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ENERPO JOURNAL MANAGEMENT

Irina Mironova

Jerry Byers

Nikita Lomagin

Yuliya Vymyatnina

Maurizio Recordati

Michael Camarda

Nicholas Watt

Olga Viyra

Editor-in-Chief (imironova@eu.spb.ru)

Associate editor, online edition (jbyers@eu.spb.ru)

Academic director, ENERPO Program (lomagin@eu.spb.ru)

Professor, Department of Economics, EUSP (yv@eu.spb.ru)

Executive Director, International Energy Center at EUSP
(mrecordati@eu.spb.ru)

Associate Director, ENERPO Program (mcamarda@eu.spb.ru)

ENERPO Journal co-founder (nicholas.a.watt@gmail.com)

Layout and design (olgaviyra@gmail.com)

EDITORIAL COUNCIL

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ENERPO student

ENERPO student

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Key words: energy, natural gas, oil, Russia, Asia, ESPO, Power of Siberia, sanctions, energy policy, LNG, energy exports

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Key words: natural gas, electrification, energy poverty, ASEAN, salt domes, underground natural gas storage, gas hubs, LNG, renewable energy, TAGP

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VIEWPOINT

In early 2015, the International Monetary Fund published a study claiming that over 5 trillion USD a year of subsidies were being paid in energy subsidies. This article is a critique of those claims and shows how the study misrepresents the term “subsidies” by assigning market externalities to the “indirect subsidies” category. In so doing, the IMF distorted the real subsidy numbers and paints a picture that these indirect subsidies are being paid by governments although they are largely not paid by anyone. This article breaks down the definitions of subsidies, indirect subsidies, and externalities in order to help the reader grasp energy subsidies with more clarity.

Key words: energy, subsidies, IMF, gas, oil, externalities, renewables, Pigouvian taxes, energy policy

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ANALYSIS

The article analyses the current situation and possible changes along the supply chain from South Caucasus toward South Eastern Europe. This area is interesting because of its role in transit avoidance within Russian gas export strategy. The second reason to pay closer attention to this region is the potential of formation of a gas-trading hub and implications for Russia’s export strategy. Finally, the role of South Caucasus supply and Turkey transit in Europe’s attempts to diversify its supply sources are also closely connected to the developments in SEE sub-regional gas market. The analysis demonstrates that currently, South Caucasus and Azerbaijan in particular is not a strong competitor to Russia, but it might well become one and take some of Russia’s share in the European gas market.

Key words: oil and natural gas markets, Russian gas supplies, Azeri gas supplies, Shah Deniz, European natural gas market, Caucasus energy hub, South Caucasus, Turkish gas market, energy policy

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This article is a review of a presentation given by Maxim Titov from the International Finance Corporation of the World Bank. The presentation was given at the European University at Saint Petersburg and was attended by students, faculty and administrators. The article details many of the subjects, strategies, and effects that the World Bank’s energy efficiency program has experienced in the Russian Federation over the past 10-15 years. Many of the key topics addressed by Mr. Titov helped clarify some of the myths regarding energy efficiency and the processes in bringing options to Russian businesses.

Key words: energy efficiency, energy policy, World Bank, energy intensity, energy finance, banking products, electricity, gas, fossil fuels

OCTOBER 2-3

2015 INTERNATIONAL SUMMIT



EUROPEAN
UNIVERSITY AT
ST. PETERSBURG

*“Russia in Changing Global Markets:
New Challenges and Opportunities”*

LIST OF PANEL SPEAKERS

(in order of appearance)

- **Dr. Nikita Lomagin**, Vice Rector for GR, EUSP; Academic Director of the ENERPO Program (Energy Politics in Eurasia)
- **Dr. Shamil Yenikeeff**, Director, International Energy Center, EUSP.
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RUSSIA IN CHANGING GLOBAL MARKETS: PERSPECTIVES OF COMPETITION IN THE EUROPEAN GAS MARKET

Irina Mironova, Michael Roh

Abstract

On October 2-3, the International Energy Center at the European University at Saint Petersburg held an International Summit “Russia in Changing Global Markets: New Challenges and Opportunities”. This report presents the main statements from the conference’s experts divided into three categories: Russia’s energy future, the impact of sanctions, and Asian energy.

Key words: energy, natural gas, oil, Russia, Asia, ESPO, Power of Siberia, sanctions, energy policy, LNG, energy exports

On October 2-3, the **International Energy Center** at the European University at Saint Petersburg held an **International Summit “Russia in Changing Global Markets: New Challenges and Opportunities”**. Representatives of international energy expert circles, policy makers, as well as industry representatives gathered at the EUSP to share their views on Russia’s position in the international energy markets, which are going through a fundamental change.

Below we present the main statements from the conference’s experts divided into three categories: Russia’s energy future, the impact of sanctions, and Asian energy. We do not disclose any names in this report since the Summit was held under the Chatham House rules.

RUSSIA’S ENERGY FUTURE

Background

The Russian economic situation can be characterized as cautiously pessimistic as the economic development prospects are not very positive. Throughout the fall 2015, today, the Rouble was weak, prices inside Russia are increasing, and the oil price was further decreasing, which was not favourable for a Russian budget dependent on oil and gas

export income. The economic development of the country depends largely on the prospects for the energy sector.

Broadly speaking, the Russian energy sector faces two groups of challenges – external and internal. External challenges include changes in the international energy markets: the already mentioned low energy prices, stagnant demand and the resulting oversupply. Internal challenges include Russia’s overall dependence on incomes from energy exports and an ineffective tax system. The good news is that hydrocarbons will still be used for the next several decades on a large scale worldwide. These circumstances coincide with deteriorating stability



throughout the Middle East. With the Middle East supplying large shares of the world's oil and gas, the political turmoil and groups such as ISIS are likely to exacerbate this threat. Therefore, Russia does have a chance to preserve its share in world oil and gas markets. The question is how to maximize this opportunity and effectively cope with the existing challenges.

The key messages / recommendations from the participants of the Summit:

- The Russian energy sector could focus on shale technology, Arctic exploration, and resources in East Siberia, which would help to develop domestic technology and create jobs.
- Russia needs to completely restructure its economic approach if it wants to develop its shale industry.
- Russia should look at countries like Iceland and Venezuela, who have taken advantage of their natural resources in a different way, focusing on exports derived from these resources.
- Russia needs to focus on the upstream oil sector (exploration, production), and restructure its current tax system.
- The Lena delta is an area with potential, but it lacks infrastructure and is not really explored.

SANCTIONS

Background

Throughout 2014, there have been several packages of sanctions against Russia introduced by the EU and the US. There are restrictions on financing and supplies of equipment and technology. New technologically complex upstream projects have experienced the largest hit from the sanctions regime (through limited access to financing and technology), while those are the ones that are critical for sustaining Russia's future production.

Russian energy companies are affected to a different degree: Rosneft, Gazprom-Neft and Transneft are subject to a full range of measures; Lukoil and Surgutneftegaz are covered only by the technology transfer sanctions within the US package; Gazprom and Novatek have avoided direct



sanctions by the EU while subject to some measures by the US.

The key messages / recommendations from the participants of the Summit:

- US and EU sanctions are delaying exploration projects, particularly the Arctic.
- The sanctions have an impact on Russia's relations with countries that are not even part of the sanctions regime, including South Korea and Japan. The latter are hesitant to lend technology, because they must be mindful of their own relations with the West. Thus, these economic links are definitely impacted by geopolitics.
- The written sanctions have very unclear wording. For example, the term "financial assistance" is a broad term that is creating confusion for banks that are hesitant to fund exploration projects.
- The sanctions are not hurting Russia particularly at the moment, since shale and projects in the Arctic are not huge shares of the Russian economy, but will certainly affect Russia in the long term.
- Sanctions hurt the West too, since Western banks are missing opportunities to invest in Russia.
- The sanctions are great for China, since the long-running negotiations between Russia and China, which have not made much progress, are affecting the balance of negotiating power in favour of China. Russia has less alternative options, hence its weaker negotiation position.
- Sanctions have an unseen benefit, as they may push policymakers to address the current ineffective strategy of import substitution.

- With the sanctions in place, countries like Israel, Algeria, Libya, and the U.S. could become more competitive gas suppliers to the EU.
- There is disagreement between experts on whether Turkish stream is mutually beneficial for Russia and Turkey, or whether this will increase Turkey's dependence on Russia.
- Gazprom isn't attracted to pursue a pipeline to Japan because it perceives Japan as having a lack of "unity" in that domestic actors want different things.
- China, South Korea, and Japan need to unite in their LNG ambitions, because it would be mutually beneficial to cooperate but they would need to be flexible and transparent. However, geopolitics and historical distrust will probably hinder this level of cooperation.

ASIAN ENERGY MARKETS

Background

The geography of world energy trade has been changing over the past decade and shifting more and more supplies to the Asia Pacific. There are increasingly important players such as China and India, but also traditional heavyweights in oil and LNG trade flows – Japan and South Korea. The construction of the first line of the ESPO pipeline was completed in 2009. This allowed Asian importers to pursue their policies of oil import diversification. Russia has marked its factual turn to the Asian gas market by signing a gas supply contract with China in May 2014. There is also a framework agreement on supplies via the Altai pipeline (the Western route), which could create competition for gas supplies between China and the EU, providing Russia with the role of an arbitrageur.

The key messages / recommendations from the participants of the Summit:

- The Power of Siberia gas line will be up and running by year 2018, delivering gas from Russia's Far East to East Asia. East Siberian oil is attractive because it's good quality, it's onshore (carrying less risk and cost), and it's close to China, South Korea and Japan who all have substantial demand.
- Russia's increasing market share of Japan's crude oil imports means Japan is moving away from the Middle East.
- China's shift toward LNG would be a "win-win" for everyone in the context of global environment.
- A Russia-ROK pipeline: former South Korean President Lee Myungbak attempted to use a gas pipeline as a political tool for its motivations against North Korea, and current President Park Geunhye stating no interest in pursuing a pipeline at all.

Irina Mironova

Senior Lecturer at Energy Politics in Eurasia Master Program, and the Editor-in-Chief of ENERPO Journal and ENERPO Newsletter.

Address for correspondence:
imironova@eu.spb.ru

Michael Roh

ENERPO student. Michael has previously studied political science at City University of New York, Hunter College.

Address for correspondence:
mroh@eu.spb.ru

INTERNATIONAL ENERGY CENTER AT EUSP



EUROPEAN
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The European University at St. Petersburg (EUSP) as one of the first independent universities in post-Soviet Russia has retained its freedom from state and corporate interests since its founding in 1994. Today EUSP seeks to continue its contribution to independent research by establishing a new International Energy Center under its auspices. The goal of this Center is to provide a balanced analysis of the energy challenges faced by governments and companies worldwide, with a specific focus on Russia's role in global energy markets and within the neighboring states.

The new research platform at EUSP will also enable domestic energy stakeholders to compare their experiences with that of other resource-rich nations in order to facilitate a more informed approach to the development of energy resources. Our contribution to a better understanding of the challenges faced by energy consuming nations and the needs of producing countries will help policymakers and companies to navigate the quickly evolving energy sphere.

The educational activities of the center will be carried out under the auspices of the ENERPO program.

MAIN ACTIVITIES:

- Analysis and monitoring of energy-related institutional processes and public policies in other countries, including the European Union, China and the United States
- Publication of analytical reports
- Organisation of regular seminars, roundtables and forums with representatives of Russian and foreign companies, public sector bodies, and leading research institutes

RESEARCH AREAS:

- Oil
- Natural Gas
- Petrochemical industry
- Electricity
- Energy and environment
- Coal
- Nuclear power
- Renewable energy

CONTACT DETAILS:

Maurizio Recordati
Executive Director, International Energy Centre

e-mail: mrecordati@eu.spb.ru
phone: +7 (812) 386-76-22

RETHINKING THE ROLE OF GASIFICATION AND ELECTRIFICATION IN ASEAN ENERGY SECURITY INITIATIVES

Cory Cox

Abstract

This article discusses the complexities of trying to apply natural gas trading hub models to developing countries and regions. The challenges of implementing a regional gas strategy amongst the ASEAN members regarding the Trans-ASEAN Gas Pipeline are reviewed, and alternative energy cooperation models are presented. Specifically, we address the opportunities for cross-border electrification programs through a variety of mechanisms including the development of more renewable sources. We argue that efforts to create a regional natural gas infrastructure in ASEAN are shortsighted and that regional coordination should be forward looking such as providing an infrastructure that can support a shift in primary fuel consumption toward RES.

Key words: natural gas, electrification, energy poverty, ASEAN, salt domes, underground natural gas storage, gas hubs, LNG, renewable energy, TAGP

Attempts to apply the experiences of one market to develop target models for another often suffer from oversimplification. Historical path dependencies and other geographical features are often absent from the models that tend to focus on market reform as simply a matter of regulatory and legal reform. For example, a more complete understanding of the historical development of the US natural gas market reveals legislation, which forced gas suppliers and consumers to break existing contracts – in direct contrast to an unyielding legal tradition of inviolable contracts or *pacta sunt servanda* – which unleashed the liberalizing effects of deregulation by unbundling transport from gas ownership.¹ Equally, target models often attempt to establish trading hubs with little consideration for storage services and the geological realities that dictate that the presence of salt formations favor some locations more so than others.² The Trans-ASEAN Gas Pipeline (TAGP) project

¹ Talus, K. (2011), *Long-Term Natural Gas Contracts and Antitrust Law in the European Union and the United States*. *The Journal of World Energy Law & Business* 4(3) 260-315i.

² Evans, D. (2008), *An Appraisal of Underground Gas Storage Technologies and Incidents, For the Development of Risk Assessment Methodology*. *British Geological Survey Open Report*. United Kingdom;

Gilhaus, A. (2007), *Natural Gas Storage in Salt Caverns – Present Status, Developments and Future Trends in Europe*. SMRI Spring Meeting, Basel, Switzerland;

Thoms, R. and Gehle, R. (2000), *A Brief History of Salt Cavern Use*. *Proc. 8th World Salt Symposium*. [S. l.]: Elsevier.

appears to suffer from the same oversimplification and a lack of consideration for historical contingencies of regional cooperation in ASEAN. Gasification of the region is dubious given the wide variance in electrification and electricity's more important role in alleviating energy poverty. This is especially true in a region where household heating is non-existent. Today, electrification ranges from a low of only 26% in North Korea to full access in Singapore (see Figure 1).

Gasification in ASEAN is misguided as it may lead to a re-directing of investment into pipeline infrastructure that generally only supports industrial consumers at the expense of electrification infrastructure that can generally benefit all. However, this does not make the TAGP project misguided. The following chapters outline recommendations for further development of the Trans-ASEAN project in order to improve ASEAN regional security, both in terms of energy security as well as security more generally.

NARROWLY DISTRIBUTED BENEFITS

Gasification as an end goal is likely to result in a less favorable market than electrification, namely resulting

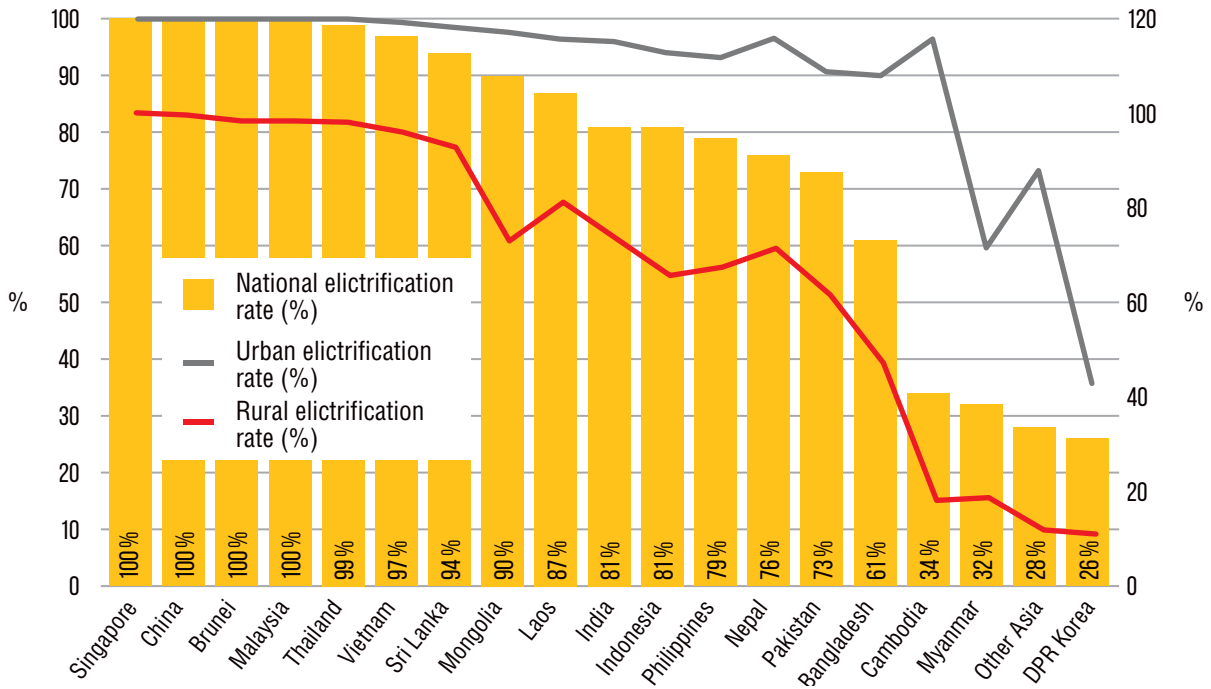


Figure 1. Electrification rates in Asia
Source: IEA, World Energy Outlook 2015

in market distortions. Therefore, end consumers will be limited to power generators who will be bearing the costs of a transportation network that does not enhance their ability to reach end consumers of electricity. This subsidy for the construction of the TAGP will be reflected in the price of gas, regardless of unbundling. Furthermore, proven reserves (see Figures 2 and 3) are evenly distributed near consumers of gas – unlike Russian gas supplies and European consumers – suggesting regional development should enhance opportunities to distribute

electricity. Counter arguments suggest that gas market development will be hampered by a lack of interconnectors. However, a well-developed, liberalized regional electric market can develop by way of high-voltage direct current (HVDC) interconnectors and will force gas market pricing to be competitive in the presence of regional LNG and electricity linkages between the localized gas markets. This will more effectively allow for both regional energy security and alleviation of energy poverty in states such as Myanmar, Laos, and Cambodia.

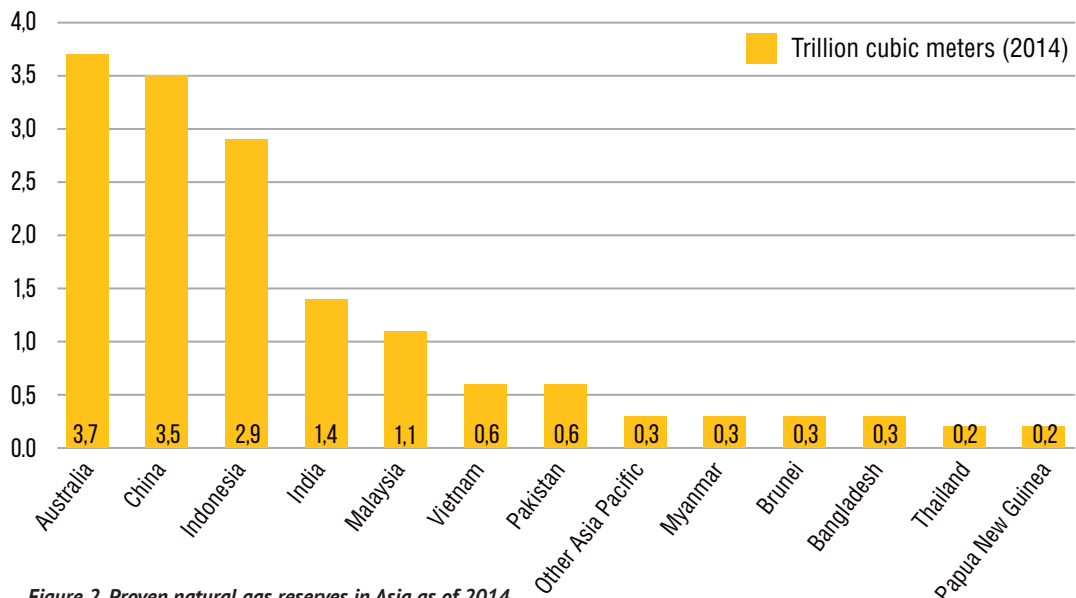


Figure 2. Proven natural gas reserves in Asia as of 2014
Source: BP Statistical Review of World Energy 2015

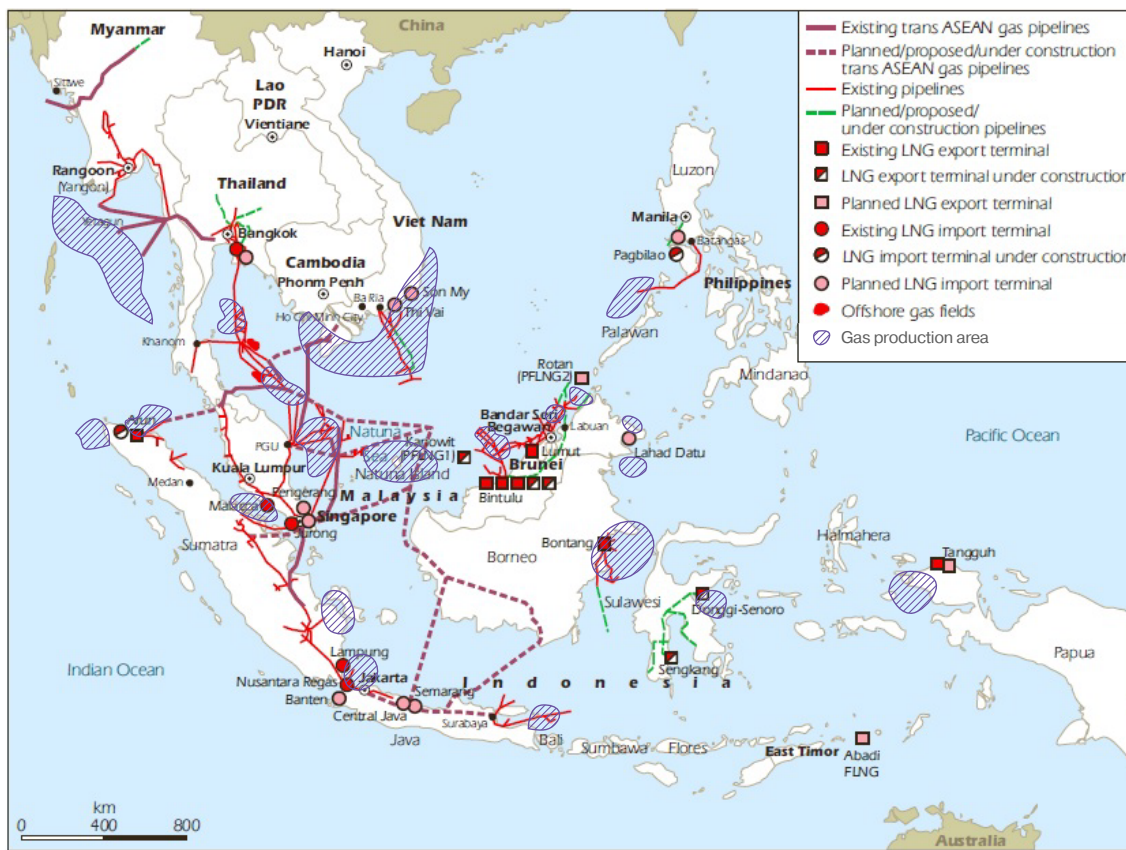


Figure 3. Gas fields and infrastructure in ASEAN region

Source: based on IEA (2014), IEA (2014), The Asian Quest for LNG in a Globalising Market

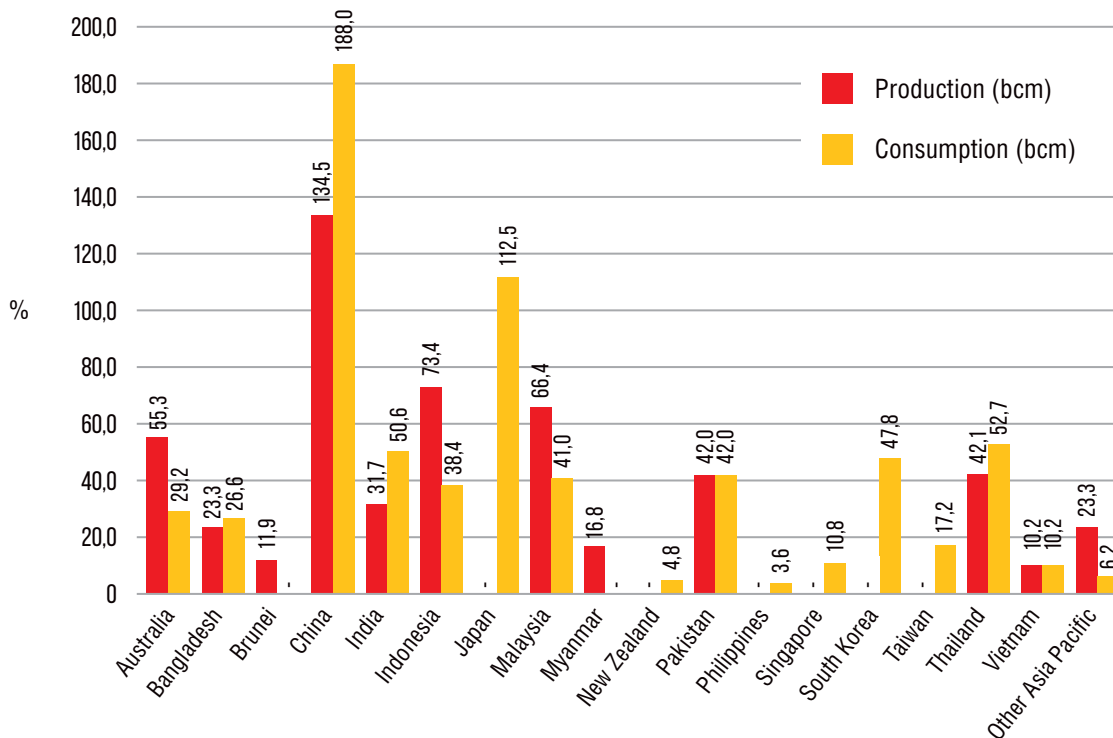


Figure 4. Natural Gas production and consumption in 2014

Source: BP Statistical Review of World Energy June 2015

HUBS: SINGAPORE VERSUS NORTHERN THAILAND

Often, justifications for a pipeline interconnecting ASEAN cite that infrastructure is needed for a proper LNG market. This is unfounded. Gasification terminals are currently built or in the process near sources of gas throughout the region (see Figure 3). The existence of interconnectors only adds an additional cost burden by having redundant networks for gas supplies that ultimately are liquefied (pipeline and LNG train). An LNG hub may develop out of Singapore, but there is no reason to predict emergence in Singapore over any other location without further examining the analogues for pipeline hubs to LNG hubs, namely analogues for merchant storage and transport unbundling. What is more fitting to predict is the emergence of a pipeline-based gas-trading hub in Northern Thailand and Laos. Trading hubs are characterized by the presence of many suppliers and consumers, as well as merchant services that support trade: online trade exchanges and merchant storage. The most important requirement is the latter, as it determines the geographical location of hubs. The former precondition is a matter of regulatory and legal frameworks, which can theoretically be developed in any location (with varying degrees of success). But the presence of affordable and effective merchant storage cannot.

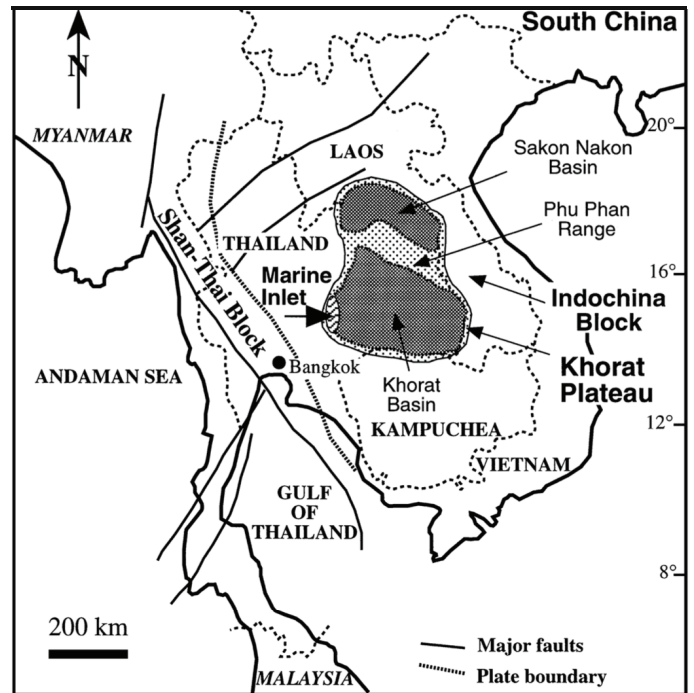


Figure 5. Maha Sarakham Salt Formation
Source: Tabakh et al.

Salt formation storage is universally seen as the most cost effective and technically feasible storage.³ This suggests that the Maha Sarakham Salt Formation in Northern Thailand/Laos will provide the ideal nexus of adequate merchant storage in salt formations at the border of the world's most viable consumers of natural gas: Chinese electricity producers (see Figure 5).

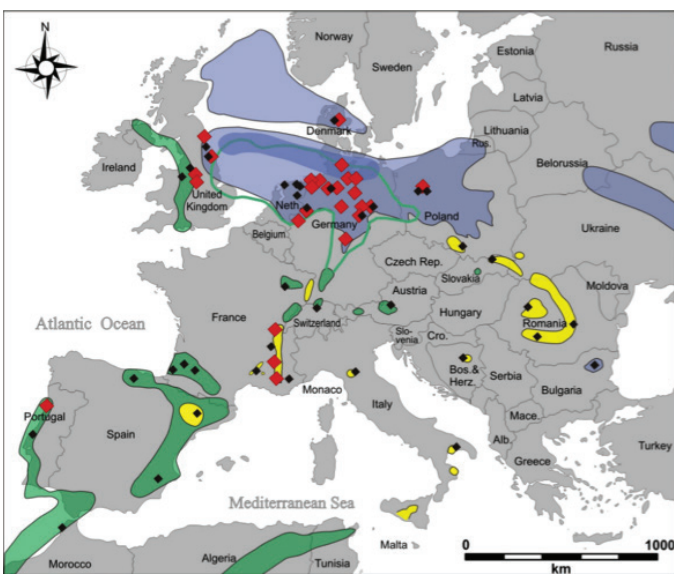


Figure 6 (left): Salt formations and underground storage in Europe
Source: Gillhaus et al., 2006

Figure 7 (right): Trading Hubs in Europe
Source: Stratfor 2014

³ Platts AOGC (2013), *Storengy Says Underground Gas Storage to Become Reality in Asia*. Natural Gas / Platts News Article & Story.

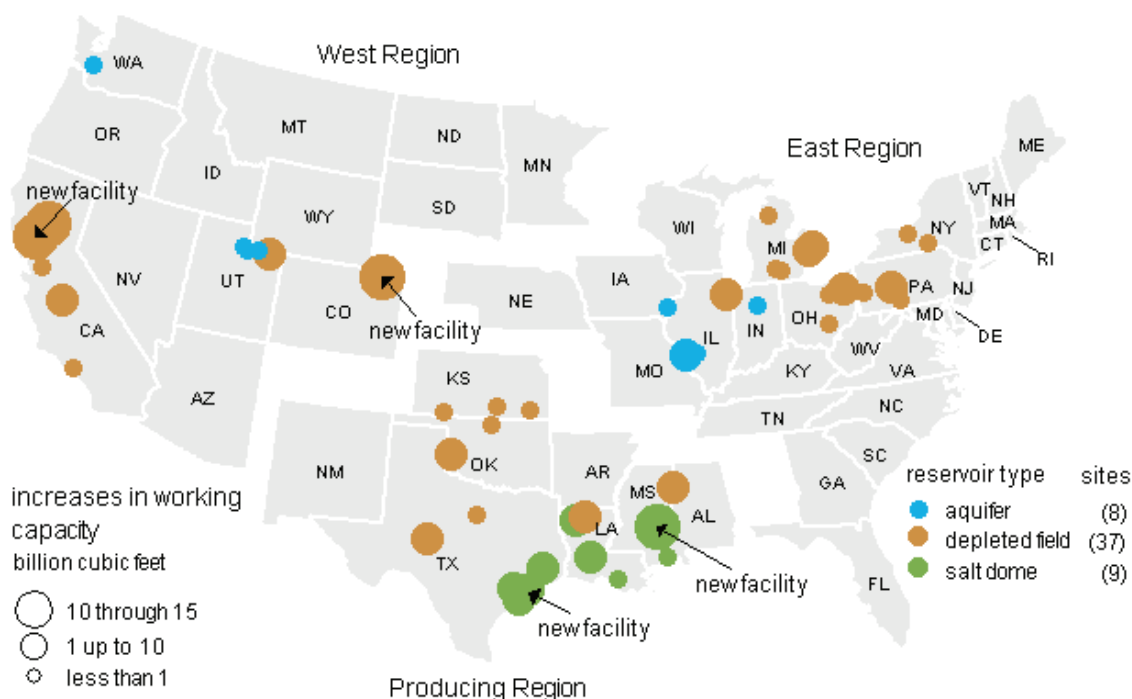


Figure 8: Salt formation gas storage in US (green) co-located at Henry Hub
Source: U.S. Energy Information Administration, Form EIA-191A, Annual Underground Gas Storage Report

Evidence of co-location of gas trading hubs with salt formation storage is a well researched, yet rarely discussed, correlation. This is clear in Europe as shown in Figures 6 and 7 as well as the presence of salt formation storage for gas at the Henry Hub in the US (see Figure 8).

ASEAN AND MEGA PROJECTS

Benjamin Sovacool argues that regional mega projects are historically quite difficult to see implemented, and specifically TAGP is even more challenging given the peculiarities of stakeholder interests in the ASEAN region.⁴

⁴ Carroll, T. and Sovacool, B. (2010), *Pipelines, Crisis and Capital: Understanding the Contested Regionalism of Southeast Asia*. *The Pacific Review* 23(5) 625-647.

Sovacool, B.K. (2009a), *Energy Policy and Cooperation in Southeast Asia: The History, Challenges, and Implications of the Trans-ASEAN Gas Pipeline (TAGP) Network*. *Energy Policy* 37(6) 2356-2367.

Sovacool, B.K. (2009b), *Reassessing Energy Security and the Trans-ASEAN Natural Gas Pipeline Network in Southeast Asia*. *Pacific Affairs* 82(3) 467-486.

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Sovacool, B.K. (2011), *The Interpretive Flexibility of Oil and Gas Pipelines: Case Studies from Southeast Asia and the Caspian Sea*. *Technological Forecasting and Social Change* 78(4) 610-620.

Van de Graaf, T. and Sovacool, B.K. (2014), *Thinking Big: Politics, Progress, and Security in the Management of Asian and European Energy Megaprojects*. *Energy Policy* 74 16-27.

Although Sovacool tends to see the project as detrimental to the environment, I would argue that a less ambitious and less regionally coordinated set of projects would create a net reduction in CO2 pollution. For the purposes of “shutting in” dirty and unsustainable coal in China, joint projects with Chinese investment into pipelines with a destination in the Laotian-Chinese border will result in a market-based trading hub for Chinese buyers with several states in ASEAN. But a fully integrated regional network comparable to NBP in the UK or the EU network currently being shaped is misguided.

BILATERAL PROJECTS WITH CHINA: NAVIGATING THE SOUTH CHINA SEA DISPUTES

Finally, I contend that ASEAN should focus on the development of HVDC interconnectors only while encouraging member states to pursue joint ventures with China to develop gas pipelines to bring gas to a Thai-Laos-Chinese pipeline gas hub. China and the region will benefit from infrastructure development that is forward looking. Development of a transportation network that can support gas as well as renewable primary energy sources will ensure the network does not retard adoption of RES as investments in gas infrastructure make adoption uneconomical.

Yet, energy security in the Asian security complex is increased by sustainable development in China matched with a de-escalation of regional border and maritime disputes. As demonstrated by Figure 10 and proposed by Stewart Taggart of Grenatec, joint ventures that provide China with long-term contracted gas supplies at market-indexed prices from South China Sea sources could achieve significant improvements in regional energy security.

Although the project proposed by Taggart is a mega project, a more limited-scale approach could achieve similar results. Instead of a coordinated effort to resolve all island disputes and build an extensive regional network at once, projects could be firstly developed with Vietnam and Laos to clear the way for future land-based pipelines to a new hub at borders of Laos and China (see Figure 9). Likely, Malaysian and Philippian disputes will be more manageable than those involving Taiwan.

Yet there is no reason to believe that precedent cannot establish a regional energy security approach that tips the scales toward win-win (as opposed to zero-sum) approaches to regional energy security.

INTERNATIONAL ENERGY AGENCY: SOUTHEAST ASIA ENERGY OUTLOOK 2015

The outlook for ASEAN electric power generation, based on the most recent IEA report, is marked by a dramatic decrease in the use of natural gas (44% to 26%) as coal-fired electric generation takes the clear lead, moving from 32% to 50%.⁵ As the IEA suggests, “oil and gas supply outlook is constrained by a mature resource base with the most prolific fields starting to decline”.⁶ These constraints seem to underscore our contention that a Trans-ASEAN gas pipeline network is the more reactionary regional approach to securing rapidly growing demand as opposed to a creating a vision for future sustainability.

⁵ *International Energy Agency (2015), Southeast Asia Energy Outlook 2015. World Energy Outlook Special Report. Paris, France, International Energy Agency, 139.*

⁶ *Ibid., p10.*



Figure 9. South China Sea Disputes
Source: Wikipedia

However, this dangerous trend in regards to CO₂ emissions underscores a need to not only focus regional integration efforts on HVDC interconnection, but also to ensure that hydropower and other renewables drive power generation in Laos, Myanmar, and Cambodia, which are projected net-exporters of electricity based on existing and planned projects. Figure 10 outlines the various findings of the Economic Research Institute for ASEAN and East Asia’s (ERIA) report on the potential implications and benefits of enhanced power grid interconnections. The potential benefits outlined, such as a reduced need for additional gas-fired or coal-fired power plants, would be negated if the power imported into states such as Thailand were generated using fossil fuels – simply shifting CO₂ impact from one ASEAN state to another.

THE WAY FORWARD

Development of regional markets is not a one-size-fits all set of policies and pipeline or power-line projects. Liberalized markets depend on not only networks for transport of energy to and from hubs, but also storage of energy at such hubs. Further, energy poverty is detrimental to full realization of a regional market, leaving vast numbers of untapped potential consumers outside the market. This may distort markets toward industrial consumer needs and the collocation of power generation in industrial



Figure 10. ERIA findings on the potential implications and benefits of enhanced power grid interconnections
Source: IEA, Southeast Asia Energy Outlook 2015

centers. Should taxpayers bear any burden of gasification pipeline mega-projects, they will effectively subsidize these industries. Moreover, these public investments will be diverted from projects that could alleviate energy poverty more generally, and not just for industrial areas. Lastly, mega projects have historically been difficult to implement. Instead, less ambitious projects directing pipeline construction towards China, whose demand for gas is growing rapidly, would seem a more logical solution. These projects also have the benefit of being limited partnerships between individual ASEAN states and China, making them less ambitious and less challenging to implement. Further, partnerships between ASEAN member states and China could provide opportunities to reframe South China Sea disputes to provide benefits to all through development of projects that effectively settle outstanding disputes via creative sharing agreements.

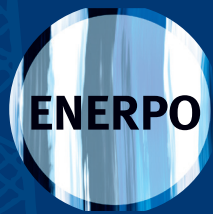
Looking forward, the most recent IEA outlook suggests that coal is likely to outpace oil and gas in electric power generation, as mature resources are increasingly less economically viable and in decline. This only strengthens the arguments we have laid out for a more targeted approach to regional energy security through cooperation. In conclusion, regional interconnectors to export electric power via HDVC with an increased reliance on hydropower exports can help to reduce CO₂ emissions and reliance on fossil fuels

(natural gas and coal) for electric generation. The general contention is that energy security will be enhanced when both energy poverty and more traditional security issues are incorporated into a holistic approach to regional security.

Cory M. Cox

Graduate of the ENERPO certificate program at the European University at St. Petersburg (spring semester 2015). He holds MA degree in Political Science as well as a second MS degree in Justice Administration from the University of Louisville. Cory is currently a PhD student at the Center for Network Science at the Central European University in Budapest, Hungary.

Address for correspondence:
cox_cory@phd.ceu.edu



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IMF DISTORTS ENERGY SUBSIDY FACTS TO VILIFY THE FOSSIL FUEL SECTOR

Jerry Byers

Abstract

In early 2015, the International Monetary Fund published a study claiming that over 5 trillion USD a year of subsidies were being paid in energy subsidies. This article is a critique of those claims and shows how the study misrepresents the term “subsidies” by assigning market externalities to the “indirect subsidies” category. In so doing, the IMF distorted the real subsidy numbers and paints a picture that these indirect subsidies are being paid by governments although they are largely not paid by anyone. This article breaks down the definitions of subsidies, indirect subsidies, and externalities in order to help the reader grasp energy subsidies with more clarity.

Key words: energy, subsidies, IMF, gas, oil, externalities, renewables, Pigouvian taxes, energy policy

The International Monetary Fund is muddying the already cloudy waters on how the world should address energy development and trade. The original report, released in May of this year, would have the casual observer believing that governments are using tax dollars to fund the energy industry to the tune of over 5 Trillion USD a year and growing. If that seems outrageous, it's because it is. The reality of the matter is quite different.

There are three things that one should know about subsidies. First, subsidies are not always bad. This is especially true of direct energy subsidies such as the development of nuclear energy, hydrogen fuel cells, efficient lighting, etc. Other subsidies help manage costs to consumers in order to keep utility and fuel costs affordable such as heating and electricity assistance.

Secondly, there is a distinct difference between “direct” and “indirect” subsidies and a further difference between them and unassigned externalities.

Third, the accuracy of the IMF accounting of subsidies is accurate to within 4.5 Trillion USD a year depending on what figures and estimations are used. The International

Energy Agency put the value at around 500 billion USD last year and some “green” advocates place the number at almost double the IMF. Assigning a value to pollution, death, climate change damage, additional healthcare costs, etc. that arise from external factors of fossil fuels is extremely hard if not impossible. Furthermore, the IMF report would have us believe that world governments are picking up 100% of the tab for these externalities and that is not remotely accurate either.

THE REPORT AND REACTIONS

The original assessment¹ was made by Benedict Clements and Vitor Gaspar and posted on their IMF blog in mid-May and titled Act Local, Solve Global: The 5.3 Trillion USD Energy Subsidy Problem. A subsequent release of country specific data² was published in July of this year.

¹ *Clemens B., Gaspar V. (2015), Act Local, Solve Global: The \$5.3 Trillion Energy Subsidy Problem, iMFdirect, 18 May.* Available at: <http://blog-imfdirect.imf.org/2015/05/18/act-local-solve-global-the-5-3-trillion-energy-subsidy-problem/> [Accessed: November 10, 2015]

² *IMF (2015), Counting the Cost of Energy Subsidies, 17 July.* Available at: <http://www.imf.org/external/pubs/ft/survey/so/2015/new070215a.htm> [Accessed: November 10, 2015]

The articles point out that pre-tax subsidies are actually falling, but that “post-tax subsidies” have been largely underestimated. The authors call these estimates “shocking”. They make an argument for substantial reforms in global subsidies for energy ahead of the Paris Climate Conferences by “getting the prices right” for energy consumption. They are advocating for higher taxes on fossil fuels opening the door for renewables to become competitive.

Of course, the report was immediately picked up and internationally parroted by advocates of climate change prevention, renewables proponents, and the anti-fossil fuel crowd. One headline reads, “The IMF Just Destroyed the Main Argument Against Clean Energy”³ written by a lawyer for Sullivan and Worcester which provides representation for environmental advocacy groups and posted on the Energy Post website before it was picked up by other Green groups.

Oddly, some of the most critical reactions came from the Green crowd claiming that the IMF estimates were too small and didn’t accurately reflect the costs associated with global warming. However, several economists have been critical of the accuracy of the data used for the IMF model, which comes from the International Energy Agency (IEA), the Organization for Economic Cooperation and Development (OECD), and IMF “staff estimates”.

SUBSIDIES, INDIRECT SUBSIDIES AND EXTERNALITIES

The biggest problem with the IMF report is that it’s not distinguishing the huge difference between an actual “subsidy” and “externalities”. Instead, it is controversially classifying externalities as “indirect subsidies”.

A “subsidy” as defined by five online dictionaries including Merriam-Webster, Cambridge, and Investopedia all characterize a subsidy as money, tax breaks, or other special assistance given to individuals, groups, or companies for the perceived public good by a government. This is fairly straightforward and most people understand that these

subsidies exist and why. For instance, a government might grant a direct subsidy to a nuclear firm for research and development on a better reactor, or subsidize/guarantee loans to a solar panel company, or give a tax break for investments into carbon capture systems that reduce CO₂ emissions.

What the IMF is referring to as an “indirect subsidy”, and then incorrectly lumping together with the aforementioned real subsidies, is actually a situation called an “externality” which occurs when the market cost of a particular good doesn’t accurately reflect the true cost to society as a whole. One of the best ways to describe it is to think of the pollution created when driving cars. The consumer pays the cost of the gasoline and gains the benefit of using the gasoline, but everyone receives the negative benefit from the pollution created by the burning of the gasoline. The following graphs (Figure 1, Figure 2) illustrate the differences between an externality and a direct subsidy.

The amounts of these “external” costs are not factored into the price paid for the gasoline and yet people outside the transaction are negatively affected. These externalities are often difficult to quantify and we rely and trust economists to create models that can accurately reflect these costs in order to make good policy decisions.

Governments often raise taxes on these goods to help offset these negative benefits because the costs are often paid by the government and/or individuals for such as things as asthma medication for a child suffering from poor air quality. Another way to address these externalities is to try to change consumer behavior by charging “Pigouvian” style taxes that diminish the appeal of these products for consumers. For example, the prices many Europeans pay for gasoline or the cost of cigarettes in New York City or California, which are taxed heavily in order to reduce consumption. It is these types of taxes that the IMF report is advocating for.

None of this part of the equation is alarming or unusual. The part that makes it confusing is when the IMF starts using terminology such as the word “subsidy” when it tries to quantify these externalities. These externalities are not

³ *Hinckley E. (2015), The IMF Just Destroyed the Main Argument against Clean Energy, Energy Post, 25 May. Available at: <http://www.energypost.eu/imf-just-destroyed-main-argument-clean-energy/> [Accessed: November 10, 2015]*

Externality (IMF – Indirect Subsidy)

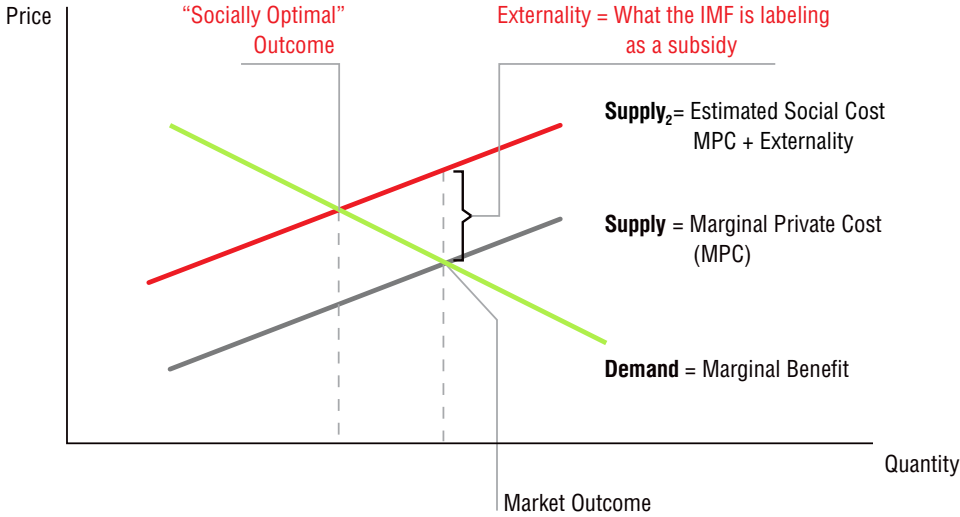


Figure 1. Externality and the 'Socially Optimal Outcome'

fully subsidized by the government because they don't PAY the complete value of the externality. Often, they pay little or none of the negative benefit and individuals pick up the costs.

IMF TARGETS FOSSIL FUEL PRODUCERS

The other area the IMF report labels as a subsidy is the market prices for some commodities in resource rich

countries. It asserts that countries such as Iran, Saudi Arabia and Russia are subsidizing energy export commodities because prices domestically in these countries are far cheaper than what consumers pay in many import markets. For instance, Russians pay less for their natural gas supplies than Europeans that import Russian gas. Much of the difference is explained in the pricing "netback" versus "costs plus" pricing formulas, but suffice it to say that my neighbors can buy more oranges more cheaply than

Direct Government Subsidy

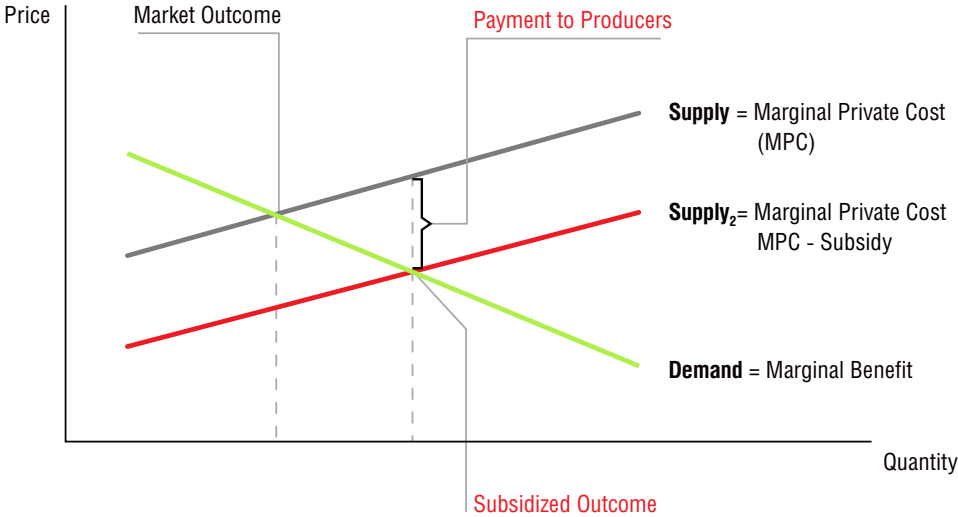


Figure 2. Direct government subsidy

people 1000 km away. I may do this voluntarily or perhaps my government mandates I sell them for less in exchange for allowing me to grow oranges on community land.

The IMF's assertion that Russian natural gas is subsidized in this way is a huge distortion because it assumes there is a world gas market similar to that of oil. Natural gas is still limited to regional markets and most gas contracts are still bilateral agreements between producers and consumers. However, even if there was a common world market for gas, oil, coal, and electricity it would be naïve to expect producer states, especially those in the developing world, to sell domestically extracted natural resources for the same price as they would the developed world.

Using IMF logic, the reason that I pay less for a round trip ticket from St. Petersburg to Chicago than for the same flight with the same airline originating in Chicago is because of a "subsidy". The truth is that it has more to do with the ability of the consumer to pay. The actual costs are not significantly different, but the airline knows that Americans have more money than Russians on average and therefore charges Americans more for the same ticket. This is a matter of geography and not subsidies.

Schalk Cloete wrote a great article⁴ in August of 2013 discussing this very topic in the Energy Collective. He describes the situation with producer nations:

"The bulk of these subsidies are in oil-producing countries which can still extract oil from their conventional oil fields at very low prices and continue to pass these low prices on to local consumers...These nations simply prefer the economic growth provided by selling fossil fuels closer to the local cost of extraction over the increased profits resulting from selling more of their product at international market prices."

Cloete further explains:

"Forcing the Middle East (which can still extract oil for \$20/barrel or less) to sell this oil locally at \$100/barrel would be similar to forcing a solar farm in Mexico

to sell electricity at the same price as that required by a solar farm in Greenland."

The following graph from the IEA's 2014 World Energy Outlook (Figure 3) shows the countries that have the largest amounts of these types of subsidies. The report notes that the amount of subsidies in these countries is also decreasing, and it further notes that the total amount is closer to half a trillion USD, nowhere close to 5 Trillion USD as the IMF contends.

You'll notice that nearly all the countries are developing or underdeveloped and not members of the OECD or IEA. The following quotes from the IEA report are very telling in how the OECD, IEA, and IMF view energy producing countries. The highlighted portion is my emphasis.

"Subsidies to fossil fuels, which encourage wasteful consumption, remain a big problem, despite major efforts on the part of many countries to eliminate them. [...] In 2013, the global value of subsidies that artificially lower end-user prices for all forms of fossil energy totaled \$548 billion – a \$25 billion cut from the previous year."

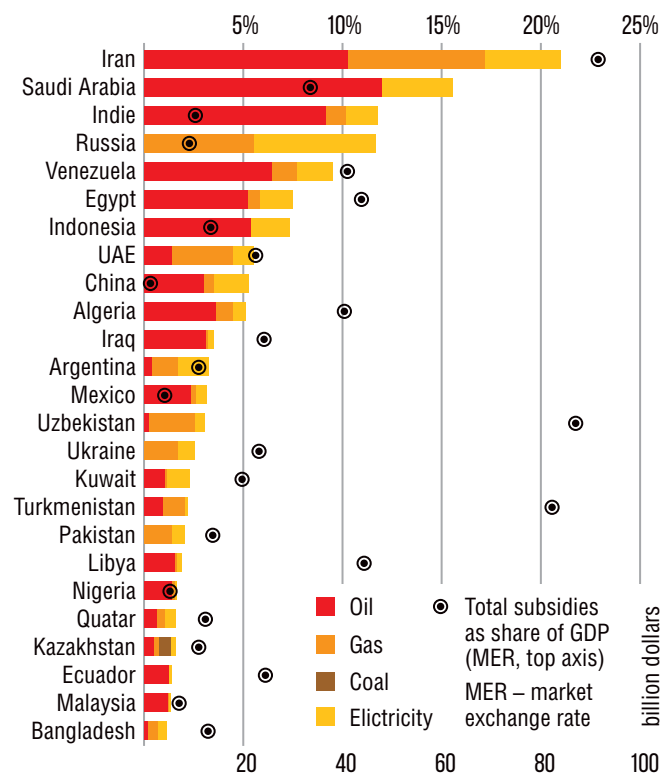


Figure 3. Economic value of fossil-fuel consumption subsidies by fuel for the top 25 countries, 2013
Source: IEA. 2014. World Energy Outlook. Paris: OECD / IEA

4 Cloete S. (2013), On Energy Subsidies and Externalities, The Energy Collective, 28 August. Available at: <http://www.theenergycollective.com/schalk-cloete/264701/energy-subsidies-and-externalities> [Accessed: November 10, 2015]

*“Ten countries account for almost three-quarters of the world total for fossil-fuel subsidies; five of them – all oil and gas exporters – are in the Middle East or North Africa. Most of the other leading subsidisers are also important hydrocarbon producers. **They generally set domestic prices above the cost of production, but well below the prices those fuels could reach on the international market**”.*

THE NEGATIVE CONSEQUENCES OF ECONOMIC REPORTS THAT DISTORT FACTS

Why is this important? I took an informal poll of my colleagues and friends and made several inquiries to economists. I asked them, “What is a subsidy?” I didn’t receive a single answer that included external costs aka indirect subsidies. Not one. That is the most alarming part. If people don’t understand your language, then they won’t understand the message and the IMF report is speaking a very unique language.

Three distinct consequences from the IMF Report and those that parrot it:

1. Contributes to the increasingly popular and inaccurate “fossil fuels are bad” narrative and governments are using your tax dollars to help.
2. Paints resource rich countries as playing unfairly, namely Russia, Iran, and Saudi Arabia but includes big consumers like the U.S. and China as culprits.
3. Misleads readers in thinking that all subsidies are detrimental to combatting climate change and pollution.

Interestingly enough, my first exposure to this report came from an energy expert who incorrectly assumed that there was now proof that energy companies were getting direct subsidies from individual governments and so she forwarded it on to me.

This is not even remotely accurate. Energy producers rarely depend on direct subsidies in order to remain competitive with the distinct exception of renewables, which receive exorbitant subsidies in the developed world. More accurate is the fact that economic growth and positive externalities

from fossil fuels account for huge growth in developing countries and improve their citizens’ standards of living.

The IMF’s follow up article from July finishes by stating: Your reform, your benefit.

It is generally in countries’ own interest to move ahead unilaterally with energy subsidy reform. Top subsidizers in percent of GDP and in per capita subsidies stand to gain the most. The benefits will mostly accrue at the local level, by reducing local pollution and generating much needed revenues. Taxing fuels to reflect environmental costs is also straightforward administratively, as it can build off road fuel excises which are well established in most countries. Energy subsidy reform can also contribute to carbon emissions reduction and help countries make pledges ahead of the Paris 2015 UN climate conference. To achieve significant carbon emissions cuts at the global level, it would be essential for top subsidizers in dollar terms to play a leading role.

It recognizes that the poor in these countries will be the hardest hit by these types of reforms, but suggests they’re necessary for the global good and that with energy prices at low levels it is best to act now.

The IMF report recommends that these countries raise their prices to consumers through increased taxes and suggests that it is in these countries best interests to do so. Apparently, the trade off is to pay for climate change prevention by taxing poorer consumers in developing nations.

Ironically, by their own definition, artificially raising prices on one good, such as fossil fuels, in favor of a replacement product (renewables) IS an indirect subsidy of the replacement product. The IMF report isn’t truly advocating for removal of subsidies, direct or indirect, but rather a shift in where subsidies are applied.

All these assertions being made by those that buy into the IMF and the movement to redefine externalities are at the very least, a mischaracterization, and at the most a direct attempt to control and distort the energy narrative leading up to the Paris climate change conference. Most

generally people are unfamiliar with the term “externality”, but they have a rough conception of “subsidy”. Therefore, by renaming externalities in a stigmatizing fashion, institutions advocating for the elimination of all subsidies are seeking to eliminate one of the best policy tools at the disposal of governments.

Distorting the argument doesn’t help policy makers or voters in making informed decisions on the best courses of action in dealing with climate change. The vilification of the fossil fuel sector as “corporate welfare” recipients and those countries that depend on their natural resources to drive their economies doesn’t move us forward on creating solutions either. If the IMF argument is sound then it shouldn’t have to mask it with ambiguous terms or grandiose headlines.

Jerry Byers

ENERPO Journal Associate Editor – Online Edition. Graduate student of the ENERPO Program (Expected graduation date: 2016). Jerry studied at Cornell College and received a BA in both Russian Studies and International Relations. He also holds an AAT (Associates Degree in Teaching) from Longview College.

Address for correspondence:

jrbyers2211@gmail.com

SOUTH CAUCASIAN FACTOR IN RUSSIA'S SECURITY OF GAS DEMAND

Konstantin Golub

Abstract

The article analyses the current situation and possible changes along the supply chain from South Caucasus toward South Eastern Europe. This area is interesting because of its role in transit avoidance within Russian gas export strategy. The second reason to pay closer attention to this region is the potential of formation of a gas-trading hub and implications for Russia's export strategy. Finally, the role of South Caucasus supply and Turkey transit in Europe's attempts to diversify its supply sources are also closely connected to the developments in SEE sub-regional gas market. The analysis demonstrates that currently, South Caucasus and Azerbaijan in particular is not a strong competitor to Russia, but it might well become one and take some of Russia's share in the European gas market.

Key words: oil and natural gas markets, Russian gas supplies, Azeri gas supplies, Shah Deniz, European natural gas market, Caucasus energy hub, South Caucasus, Turkish gas market, energy policy

Russia is one of the leaders in the world energy trade and exports almost half of the primary energy produced. Natural gas plays significant role in those exports. Russia is encountering new challenges in the European gas market, which is the central in Russia's natural gas exports.

The challenges can broadly be characterised as narrowing niche for natural gas in Europe's energy system. Moreover, there is overall target of decreased dependence on Russian supplies in line with the logic of geographical diversification.

In this article, we would like to analyse current situation and possible changes along the supply chain from South Caucasus toward South Eastern Europe. This area is interesting because of its role in transit avoidance within Russian gas export strategy. The second reason to pay closer attention to this region is the potential of formation of a gas-trading hub and implications for Russia's export strategy. Finally, the role of South Caucasus supply and Turkey transit in Europe's attempts to diversify its supply sources are also closely connected to the developments in SEE sub-regional gas market.

The future of Russian supply to Turkish natural gas market is unpredictable now, since the unprecedented deterioration of bilateral relations because of Russian military aircraft downed by Turkish fighter on Turkish-Syrian border on November 24, 2015. Russian market power on the Turkish natural gas market is in bifurcation point now. An available market niche for Caspian gas supply in Greece, the Balkans, Central Europe and Turkey exists mostly due to the current market trends and political imperative of reducing dependency on Russia than to economic incentives. Azerbaijani gas will inevitably substitute some of these volumes but not in dramatic proportions.

The main purpose of this article is to assess the potential of development of gas market in SEE and answer the question whether Armenia, Azerbaijan and Georgia pose a significant risk to Russia's security of demand. Moreover, the article seeks to evaluate the impact of geopolitical developments on the regional gas trade.

The article is based on research conducted under the [*CASCADE project "Energy Security in the South Caucasus: the View from the Region"*](#).

RUSSIA'S GAS EXPORTS: DIFFICULTIES AND CHALLENGES

Russia is one of the leaders of the world energy trade and exports almost half of the primary energy produced.¹ The Russian trade balance is highly dependent on Urals oil prices, and hydrocarbon exports still dominate in Russian total exports.² In the past few years, contributions of the energy sector to the federal budget revenues increased to 52%.³ The significance of natural gas in this context is not only of budget revenues importance, but also of political significance.⁴

Concerning Russia's natural gas exports, most gas exports have been directed toward Europe, where Russia provides for 30% of the market volume. A key trend over the past five years is a decrease of Gazprom's exports to the the Former Soviet Union, while at the same time Russia has expanded its exports of LNG (7% of overall exports, targeted at the Asia-Pacific region).

Natural gas exports are one of the major tools of Russia's integration into global trade and play a significant role in Russia's economic and political relationship with the EU and Western CIS countries such as Belarus, Moldova and Ukraine.

The Russia-EU energy interdependence can be characterized as asymmetrical, because Russia is more dependent on the EU energy market than the EU is of Russian energy supplies. Moreover, Russia's existing western gas transport infrastructure binds Russia to European

1 For statistics on Russia's natural gas reserves, see *BP Statistical Review of World Energy*. BP: London, 2015.

2 Fuel exports provide more than 70% of export earnings and 18-19% of GDP. In the past few years, contributions of the energy sector to the federal budget revenues increased to 52%. The share of energy sector investments in the Russian economy has continued to grow and reached 38.9% in 2013. The data of the Federal State Statistics Service. Available at: http://www.gks.ru/bgd/regl/b13_58/lssWWW.exe/Stg/06-09.doc
http://www.gks.ru/free_doc/new_site/vnesh-t/exp_2012-2013.xls
http://www.gks.ru/free_doc/new_site/vvp/tab10a.xls
http://www.gks.ru/free_doc/new_site/business/invest/Inv-OKVED.xls [Accessed: November 10, 2015]

3 The data of the Ministry of Finance of the Russian Federation. Available at: <http://budget.gov.ru/static-report/mdxexpert/index.html?reportId=36b384d0-0f87-4aaf-b121-e8471b4e6f41#> [Accessed: November 10, 2015]

4 For info on significance of natural gas for Russia's economy, see **Mitrova T.** *The Political and Economic Importance of Gas in Russia*. In: **J. Henderson, S. Pirani (eds.)**. *The Russian Gas Matrix: How Markets are Driving Change*. Oxford: Oxford Institute for Energy Studies, 2014. Pp. 6-38.

markets. The Russian Federation is quite vulnerable to EU energy policy both in terms of geography (no diversification alternatives in the medium term) and finances (because of the high budgetary dependence on the financial resources from the EU). The situation is complicated by the influence of transit states, especially the often-hostile policies of the Ukrainian government.

Due to the falling domestic, European countries will inevitably increase the imports of fossil fuels, but will apply every effort to diversify away from Russian hydrocarbons. North America could become a net exporter of LNG in the medium term. The emergence of new energy producers and the development of hydrocarbon fields in the Persian Gulf, Brazil, Australia, Central Asia and Caspian region, as well as a significant increase in production of unconventional hydrocarbons will lead to increased competition in all of the key Russian export markets and unfavourable for Russian transformations of pricing mechanisms.

A series of energy crises in the relations between the EU, Russia and the transit countries have significantly contributed to the politicization and, indeed, the securitization of energy deliveries. Although Russia might have been perceived as a relatively stable supplier of energy resources to the EU at the turn of the century, today, in some EU quarters, the discussions about the need of diversification are centered on the allegedly strong dependence of the EU on Russia.⁵

The Crimean crisis of March 2014 accelerated a mutual avoidance between Russia and Europe in their energy interdependence. In particular, European states declared their wish to decrease Russia's share of natural gas imports. At the same time, a number of voices emerged in Russia itself about a necessary diversification to Asia. This trend of mutual avoidance means a culmination of mutual political distrust, which certainly has a long-term effect on the markets.⁶ Russian shares in the gas market in Europe and the CIS will be strictly limited by the demand and

5 **Kratochvil P., Tichy L. (2013)**, *EU and Russian discourse on energy relations*. *Energy Policy*, 56, p. 398.

6 **Belyi A. (2015)**, *Russia's gas export reorientation from West to East: economic and political considerations*. *Journal of World Energy Law and Business*, 2015, Vol. 8, No. 1.

measures of consumer countries to reduce dependence on Russian gas.⁷

This forecast actually has a high risk of downward revision due to geopolitical threats and other factors. In this context, the primary current goal of Russian actors is to support the federal budget and energy sector investments through export revenues. This requires maintaining the Russian position in the European energy market. The Asia-Pacific countries will remain a growing market for oil and natural gas, opening up new possibilities for the Russian energy sector, but Asian export vector requires large investments in the development of appropriate energy transport infrastructure.

The status and prospects of economic development of Russia and the situation in the global energy markets shows that the energy sector faces a complex set of internal problems and extraordinary external challenges. They include the following:

1. **Economic stagnation.** Russia's economy overall has entered the phase of stagnation; the implications of an economic downturn are always in (a) energy demand and (b) investment activity. Moreover, **oil and gas exports are insufficient to insure sustainable growth.**
2. **Export revenue expectations are declining.** This is due to stagnant gas demand and increasing tensions in the European market; limited prospects for presence in the Asian gas market; increasing competition from the new gas suppliers (US, Iran, Australia, East Africa, etc.); and a declining trend in oil and gas prices within the period until 2022-25.
3. **Russia's oil and gas resource base deteriorates.** In order to maintain oil production and export volumes at the current historically high levels, Russia will need to develop new resources, maximize the remaining potential

⁷ Even under favourable conditions, the volume of Russian supplies to the European gas market by 2035 will not exceed 150-170 bcm, according to the 2015 Draft of the Russian Energy Strategy for the period to 2035. Supplies to the CIS will not exceed 45 bcm/a with a high probability of decline. A decrease by 2035 of 55-50% of Russian oil exports to Europe is also expected. Potential export volumes to Asia could be from 100 to 150 bcm by 2035. Meanwhile, the prices at the European and Asian gas markets are projected to decrease – from 375 USD/mcm in 2012 to 315-370 USD/mcm in 2035, – due to the dynamics of oil prices, and excess supply. Russian Energy Strategy for the period to 2035. Draft 2015.

at existing brownfields, and improve energy efficiency. This will increase the cost of Russian gas supplies both domestically and for external markets, as there is reduction in the development of highly productive and shallow reserves, the climate conditions and challenging, and the new areas of gas production are remote from the centres of consumption.

4. **Additional challenges introduced by the sanctions regime.** Sanctions threaten to postpone several major projects in the energy sector, as well as to defer updating its infrastructure, production assets and technologies.
5. **High stress on the environment.** This is due to the low usage of renewable energy and green technologies prevails.

SOUTH CAUCASUS: CURRENT WEIGHT IN RUSSIA'S ENERGY SECURITY

The energy sectors of the CIS countries suffered the most amongst other key segments of the economy in all the newly independent states after 1991. The energy markets that were originally set up to suit the overall Soviet planning were no longer effective. This was particularly evident for fixed energy infrastructure designed to serve regional energy markets in the most rational way, and in some cases, this meant that countries had to cross the boundaries of their neighbours in order to supply remote parts of their own territories.⁸ This issue is also at the core of transit issues that have formed in Russia-EU gas trade: after 1991, a number of independent states have appeared along the supply chain.

In this regard, transit risks are some of the central issues discussed, e.g., in the Russia's Energy strategy until 2030⁹ (RES-2030). The document states that energy markets in Europe and the CIS countries will remain major markets for Russian energy export until 2030, and suggests measures to reduce transit risks, including further development and improvement of a full-fledged export infrastructure.

⁸ IEA (2014), *Eastern Europe, Caucasus and Central Asia. Highlights*. Paris: OECD / IEA. Available at: <http://www.iea.org/publications/freepublications/publication/eastern-europe-caucasus-and-central-asia-highlights.html> [Accessed: November 10, 2015]

⁹ *Russian Energy Strategy for the period to 2030*

The share of the European market in total Russian energy supplies will steadily decline as a result of diversifying the export in the Eastern direction. However, this key provision is retained in the relevant draft of the new RES-2035, which was being developed throughout 2015 in response to changed economic and geopolitical reality resulting in different outlook for the energy sector.¹⁰

One of the mechanisms of energy policy is the development of energy cooperation with the countries of the EU, the CIS, and the Eurasian Economic Union (EAEU) as well as the need of rational development of energy transit through the Russian territory. Interestingly, there is almost complete absence of specific South Caucasus' issues in the RES-2030 and RES-2035. This confirms the suggestion that Russian actors do not expect considerable risks or unique opportunities for energy security and cooperation with Armenia, Azerbaijan or Georgia.

There are several reasons for this situation. First, the difference in volumes of production, consumption and international trade of energy resources between Russia and the South Caucasus' countries is very significant. Therefore,

it is hard to speak of competition at current stage. Natural gas production in Russia in 2014 was more than 30 times larger than all the South Caucasus. (Tables 1 and 2). Natural gas exports of the only gas production country of South Caucasus, Azerbaijan, was less the Russia's one by the factor of 20. Russian crude oil production is more than 12 times larger than Azerbaijan; the different in exports of the two countries is 9 times.

Therefore, the South Caucasus' potential maximum share (in case of hypothetical Russian supplies to Georgia, and no Azeri exports) is only 2.3 % of total current Russian export. In other words, we can conclude, that **South Caucasus natural gas market is of very limited interest for Russian energy security as a potential market** simply due to its size. There is some potential in cooperation for gas transit, however: 200 mcm of Azeri natural gas were transported via the Russian gas transport system in 2014.¹¹

Secondly, most of Azeri energy exports in 2014 was directed to the European OECD countries including Turkey, and constituted 6,068 mcm versus 141,467 mcm of similar Russian supplies (4.2%). Thus, there is **no serious**

	RUSSIA	ARMENIA	AZERBAIJAN	GEORGIA
Natural gas production, bcm	643,6	-	20,5	0,005
Natural gas consumption, bcm	461,5	2,4	11,7	1,9
Imports of natural gas, bcm	8,6	2,4	-	1,9
Exports of natural gas, bcm	187,9	-	8,8	-

Table 1. Natural gas usage in Russia and South Caucasus countries in 2014

Source: IEA Statistics. Natural Gas Information 2015

	RUSSIA	ARMENIA	AZERBAIJAN	GEORGIA
Crude oil and NGL production, million tonnes	528,6	-	42,3	n/a
Imports of crude oil and NGL, million tonnes	-	n/a	-	n/a
Exports of crude oil and NGL, million tonnes	221,6	n/a	23,6	n/a

Table 2. Oil and NGL usage in Russia and South Caucasus countries in 2014

Source: IEA Statistics. Oil Information 2015

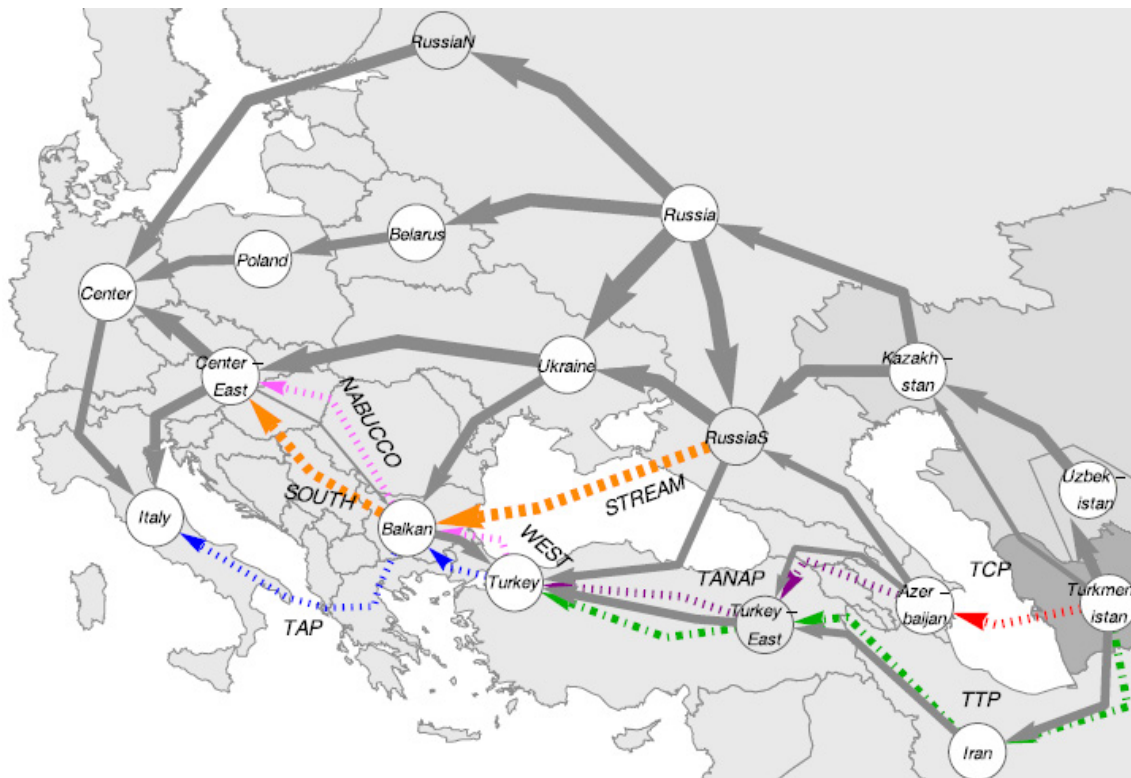


Figure 1. Gas Pipelines in Eurasia
Source: Onur 2014

competition so far between Russian and Azeri supplies to Europe at the current market situation, and no adequate vulnerability to Russian energy supply.

Thirdly, the **geopolitical tensions in South Caucasus distort pure economical motives**. Armenian isolation dictates political reasons of Armenian-EAEU integration and implementation of EAEU energy regulation. At the time of integration of Armenia to the EAEU in the beginning of 2015, the level of Russian influence in the energy sector was incredibly high. Gazprom handled imports and distribution of natural gas. Russian companies have gained the control of power generation, including the hydropower plants cascade, which had been passed to Russians as a repayment of debt for delivered nuclear fuel. Moreover, the future of Russian investment in Armenia is directly linked to the issue of building a new unit of the Armenian nuclear plant. The long-term presence of Russian energy companies in Armenia significantly changed the latter's energy system to fit the Russian standards, which are the basis the "common energy space" of the EAEU. Thus, Russia through development of this set of bilateral links strengthens the status of key energy player in the region.

Armenia, in turn, sees Russia as a guarantor of its security and demonstrates openness to Russian investment in any sector of the economy. That means that the Armenian energy market (including electricity sector) can be considered by Russian actors as a domestic energy market, where social and political stability issues are dominant and form the economic context.

Post-war Russian-Georgian relations warn both sides of direct energy cooperation. Taking into account small market niches, there is no direct influence to Russia's energy security.

As noted earlier, the most reasonable issue of South Caucasus influence on Russia's energy policy is current and potential competition from Azeri natural gas supplies to the European market. Presently, it constitutes a negligible 6 bcm in comparison with Russia's 141 bcm.¹² However, the market situation will change – but the changes will be discussed in the next part of the article.

12 The statistics of the Central Bank of Russia shows even more – 174,3 bcm of Russian natural gas export in 2014. For methodologically appropriate comparison we use the *IEA Natural Gas Information 2015*. IEA (2015), *Natural Gas Information*. Paris: OECD/IEA.

What is important, this direction of supplies is not without a transit state. The transit (as well as significant share of demand) is represented by Turkey. Turkish natural gas consumption was 48 bcm in 2014.¹³ More than half of that (25 bcm) came from Russia, and Azerbaijan was responsible for delivering 6 bcm (12.5 %). There was no crude oil supplies to Turkey from Azerbaijan in 2014,¹⁴ and only 608 thousand tons came from Russia (3.5 % of total crude oil imports).

Turkey also exerts appreciable influence in the South Caucasus–Russian energy security relations, since it has historically been deeply involved in the situation in the Caucasus, and has a special relationship with Azerbaijan («two states – one nation»)¹⁵ The issue of the Armenian Genocide, as well as the problem of Nagorno-Karabakh preclude the normalization of Turkish-Armenian relations. Turkey has close ties with Georgia in the framework of infrastructure projects such as the Baku–Tbilisi–Ceyhan gas pipeline (2006), Baku–Tbilisi–Erzurum pipeline (2007), and railway construction from Baku–Tbilisi–Kars.

WHAT ARE POSSIBLE CHANGES?

The EU is still interested in new natural gas import facilities all over the continent including LNG terminals and additional pipelines and energy routes, such as the Trans-Adriatic pipeline (TAP), the Trans-Anatolian gas pipeline (TANAP), Nabucco, to some extent Turkish (previously South) Stream (Figure 1) and Nord Stream 2. The Baku–Tbilisi–Ceyhan Oil Pipeline and the Baku–Tbilisi–Erzurum Gas Pipeline (South Caucasus Pipeline), built after the dissolution of the Soviet Union, are important examples of pipelines creating an alternative to the Russian-controlled export routes.¹⁶

South East European countries will likely dilute their dominant reliance on Russian natural gas supplies as the long-term contracts with Gazprom will begin to expire in the

2020s (contract to Slovenia expires in 2017, to Serbia in 2021, to Bulgaria in 2022, to Slovakia in 2028).

The changes can generally be split into three segments: supply options with the focus on the role of Azerbaijan as the main competitive supplier; the role of Turkey as destination market as well as transit state; the situation in SEE sub-regional market. Below we are looking at each of the sections in more detail.

TURKMENISTAN AND TRANS-CASPIAN

The Trans-Caspian gas pipeline construction is supposed to carry gas from Turkmenistan, Kazakhstan and maybe Uzbekistan through the Caspian Sea to Turkey and Europe via the expanded SGC. As the Caspian legal status is still not settled, this construction is questionable, but there are many efforts from the European side to promote this idea. The potential arrival of these larger gas volumes from Central Asia is a challenge for the Russian competitive position in the European gas market and therefore this project is regarded by Russia as highly undesirable and a serious threat to its national energy security.

THE ROLE OF AZERBAIJAN

Azerbaijan occupies a central place in the logistic map of the Greater Middle East and its transport corridors pass almost the entire distance from Iran to the north. Overall, Azerbaijan has been able to position itself as an important actor in the EU's Southern Corridor initiative.¹⁷

According to the Outlook for Azeri gas supplies to Europe 2015, natural gas production in Azerbaijan is provided by the giant field Shah Deniz (SD), which output at current Phase 1 is 9 bcm per year is at its plateau level. The next phase of development of the field will increase the plateau by some 17 bcm, to a total of more than 26 bcm from both phases starting from late 2018. The overall annual gas volume of SD2 contracted at the Georgia-Turkey border will be above 16 bcm, of which about 10 bcm are contracted to the European buyers and 6 bcm to Turkish Botas; 1 bcm will be supplied to Georgia as a transit fee.

¹⁷ Shadrina E., 2014. *Russia's natural gas policy toward Northeast Asia: Rationales, objectives and institutions. Energy Policy*, 74 (2014), p. 58.

¹³ IEA (2015), *Natural Gas Information. Paris: OECD/IEA.*

¹⁴ IEA (2015), *Oil Information. Paris: OECD/IEA.*

¹⁵ Stegny P., (2015), *Together on the "Heartland." Russia in Global Affairs.* Available at: <http://www.globalaffairs.ru/number/Vdvoem-na-khartlande-17312> [Accessed: November 10, 2015]

¹⁶ Leal-Arcas R., Rios J.A., Grasso C., 2015. *The European Union and its energy security challenges. Journal of World Energy Law and Business*, 2015, pp. 44-58.

Azeri SD2 contracts with the European buyers have been signed for 25 years with deliveries starting in 2020. The tail-off period of SD2 starts in the mid 2030s. The contracts with the EU buyers expire in 2045. So, the SD partners have the incentive to explore, develop and produce gas from the SD Phase 3 to maintain the gas deliveries to the customers.

The infrastructure to be built and expanded for those volumes seems to be sufficient to transport some additional 15 bcm annually in the 2020s and 20 bcm annually in the 2030s. This could be achieved via further expansion of SCP. TANAP stage-by-stage expansion will be capable of accommodating the aforementioned volumes, with possible expansion of up to 60 bcm if needed.

Subsequently, there are two markets for rising Azeri natural gas supplies: Turkey and Europe – the same markets where Gazprom operates. The Turkish market seems to be the most commercially profitable for Azerbaijan, because of the short distance and reasonable price. However, a direct Russian-Azeri competitive clash on the Turkish market is avoided by rapidly growing demand for gas in Turkey and its goal of import diversification. Azerbaijan also seeks to diversify demand risk – to the European market.

THE ROLE OF TURKEY

The future of Russian supply to the Turkish natural gas market is unpredictable now since the unprecedented deterioration of bilateral relations because of Russian military aircraft downed by Turkish fighter on Turkish-Syrian border on November 24, 2015. The trade relations between the countries suffer considerable loss due to economic sanctions and actually embargo imposed by Russian government on Turkish business. Since the natural gas supply to Turkey is not an object of these sanctions, the perspective on the Turkish natural gas market is in bifurcation point now.

Turkey has intended (before Russian-Turkish clash on Syrian problem) to import an additional 3 bcm of Russian gas from 2016 at a 6% discounted price to cover the possible

supply gap.¹⁸ Moreover, the two countries also have agreed to import 14 bcm to Turkey by an alternative route, the Turkish Stream, as well as 50 bcm of gas, that were already contracted by EU buyers, to the Turkish-Greek border instead of the Ukraine transport system. However, as we can conclude from official Russian rhetoric, natural gas supply by existing routes and even future Turkish Stream (Phase 1) plans will not be revised yet.

THE SITUATION IN SEE SUB-REGIONAL MARKET

The key features of the developing Southern gas corridor (SGC) refers to bypassing Russia and exploiting non-Russian Caspian gas reserves.

The Balkans is the only region in Europe, where demand is expected to grow significantly by 2030. The SEE, Central Europe and the Balkans exists as these are keen to diversify away from Gazprom supplies after the expiration of the existing contracts, and this creates a ready market for Azeri gas.¹⁹ Azerbaijan-sourced gas can be transported to these countries via existing or planned interconnectors, which will make the cost of transportation lower and provide supply diversity.

In the most optimistic scenario for Europe with significantly increased LNG imports, additional pipeline gas imports will still be required. Given the likely future, Turkish gas demand growth and its need to import additional volumes of gas, at least half of the 15 bcm of Azerbaijan's uncontracted "free" gas available in the 2020s can be absorbed by Turkey. The remaining 7+ bcm may be absorbed in Southeast European countries (Bulgaria, Romania, Macedonia, Serbia) and Central European countries (Czech Republic, Slovakia, Poland) and the Balkans.

There is actually an existing market for Caspian gas in Greece, the Balkans and Central Europe mostly due to the current market trends and political imperative of reducing dependency on Russia than to economic

¹⁸ According to the *Memorandum of Understanding signed by Turkey and Russia in December 2014*,

¹⁹ *The Outlook for Azerbaijani Gas Supplies to Europe: Challenges and Perspectives. The Oxford Institute for Energy Studies, June 2015. Available at: <http://www.oxfordenergy.org/wpcms/wp-content/uploads/2015/06/NG-97.pdf> [Accessed: November 10, 2015]*

incentives. Thus, Azeri gas will inevitably substitute some of these volumes (but not in dramatic proportions, as SD production potential is limited).

RUSSIA'S POSITION AND APPROACHES

Due to a number of political Armenia-Azerbaijan and Russia-Georgia tensions, we can conclude that the common energy market of the South Caucasus could hardly exist. Azerbaijan is self-sufficient in its energy needs and thanks to a variety of international oil companies operating in the country has access to modern drilling technologies. Georgia, due to the continued Armenian-Azeri conflict, enjoys natural gas supplies as a transit fee for SCP. Armenia being blocked by hostile Azerbaijan and Turkey and to some extent pro-NATO Georgia has become a Russian energy satellite.

Georgia is highly dependent on Azerbaijan for its oil and gas provision, although it has no control over the operation of the pipes traversing its territory. The strategic geography allows Georgia to exact better terms from Azerbaijan regarding energy supply, however, it has less weight for fine-tuning it to its political agenda because of its own conflict with Russia. Furthermore, SOCAR has bought and controls most of the distribution companies in Georgia.²⁰

The Caspian states, with regard to their energy relations, are no longer pursuing multi-vector approaches. During the past five-to-ten years, the Caspian states have become more concerned about autonomy and gaining control over their energy assets and transportation routes, and maximizing rents than about appeasing and balancing their more powerful neighbors. Currently, political conflicts in the Middle East and Caspian Region have left Azerbaijan's Shah Deniz field as the only supplier of the Southern Corridor.²¹

Although the European Commission endorses the projects linking the Caspian Region and Central Asia to the European markets, Azerbaijani and Turkmen supplies bring only

marginal gains to the European consumers.²² Transporting gas from the Azeri-Russian border through for example, South Stream appears to be cheaper than using the Ukrainian pipelines.²³

Despite the enormous costs and difficulties of building such a pipeline, Gazprom repeatedly said it was committed to the project, now changed to Turkish Stream. In the absence of other valid economic reasons for the company, its main purpose appears to be to undermine European ambitions of reducing dependence on Russia's gas supply by means of the construction of SGC.

TANAP's uniqueness comes from its promotion of competition both in economic and political terms. TANAP increases the amount of supply, brings an additional supplier through an alternative route, which is controlled not by one nation or state, but by several nation-states.²⁴ Still, both suppliers, Russia and Azerbaijan enter into tough competition with LNG imports, where a competition for supplies leads to a loss of control over pricing. A new market paradigm affects the future LNG export plans and already demonstrates that Russia is changing its market practices compared to the ones previously existing in exports to Europe. Implications for Europe are also significant as European consumers enter into a tougher competition with Asia for LNG supplies. Hence, their attempts to import non-Russian gas will be somehow challenged by the price dynamics in Asia. This actually means that the security of supply for the Europeans is increasingly located in the development of the Asian markets rather than in their relations with Russia.²⁵

Actually, Russian actors perceive their role in energy security of the South Caucasus in the following dimensions. Firstly, energy support of Russian citizens and Russian allies is essential. It concerns both Armenian energy

²² Cobanli O., 2014. *Central Asian gas in Eurasian power game. Energy Policy* 68 (2014), p. 353.

²³ Chyong C.K., Hobbs B.F., 2014. *Strategic Eurasian natural gas market model for energy security and policy analysis: Formulation and application to South Stream. Energy Economics*, 44 (2014), p. 202.

²⁴ Ozdemir V., Yavuz H.B., Tokgoz E., 2015. *The Trans-Anatolian Pipeline (TANAP) as a unique project in the Eurasian gas network: A comparative analysis. Utilities Policy* xxx (2015), p. 4.

²⁵ Belyi A., 2015. *Russia's gas export reorientation from West to East: economic and political considerations. Journal of World Energy Law and Business*, 2015, Vol. 8, No. 1.

²⁰ Abbasov F.G., 2014. *EU's external energy governance: A multidimensional analysis of the southern gas corridor. Energy Policy*, 65 (2014), p. 29.

²¹ Stegen K.S., Palovic M., 2014. *Decision-making for supplying energy projects: A four-dimensional model. Energy Conversion and Management*, 86 (2014), p. 647.

supply and management, and ensuring energy stability in Abkhazia and South Ossetia. Secondly, the construction of TANAP and TAP does not constitute a serious menace for Gazprom market positions in Europe due to (a) political motives of European energy policy, (b) rising demand in Turkey and in the Balkans countries, (c) limited possibilities of Azeri supply building-up. Thirdly, forming a gas hub (as a physical intersection of pipelines) on the Greek-Turkish border at the end of TANAP may facilitate Gazprom's efforts in negotiating the rerouting of gas supplies from Ukrainian transit to Turkish Stream.

Pragmatic relations with Azerbaijan should be maintained in order (a) to secure Russian business share in Shaz Deniz consortium (Lukoil), (b) to provide the potential growth in Russian transit of Azeri gas, (c) to escape being into a ruinous pipeline building race.

A Trans-Caspian pipeline contradicts Russian national interests on the European gas market and should be set aside while Turkmen gas should be transited either via Russia or to China or India.

CONCLUSIONS

Russia's position in the dynamic and highly competitive global energy markets differs greatly from the previous years. The main long-term external threat is a drop in revenues from energy exports due to the stagnation in demand and changes in the regulation and pricing on major Russian export energy markets. The centre of the demand growth has moved to emerging markets mainly in Asia where the Russian presence is limited. The competitive advantages of Russian energy companies, arising from the Russian ruble devaluation in 2015, will disappear in a few years due to the increased cost of investment resources and limited access to foreign technology. Consequently, a radical increase in the flexibility of export policies, product and geographical diversification of supply, and a significant reduction of Russian companies' costs are required.

Russia is experiencing notable problems in the European gas market – the main destination to its natural gas exports. South Caucasus may just be part of that story for

Russia. Firstly, South Caucasus natural gas market is of limited interest for Russian energy security in terms of market diversification or enhanced gas export volumes. Secondly, the region is home to two potential strong players who may affect Russia's energy policy and energy security. These two players are Azerbaijan and Turkey.

Most of Azeri energy exports in 2014 was directed to the European OECD countries, including Turkey, and mounted to only 4.2% of Russian supplies to these countries. Thus, up till now there has not been any serious competition between Russian and Azeri supplies to Europe, and no adequate vulnerability to energy security. However, potentially, competition from the Azeri gas competes to replace part of Russia's share in the European market. There is actually an existing market for Caspian gas in Greece, the Balkans, Central Europe and Turkey mostly due to the current market trends and political imperative of reducing dependency on Russia than to economic incentives. Azeri gas will inevitably substitute some of these volumes.

The future of Russian supply to the Turkish natural gas market is unpredictable now since the unprecedented deterioration of bilateral relations because of Russian military aircraft downed by Turkish fighter on Turkish-Syrian border on November 24, 2015. The trade relations between the countries suffer considerable loss due to economic sanctions and actually embargo imposed by Russian government on Turkish business. Since the natural gas supply to Turkey is not an object of these sanctions, the perspective on the Turkish natural gas market is in bifurcation point.

Konstantin Golub

Graduated from Saratov State Socio-Economic University (Faculty of World Economy, 2009) and Saratov State Academy of Law (Institute of Jurisprudence). In 2009-2011 he pursued MA degree at the National Research University – Higher School of Economics, Faculty of World Economy and World Politics. Konstantin defended PhD dissertation on theory of law in 2012. During 2011-2013 K. Golub worked for the Department of budget policy in the spheres of innovation, civil industry, energy, telecommunications, and public-private partnership of the Ministry of Finance of the Russian Federation. Currently K. Golub is a project manager at MegaFon Headquarters.

Address for correspondence:
kgolub@gmail.com

European University at St. Petersburg
International Office

3 Gagarinskaya street, St. Petersburg, Russia

Tel.: +7 812 386 7648

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ENERPO WORKSHOP SERIES: MAXIM TITOV ON RUSSIA'S ENERGY EFFICIENCY

Michael Camarda

Abstract

This article is a review of a presentation given by Maxim Titov from the International Finance Corporation of the World Bank. The presentation was given at the European University at Saint Petersburg and was attended by students, faculty and administrators. The article details many of the subjects, strategies, and effects that the World Bank's energy efficiency program has experienced in the Russian Federation over the past 10-15 years. Many of the key topics addressed by Mr. Titov helped clarify some of the myths regarding energy efficiency and the processes in bringing options to Russian businesses.

Key words: natural gas, electrification, energy poverty, ASEAN, salt domes, underground natural gas storage, gas hubs, LNG, renewable energy: Trans ASEAN Gas Pipeline

ENERPO hosted its sixth and final workshop series of the year 2015 with Maxim Titov of the Energy Efficiency Finance Program of the International Finance Corporation of the World Bank Group. Titov's presentation was a first for ENERPO as it addressed the very important, but somewhat ignored topic of energy efficiency and the process of financing it.

Energy efficiency is not only environmentally friendly but also saves money, making it one rare policy that can unite both environmentalists and businessmen. However, the amount of investment needed runs into the hundreds of billions of dollars, so getting capital into the right hands in order to effect these changes is a key issue. Titov cited

the interesting statistic that for every billion dollars allocated, roughly 1000 investment decisions, on average are made. How to most efficiently steer investments in the right direction in a system where so many investment decisions are being made by such a widely dispersed group of people? These are the challenges that Titov faces in his daily work.

His talk addressed these issues in the context of Russia's energy efficiency and investment climate. He addressed the myths and realities of Russia's energy efficiency and investing. One main challenge is how to convince businesses of the need to invest so much money in energy efficiency in a country with cheap, abundant, and often subsidized energy. Titov gave what some would consider a very Russian answer to this issue: "Find the main decision maker and convince this person of the benefits of change". The World Bank accomplished this by producing and printing a study they conducted showing that the Russian Federation could save 45 billion USD in energy consumption and that its total energy waste was equal to the consumption of France. Once this information found its way to President Vladimir Putin, there was serious overhaul in the way Russia addressed its energy efficiency policies.





From 2003 to 2009, Russia improved its energy intensity by 23%, dropping from 19 to 14 Gigajoules (GJ) per thousand USD PPP, and remaining around that level ever since. If Russia were to make the needed investments toward energy efficiency, it would mean 320 billion USD in energy investments that would pay itself back in savings in four years, or 80 billion USD a year. His team discovered these numbers through administering surveys throughout Russia, from the level of the federal districts to the small-and-medium enterprise level. Banks were more likely to lend than many believed, leading to what he called an energy efficiency paradox: why Russia isn't more energy efficient despite funding being available. He found that businesses often underestimated their savings potential, had scepticism toward energy efficiency in general, or were unfamiliar with market players in energy efficiency that could help their businesses among other reasons.

The IFC developed financial products and advisory services for banks in the three key areas of energy efficiency, renewable efficiency, and resource efficiency. These banks then passed this on to end-users: SME's, Housing Loans, etc. These advisory services included market strategies, product development, pipeline development, and result measurement tactics. The three sectors that yielded most of Russia's energy savings under this program were in the food (35%); general services (17%) and metals and machinery (17%) sectors. Some concrete examples given were a confectionary factory, sunflower oil producer, and a car manufacturing plant that all received loans, made required efficiency updates and with the savings were all able to pay back the bank with interest within 2-3 years just by using the increased revenues from efficiency projects.

Michael Camarda

Executive director of the ENERPO program at the European University at Saint Petersburg. Graduate of the ENERPO program (2014). Michael received his BA degree in History at Yale University.

Address for correspondence:
mcamarda@eu.spb.ru

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The main types of articles published in the ENERPO Journal are analytical articles and viewpoint/commentary. ENERPO quality standards for analysis and research are at a professional level, while young researchers are often the ones providing creative solutions for the existing challenges. Thus, the work produced by the students will be useful for experts and industry professionals.

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