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Security of Energy Considering its Uncertainty, Risk and Economic implications

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Proceedings of regional Workshop in Moscow

ERI RAS

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Proceedings

Jurij Baron of Energy Ministry, Russia announced welcome words by Sergey Michailov, Head of the State Energy Policy and Energy Efficiency Department of the Energy Ministry of the RF, wishing meeting participants fruitful work and expressing hope that it will help EU-Russia cooperation in the energy sector.

Academician Alexey Makarov, Director of ERI RAS, welcomed SECURE partners and representatives of the Russian governmental bodies, companies and expert circles.

Michael Webb, Minister Counselor, Deputy Head of Delegation of the European Union to Russia gave an overview of the main directions of EU-Russia energy cooperation and stressed an extremely important role of such sort of meeting in promotion of energy security problem.

Manfred Hafner, FEEM made an introduction to the SECURE project as:

- Comprehensive framework of all issues related to energy security including geopolitics, economic/regulatory and technical design of energy markets both inside and outside the EU
- Analysis of all major energy sources and technologies (oil, natural gas, coal, nuclear, renewable and electricity) from upstream to downstream (supply and demand side approach)
- Development of tools, methods and models (global and sectoral) to measure and assess security of supply
- Policy recommendations on how to improve energy security taking into account costs, benefits and risks of various policy choice.

He also presented the main goals and methods of the project as well as consortium members.

During the **first session “Long term energy scenarios in the context of energy security”**, both European and Russian long-term energy scenarios were discussed.

Patrick Criqui of University of Grenoble/LEPI-CNRS presented SECURE long-term energy scenarios for Europe. Five scenarios were developed in the SECURE project to illustrate the complex interactions of climate policies and energy security issues. It was found that the EU was less vulnerable in the “Europe Alone” scenario than in “Muddling Through”, although it was unclear at what cost these security benefits could be achieved. He said that the reference scenario as a baseline was questioned due to the fact that it represented an unrealistic/artificial scenario without any climate policy intervention. Since climate policy is a reality it was suggested to use

the “Muddling Through” scenario as the baseline scenario for conclusion and policy recommendation purposes and leave the current reference scenario as a technical background scenario.

Patrick’s main conclusions related both to the technical and political sides of EU energy security. On the technical side he noted that across the different scenarios total electricity consumption remains strong, since it is the main carrier of the decarbonisation. Moreover the power generation technology in the most policy active scenarios mix leans considerably towards more renewables, nuclear and CCS, but natural gas is almost not impacted, and Russia, due to its competitive advantage, would keep a large share of EU gas import even in the “Global Regime” scenario, in which the highest CO₂ abatement efforts are made.

On the political side, Patrick noted that climate policies strongly impact the energy-security problem and illustrate the type of uncertainties that EU and Russia will have to face in the next decades, the debate on “Energy Charter being part of the problem. Patrick concluded by underscoring the importance of taking into account the fundamentals of supply and demand in a global policy framework. In particular, efforts are needed to combine institutional solutions with a dialog on a Pluriannual Programming of Investments in the energy sector, in a balanced and mutual understanding perspective.

Jurij Baron, Energy Ministry of the RF, Deputy Director of the Energy Policy and Energy efficiency Department presented the main goals of Energy Strategy of Russia until 2030. He focused on the analysis of the key indicators of oil, gas, coal, electricity and heating sectors. As the main targets of the Russian external energy policy he stressed the following: building the multilateral legal framework to promote energy relations between Russia and other countries, increasing the share of export to Asia-Pacific region in total Russian energy export, transit risk mitigation, growth of the share of FDI (foreign direct investments) in the Russian energy sector.

The forecasted structure of investments in the Russian energy and major assumptions of the state energy policy including export security have been presented as well.

Vladimir Feigin, Principal Director of the Institute of Energy and Finance, Russia focused on the comparison of more than 40 European energy scenarios from the energy producers’ point of view. In the course of this report, he mentioned that European and Russian approaches to scenario creation are completely different. He also presented the comparison of scenarios in case of different factors such as: model content, assumptions, modeling mechanisms, production chain and energy, prices, GDP growth, gas balances and results.

Vladimir Feigin has emphasized several disadvantages of all of these forecasts such as huge uncertainty and extremely wide range of forecasts which are discouraging investments and undermining security from the producers’ perspective.

During the open discussion **academician Alexey Makarov** has stressed the necessity of assessment of the impact of the costs of CO₂ mitigation on GDP dynamics. During the ensuing discussion, the emphasis on nuclear energy and carbon capture and sequestration was discussed, along with alternative models.

During the **second session potential threats for EU oil and gas security and security of demand for Russian hydrocarbon exports to EU** were discussed by SECURE partners and Russian experts.

Stefan Schaar Kruse, RAMBOLL presented results of the assessment of EU gas import dependency and potential threats for EU gas security. Such analysis is based on a Security of Supply (SoS) index. This index allows for country-specific characteristics, for assessment of SoS impact of new investments and policies as well as for scenarios analysis. His presentation contained EU countries classification by risks and SoS impact. In order to enrich the balance between SoS and security of demand. Stefan suggested to use Long Term Contracts (LTC) and clear EU signals and policy on natural gas (in the case of security of demand) and flexibility, diversification and interconnection (in the case of SoS). In addition, he stressed the importance of transit security and regulation security. As an example Stefan cited the Russian-Ukraine gas crisis of 2009 and its influence on the EU countries. Then he proposed preventive measures such as building gas storages, alternative suppliers and RES.

On behalf of Vlada Rusakova, Head of the Strategy Development Department of Gazprom, Aleksander Fomin from the same Department presented Gazprom's view on the security of gas markets and Russian gas industry. At the beginning, he noticed the positive development of Russian gas market in the terms of energy security. He described the current situation, the potential and prospective Russian gas balances. Diversification of export routes to the East and LNG terminals construction have been mentioned in this report as well as the impact of financial crisis on the huge gas projects, for instance the Yamal-project. The main idea of this report is that Russia is able to become the center of transcontinental gas system formation that will increase energy security.

Sergey Komlev, Head of Contract Structuring and Price Formation Directorate of Analysis and Optimization Department of Gazprom Export in his report presented Gazprom Export's position on the EU gas security of supply. The main topic of his presentation was the incoherence of two European major goals: (1) Decreasing of Russian gas import dependency and (2) Development of strategic partnership with Russia. In his opinion, the first goal is prompted by political reasons while there are no economical reasons to decrease gas import from Russia.

Mr. Komlev considered the Russian-Ukraine gas conflict of 2009 as the “wake up call” for Russia to doubt in EU's ability to provide security of demand, because in this conflict European partners were inactive and did not take any obligation to solve the problem.

Giacomo Luciani from Gulf Research Center Foundation presented the results of the critical analysis of the threats to the EU security of oil supplies. Some major factors, influencing SoS, were discussed, such as resource nationalism, political

instability, export tariffs, domestic oil prices, and high probability of armed conflicts in main oil-production regions. He paid attention to logistic problems and chokepoints. The analysis of straits' capacity shows the necessity of building Pan-European Oil Pipeline. In addition, he mentioned Russian strategic advantages to become a location of new crude oil spot trading center, based on Russian oil pipeline system. In the end of his presentation Mr. Luciani suggested the following measures to enhance European SoS: international alignment of products standards, diversification of imports, reduction of differential in taxation, greater coordination between industry and legislators, development of biofuels, including imported, or GTL.

After the report **Andrey Konoplianyk, adviser of Gazprombank** asked if the failure of the Anglo-Saxon financial model is the major threat for the energy security, as financial crisis of 2008 showed. Mr. Luciani and Mr. Cruse conversationally settled that the major threat is the abrogation of the LTC and incorrect investment analyses.

During the **third session, energy efficiency and renewables as new possibilities for EU-Russian cooperation** were discussed by SECURE partners and Russian experts.

Andrea Bigano from FEEM made a presentation on energy efficiency and electricity demand response in Europe to improve security of supply. He based his report on three fundamentals: energy intensity, energy efficiency and carbon intensity. Based on panel analyses Andrea illustrated useful energy policies in different sectors of the EU countries, such as cross-cutting policies in the residential, industry, tertiary and transport sectors. The conclusions are that there is number of policies that had a beneficial impact on energy efficiency and carbon efficiency, at the aggregate level. However only one category of these policies (general cross-cutting policies), has proven also useful to improve aggregate energy security indicators. Restricting analysis to specific sectors does not lead to sharper or more encouraging conclusions in terms of co-benefits on energy security of energy efficiency policies. Between energy intensity and carbon intensity there is more policy interaction, and also some sector-specific policies improve the performance of both indicators. This is hardly surprising, given the high correlation between the two indicators, and holds in particular for the household sector, but also cooperative measures in the industry sector affect both carbon and energy intensity at the aggregate level. Energy efficiency policies in the EU do work, but none can successfully address different policy objectives, unless it is so general that naturally encompasses different sectors and modes of energy use. Thus only broadly defined cross cutting policies seem to have this double effect.

Alexander Savin, Deputy Director of Russian Energy Agency presented the draft of the new Russian strategy on energy efficiency until 2020 and its major goals, instruments and some particular projects. He has also discussed different possibilities for cooperation with EU in this sphere.

Fedor Veselov, Head of the energy markets modeling and regulation laboratory and Vladimir Malakhov, Head of Laboratory for Studies in Energy Economy Relationships Director, ERI RAS presented the results of ERI RAS research on the possible impact of the new Russian environmental targets (in the post-Kyoto framework) on the structure and performance of the Russian energy sector. The main conclusion of the study is that carbon price will stimulate nuclear and gas-fired generation (mainly CHP) and preserve the high gas share. The base case will ensure 20% decrease of CO₂ emissions in 2030 from the BAU case. Implication of carbon prices will be able to additionally reduce CO₂ emissions in 2030 up to 20% (or 140 Mt CO₂) in respect to the base case. New environmental targets will require additional investment and higher prices: each 10 Mt CO₂ abatement in the power sector will increase the electricity prices by 0.4-0.5 cent /kWh.

After the report Patrick Criqui asked if there are any opportunities to provide investments in new technologies as the main driver of energy growth. According to Vladimir Malakhov, the main indicator of investment policy is the share of investments in GDP; in ERI RAS researches they are carrying on financial balances so they are able to state a fact of growing investments. But still the investments in new technologies are lacking.

Christian Panzer from Energy Economics Group – Vienna University of Technology presented SECURE's view on the role of renewables in the future European energy mix. His analysis was carried out using the Green-X model, on the basis of the POLES scenario developed in the SECURE project (with minor adaptations in order to take correctly into account the 20% target for the renewables' share on TPES by 2020). Christian presented three main scenarios of RES consumption, production and imports. (1) Muddling Through: 267 Mtoe avoided fossil fuel consumption in 2030 due to domestic RES generation, meaning 78 billion Euro. (2) Europe Alone: 540 Mtoe avoided fossil fuel consumption in 2030 due to domestic RES generation, meaning 146 billion Euro (3) Global Regime – Full Trade: 539 Mtoe avoided fossil fuel consumption in 2030 due to domestic RES generation, meaning 145 billion Euro mainly impacting (reducing) the coal imports among fossil imports.

Christian concluded with an assessment of the main risks and advantages connected with RES. An increased use of RES in the electricity, transport and the heating sector may contribute considerably to decreasing import dependency. Additional benefits relate to the contribution of RES towards the achievement of climate change targets. However, decrease in import dependency involves certain transfer costs for society. On the economic side, competitiveness of RES is expected to improve in the future. Other threats resulting from the specific character of RES (variable power output) seem to be still manageable, but may require changes in system operation and infrastructures in the near future.

After the presentation Andrea Bigano, Christian Panzer and Andrey Konoplianyk discussed some questions concerning the insignificant biofuels role in the future EU energy balance, and the role of back-up capacities (pumping-storage systems) to provide enough energy during peak load periods.

To finalize the meeting and sum up policy recommendations for EU-Russia cooperation in the energy security field, a **round table “Long-term priorities of EU-Russian energy cooperation to provide energy security”** took place. Manfred Hafner, Patrick Criqui, Jurij Baron, Stefan Schaar Kruse, Andrea Bigano, Christian Panzer and Stanislav Zhiznin had an open panel discussion of the road map of EU-Russian cooperation in all energy sectors in the long-term until 2050 with the emphasis on energy security.

Conclusions and wrap-up were made by Manfred Hafner, FEEM, Juriy Baron, Energy Ministry of the RF and Tatiana Mitrova, ERI RAS.

List of Participants

Name	Organization
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