

# Integrated modelling and information technology for strategic planning in the energy sector of Russia

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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:

✓ state level - methodological, modeling and analytical support for the energy policy priorities and implementation mechanisms (incl. macroeconomic, technological, pricing, environmental and other aspects), quantitative elaboration of the economy and energy sector scenarios in the context of Energy Strategy, etc.

❖ *Ministry of Energy, Ministry of economic development, Ministry of natural resources, Federal Antimonopoly Service*

✓ corporate level – modeling and information support for the strategic planning systems of energy companies, etc

❖ *Gazprom, Gazexport, NovaTEK, Mezhrefiongas, Wintershall, Rosneft, TNK-BP, SUEK, RAO EES Rossii, Rosenergoatom, Fortum, Enel Russia, Gazpromenergoholding, etc.*

## ERI RAS – experience in system energy studies

- 1. Addition and revision of the USSR ENERGY PROGRAM – 1986-1989**
  - 2. Integrated 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 г. 215-p.**
  - 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 – still in Government**

## Actual problems of the energy sector forecasting

At present the understanding and proper accounting of the diversity and dynamics of internal and external relationships of energy industries became more and more important and complicated

- ✓ global energy markets
- ✓ macroeconomic trends and solvent demand
- ✓ new technologies in energy sector and energy consumption
- ✓ energy balances
- ✓ domestic energy markets: competition and regulation
- ✓ financial balances of energy companies and investment resources
- ✓ long-term (after-) effects from implementation of investment decisions in energy sector
- ✓ environmental and social externalities

ERI RAS developed the integrated global and Russian economy and energy sector forecasting system



National Energy Modeling System

World Energy Projection System +



GEM-E3 + PRIMES

TIMES

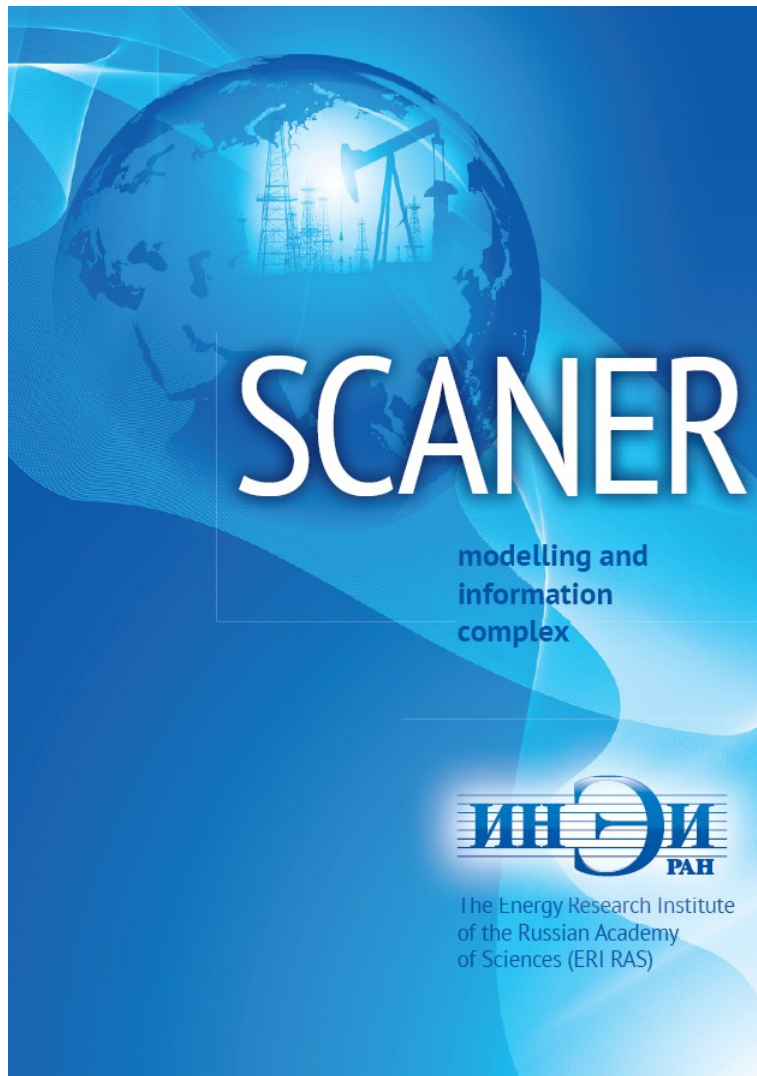


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# SCANER – Super Complex for Active Navigation in Energy Research



«SCANER» is a tool for the system analysis of the Russian energy sector development for the mid- and long-term prospects (to 2030-50) as an important part of national economy and global energy markets. Integrating the powerful modeling and informational resources, SCANER provides:

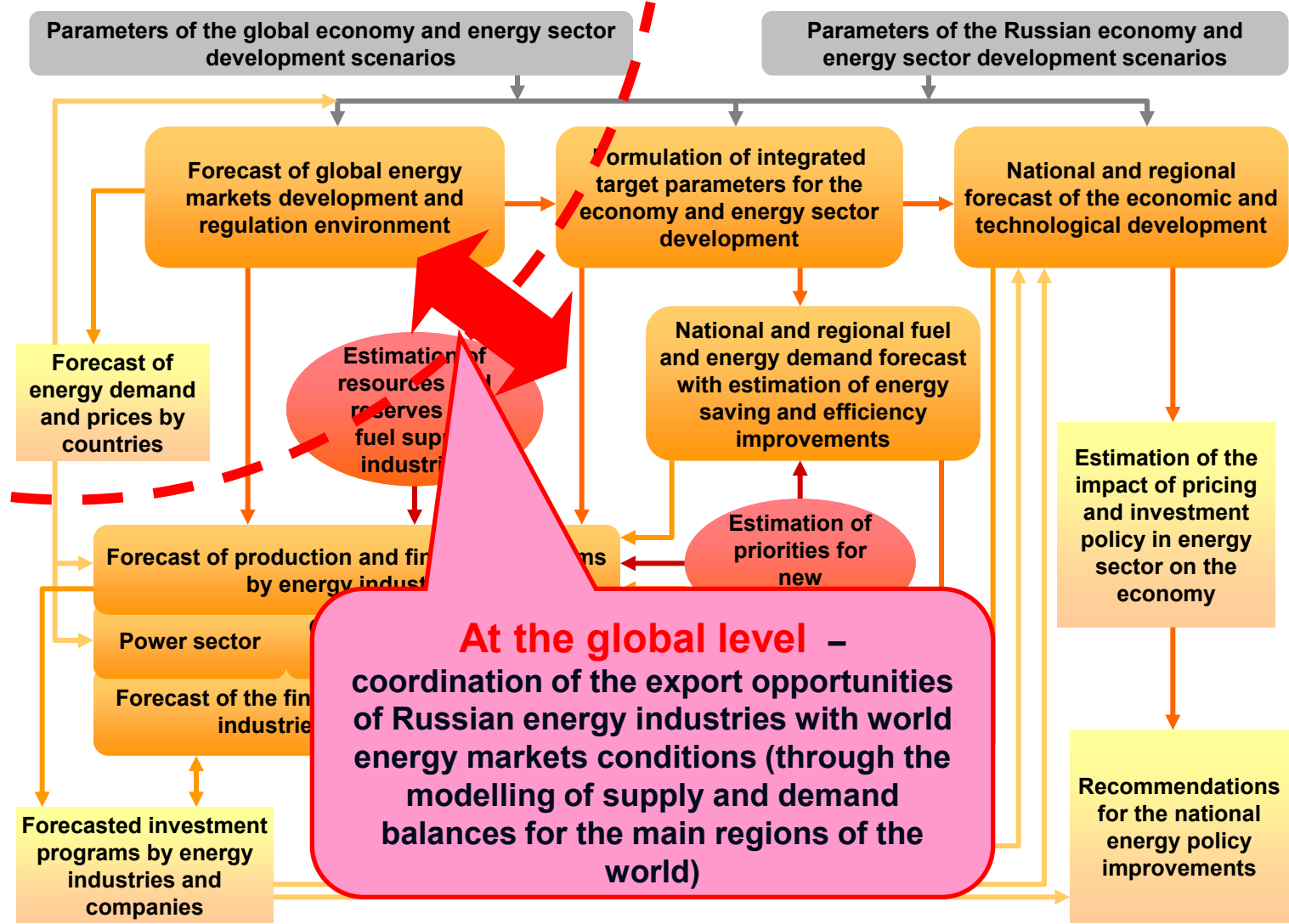
- ✓ Unique **information** support for the analysis and forecasts (regularly **updated** databases on the national and regional economy, energy sector, energy balances and markets)
- ✓ Multilevel coordination system of energy forecasts focused on the formulation of **rational** variants of the economy, energy sector and energy companies' development
- ✓ Huge **flexibility** and fast **adaptation of the models** and their calculation modes for new forecasting requirements

## Main modules of SCANER:

- module for the development of external conditions scenarios;
- module for global energy forecasts;
- module for forecasting of socio-economic development of Russia and its regions;
- module for energy demand forecasting and energy balances' formation;
- modules of energy sectors' development: gas, coal, oil (incl. oil refining), electric power.

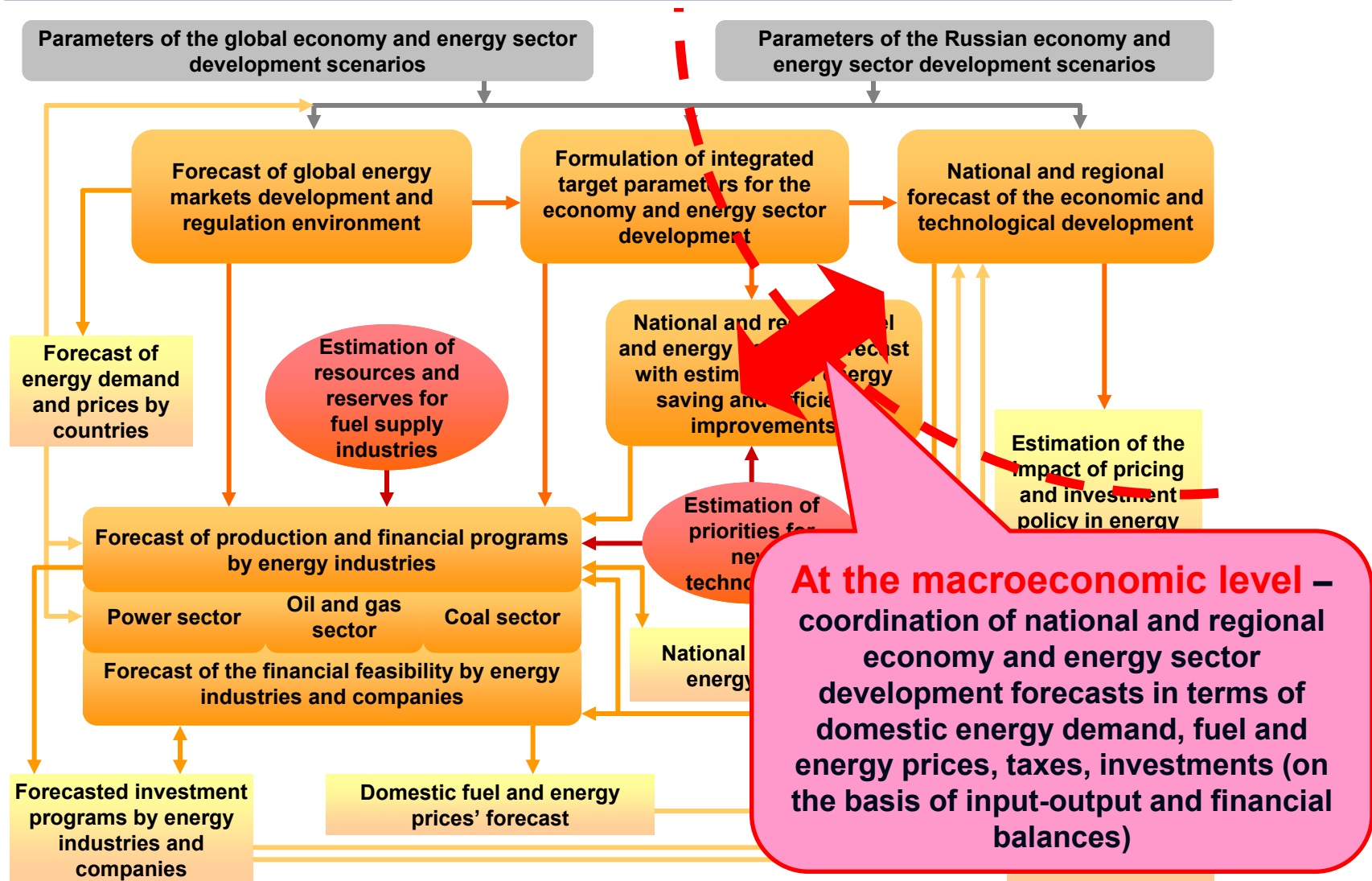


# SCANER – multi-level coordination of energy forecasts

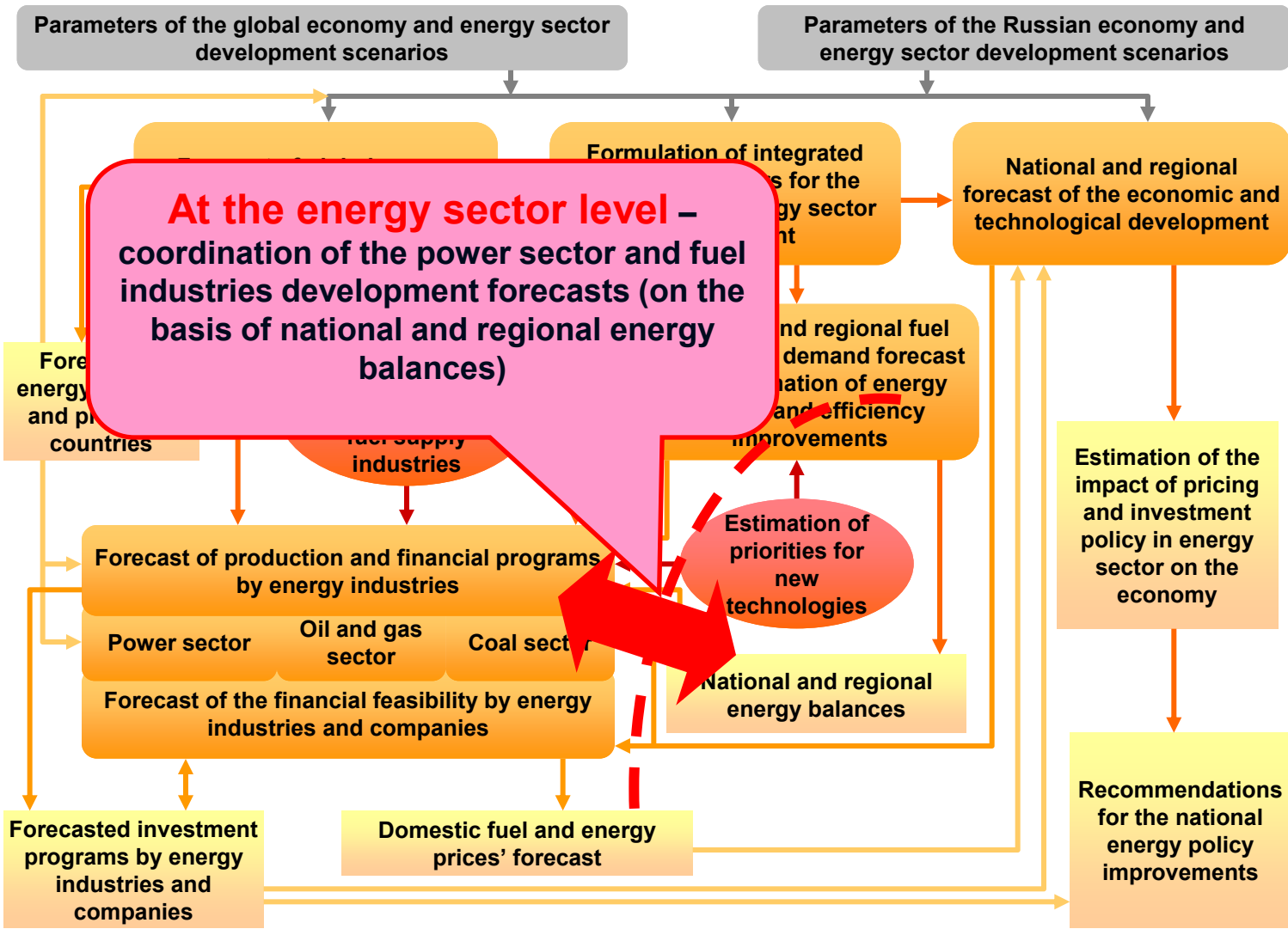




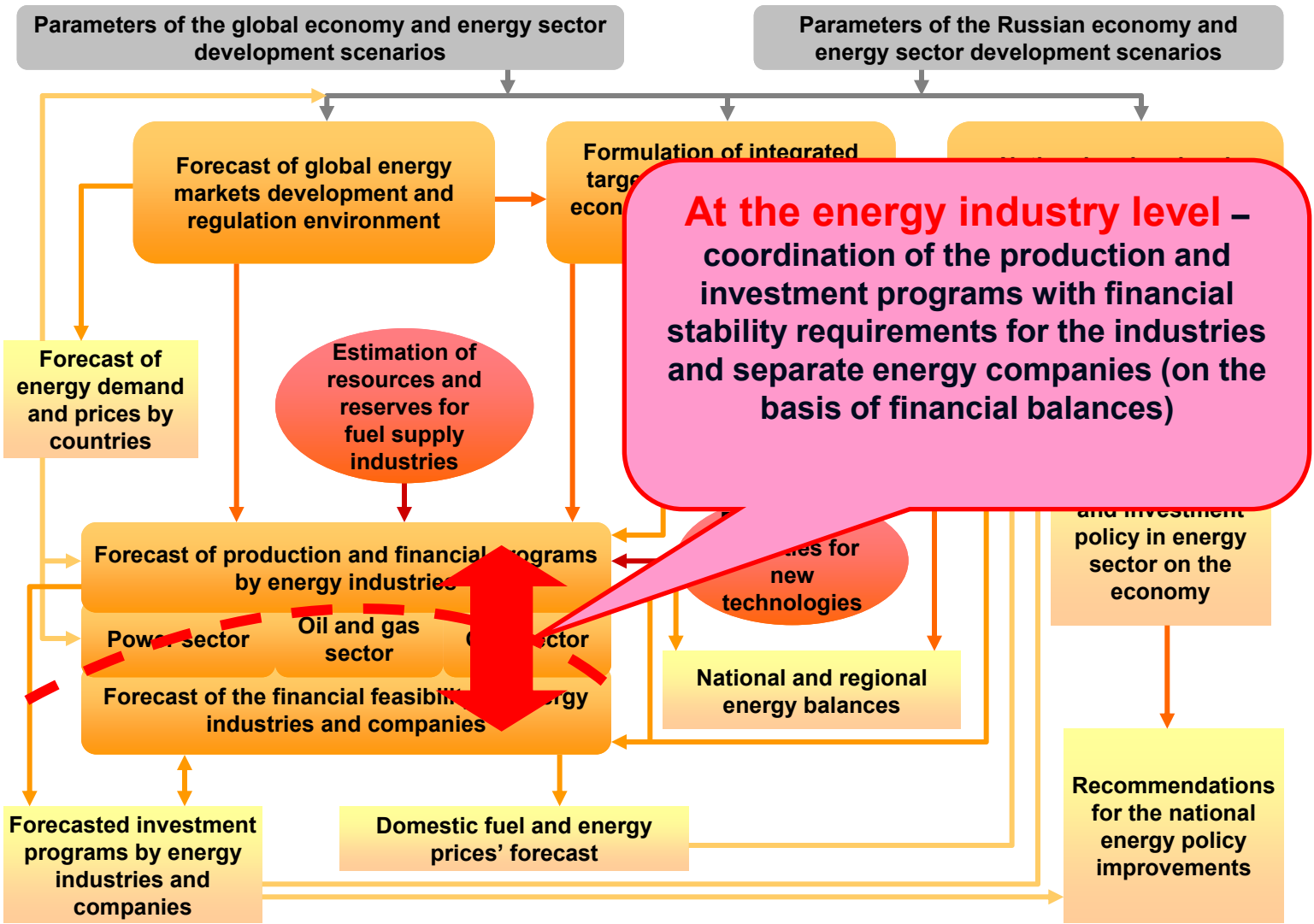
# SCANER – multi-level coordination of energy forecasts



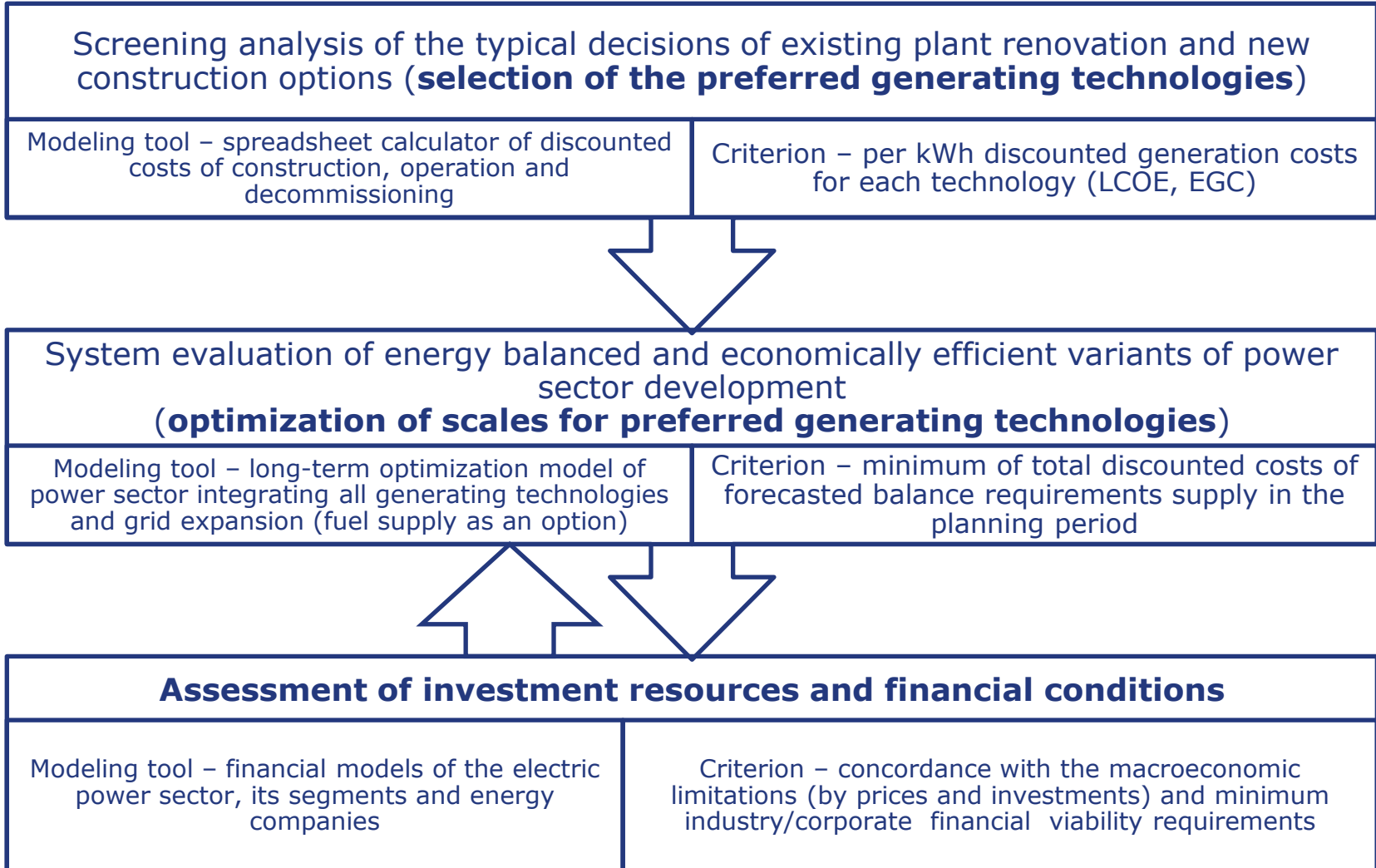
# SCANER – multi-level coordination of energy forecasts



# SCANER – multi-level coordination of energy forecasts



# Main modules of the strategic decisions support technology in the electric power sector



## Specific features of the approach implemented in the SCANER technology

- high degree of the informational integration of all modelling parts
- unique degree of multi-level coordination of the forecasts
- wide opportunities for the long-term optimization of the situation on the domestic competitive electricity and capacity markets and their interaction with the competitive fuel markets
- unconditional concordance of the energy resources' production and consumption forecasts with their economic affordability and financial viability for the society, energy industries and market agents

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Thanks for your attention