



Ministry of Energy
of the Kyrgyz Republic



Energy Sector of the Kyrgyz Republic

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Kyrgyzstan – Bishkek

Energy Potential of the Kyrgyz Republic

- **Kyrgyzstan has great energy resources of Central Asia, large coal reserves and 30% of hydropower resources, of which only 1/10 is used**
- **Hydropower is the key direction for development of the energy sector of Kyrgyzstan**
- **The hydropower potential of the Kyrgyz Republic is more than 142 bln. KWh (ranks the third in the CIS after Russia and Tajikistan)**
- ┌ **22 HPPs with annual output of about 30 bln. KWh can be constructed at the Naryn river and its tributaries**

Generating Sector of Kyrgyzstan

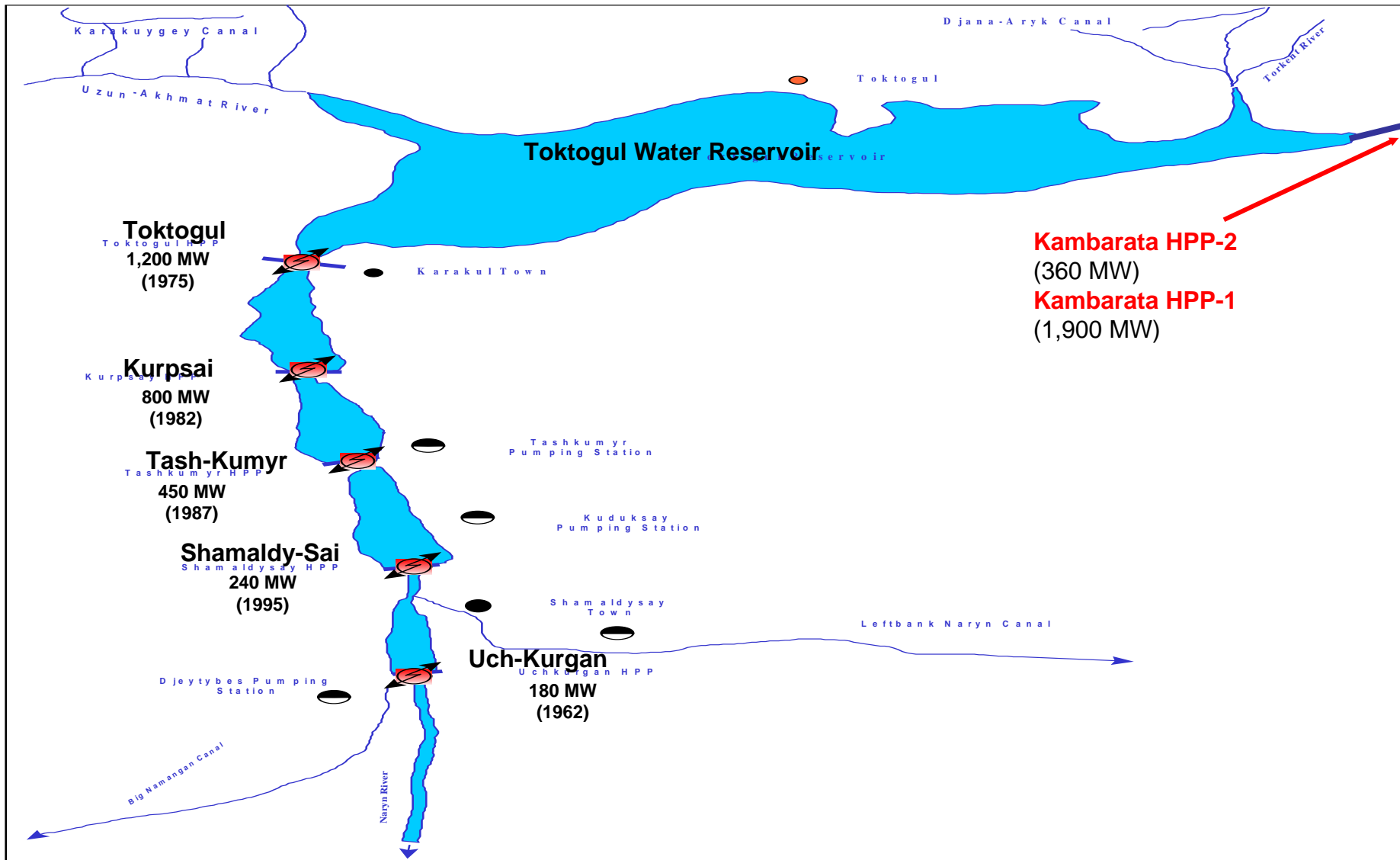
- **18 PPs (16 HPPs and 2 CHPPs) are operating in the Kyrgyz Republic;**
- **Installed capacity is 3,666 MW;**
- **Annual electricity output varies from 12 bln. KWh to 15 bln. KWh (depending on the water flow of the Naryn river).**

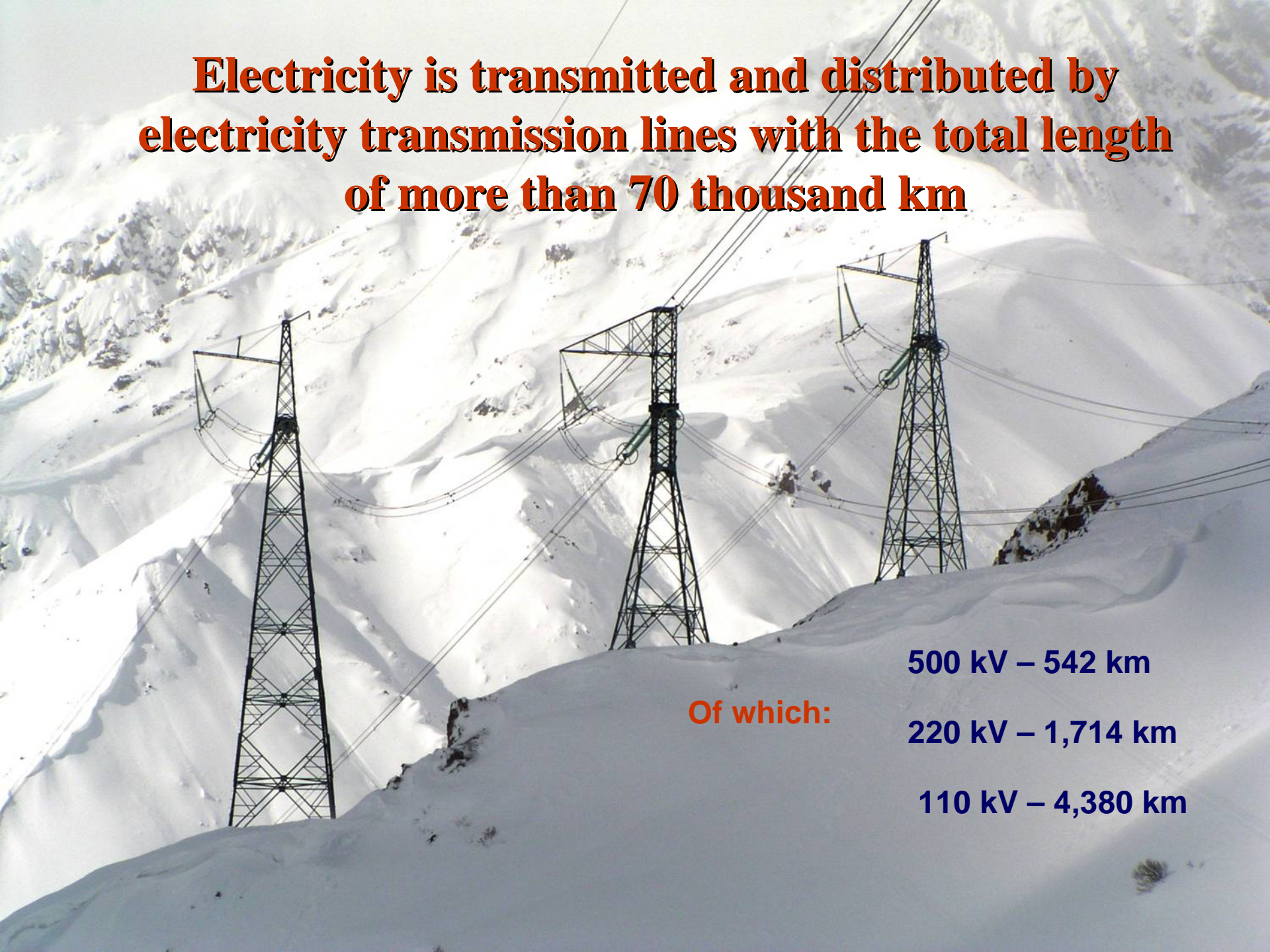
Power Plants of the Kyrgyz Republic

- Toktogul HPP (1,200 MW)
- Kurpsai HPP (800 MW)
- Tash-Kumyr HPP (450 MW)
- Shamaldy-Sai HPP (240 MW)
- Uch-Kurgan HPP (180 MW)
- At-Bashi HPP (40 MW)
- Small HPPs – 10 units (40 MW)

- ┌ Bishkek city CHPP (666 MW)
- Osh city CHPP (50 MW)

Toktogul is the only over-year regulation water reservoir in the region with the total volume of 19.5 km³. Five power stations of the Naryn cascade (2,870 MW) produce 12-14 bln. KWh a year





**Electricity is transmitted and distributed by
electricity transmission lines with the total length
of more than 70 thousand km**

500 kV – 542 km

Of which:

220 kV – 1,714 km

110 kV – 4,380 km

Electricity transmission systems

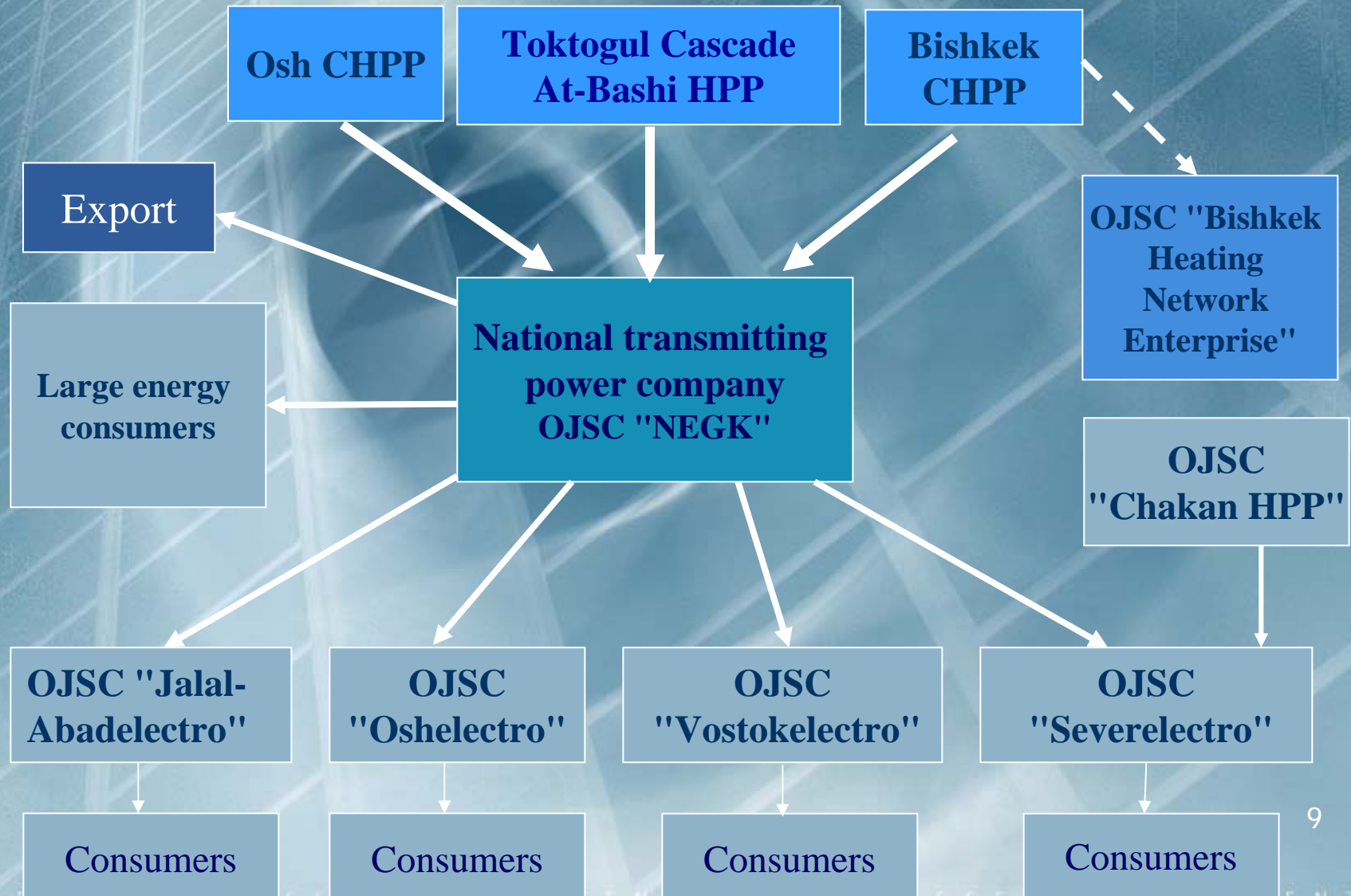
Quantity	Name	# of substations	Voltage (kV)	Length (km)
	Toktogul HPP – Lochin L-504	1	500	118
	Toktogul HPP - Frunze L-509	2	500	208
	Frunze - Djambul L-515	1	500	216
3	Total PTL – 550	2	500	542
33	Total PTL – 220	14	220	1,714
258	Total PTL – 110	174	110	4,380
294	Total PTL	190	110-220-500	6,636

Electricity Market Participants and Electricity Suppliers

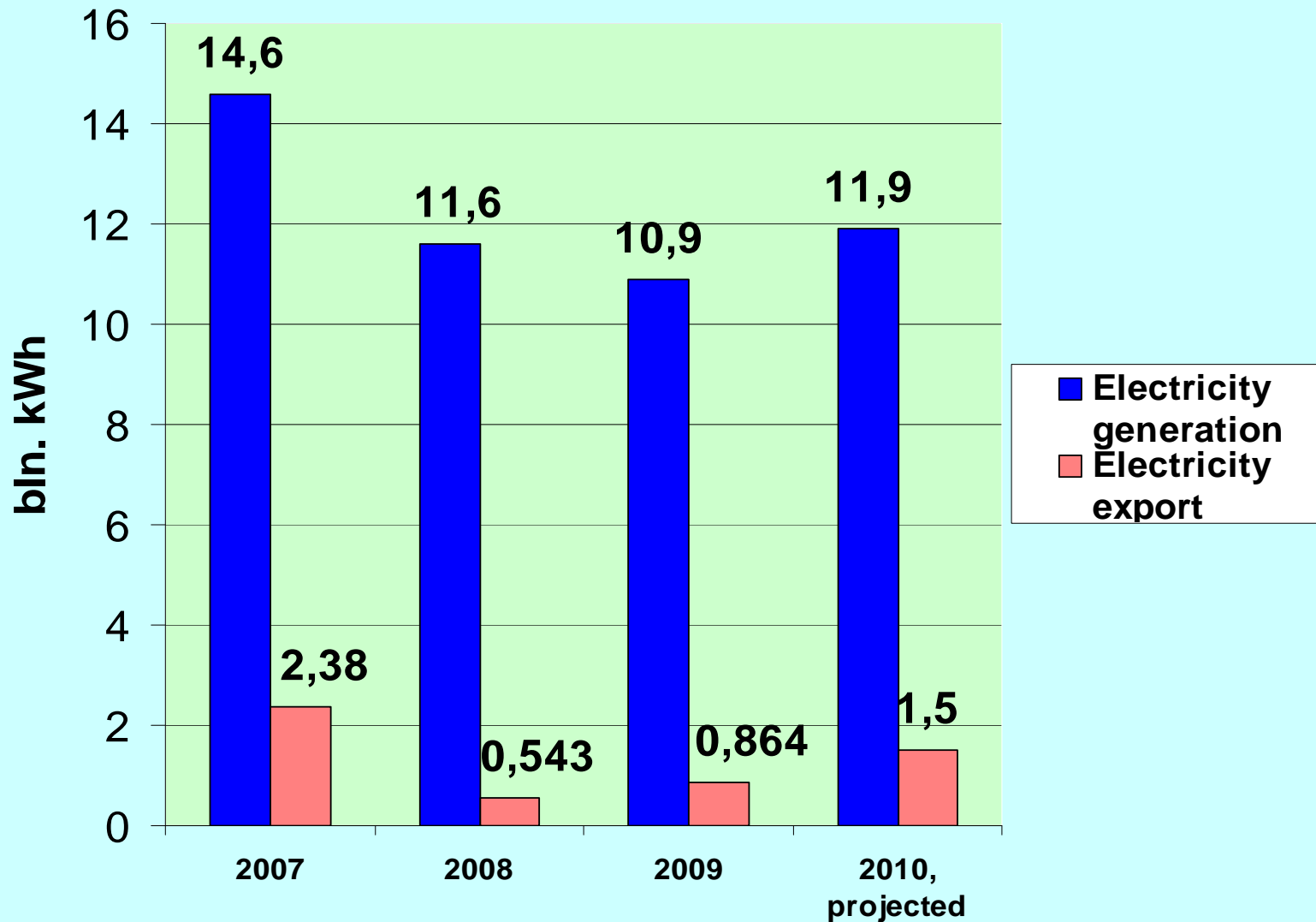
- Generating company – OJSC "Power Plants" (6 HPPs and 2 CHPPs)
- Hydropower Stations up to 30 MW (10 HPPs)
- Transmission company – OJSC "NEG of Kyrgyzstan"
- Distribution power companies – OJSC "DPC"

Kyrgyz Republic Energy Sector Structure

OJSC "Power Plants"



Electricity generation and export for 2007-2009



Projections on putting HHPs in operation

Name	Installed capacity. MW	Construction period (years)	2010	2015	2020	2025
Kambarata HPP № 1	1,900	2013 -2023			475	1,425
Kambarata HPP №2	360	2007-2012	120	240		
Upstream Naryn HPPs №№ 1,2,3	200	2012-2018			180	
Ak-Bulun HPP	200	2015-2019			200	
Kara-Keche CHPP	1,200	2016-2025			1,200	
Total			120	240	2,055	1,425

Construction of Kambarata HPP-2

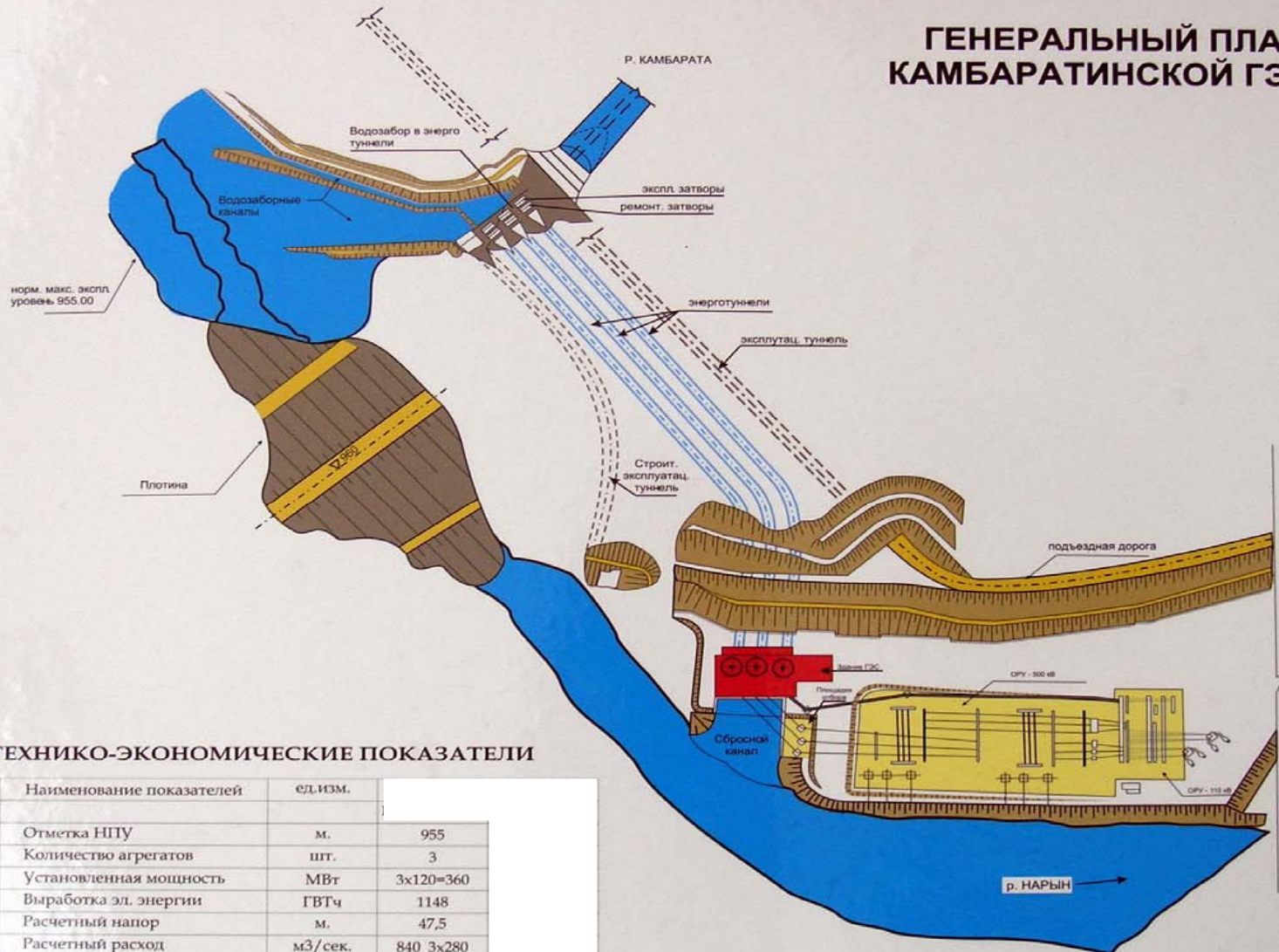
Key HPP's parameters

- Normal pool level (NPL) – 955 m
- Installed capacity – 360 MW (3x120 MW)
- Electricity generation – 1,148 mln. kWh
- Water reservoir capacity – 70 mln. m³
- ┘ Turbogenerator unit-1 was put in operation as of August 30, 2010



Master Plan for Kambarata HPP-2

ГЕНЕРАЛЬНЫЙ ПЛАН КАМБАРАТИНСКОЙ ГЭС-2



ТЕХНИКО-ЭКОНОМИЧЕСКИЕ ПОКАЗАТЕЛИ

№	Наименование показателей	ед.изм.	
1	Отметка НПУ	м.	955
2	Количество агрегатов	шт.	3
3	Установленная мощность	МВт	3x120=360
4	Выработка эл. энергии	ГВтч	1148
5	Расчетный напор	м.	47,5
6	Расчетный расход	м ³ /сек.	840 3x280
7	Макс. расчетный расход	м ³ /сек.	2630
8	Объем водохранилища	млн.м ³	70

Construction of Kambarata HPP-1

Key parameters

NPL is 1,190 m

- Installed capacity – 1,900 MW (4x475 MBT)
- Electricity generation – 5,088 mln. kWh
- Water reservoir capacity – 4.650 mln. m³
- According to estimates of Western experts (US company "Harza" and Canadian company "SNS Shavinigan") the estimated construction cost would be US\$1.7 billion
- ┌ At present a construction feasibility study is conducted



The HPP site according to the project

Prospects for development of small HPP in Kyrgyzstan for 2010-2025

Activities	Number	Capacity, MW	Generation, Mln. kWh
Rehabilitation of existing HPPs	33	22	100
Construction of new HPPs:			
At water reservoirs	7	75	220
At river stations	92	178	1,200

Construction and commissioning of power transmission lines and substations to increase transmission capacity and ensure electricity export

- Construction of 500/220 kV SS "Datka" and reconstruction of a 220 kV power transmission line;
- Construction of the 500 kV PTL "Datka - Kemin" with the 500 kV SS "Kemin";
- Construction of a 110 kV PTL "Aigultash – Samat";
- Construction of the 500 kV PTL "Datka – Khudjant" to supply electricity from Central Asia to South Asia under the CASA-1000 Project.

Water and Energy Regime of the Kyrgyz Republic

- Provided by the Toktogul HPPs cascade with the largest over-year regulation Toktogul reservoir with the total water capacity of 19.5 bln. m³.
- As of September 16, 2010 the volume of water in the Toktogul reservoir was 19.5 bln. m³, which is 6.9 bln. m³ more compared to the same date of 2009.
- Favorable conditions for water accumulation enable to export additional electricity, thus, as of September 16, 2010 export of electricity to Kazakhstan totaled 961.4 mln. kWh and to China – 0.759 mln. kWh



Achieving water-energy and environmental security

- rational and efficient use and protection of water and power resources in the territory of Central Asia;
- mutual understanding among people of CA countries and increasing the awareness of the need for the mutually beneficial and rational use of water and power resources;
- interstate cooperation on water flushes and supply of fuel resources as compensation;
- annual interstate agreements on the use of water and power and fuel resources.
- └ supply of counterpart fuel and energy resources under the scheme "water – electricity – fuel".

Key directions of the state policy in energy

- Power enterprise management system reforms.
- Introduction of transparency principles and public discussions in the sector management and regulation process, establishment of a system of public control and accountability of companies for revenues and expenditures.
- ┘ ensuring the quality and affordability of electricity supply services.

Measures taken to ensure energy companies transparency

On July 20, 2010 the KR President issued the Decree "On Transparency Initiative in the Fuel and Energy Industry of the Kyrgyz Republic", which stipulates the following measures:

- - establishment of a Supervisory Board on a voluntary basis;
- - using earmarked deposit accounts and other transparent arrangements;
- - use, monitoring and enforcement of operations contracts;
- - introducing a transparent procedure for tariff setting;
- - development of modern and accurate IT systems to monitor operations of FEI enterprises;
- └ - adopting open competitive bidding for electricity export and import and procurement of fuel.

Conclusion

- Future cooperation in the energy sector shall become a positive factor for efficient use of energy resources of all countries. And first of all mutual cooperation shall be aimed at preserving organic fuel and improving the environment.

*Thank you for your
attention!*