate change is seen as a collective action problem, since actors believe the costs are unevenly distributed. But they fail to account for spillover costs. Policymakers in the U.S. and Europe struggle to accept refugees today, but eroding coastlines, disappearing islands, and natural disasters will flood borders with populations displaced by more frequent and destructive natural disasters. For a country's economy, a supply shortage caused by a hurricane or flood could affect production in a country like China and India, raising prices

for consumers in the West. Food supply security is another major concern, as droughts will certainly affect agricultural production around the world.⁴

Scientists agree that these concerns will be quickly realized if global temperatures exceed 2 degrees Celsius above pre-industrial levels. At the 21st Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC), countries came together to sign the Paris Agreement, which adopted this goal for limiting global temperatures to below 2 degrees Celsius above pre-industrial levels. Countries submit Nationally Determined Contributions, to curb national emissions, and are encouraged to adopt carbon pricing to meet these goals, though cap-and-trade is not endorsed over other carbon pricing methods, like carbon taxes. Currently there are about 40 national and 23 subnational governments with carbon pricing mechanisms.

This paper seeks to uncover the features and various issues affecting existing cap-and-trade programs, and determine whether cap-and-trade is the most effective strategy to reduce emissions. Since the European Union Emissions Trading Scheme (EU ETS) is both the world's first and currently the largest ETS, and is looked to as a model for other ETSs, it is the main program referenced in this paper. The structure of the paper begins with a brief explanation of how cap-and-trade works, followed by a brief history of the international emissions reduction agreements. The next section will overview noteworthy ETSs currently in effect, and assess the future of China's national ETS set to begin in 2017. The last section argues why cap-and-trade is a superior carbon pricing mechanism over a carbon tax.

1 Kahn, B., 2016. Earth's CO₂ Passes the 400 PPM Threshold – Maybe Permanently. *Scientific American*, [online] 27 September. Available at: <http://www.scientificamerican.com/article/earth-s-co2-passes-the-400-ppm-threshold-maybe-permanently/> [Accessed 01 September 2016].

2 Rice, D., 2016. Carbon dioxide levels cross 400 ppm threshold, likely highest in millions of years. *USA today*, [online] 30 September. Available at: <http://www.usatoday.com/story/tech/sciencefair/2016/09/29/carbon-dioxide-levels-400-ppm-scripps-mauna-loa-global-warming/91279952/> [Accessed 01 October 2016].

3 Japanese Meteorological Agency, 2016. Monthly Anomalies of Global Average Surface Temperature in July (1891-2016). [online] Available at: http://ds.data.jma.go.jp/tcc/tcc/products/gwp/temp/jul_wld.html [Accessed 15 September 2016].

4 Freeman, J. and Guzman, A., 2009. *Climate Change and U.S. Interests*. *Columbia Law Review*, 109(6), 1568.

HOW CAP-AND-TRADE WORKS

When carbon is commodified into permits, two significant forces come into play: a market to trade these permits, and a regulatory authority to establish a cap on these emissions permits. How the permits are traded is then left up to supply and demand forces. If a polluting firm wishes to pollute more, it can simply purchase more permits, whereas if it pollutes less, it can profit from selling excess permits. By placing a value on carbon emissions, fundamentally a market is created, and a reduction in carbon emissions is ensured as the cap is reduced over time. Cap-and-trade has three components: a regulatory authority (to set a cap), permits (which are distributed or auctioned off), and a system to allow actors to trade permits.⁵ A supply and demand system allows firms emitting low emissions to sell extra emissions to firms emitting greater amounts. These firms then work with what is essentially a carbon budget.⁶

Cap-and-trade is an attractive strategy because it provides flexibility to firms. Firms can decide for themselves whether to sell extra permits, incentivized by profit, or to purchase more permits if they find they cannot reduce their emissions. While firms can trade allowances with each other, the regulatory body (usually the government) can guarantee that overall aggregate emissions will be reduced, subject to externalities. Moreover, the revenue generated from auctioned permits can be used to invest in green energy.

Before the Paris Agreement, the Kyoto Protocol was the first international treaty to discuss greenhouse gas emissions reductions. Adopted in 1997 in Kyoto, Japan, but entered into force since 2005, the Kyoto Protocol commits the parties to the agreement to reduce emissions with binding targets. The structure of the Kyoto Protocol is built upon not only binding commitments to reduce emissions for developed countries, but flexible market mechanisms. Specifically, in addition to reducing emissions domestically, countries can use these market mechanisms to utilize the most cost-effective approach. Therefore, the Kyoto Protocol places less emphasis on where the emissions are reduced, but just that there is an overall reduction. Benefits to this include increased investments into developing countries' green projects, and inclusion of the private sector.⁷

The UNFCCC divides the international system into three groups with different commitments for each group. Annex I Parties includes OECD⁸ countries and countries with economies in transition, including former Soviet countries.

5 Goulder, L., 2013. *Markets for Pollution Allowances: What are the (New) Lessons?*. *The Journal of Economic Perspectives*, 27(1), 87.

6 The World Bank, 2014. *Putting a Price on Carbon*. [online] Available at: <http://www.worldbank.org/en/programs/pricing-carbon> [Accessed 11 December 2015]

7 United Nations Framework on Climate Change, 2015. *Making those first steps count: An Introduction to the Kyoto Protocol*. [online] Available at: http://unfccc.int/essential_background/kyoto_protocol/items/6034.php [Accessed 12 December 2015].

8 Organization for Economic Cooperation and Development. *The OECD is essentially a club for rich countries*.

Annex II Parties includes OECD countries from Annex I, who are required to provide financial assistance to assist developing countries reduce emissions and transfer green technologies. Non-Annex Parties are developing countries, countries vulnerable to negative effects of climate change, both economically (in terms of fossil fuel producer states concerned about security of supply) and environmentally (in terms of states vulnerable to sea levels and drought concerned about survival).⁹ The separate designations and commitments complicate matters, as many countries believe this tier system is unfair. This issue of grandfathering will be discussed later.

CAP-AND-TRADE PROGRAMS: CURRENT AND IN DEVELOPMENT

European Union Emissions Trading System (EU ETS)

Covering roughly 45% of the EU's greenhouse gas emissions, the European Union Emissions Trading System entails 11,000 power stations and manufacturing plants amongst the 28 EU member states, in addition to non-member states Iceland, Liechtenstein, and Norway, making it the largest emissions trading scheme in the world. In the EU ETS, the EU is the regulatory authority that sets the cap and distributes tradable emission allowances.¹⁰ Companies are then provided with some flexibility to curb emissions cost-effectively, as the allowances are used as a form of currency. Each allowance allows the right to emit one tonne of CO₂. If companies exceed emissions over the allowances they submit, they are imposed with heavy fines. To avoid this matter, companies can purchase allowances from other companies or purchase emissions trading schemes outside the EU. On the other hand, surplus allowances can be sold for profit. This creates an incentive for companies to reduce their emissions, while also incentivizing investment into cleaner technology. The EU ETS covers energy-intensive industries, as well as the power and heat generation sector, and airline emissions.¹¹ Within these sectors and industries include power stations, oil refineries, coke ovens, iron and steel plants, cement clinker, glass, lime, bricks, ceramics, pulp, paper and board, aluminum petrochemicals, and commercial aviation. The program covers 45% of the EU's GHG emissions. Now in the third phase of the program (2013-2020), the cap decreases the quantity of allowances by 1.74%, with the cap in 2013 set at 2,084,301,856 allowances. Phase 3 is also characterized by auctioning over free allocation, which the EU says is how transparency and non-discrimination can be ensured.

9 United Nations Framework Convention on Climate Change, 2015. *Parties & Observers*. [online] Available at: http://unfccc.int/parties_and_observers/items/2704.php [Accessed 12 December 2015].

10 European Commission, 2015. *The EU Emissions Trading System (EU ETS)*. [online] Available at: http://ec.europa.eu/clima/policies/ets/index_en.htm [Accessed 11 December 2015].

11 Vlachou, Andriana., 2014. *The European Union's Emissions Trading System*. *Cambridge Journal of Economics*, 38, 127-152.

12 European Commission, 2015. *The EU Emissions Trading System (EU ETS)*. [online] Available at: http://ec.europa.eu/clima/policies/ets/index_en.htm [Accessed 11 December 2015].

Figure 1. Summary map of existing, emerging and potential regional, national and subnational carbon pricing initiatives (ETS and tax)

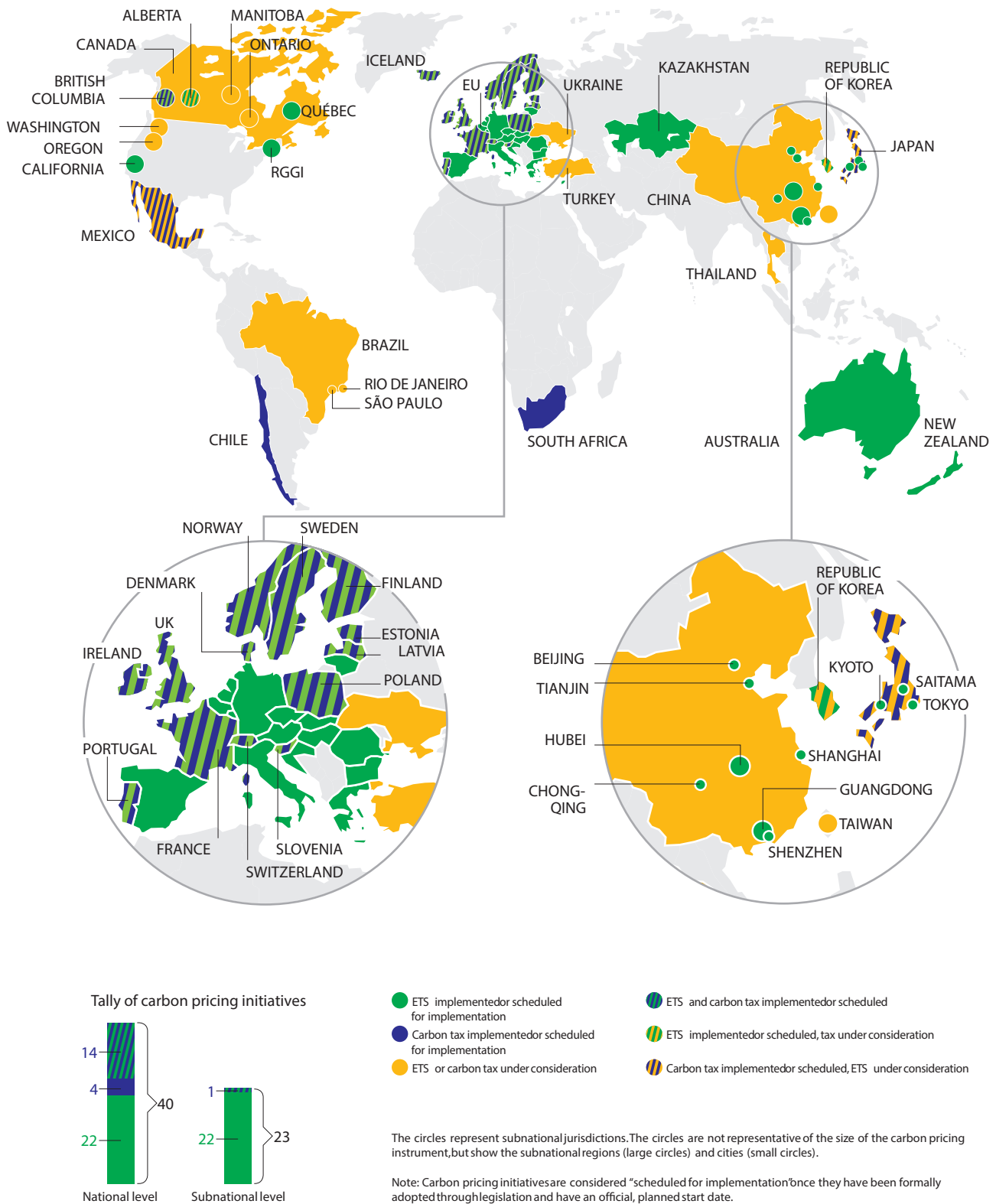


Figure 1: Summary of existing, emerging and potential regional, national and subnational carbon pricing initiatives (ETS and tax)

Source: World Bank Group, 2016. Carbon Pricing Watch 2016. [pdf] Available at: < <https://openknowledge.worldbank.org/bitstream/handle/10986/24288/CarbonPricingWatch2016.pdf?sequence=4&isAllowed=>> [Accessed 20 September 2016].

Cap-and-Trade in the U.S.

Regional Greenhouse Gas Initiative (RGGI). The Regional Greenhouse Gas Initiative was the first cap-and-trade system in the United States, which covers the Northeast region, including New York. Using three-year control periods, companies must submit the allowances every three years. Using auctioning to allocate allowances, the funds generated from the auctions are then invested into programs like energy efficiency and renewable energy.¹³ The program's goal was to contain emissions at 2009 levels from 2009–2014, with the goal of reducing carbon emissions by 2.5% annually, to eventually come to a reduction of 10% by 2018.¹⁴

The United States' Regional Greenhouse Gas Initiative, being the first emissions trading program in a country, whose status as a major fossil fuel consumer and emissions emitter who also previously opposed the Kyoto Protocol, deserves particular attention. The program only covers large electricity generators, and the money raised from allowances, which is almost all auctioned, go to their respective states' governments, to then be invested into renewable energy and energy efficiency projects. The program is unique for two reasons. First, there is a floor price in allowance auctions. The ability to remove surplus options, preventing prices from falling too drastically, gives the program some influence for how the market operates, avoiding a flood of permits. Second, the program has initiated a substantial transition from coal to natural gas.¹⁵ Natural gas, though still a fossil fuel, is a significantly cleaner fuel to burn than coal. Therefore, this program's success can be measured by its ability to alter the region's energy consumption mix.

California Cap-and-Trade. California's ETS was adopted in 2011 as part of the Global Warming Solutions Act of 2006.¹⁶ The program covers electricity generation, suppliers of natural gas and blended fuels, refineries, cement, glass, iron and steel, etc. These energy-intensive sources are part of the program, including sources whose annual emissions exceed 25,000 metric tonnes of CO₂. California's ETS is unique because it sets both a price ceiling and floor, keeping the price from fluctuating too wildly.¹⁷ California's ETS utilizes both auctioning and free allocation. The first year generated 525 million USD in revenue from

¹³ Peel, J., Godden, L., and Keenan, R., 2012. *Climate Change Law in an Era of Multi-level Governance*. *Transnational Environmental Law*, 1(2), 245–280.

¹⁴ Ibid.

¹⁵ Newell, R., Pizer, A., and Raimi, D., 2013. *Carbon Markets 15 Years after Kyoto: Lessons Learned, New Challenges*. *The Journal of Economic Perspectives*. 27(1), 123–146. Pg.130

¹⁶ Center for Climate and Energy Solutions, 2016. *California Cap and Trade*. [online] Available at: <http://www.c2es.org/us-states-regions/key-legislation/california-cap-trade> [Accessed 25 September 2016].

¹⁷ *The Economist*, 2013. *ETS, RIP? The Economist*, [online] 20 April. Available at: < <http://www.economist.com/news/finance-and-economics/21576388-failure-reform-europes-carbon-market-will-reverberate-round-world-ets> [Accessed 20 September 2016].

auctioning, and 29 million allowance permits were auctioned. California's ETS is unique because profits generated from auctions must be invested into efforts to improve air quality. At least a quarter of the profits must go to disadvantaged communities that suffer most from air pollution. The California ETS is linked with one other ETS, in Quebec, while other schemes in Canada are in the process of being linked to California's ETS.¹⁸



Figure 2: What do the world's cap-and-trade programs cover?

Source: International Carbon Action Partnership, 2015. *Here's How Countries All Over the World are Making Polluters Pay*. [online] Available at: <http://www.motherjones.com/environment/2015/02/cap-and-trade-countries> [Accessed 25 September 2016].

Republic of Korea Emissions Trading Scheme (KETS)

Launched in 2015 as the first emissions trading scheme in Asia, the program is also the world's second largest ETS, after the EU ETS. The KETS covers two-thirds of the country's total emissions. The program's existence is significant, as South Korea is the OECD's fastest-growing GHG emitter. With the goal of a 22% reduction below 2012 emission levels by 2030, the program covers 23 industries, including steel, cement, petro-chemicals, refineries, power generation, buildings, waste, and aviation. Within these industries, 525 companies, including five airlines, are included within this scheme. Like the EU ETS, the program is in three phases: Phase 1 (2015–2017), Phase 2 (2018–2020), and Phase 3 (2021–2025). Phase 1 is characterized with no auctioning, and companies are allocated free allowances, according to the base year of 2011–2013. Phase 2 introduces 3% auctioning, while Phase 3 requires at least 10% auctioning.¹⁹

The South Korean ETS was only recently introduced in 2015. Therefore, it is too early to assess its effectiveness and to identify areas needing adjustment. However, its status as the first national program in Asia has implications for the region, and the sheer size of the program being second after the EU's has implications beyond the region. The program also has

¹⁸ Center for Climate and Energy Solutions, 2016. *California Cap and Trade*. [online] Available at: <http://www.c2es.org/us-states-regions/key-legislation/california-cap-trade> [Accessed 25 September 2016].

¹⁹ International Carbon Action Partnership, 2015. *Korea Emissions Trading Scheme*. [online] Available at: https://icapcarbonaction.com/en/?option=com_etsmap&task=export&format=pdf&layout=list&systems%5B%5D=47 [Accessed 11 December 2015].

the backing of the EU, when in August 2016, it was announced the EU would support the implementation and technology of the KETS under a three-year project, worth 3.5 million euros, funded by both parties.²⁰ This could provide an opportunity for linking, where firms can purchase or sell allowance permits to firms in another ETS in another jurisdiction.

The success of this program will set a precedent for its neighbors and for other countries that could look to this country that emits a substantial amount of fossil fuel emissions as an example. South Korea's status as an import-dependent country with a very diversified energy mix will make the country an interesting case study for further analysis.

China's National Emission Trading Scheme

During a visit to Washington, at the U.S.-China Joint Presidential Statement on Climate Change, President Xi Jinping announced that China will begin implementing a national emissions trading scheme beginning in 2017, which will cover such energy-intensive industries as iron, steel, power generation, chemicals, building materials, paper, and nonferrous metals.²¹ China's eagerness to address China's air pollution is rational. As a result of the energy-intensive industries that drove China's economy, China sits in a paradoxical position as both the world's largest carbon polluter and largest investor in renewable energy.²² Beijing's mayor himself admitted that his city is "unliveable."²³ And the data backs his claim. A recent University of California, Berkeley study estimates that air pollution kills about 4,000 people in China a day, due in large part to China's reliance on burning coal for heating.²⁴ The situation is dire for a city that is home to an estimated 21 million residents, almost the population of Australia.²⁵ Therefore, China is serious about tackling its air pollution problem.

20 European Commission, 2016. *EU announces 3.5 million emissions trading cooperation project with Korea*. [online] Available at: <http://ec.europa.eu/clima/news/articles/news_2016070801_en.htm> [Accessed 25 September 2016].

21 The White House, 2015. *U.S.-China Joint Presidential Statement on Climate Change*. [online] Available at: <<https://www.whitehouse.gov/the-press-office/2015/09/25/us-china-joint-presidential-statement-climate-change>> [Accessed 20 September 2016].

22 The Economist, 2013. *China and the environment: The East is Grey*. The Economist, [online] 10 August. Available at: <http://www.economist.com/news/briefing/21583245-china-worlds-worst-polluter-largest-investor-green-energy-its-rise-will-have> [Accessed 15 September 2016].

23 Kaiman, J., 2015. *Beijing smog makes city unliveable, says mayor*. The Guardian, [online] 28 January. Available at: <https://www.theguardian.com/world/2015/jan/28/beijing-smog-unliveable-mayor-wang-anshun-china> [Accessed 15 September 2016].

24 Associated Press, 2015. *Air pollution in CHian is killing 4,000 people every day, a new study finds*. The Guardian, [online] 13 August. Available at: <https://www.theguardian.com/world/2015/aug/14/air-pollution-in-china-is-killing-4000-people-every-day-a-new-study-finds> [Accessed 20 September 2016].

25 Sharma, S., 2014. *Beijing has almost the same population as these countries*. The Washington Post, [online] 19 June. Available at: <https://www.washingtonpost.com/news/worldviews/wp/2014/06/19/beijing-has-almost-the-same-population-as-these-countries/> [Accessed 15 September 2016].

There are currently seven pilot ETSs in Beijing, Chongqing, Guangdong, Hubei, Shanghai, Shenzhen, and Tianjin, and these programs will be merged into a national ETS in 2017. Firms emitting more than 5,000 tCO₂e²⁶ must participate in the national ETS.²⁷ China's implementation of its ETS is a major victory for environmental activists. Once implemented, roughly half of global GHG emissions will be generated in countries or firms with some form of carbon pricing. For Beijing's policymakers, environmental concerns once took a backseat to economic progress and industrialization. But the current problems with air pollution can no longer be ignored. Outlooks on the potential for China's national ETS look optimistic, given that China has a reputation for following through with decisions, quickly and efficiently, which is exactly how climate change needs to be addressed. China has another key advantage, for not being first. The existing ETSs, particularly the EU ETS, can serve as a blueprint for China to avoid the same obstacles.

CRITICISMS OF CAP-AND-TRADE

Less than stellar results

The EU ETS came under criticism for the scale of its success. The European Commission website states that under the first commitment period (2008-2012) of the Kyoto Protocol, where states committed to reducing emissions to 5% below 1990 levels, the EU exceeded their commitment, with an 8% reduction as a whole. This can be seen as an overachievement, according to the EC, considering that the EU-15 achieved a reduction of 19% (including international credits and carbon sinks), and 11.7% domestically.²⁸ But critics claim the targets don't go far enough. To offer a comparison, in the first Kyoto period of 2008-2012, the EU achieved the same emissions reductions as the U.S., despite the U.S. lacking a national emissions trading scheme.²⁹ Therefore, it could be argued that the EU would have achieved the same results without the EU ETS. Much of the blame, however, can be traced to a surplus in permits, which is the EU's own misdoing.³⁰

26 Tonnes of carbon dioxide equivalent

27 World Bank Group, 2016. *Carbon Pricing Watch 2016*. [pdf] Available at: <<https://openknowledge.worldbank.org/bitstream/handle/10986/24288/CarbonPricingWatch2016.pdf?sequence=4&isAllowed=y>> [Accessed 20 September 2016].

28 European Commission, 2015. *Kyoto 1st commitment period (2008-2012)*. [online] Available at: http://ec.europa.eu/clima/policies/strategies/progress/kyoto_1/index_en.htm [Accessed 12 December 2015].

29 Friends of the Earth, 2009. *A Dangerous Obsession: The evidence against carbon trading and for real solutions to avoid a climate crunch*. [pdf] Available at: http://www.foe.co.uk/sites/default/files/downloads/dangerous_obsession.pdf [Accessed 12 December 2015]

30 The Economist, 2013. *ETS, RIP? The Economist*, [online] 20 April. Available at: <<http://www.economist.com/news/finance-and-economics/21576388-failure-reform-europes-carbon-market-will-reverberate-round-world-ets>> [Accessed 20 September 2016].

Corruption

Additional criticisms involve accusations of permit fraud in the millions, in addition to claims that high emitting companies receive huge windfall profits through free permits, and the program is hindering investment into renewables and low-carbon technology, as the carbon price fluctuates.³¹ The EU ETS's credibility has been debated, when in 2011, an estimated 50 million euros, or 73 million USD of allowances from Eastern European registries were hacked and transferred into the open market. An incident in the Czech Republic used a bomb threat to evacuate a registry building.³² Another incident involved traders manipulating tax laws in different countries to fraud governments of over 1 billion euros.³³

In 2006, India was outed by a Wikileaks revelation for its CDM³⁴ projects that should not have been certified because they did not reduce emissions for the developing countries beyond those that would have been achieved without foreign investment, meaning that millions of tonnes of CO₂ reductions could be falsified.³⁵

Grandfathering: Developed and developing countries disagree on what is fair

Grandfathering refers to the practice of determining future emissions allowances based on prior emissions. Therefore, grandfathering allows actors to emit the same percentage of emissions as they have emitted in past years.³⁶ In terms of state actors, grandfathering applies to the existing emissions level of each country, whereby the reductions must then be proportional to the country's history of emissions.³⁷ Both the Kyoto Protocol and the EU ETS use forms of grandfathering.

Developed countries defend the status quo, since energy consumption is crucial to their economic activities. Current lifestyles, economic endeavors, technological projects, etc. that are dependent on fossil fuel consumption in the industrialized world are necessary and unable to adjust so abruptly. It's debatable whether the developed world would face such a destructive adjustment. But people in developed countries must come to terms with the understanding that

31 Friends of the Earth Europe. *Carbon Trading*. [online] Available at: <https://www.foeeurope.org/carbon-trading> [Accessed 12 December 2015]

32 Schiller, B., 2011. *Is it time to overhaul Europe's carbon trading scheme?* [online] 28 April. Available at: <http://www.theguardian.com/environment/2011/apr/28/overhaul-europe-carbon-trading-scheme> [Accessed 12 December 2015].

33 Newell, R., Pizer, A., and Raimi, D., 2013. *Carbon Markets 15 Years after Kyoto: Lessons Learned, New Challenges*. *The Journal of Economic Perspectives*, 27(1), 123-146.

34 *Clean Development Mechanism*. [A key feature of the Kyoto Protocol, allowing developed countries to receive more emission allowances by investing in green energy projects in developing countries]

35 Schiermeier, Q., 2011. *Carbon-Credits System Tarnished by WikiLeads Revelation*. *Scientific American*, [online] 27 September. Available at: <<http://www.scientificamerican.com/article/carbon-credits-system-tarnished-wikileaks/>> [Accessed 25 September 2016].

36 Knight, C., 2013. *What is grandfathering?* *Environmental Politics*, 22(3), 410-427.

current consumption patterns cannot continue as they do today.

Developing countries argue that the atmosphere is a common resource, whereby one actor's actions affect everyone on the planet.³⁸ Therefore, since carbon emissions accelerate global warming, a universal problem requiring collective action, there is no justification for one actor to have more claim to it than another.

But there can also be a compromise. Grandfathering can be applied in different intensities. Strong grandfathering simply hands out free allowances to previous emitters, whereas moderate grandfathering considers other factors, while still considering prior emissions in the decision-making process.³⁹ Moderate grandfathering characterizes the current international agreement, the Kyoto Protocol, which does not only consider prior emissions. The Kyoto Protocol places more burden on developed countries, principled on "common but differentiated responsibilities." The EU ETS, also exhibits moderate grandfathering.

Overallocation of permits and price volatility

Perhaps the most compelling criticism of the EU ETS is the over allocation of permits, which created a surplus, particularly to the industrial sector. The volatility of the permit prices do little to incentivize companies to reduce emissions, when there is a surplus of permits, with an estimate there were 400 million tons worth of surplus permits in Phase II of the EU ETS.⁴⁰ This also influences the momentum for investment into cleaner technology. The EU ETS has also been criticized for not making any serious impact on low-carbon technological innovation.⁴¹

The EU ETS's market characteristics make it susceptible to economic crises and instability, and prone to manipulation by financial actors. In 2008 and 2009, with the global financial crisis, demand for the allowances fell. This prompted companies to sell off large amounts of permits to quickly raise funds. This subsequently triggered extremely low carbon prices, negatively affecting investment into clean energy projects in developing countries.⁴²

The prices of allowances are subject to volatility in some cap-and-trade programs. In the EU ETS's first phase, allowance prices fell significantly. In 2006, Phase 1 permit

37 Meyer, L. and Roser, D., 2006. *Distributive Justice and Climate Change. The Allocation of Emission Rights*. *Analyse & Kritik*, 28, 223-249.

38 Ibid.

39 Knight, C., 2013. *What is grandfathering?* *Environmental Politics*, 22(3), 410-427.

40 Friends of the Earth, 2009. *A Dangerous Obsession: The evidence against carbon trading and for real solutions to avoid a climate crunch*. [pdf] Available at: http://www.foe.co.uk/sites/default/files/downloads/dangerous_obsession.pdf [Accessed 12 December 2015]

41 Vlachou, A., 2014. *The European Union's Emissions Trading System*. *Cambridge Journal of Economics*, 38, 127-152.

42 Ibid.

prices dropped from 31.65 euros in April to 11.95 euros in May. Price volatility is a problem for investment, as it creates uncertainty. Price volatility is also an issue when it comes to linking ETSs. If the price of an allowance is too steep, firms from other jurisdictions will be unwilling to purchase a permit if it is more profitable to just pollute. Establishing price ceilings and floors can help mitigate this problem.

'Cap and Trade' limits the potential for more

Emissions trading schemes have also been criticized for its approach, that this environmental problem is now being seen as an economic struggle. Actors are thus too concerned with "prices, sale, purchase, registration, transfer and return of emission allowances and have thereby lost sight of the ecological purpose of the overall enterprise."⁴³ Winter acknowledges that in some ways it is an elegant approach, highlighting the issue of scarcity, and diminishing social costs. But actually it creates another problem, introducing a political negotiation process, which is contextualized by calculations of costs and states' resilience.

The nature of cap-and-trade plays into the rationale of a maximum threshold. The maximum threshold will always be viewed as exploitable. The economics of cap and trade, where allowances are valued, induces actors to either use the allowance or sell it. Any other action is seen as economically irrational.⁴⁴ Therefore, a state or actor will always use or sell the allowances. Therein lies the problem, where no state or company would hold emissions allowances, since there is no incentive to do so.

WHAT ABOUT A CARBON TAX?

Carbon taxes, thought not as prevalent as cap-and-trade, is a popular strategy to reduce emissions. A carbon tax assigns a price on carbon itself, setting a tax rate on carbon emissions. It differs from emissions trading schemes in that a reduction in emissions is not ensured. For this reason, a carbon tax delivers more uncertainty. But both strategies share in common the ability to generate government revenue.

How this money is spent is key, as ideally they would be invested into green programs, like energy efficiency and renewable energy projects. While carbon taxes provide less predictable emissions reductions, they do offer stable carbon prices, allowing energy producers and investors to make more certain decisions, without having to negotiate the unpredictability of costs.⁴⁵ Furthermore, cap-and-trade does not encourage aggregate emissions reduction beyond the target, as firms with excess allowances will always sell them to make a profit. Nevertheless, cap-and-trade is the more popular option of carbon pricing, and since cap-and-trade, in practice, guarantees a reduction in emissions, the certainty of reaching this goal makes cap-and-trade slightly more superior. Any shortcomings of cap-and-trade are design flaws, and these could be refined to make the strategy more effective.

⁴³ Winter, G., 2010. *The Climate is No Commodity: Taking Stock of the Emissions Trading System*. *Journal of Environmental Law*. 22(1), 1-25.

⁴⁴ *Ibid.*

CONCLUSIONS

Cap-and-trade's market-friendly approach for countries to reduce their GHG emissions should be strongly considered to meet the ambitious commitments of international climate change agreements. A handful of ETSs already exist on the local, national, and subnational level.

Criticisms of existing cap-and-trade programs include unimpressive reductions, corruption issues, allowance permit surpluses, poor investment climate due to price volatility, and the unfair structure of differentiated responsibilities and commitments for developed and developing countries under international agreements. Still, despite cap-and-trade's flaws, they are mainly due to design issues, which have a number of solutions. The EU ETS, as both the largest and oldest program, has drawn its share of criticism. Other ETSs have also encountered problems but have been able to devise solutions. There is much anticipation for China's national ETS, which will be a major environmental victory for the mammoth polluter once it goes into effect. Cap-and-trade is still a better alternative to a carbon tax, since, when regulated, can ensure a reduction in emissions.

The Paris Agreement is already entering into force, much sooner than anticipated, reflecting the urgency of the climate change issue. Policymakers must come to terms with the sad reality that most firms are not financially incentivized to limit emissions, and that green technology, despite tremendous gains in some areas like electric cars, is still not advancing at a pace fast enough to slow the continuously growing demand for oil. Encouraging the private sector by providing firms the flexibility to pursue different options could allow innovation and technology to thrive, while simultaneously protecting the environment. Therefore, inviting all the stakeholders and engaging them in a thoughtful way is the only means of achieving a significant impact in the fight against climate change.

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ENERPO RESEARCH CENTER



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FIVE QUESTIONS ABOUT NORD STREAM 2

Henrik Vorloeper

Abstract

This article presents an assessment of the political and economic arguments against Europe's current largest natural gas infrastructure project, Nord Stream 2. The pipeline project connects Russia directly with Germany, Europe's largest gas consumer and Russia's most important customer, via the Baltic Sea. This article views the project in the context of European energy security. The European Union members are currently deeply divided in the question of EU energy security in general and natural gas supply security in particular. This paper argues that the liberalization process of European gas markets (one of the strategies), is the preeminent way to achieve gas supply security in Europe. The case of Nord Stream 2 is almost symbolic of the gas supply security problem and how deep the dispute runs across the continent. Nord Stream, next to the Greek bailout, the refugee crisis and 'Brexit', could become another step towards EU disintegration. The aim of this article is to overview the European dispute around Nord Stream 2 based on the five most noteworthy arguments against this project. Considering these arguments, this article delivers an explanation as to why Nord Stream 2 is not as bad as it appears to be, and why the project is benefitting European energy security.

Key words: Nordstream 2; energy security; EU; Gazprom

Nord Stream 2 is an offshore gas pipeline project, designed to connect Russia with its main single European gas consumer, Germany, via the Baltic Sea (Figure 1). The pipeline will run from the Russian city of Vyborg (or Ust Luga) to Greifswald in Germany, in parallel to the already functioning Nord Stream 1 pipeline, which began operation in 2011. Nord Stream 2 is still in its planning and commissioning phase, but its main shareholder Gazprom anticipates the pipeline to go online by then end of 2019. The pipeline would add a capacity of 55 bcm¹ of gas per year to the European market. Gazprom holds a 50% share in the project, followed by Uniper (Germany), Wintershall (Germany), Royal Dutch Shell (UK), OMV (Austria) and Engie (France), each holding a 10 percent share.

The construction of Nord Stream 2 has yet to officially start, but there are already plans for onshore interconnections into the European markets in place. According to the intention, there will be two pipelines taking a similar path as the onshore connection of Nord Stream 1: Germany's gas transmission system operator "Gascade" plans to construct a new pipeline "EUGAL", which will run parallel to "OPAL", the main interconnector of Nord Stream 1 and feeds the German gas network as well as the Austrian gas hub "CEGH" in Baumgarten. The second onshore pipeline is the already existing pipeline "NEL", which will receive a capacity upgrade, via another compressor station.² NEL connects Nord Stream 1 and later also Nord Stream 2 with the Northern German network and the Dutch gas trading hub "TTF."³

1 billion cubic meters

2 GASUNIE, 2016. *Natural Gas Compressor Station for Extension of the Northern European Natural Gas Pipeline (NEL) – Application Conference Held, GasUnie [online]* 22 June. Available at: <https://www.gasunie.de/en/main-menu/news/natural-gas-compressor-station-for-extension-of-the-northern-euro> [Accessed 15 July 2016].

NORD STREAM 2 AND EUROPEAN ENERGY SECURITY

Very often Nord Stream 2 is labelled as a threat to European energy security. Energy security in this context refers to the stable supply of energy sources to economically reasonable prices. Natural gas is a primary and vital energy source for the EU and likely to stay important, and supply cuts would have detrimental effects for the internal security situation in Europe. Although consumption might not grow considerably over the next decade, it is still an important fuel for the heating and electricity generation sector.

The EU follows two concepts of energy security, which seem to be somewhat contradictory, despite following the same goal of a unified EU gas market. The first concept is targeted at the increase in competition in the European gas market, to be achieved through regulation. The example here is the introduction of the Third Energy Package, which among other things, prevents large companies from taking a monopolistic position. Through these measures, the TEP regulation actually affects activities of Gazprom, but this is to the same extent as affecting activities of other large companies from outside of the EU. Another approach, on the contrary, is clearly anti-Russia, with the intention of diversification away from Russia through large politically-driven choices. Already in these justifications, there is clear distinction between political and market aspects.

This leads to the situation that when Nord Stream is assessed from the point of view of natural gas supply security, the discussion is also characterised by the use of arguments of both political and economic nature. Opinion leaders often fail to distinguish between the market economic forces in European-Russian relations and the foreign political situation and geopolitics.

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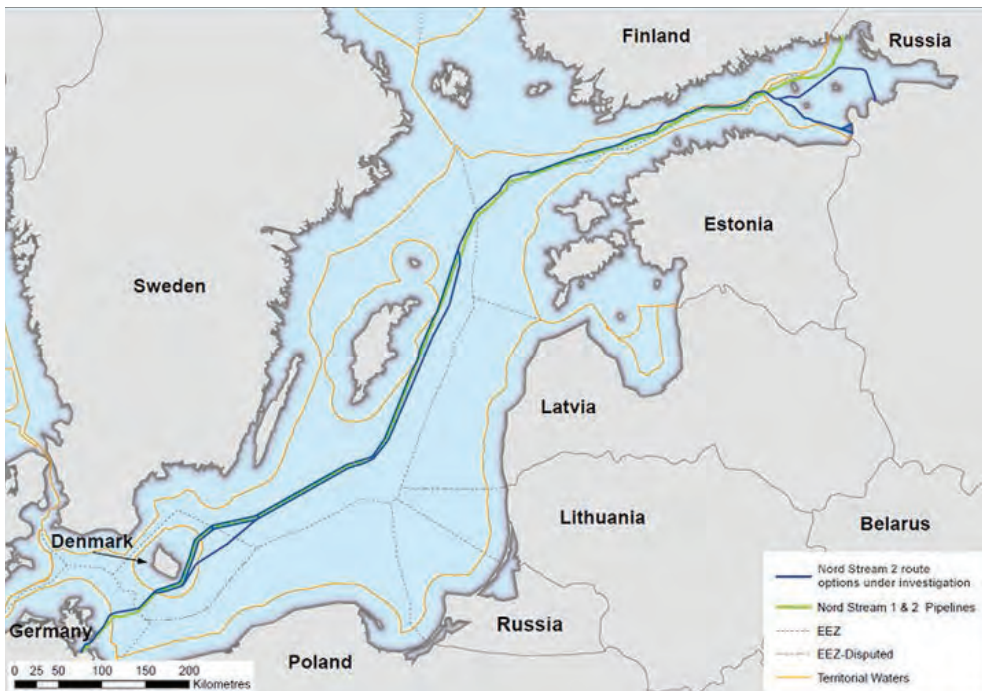


Figure 1. Nord Stream 1 and 2 pipelines
Source: Nord-Stream.de

What I would like to do below is distinguish between political and economic aspects of the project. Here is the list of the five most common arguments against Nord Stream 2:

1. Nord Stream 2 increases Europe's dependence on Russian gas.
2. Nord Stream 2 does not contribute to supply diversification and hinders competition.
3. Nord Stream 2 is not an economically viable project, because even Nord Stream 1 is not used at full capacity.
4. Nord Stream 2 isolates Central and Eastern European countries from Western European gas markets and makes them more vulnerable to Russian price dictation.
5. Nord Stream 2 is a political project and aims to reduce Ukraine's status as a gas transit state.

These arguments reflect the concerns of those who in general are wary about energy relations with Russia, which might to a large extent be based on negative experiences in energy relations with Russia in the past. These selected arguments all have a certain degree of legitimacy and the aim here is neither to disagree or declare them void, but to demonstrate that the facts are not as negative as displayed and that Nord Stream 2 is a rational choice for European energy security.

1. "Nord Stream 2 increases Europe's dependence on Russian gas"

The amount of imported Russian gas is increasing throughout Europe. This is especially true for the case of Germany, which already imports around 40% of its gas needs from Russia.⁴ That is the first element of the problem.

Russia can leverage dependencies either for political purposes or to exploit economic benefits as a monopolist.⁵ In terms of political exploitation, there is indeed reason for some concern. The last time Russia used gas supply cuts for political reasons, took place in 2014, when Gazprom reduced gas supplies to Poland to the lowest limit permitted within the gas supply contract flexibility for several days. Gazprom intended to prevent Poland from supplying gas to Ukraine via reverse flow capacities, as Russia has stopped gas supplies to Ukraine.⁶ This situation has shown some peculiarities regarding changes in the European natural gas market.

Moreover, there is no immediate solution to import dependence on Russia: there are not many alternative supply sources⁷, since conventional suppliers are either declining their production (Norway), or are unstable (North Africa), LNG supplies from the global market or pipeline gas from the Caucasus, Turkmenistan and Iran are too expensive.

Therefore, we may conclude that Europe's dependence on Russian gas exists indeed and that dependence is hard to get rid of due to the fact that Russian supplies are among the cheapest available, with existing infrastructure.

However, Nord Stream 2 will not make this dependence stronger, but would actually improve the situation for Europe. The following four areas of development show, why this is the case.

First, Gazprom has already shown the willingness and ability to make concessions in terms of gas prices. Especially for the upcoming availability of LNG, Gazprom has already stepped into price competition to protect market share. The latter case provides evidence that Gazprom has already chosen to compete with other suppliers on the continent, even before LNG has arrived in large volumes on the EU market. Gazprom

4 Amelang, S., 2016. Germany's dependence on imported fossil fuels, *Clean Energy Wire* [online] 11 February. Available at: <https://www.cleanenergywire.org/factsheets/germanys-dependence-imported-fossil-fuels> [Accessed 15 July 2016].

5 Austrevicius, P., 2016. Nord Stream 2: A Killer Project, *EU Observer* [online] 11 May. Available at: <https://euobserver.com/opinion/133401> [Accessed 15 July 2016].

6 Foy, H., Weaver, C., and Buckley, N., 2014. Russia tightens gas supplies to Poland, *Financial Times* [online] 10 September. Available at: <http://www.ft.com/cms/s/0/5533134a-38f6-11e4-a53b-00144feabdc0.html#axzz4FPLUbLib> [Accessed 20 July 2016].

7 Note the distinction between supply sources and supply routes: supply sources refer to the areas of natural gas production / exporting countries, while supply routes refer to actual pipelines. Diversification of supply routes is therefore not the same as diversification of sources, and may take place if the supplier is still the same country / company.

will stay in price competition as long as LNG and other sources remain an option for European customers.

Second, Germany and most of the EU have augmented the number of alternative sources of energy, primarily renewable energy for power generation. The EU's environmental policies have reduced the role of gas as a vitally important energy source.

Third, Nord Stream 2 will back-up the already-improving interconnectivity within the EU gas network in a similar way as Nord Stream 1. For example, in a fictive and simplified scenario where Russia would cut gas supplies to Poland for a longer period of time, gas volumes delivered via Nord Stream 2 could be made available via reverse flow capacities.⁸ Reverse flow capacities between Germany and Poland already exist.⁹ If Russia wants to put political pressure on Poland, it would have to cut off supplies to Germany as well, to what in turn Gazprom would be reluctant to do. EU competition law restricts destination clauses within gas supply contracts, with the consequence that gas entering the European market can be traded freely within the EU. In other words, once arrived at the customer, Russian gas is not owned by Gazprom anymore.¹⁰ The new owner, in most cases the utility supplier, has the right to sell and distribute its acquired gas volumes freely in the EU and for other export markets. Nord Stream 2 will supply mature gas markets of Continental Europe, the Netherlands, Germany, and Austria, where gas trade plays an increasingly important role.¹¹

Fourth, the Russian gas sector is highly dependent on exports to Europe, which actually makes Russia reluctant to use natural gas supplies for political objectives.

Instead, Russia has made efforts to liberalize domestic market and integrate in international markets.¹² This somewhat differs to a widely expected strategy of export markets diversification of Russia. Russia's increased presence in the Asian markets is slower than expected, so the willingness to adapt to the European concept of liberalization is likely to persist. This makes the political aspect less likely to interfere in European-Russian gas relations. Moreover, growing global trade of LNG

will pressure Russia to participate in a more competitive fashion on the global market in the future, which includes the Asian market as well.

Overall, Europe is dependent on natural gas imports, and especially on gas imports from Russia. The argument stated in the heading of the section thus holds true. However, the reason why this dependence becomes a threat to energy security loses its ground. Natural gas market conditions in Europe have gone through a substantial change during the last seven years. The increase in competitiveness significantly reduced the negative aspects of import dependency, hence also political and economic exploitation of natural gas trade. With the implementation of Nord



Figure 2: The European Pipeline Network
Source: Energypost.eu

Stream 2, the good news is that the pipeline, despite bringing more gas from Russia, is even supportive to diversification because it increases Russia's export reliance on the European market and incentivises investments into the EU's internal pipeline network.

8 GASCADE, 2014. Reverse Flow towards Poland starts in April [online] 22 September. Available at: <https://www.gascade.de/en/press/press-releases/press-release/news/reverse-flow-towards-poland-starts-in-april/> [Accessed 20 July 2016].

9 SHALE GAS INTERNATIONAL, 2016. Reduction in supply causes Poland to buy gas from Germany and Czech Republic, Shale Gas International [online] 16 September. Available at: <http://www.shalegas.international/2014/09/16/reduction-in-supply-causes-poland-to-buy-gas-from-germany-and-czech-republic/> [Accessed 25 July 2016].

10 EUROPEAN COMMISSION, 2015. Antitrust: Commission sends Statement of Objections to Gazprom – Factsheet, [online] 22 April. Available at: http://europa.eu/rapid/press-release_MEMO-15-4829_en.htm [Accessed 25 July 2016].

11 Heather, P., 2015. The evolution of European traded gas hubs, OIES Paper: NG 104, Oxford Institute for Energy Studies, [pdf] December, Available at: <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2016/02/NG-104.pdf> [Accessed: August 8, 2016].

12 Lunden, L.P., Fjaertoft, D., Overland, I., and Prachakova, A., 2013. Gazprom vs. other Russian gas producers: The evolution of the Russian gas sector, Energy Policy [e-journal] October. Available at: <http://www.sciencedirect.com/science/article/pii/S0301421513005405>

2. “Nord Stream 2 does not contribute to supply diversification and hinders competition”

Russian gas export monopoly Gazprom is a major supplier of natural gas to the EU. In some Central and Eastern European (CEE) countries, Gazprom is the only supplier. Most of Gazprom's deliveries are handled under long-term contracts with mandatory take-or-pay levels and oil indexation. Both parameters are considered to be contradictory to the free competition principle.

In order to enhance competition, the best solution is diversification of supply sources. In the case of Nord Stream 2, Gazprom still remains the main supplier, thus the objective of source diversification is not the case. For the proponents of the Energy Union, supply source diversification appears to be the only option to enhance competition.¹³

However, it is essential to look at the project in the context of changing market conditions. There are two elements that make Nord Stream 2 in line with market development.

Firstly, it provides a source of gas to be further delivered to the hubs (CEGH, Baumgarten), as well as to the locations that we previously supplied exclusively by direct Gazprom supplies (e.g. Ukraine via reverse flow capacity¹⁴). Therefore, Nord Stream 2 does not contradict the interconnectivity / competition objectives of European gas market development.

Secondly, Nord Stream 2 does provide for the diversification of supply routes and thus provides for stronger security of supply, even if the source is still the same.

3. “Nord Stream 2 is not an economically viable project, because even Nord Stream 1 is not used at full capacity”

Nord Stream 1 is currently not used at full capacity. While the pipeline is capable of bringing 55 bcm of natural gas from Russia to Germany, flows in 2015 were at 39 bcm. This leads many analysts to conclude that Nord Stream 2 is not needed in the situation when the first pipeline is not used at full capacity.

However, the fact that Nord Stream 1 is not used at full capacity is not caused by the lack of demand, but rather by regulatory restrictions. According to the TEP legislation, interconnecting onshore pipelines (OPAL and NEL) have to reserve part of their capacity open for third-party access, and in the lack thereof, 50% of capacity sits idle. The reason for underuse of Nord Stream 1 is therefore regulatory, not economic. Nord Stream 2 is actually under the danger of encountering the same challenges of regulatory nature, and probably they will be more complex and difficult to come through.

The argument against Nord Stream 2 claims “it cannot be used at full capacity rates as well; the investment costs do not justify the amount of unused capacity; and Nord Stream

2 in fact is a political project, for example to undermine Ukraine's role as a transit state”. I believe that this is not completely true.

Firstly, Nord Stream 1 was not proven to be economically inefficient. The low rates of capacity utilization in the beginning of 2011 to 2012 were mostly related to problems with the interconnecting infrastructure, rather than shortcomings in demand. Nord Stream 1 has been increasingly utilized in a year to year comparison. Gazprom appealed to the EU Commission several times, to grant an exemption of the usage of OPAL. The last time was in summer 2016 which, at the time of writing this article, the EU Commission has not made final verdict. Gazprom's efforts provide evidence that there is an essential interest to make use of the full capacity, which will with a high probability apply to Nord Stream 2 as well.

Secondly, Nord Stream 1 and Nord Stream 2 consortia are made of private or profit seeking companies and their investment decisions are simply based on profit maximization. Their investment decision is something that goes beyond the area or inquiry of the European Commission.

Thirdly, Gazprom is making adjustments to its business model for gas exports to Europe, and these changes may well improve the situation for both Nord Stream 1 and Nord Stream 2. Traditionally, Gazprom has been supplying its European customers through traditional long-term contracts with take-or-pay volumes as well as oil indexation as the core pricing mechanism. Besides introducing hub indexation in the LTCs, Gazprom has also started to test the mechanism of auctions, offering gas supplied via Nord Stream 1 on auctions for the first time in autumn 2015. Gas auctions were held since then several times and more auctions for Nord Stream 1 are planned for September 2016. In Gazprom's most recent bid to the EU Commission on the OPAL exemption, the company asked if the unused capacity of OPAL could be offered on the European gas capacity auction platform PRISMA. If approved, this would give Gazprom the opportunity to bid for OPAL's free capacity at capacity auctions. The same model of capacity auctions via PRISMA is applied to the NEL pipeline. This option has not yet been available for Gazprom and would make the necessity of gas auctions void. Still, capacity auctions via PRISMA, which is the running model for most of Europe's gas infrastructure, would enable Nord Stream 1 full capacity usage.

In conclusion: the reasons why Nord Stream 1 is not used under its full capacity is not based on economic reasons, but is of regulatory nature. The same difficulties are likely to appear for Nord Stream 2 project. However, it is questionable

17 GAZPROMEXPORT, 2016. *Gazprom Export will carry out the 3rd gas auction for Europe*, [Gazpromexport.ru](http://www.gazpromexport.ru) [online] 14 July. Available at: <http://www.gazpromexport.ru/en/presscenter/news/1851/> [Accessed 01 August 2016].

18 PLATTS, 2016. *European Commission delays ruling on new Gazprom bid for German gas link Opal use*, [online] 14 July. Available at: <http://www.platts.com/latest-news/natural-gas/brussels/european-commission-delays-ruling-on-new-gazprom-26492211> [Accessed 02 August 2016].

14 Sharples, J., 2015. *Gazprom Monitor Annual Review. Analyzing the External Dimensions of Russian Gas – Summer 2014*, *Gazprom Monitor Annual Review*, (European Geopolitical Forum SPRL, Brussels, 2015) [Accessed 08 August 2016].

whether the experts outside Nord Stream 1 and Nord Stream 2 consortia should be concerned about the decision whether to build the Nord Stream 2 pipeline: it is the investment decision made by the members of the consortium, and they have their reasons to see economic rationale in the project realisation. Moreover, there are some signs of improvement of the situation for Nord Stream 1 after a range of adjustments made by Gazprom, and this gives a reason to believe that solutions will also be found for Nord Stream 2.

4. “Nord Stream 2 isolates Central and Eastern European countries from Western European gas markets and makes them more vulnerable to Russian price dictation”

Nord Stream 2, just as Nord Stream 1, directly connects Russia with Germany and bypasses Poland, Slovakia and the three Baltic states – this serves as the basis for the argument that Nord Stream 2 effectively isolates Central and Eastern European countries. Especially these countries that see themselves as circumvented perceive this as a general threat to their energy security.

Some of these countries are currently not only consumers of Russian gas, but also transit countries for gas deliveries to the rest of Europe. The transit status provides the country with some advantages – in particular, Gazprom is dependent on the transit country for further deliveries. The transit status also provides the country with income from transit fees, which would be reduced if gas deliveries are diverted from transit states to Nord Stream 2. Moreover, the direct link between Russia and its largest European buyers develop a sense of isolation of CEE countries from the European continent or even the EU.

An important issue to remember here is that firstly, Nord Stream 1 or Nord Stream 2 do not actually do anything to effectively isolate these markets from Western Europe. On the contrary, simultaneously the reverse flow capacities are built.

Additionally, with possibility of Gazprom's supplies to Western Europe and CEE countries receiving their gas from the West, they might still end up receiving Gazprom gas which had arrived to Europe via Nord Stream, but with lessened Gazprom's monopoly as their main supplier.

The concern of reduced transit fees, however, is an argument that stands against the idea of liberalization. Nord Stream 2 has the advantage that supplier and consumer are not bound on additional costs imposed by a third country. The third country that provides pipeline capacity, like Poland or Ukraine, will have to adapt to liberalization and offer transit capacities that are competitive to Nord Stream 1 and Nord Stream 2 gas transit costs.

Consequently, Nord Stream 2 would not lead to isolation. Instead, it would provide those countries that feel isolated with more opportunities to enhance supply diversification and strengthen energy security.

5. “Nord Stream 2 is a political project and aims to reduce Ukraine's status as a gas transit state”

Clearly, Nord Stream 2 will result in reduced gas flows via Ukraine.

Ukraine will lose two important assets for the country's internal stability. Firstly, it is political leverage over Russia in a situation where Russian-Ukrainian political relations are on the lowest level since the 1990s. Secondly, Ukraine will lose economic benefits in terms of transit fees, which annually add 2 billion USD to the state budget. The Ukrainian state budget is already constrained due to the deteriorating economic situation, causing fragile political balance. Reduced gas flows for transit are therefore a destabilizing factor for Ukraine. In this respect, it is clear why Ukraine would like to see its status as a transit state protected.

Gazprom, however, has its valid reasons for looking at options of avoiding Ukraine as a transit state. One prominent reason to halt gas transit via Ukraine is a form of political punishment to the incumbent Ukrainian government for its “anti-Russian” politics.¹⁸ One more durable reason to halt gas transit via Ukraine, based on economic calculation, is that Ukraine has proven to be unreliable in several cases to provide transit security for Russian gas destined for European markets.

At the same time, Gazprom's intention to stop transiting gas through Ukraine has to a large extent been political rhetoric. The company has already started talks with the Ukrainian pipeline owner in order to secure future contracts (beyond 2019, when the current contract expires). An agreement between Gazprom and the Slovakian pipeline owner EUSTREAM, which states that the pipeline will be utilized by Gazprom with gas flows from Ukraine despite Nord Stream 2, is the most recent example that Gazprom does not intend to stop using Ukrainian transit capacities.^{20,21}

19 Pirani, S., Yafimava, K., 2016. *Russian Gas Transit Across Ukraine Post-2019: pipeline scenarios, gas flow consequences, and regulatory constraints*, OIES paper: NG 105, Oxford Institute for Energy Studies. [pdf] Available at: <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2016/02/Russian-Gas-Transit-Across-Ukraine-Post-2019-NG-105.pdf> [Accessed 05 August 2016].

20 TASS, 2016. *Russia may supply gas through Ukraine even after Nord Stream 2 is commissioned*, [online] 20 February 2016. Available at: <http://tass.ru/en/economy/858175> [Accessed 01 August 2016].

21 ICIS, 2016. *Slovak-Polish pipe advances as Gazprom calms Eustream*, [online] 1 July. Available at: <http://www.icis.com/resources/news/2016/07/01/10013032/slovak-polish-pipe-advances-as-gazprom-calms-eustream/> [Accessed 05 August 2016].

Overall, political considerations for Russia's avoidance of Ukraine's transit pipeline cannot completely be excluded, although there is enough evidence that transit route diversification – or the so-called “transit avoidance corridor” by Gazprom – has economic reasons. It is in the interest of Ukraine and the EU that the country reduces its dependency on transit fees and thus basically from Russia. The availability of more gas in Europe a long with an improved interconnecting infrastructure improves the situation for Ukraine and both is supported if not to be made possible by Nord Stream 2.

CONCLUSIONS

Nord Stream 2 is an ambitious project facing a lot of obstacles, not least in terms of overall opposition from the media. In this article, we have analysed some of these arguments and demonstrated that they are often only partly true. The most questionable aspect in relation to Nord Stream 2 is the fact that this project only provides route diversification and not source diversification. Gazprom maintains its market share in Europe and hinders other suppliers from entering the market.

However, the project itself actually contributes to overall liberalization of the European natural gas market. Nord Stream 2 increases gas supply volumes in Europe. The additional volumes increase the incentives to build new infrastructure that support interconnectivity between particular markets. Integrated pipeline network is one of the main preconditions to establish single and liberalized market.

Liberalization of gas markets is the chosen solution to provide energy security in Europe. And Nord Stream 2 does not hinder liberalization and energy security. Our main conclusion is that Nord Stream 2 in fact contributes to the liberalization process in the EU and thus supports energy security in the region.

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