Russian Power Sector Outlook: Opportunities for Integration into Northeast and Southeast Asia Energy Interconnection

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Forum on Northeast Asia and Southeast Asia Energy Interconnection Development

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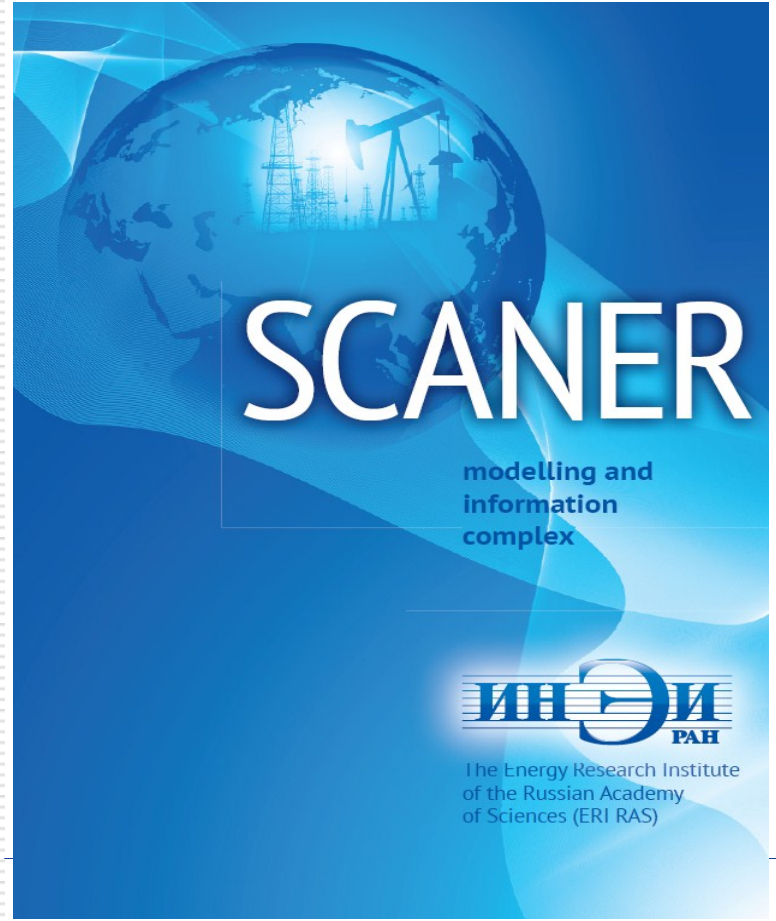
ERI RAS – experience in system energy studies

Energy Research Institute of the Russian Academy of Sciences (ERI RAS) was established in 1985 for the fundamental studies of national energy policy development and implementation.

1. **Addition and revision of the USSR ENERGY PROGRAM – 1986-1989**
2. **USSR SCIENTIFIC AND TECHNICAL PROGRESS PROGRAM – 1985-1989**
3. **CONCEPT OF RUSSIAN ENERGY POLICY under the new economic conditions – RF Government resolution 10.09.1992 №26.**
4. **ENERGY STRATEGY of Russia – RF Government resolution 13.10.1995 №1006.**
5. **ENERGY STRATEGY of Russia up to 2020 - RF Government resolution 28.09.2003 №1234-p.**
6. **ENERGY STRATEGY of Russia up to 2030 – RF Government resolution 13.11.2009 № 1715-p.**
7. **ENERGY STRATEGY of Russia up to 2035 – still in Government**
8. **Reform of the Russian ELECTRIC POWER SECTOR. World Bank-RF Ministry of economy – RF President decree 28.04.1997 № 426**
9. **Reform of GAS DISTRIBUTION sector in Russian Federation. World Bank – RF Ministry of fuel and energy – 1999-2001**
10. **GENERAL SCHEME for power sector development and assets allocation up to 2020 - RF Government resolution 22.02.2008 #215-r**
11. **GENERAL SCHEME for power sector development and assets allocation up to 2020 and for 2030 prospect – RF Government protocol 3.06.2010**
12. **GENERAL SCHEME for power sector development and assets allocation up to 2035 – RF Government resolution 09.06.2017 #1290-r**

SCANER – Super Complex for Active Navigation in Energy Research



«SCANER» is a tool for the system analysis of the Russian energy sector development for the mid- and long-term prospects (to 2040-50) as an important part of national economy and global energy markets. Integrating the powerful modeling and informational resources, SCANER provides:

✓Unique information support for the analysis and forecasts (regularly updated databases on the national and regional economy, energy sector, energy balances and markets)

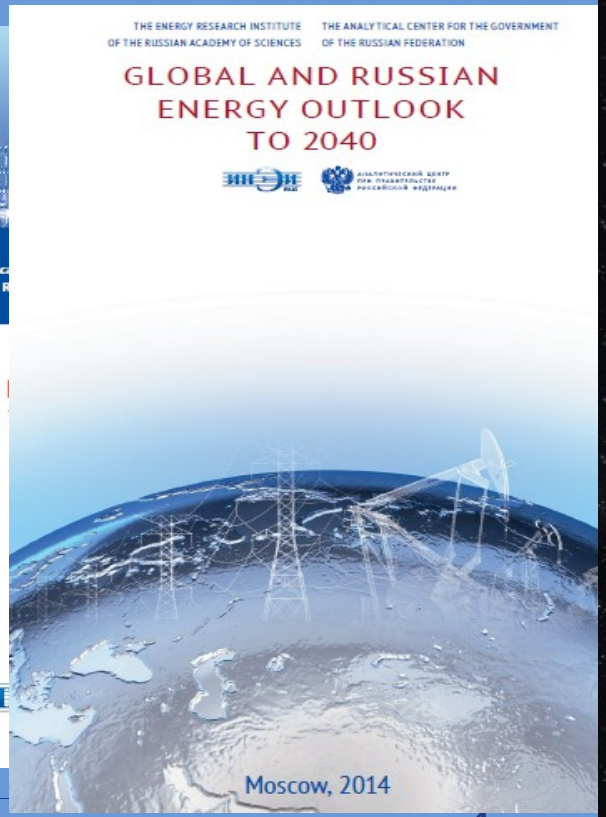
✓Multilevel coordination system of energy forecasts focused on the formulation of rational variants of the economy, energy sector and energy companies' development

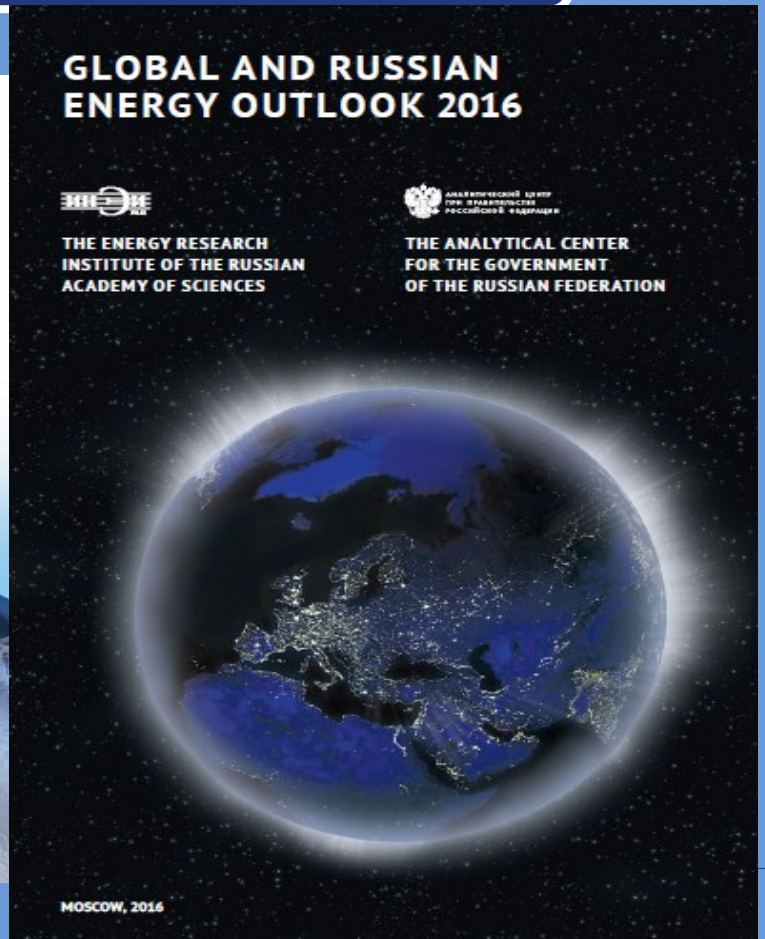
✓Huge flexibility and fast adaptation of the models and their calculation modes for new forecasting requirements

Global and Russian Energy Outlook

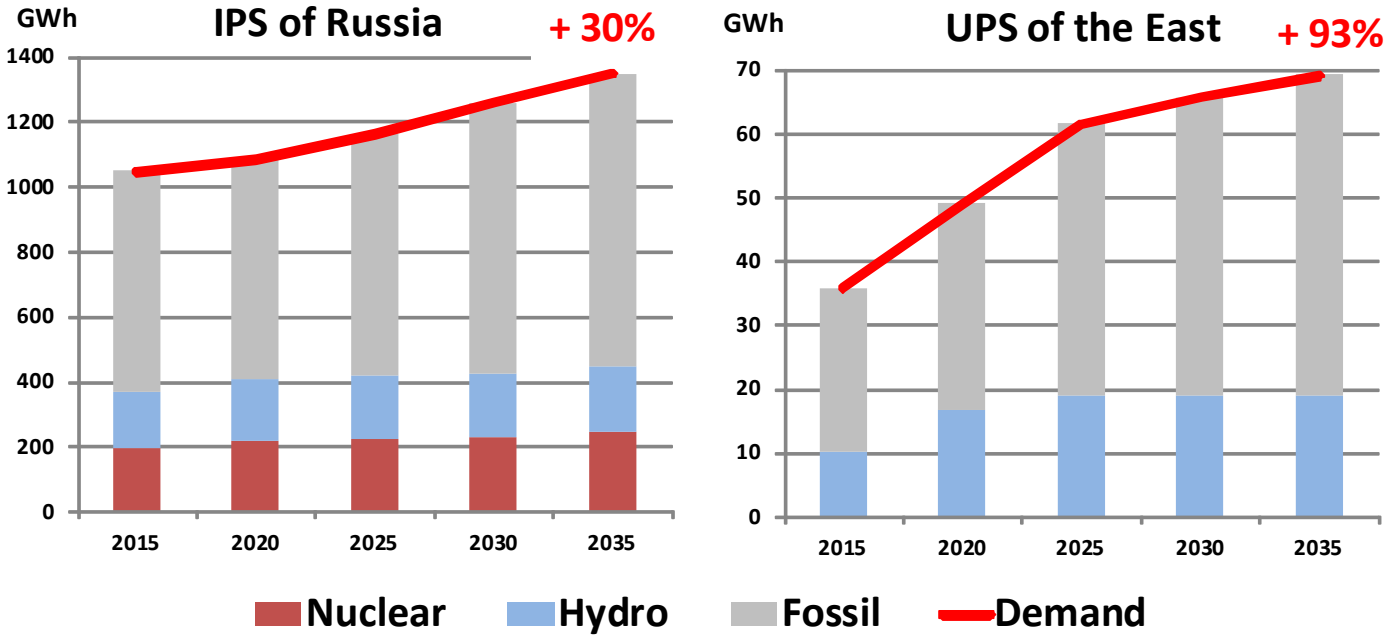
GLOBAL AND RUSSIAN
OUTLOOK UP

АНАЛИТИЧЕСКИЙ ЦЕНТР
ПРИ ПРАВИТЕЛЬСТВЕ
РОССИЙСКОЙ ФЕДЕРАЦИИ





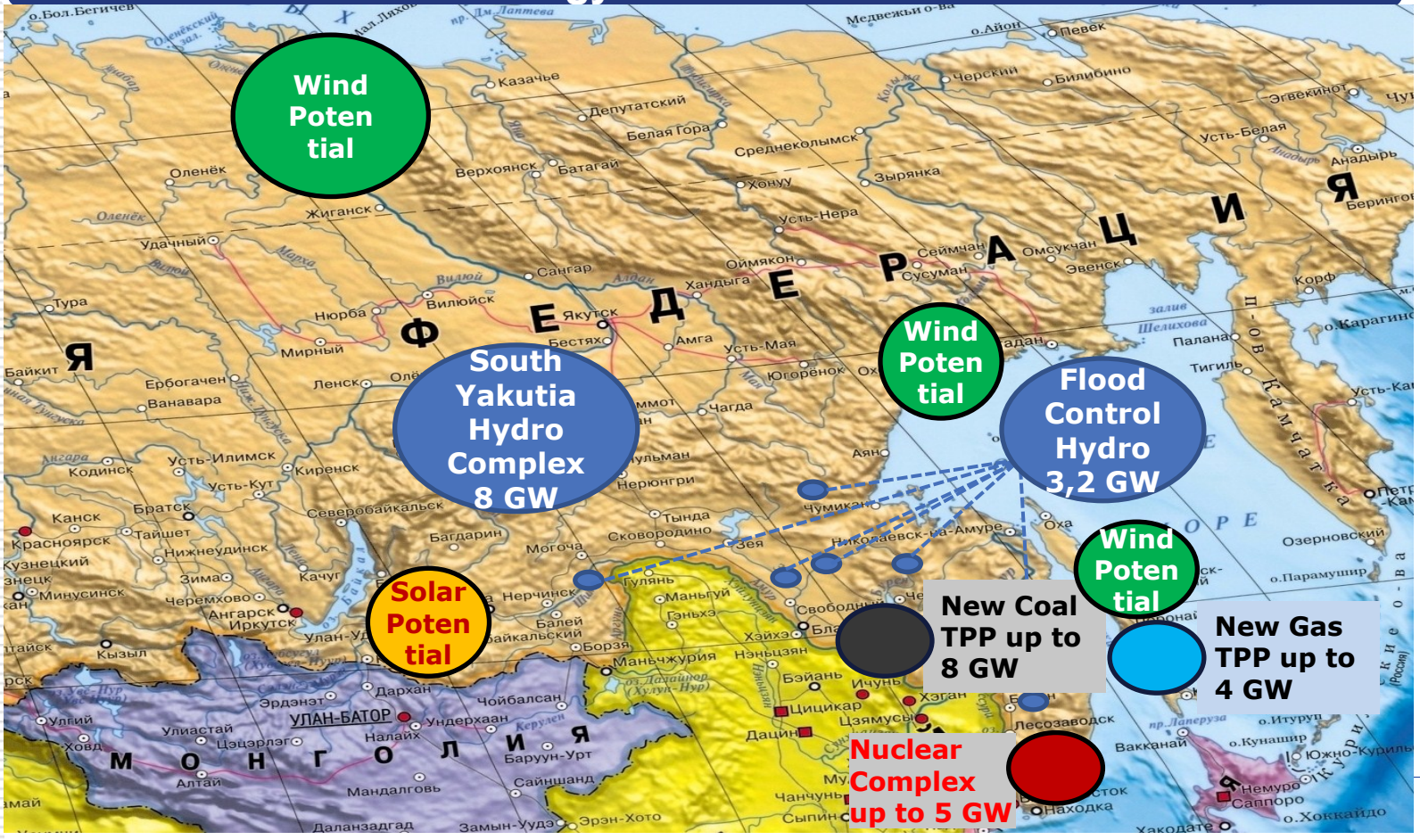
Main Parameters of the Latest General Scheme of Russian Power Sector Development



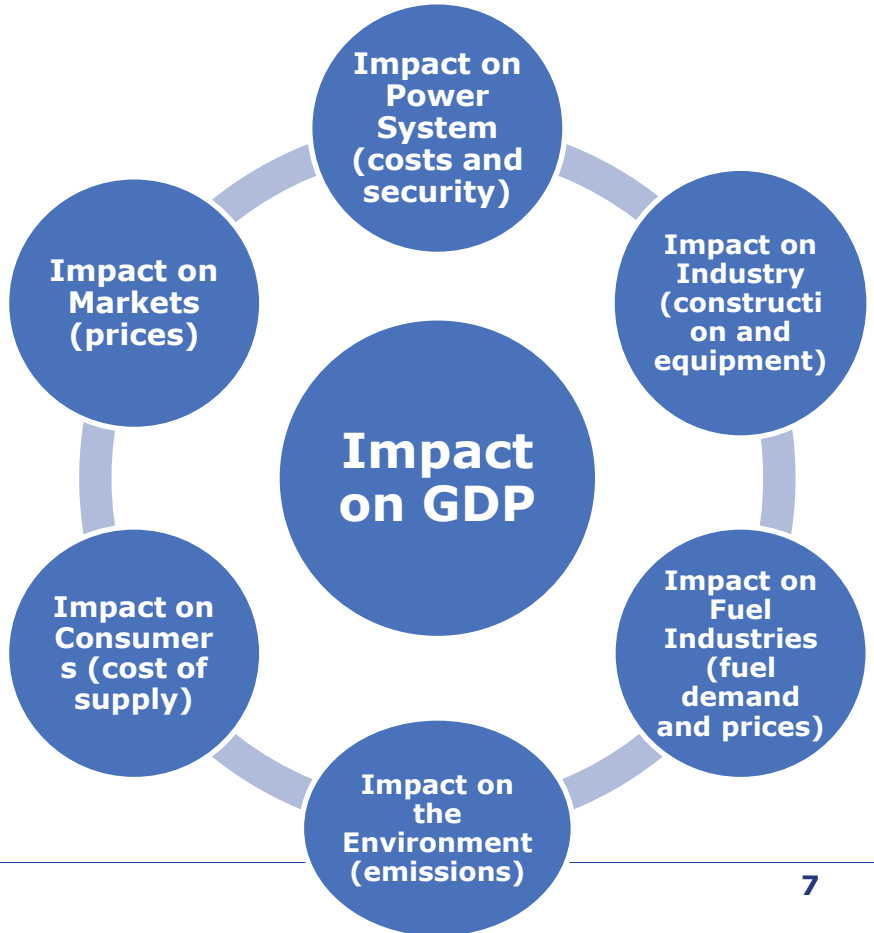
Main Investment Priorities (up to 2035):

- New Nuclear Reactors (VVER-TOI, "Fast" Reactors) – up to 22 GW
- RES – at least 5 GW (with possible further increase to 10-15 GW)
- Effective Thermal Power Plants – CCGT (localized) + Coal USC
- Modernization of Existing TPPs (about 50 GW)
- Smart-grids and demand response

Opportunities for Integration into Northeast and Southeast Asia Energy Interconnection



Power grid integration project require the integrated cost/benefit analysis on the national and supranational levels



We need to find the mechanisms how to share the expected positive effects among all the project participants as well as compensate through the common efforts the possible negative effects for separate countries

Several Questions We Need to Address Together

Affordability of the changes in the energy security conditions

- Breaking the structure of energy balances
- Decrease of the energy independence (self sufficiency of energy supply)
- Challenges for the local fuel suppliers

Affordability of the changes in the power system security conditions

- Needs for the reservation of super-grid capacity, cost and allocation of the reserves
- Needs for adaptation of the power system to the huge amounts of intermittent RES generation, incl. storage technologies
- Needs for multilevel super-grid dispatching and challenges for the national dispatching systems – as well as markets

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Thank You for Your Attention