



Russian Energy Agency

Overview of the Russian Electric Power Sector

**Deputy General Director
of the Russian Energy Agency
Kozhukhovskiy Igor Stepanovich**

Baku, 18 October 2016

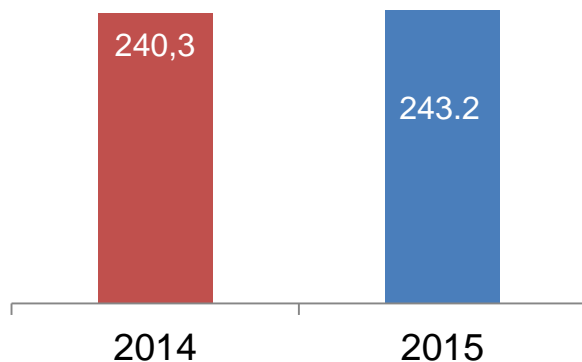


Российское
Энергетическое
Агентство

Key Indicators of the Russian Electric Power Sector

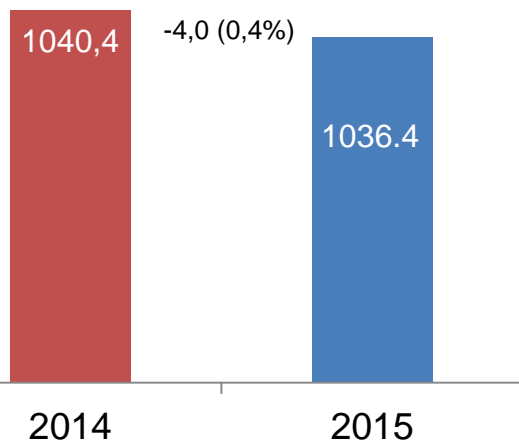
Installed Capacity (GW)

+2,9 (1,2%)

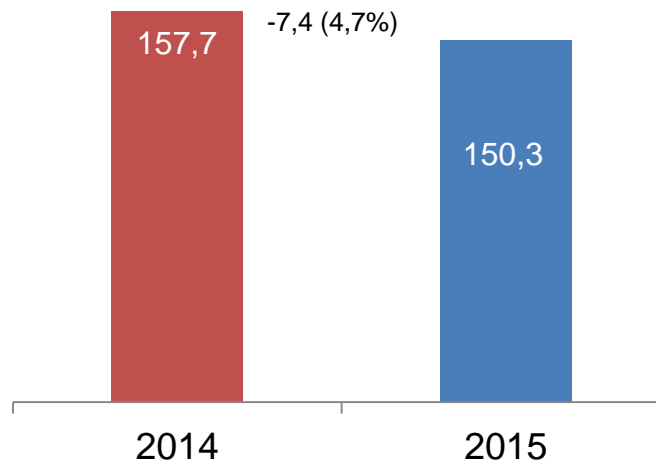


Electricity Consumption (TWh)

-4,0 (0,4%)



Maximum Load (GW)



Electricity
Production
in 2015

1049,9 TWh

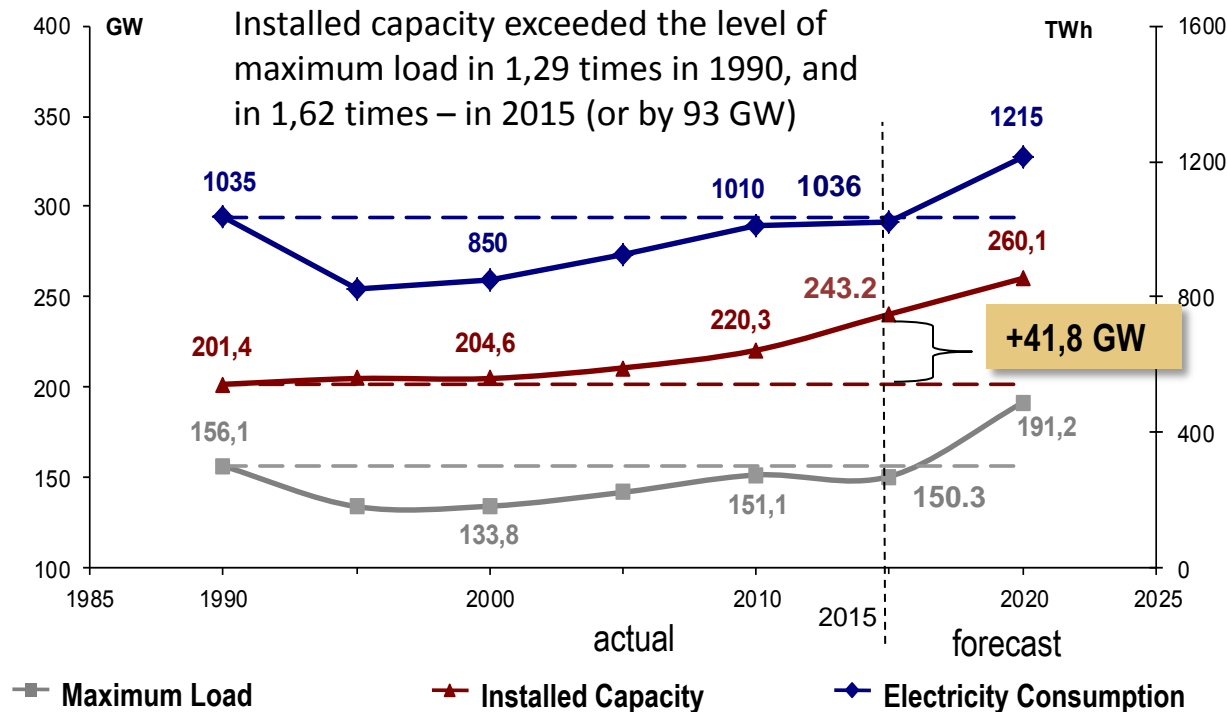
5th in
the global
ranking

- 1 China
- 2 USA
- 3 India
- 4 Japan
- 5 Russia

Revenue – 3 trillion roubles (47,6 bln US\$)



Trends in Electricity Demand and Supply, Excess of Generation Capacity



2015 :
Electricity consumption and maximum load are comparable to the levels reached in 1990
Installed capacity exceeded the level achieved in 1990 by 41,8 GW

Total annual hours of thermal plant's operation

- 1990 г → 5673 hours
- 2015 год → 4136 hours, installed capacity utilization factor - 47,2%

Reasons for growing excess of generation capacity:

- Drastic reduction of electricity consumption while maintaining the existed level of old generation capacities during the period of economic decline in the 1990s
- Changes in the structure of electricity consumption in the period of recovery economic growth
- Low growth rate of electricity consumption, substantial increase in new generating capacities commissioned under the concluded regulated capacity contracts, and lower decommissioning of old inefficient power plants during the post-reform period of 2005-2015



Legal & Regulatory Basis

Sector Specific Legal & Regulatory Basis

- **Federal Law №35-ФЗ «About Electric Power Sector»**
- Electricity & Capacity Markets Rules & Procedures
- Tariffs Formation Rules (based on fair return of investments) in the Electric Power Sector

General Legal & Regulatory Basis

Laws & Regulations on:

- Energy Security
- Entrepreneurship
- Labor
- Competition
- Non-Discriminatory Network & Services Access
- Environmental Protection



Structure of the Russian Electric Power Sector

Power Delivery Infrastructures, System & Market Operators

JSC «System Operator»

7 Uniform Dispatch Centers
50 Regional Dispatch Centers

JSC «Russian Electric Grids»

JSC «Federal Grid Company»	JSC «МРСК Волги»
JSC «МОЭСК»	JSC «МРСК Центра и Приволжья»
JSC «Ленэнерго»	JSC «МРСК Юга»
JSC «Янтарьэнерго»	JSC «МРСК Центра»
JSC «Тюменьэнерго»	JSC «МРСК Урала»
JSC «ТПК»	JSC «МРСК Сибири»
	JSC «МРСК Северо-Запада»
	JSC «МРСК Северного Кавказа»

Partnership «Market Council»

- Seller's Chamber
- Buyer's Chamber
- Expert's Chamber
- Infrastructural Organization's Chamber:
- JSC "Financial Settlement Center"
- JSC «Trade Administrator»
- JSC «System Operator»
- JSC «Federal Grid Company»

Generation Companies

LLC «Газпром энергохолдинг»
(JSC «Мосэнерго», JSC «МОЭК»,
JSC «ТГК-1», JSC «ОГК-2») 38
GW

JSC «РусГидро»
(51 HPP, 3 PSPP,
3 GTPP) 38,5 GW

JSC
«Росэнергоатом»
25,2 GW
(16 NPP)

JSC«ИНТЕР
РАО» 22,9 GW
(18 TPP)

JSC «Т Плюс»
16,2 GW
(62 TPP)

JSC«Юнипро»
4,7 GW
(5 TPP)

JSC «Энел ОГК-5»
9,7 GW
(4 TPP)

JSC «ЭС
Востока»
9 GW
(40 TPP)

JSC«Сиб. ГК»
7,1 GW
(17 TPP)

JSC «Фортум»
3,8 GW
(8 TPP)

JSC «Квадра»
3,6 GW
(22 TPP)

JSC«Кузбасэнерго»
2,5 GW (2 TPP)

JSC «ТГК-11»
1,5 GW
(6 TPP)

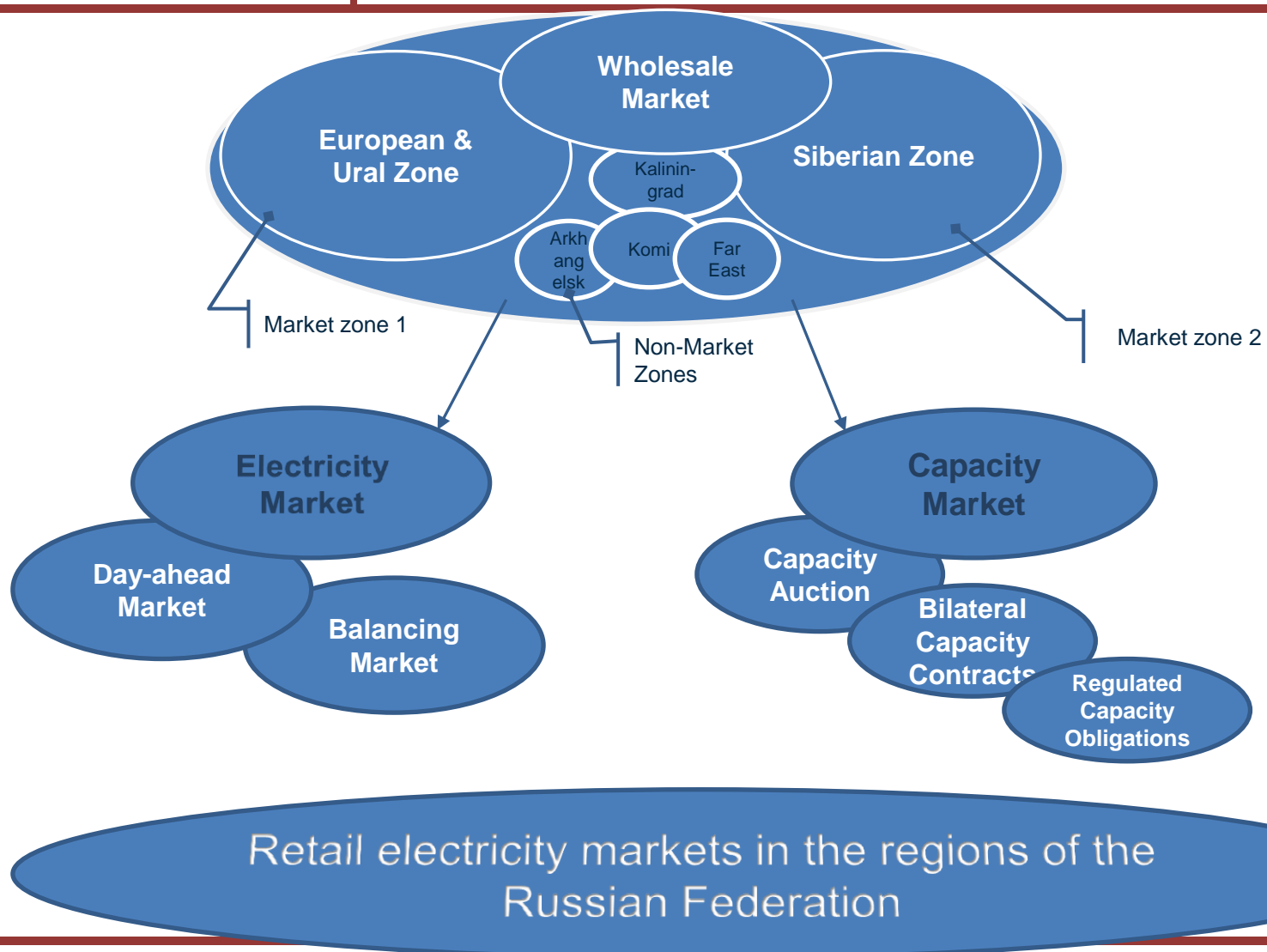
& others

Guaranteeing Suppliers, Non-regulated Supply Companies

> 300 companies are participating in the wholesale&retail electricity markets (guaranteeing suppliers, non-regulated supply companies)



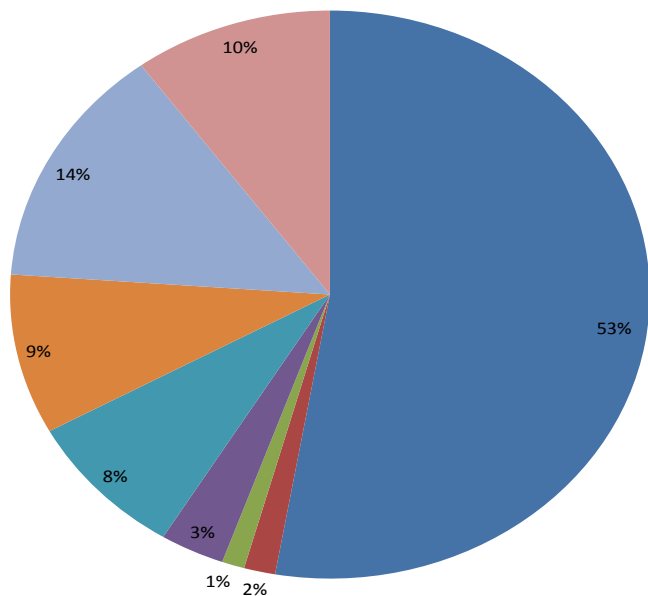
Market Structure





Structure of the Electricity Consumption in 2015

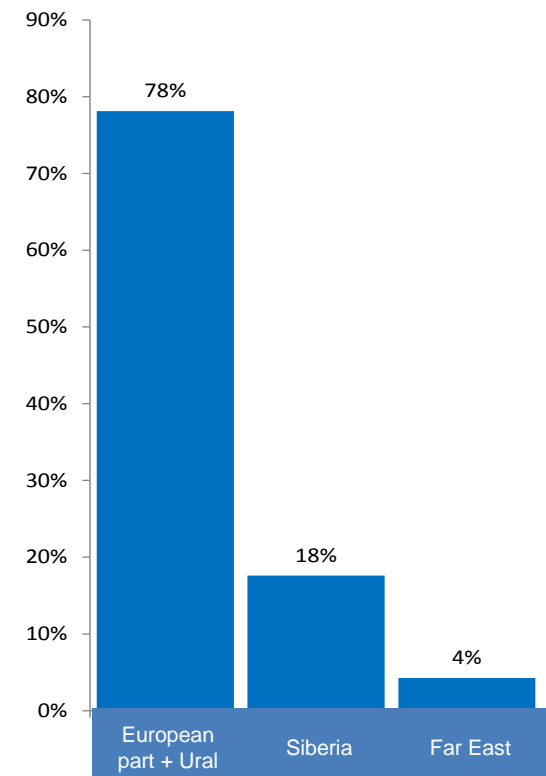
By economic activities



Данные Росстата



By regions of Russia

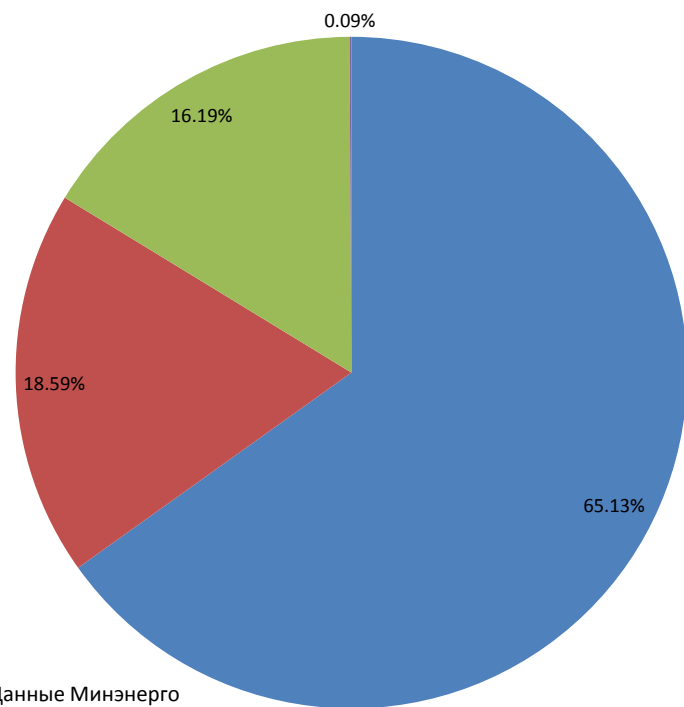


Since 2005 electricity consumption has increased by 12,1% and reached 1036,4 TWh in the Russian Federation (source of data: Ministry of Energy of RF)

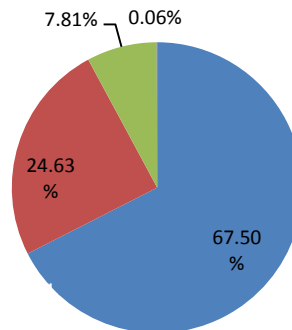


Structure of Electricity Production in 2015

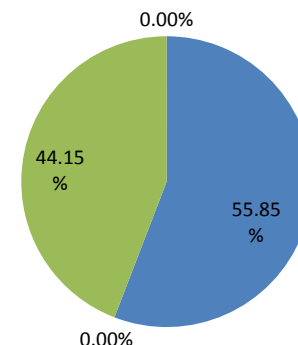
Russian Federation



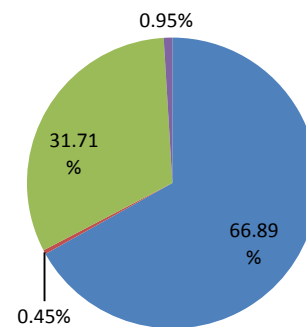
European zone + Ural



Siberia



Far East



Since 2005 electricity production has increased by 12,2% and reached 1049,9 TWh (source of data: Ministry of Energy of RF)



Capacity Additions & Investments in 2011-2015

New Capacity Additions in 2011-2015

	2011	2012	2013	2014	2015	2011-2015
Total Capacity Additions	4,7	6,3	4,0	7,6	4,9	27,5
incl. added due to regulated capacity obligations (thermal PP)	3,9	3,6	1,9	4,9	2,9	17,2

GW

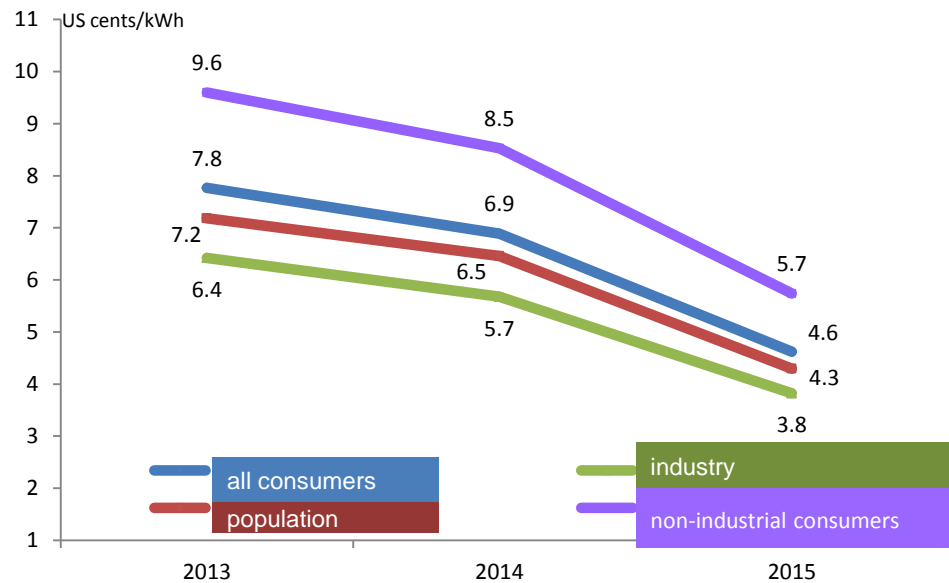
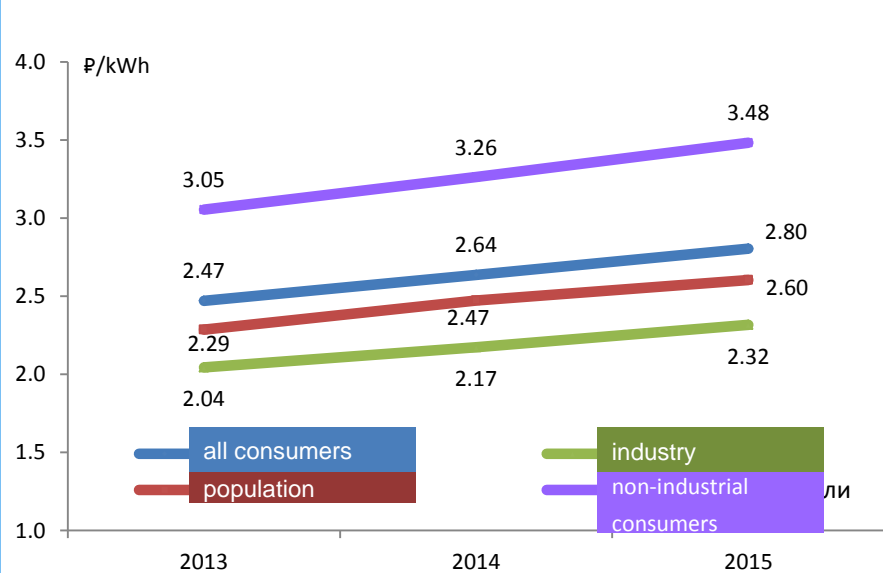
Investments in the Russian Electric Power Sector in 2011–2015

	2011	2012	2013	2014	2015	2011-2015
Largest Generation&Electric Network Companies	893,4	851,3	867,0	807,7	646,5	4065,9
Largest Generation Companies	523,7	522,8	522,2	492,5	375,8	2437,0
incl. invested due to regulated capacity obligations (thermal PP)	151,1	172,2	185,9	165,8	96,1	771,1

bln.₽



Tariff dynamics



In 2013-2015, electricity price growth was rather even for all customer groups - 6-7% per year. The rate of growth was lower than the inflation rate (11% in 2014, 13% in 2015).

Electricity prices in US cents are decreasing in the last years due to depreciation of the Russian currency against the U.S. dollar.

High prices for non-industrial electricity customers and roughly equal prices for industrial and residential customers suggest that residential electricity tariffs are still cross-subsidized. By assessments of Ministry of Energy of RF, the level of cross-subsidization in the electric power sector was around 238 billion rubles. This problem is most acute in the regions of the Russian Far East



Capacity additions and dismantling capacity in 2016-2022

Capacity additions in 2016-2022 (mW)

	2016	2017	2018	2019	2020	2021	2022	2016-2022
Total Capacity Additions	5671,5	5994,0	4439,6	1713,6	565,0	2453,8		20837,5
Nuclear power	1195,4	2268,8	1195,4	1198,8		2453,8		8312,2
Hydro power	351,8	11,6	350,2	49,8				763,4
Pumped-storage hydroelectricity	140	420	420					980
Thermal power plant	3589,3	2948,6	2174	195	565			9471,9
Renewable energy	395	345	300	270				1310

Dismantling capacity in 2016-2022 гг. (mW)

	2016	2017	2018	2019	2020	2021	2022	2016-2022
Total dismantling Capacity	1674,1	1383,0	1617,0	300	1000	1000		6974,1
Nuclear power	417		1000		1000	1000		3417
Thermal power plant	1257,1	1383	617	300				3557,1



New Trends and Proposed Projects

- Grid development for power interchanges Russia-Azerbaijan-Iran
- Development large wind park in Sakhalin Island for supply electricity to Japan
- Development large wind park in the South of Siberia-the North of Kazakhstan to supply electricity for the region of «Silk Roads Project» implementation
- Pilot innovation projects – National technological initiative «Energy Net»
- Implementation of the energy management systems and informational systems in regions of Russia



Thank you for your attention!