



**Ministry of energy
of the Kyrgyz Republic**

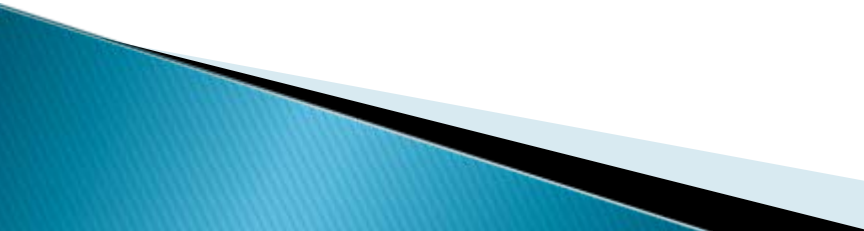


CMD projects in the Kyrgyz Republic Hydropower

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The Clean Development Mechanism **in the Kyrgyz Republic**

- The Kyrgyz Republic ratified the UN Framework Convention on Climate Change (UNFCCC) in January 14, 2000
 - The Kyoto Protocol was ratified January 15, 2003
 - In order to guide and coordinate the implementation of international commitments of the Kyrgyz Republic in the UNFCCC and the Kyoto Protocol a National Committee on climate change was created by Presidential Decree of July 18, 2005 № 281
 - In 2006, the State Agency of Environmental Protection and Forestry under the Government of the Kyrgyz Republic appointed by the Executive Body on the Clean Development Mechanism (CDM) of the Kyoto Protocol
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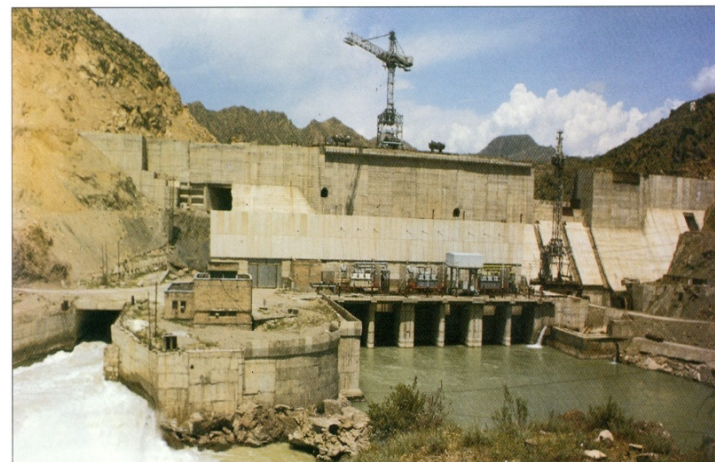
The potential of renewable energy sources in the Kyrgyz Republic

- Solar energy (heat) - 421,3 thous. Gcal
- Solar energy (electric) – 22'500 MWh
- Wind power – 44'600 MWh
- **Small streams - 5 billion kWh**
- Biomass – 1'300'000 MWh

Practical use of renewable energy sources in the Kyrgyz Republic is less than 1 %

Hydropower of the Kyrgyz Republic

- Hydropower is main direction of the energy sector development in the Kyrgyz Republic
- Hydropower potential of the Kyrgyz Republic is 142 billion kWh
- The Kyrgyz Republic takes third place among the CIS countries on hydropower potential after Russia and Tadzhikistan
- It is possible to construct 33 hydropower plants with capacity of 6'450 MW and annual generation more than 22 billion kWh on the Naryn river



Hydropower plants of the Kyrgyz Republic

➤ Toktoghul HPP	(1200 MW)
➤ Kurpsai HPP	(800 MW)
➤ Tash-Kumyr HPP	(450 MW)
➤ Shamaldy-Sai HPP	(240 MW)
➤ Uchkurgan HPP	(180 MW)
➤ At-Bashy HPP	(40 MW)
➤ Kambar-Ata HPP №2	(120 MW)
➤ Small HPP (12 ps.)	(40 MW)
Total installed capacity	3070 MW

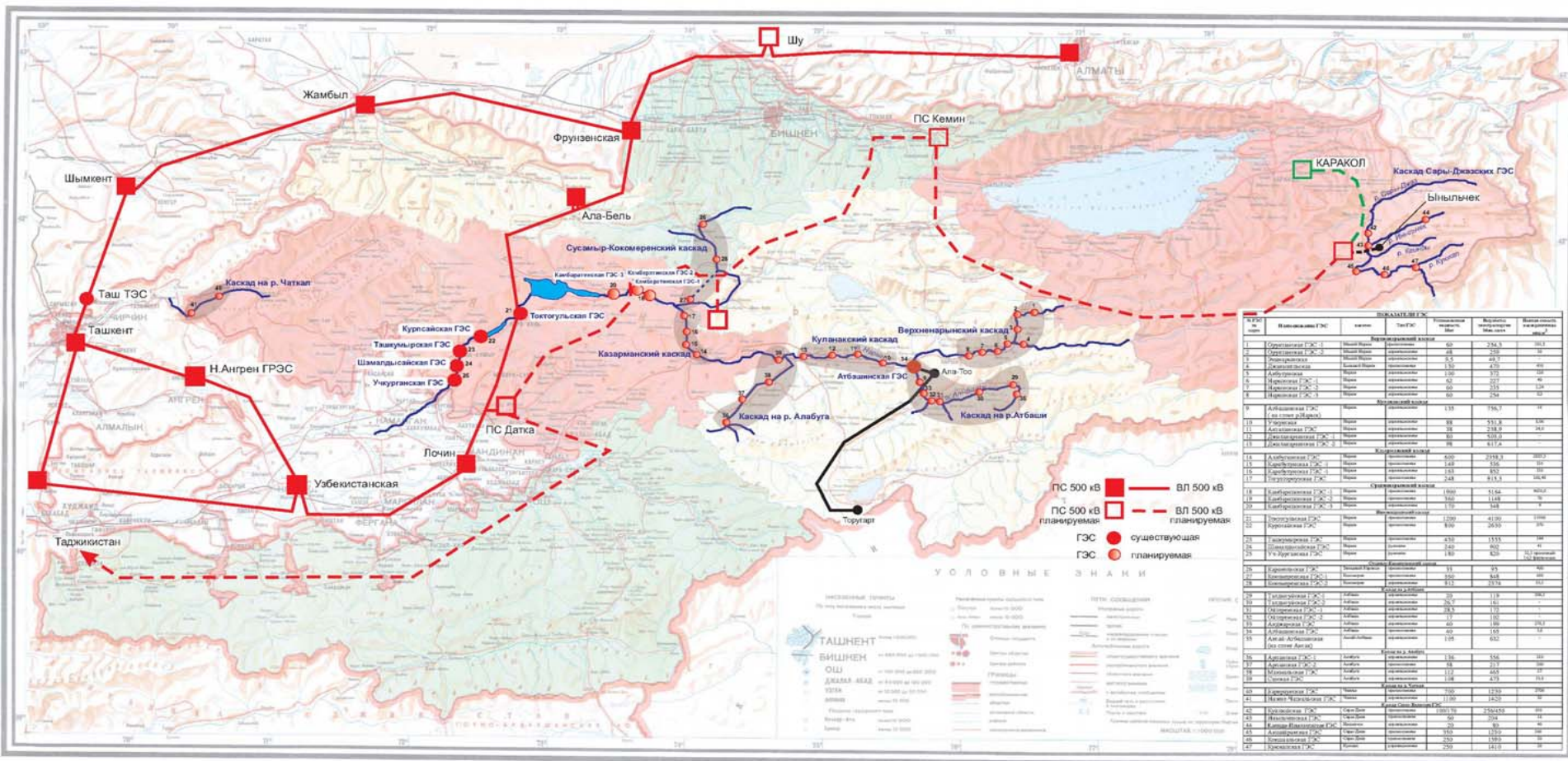
Power sector of the Kyrgyz Republic

- Installed capacity: 3786 MW
 - **Hydropower:** 3070 MW (84%)
 - Thermal: 716 MW (16%)
- Annual generation: 11,9 billion kWh (2010 year)
 - **Hydropower:** 11,0 billion kWh (92%)
 - Thermal: 0,9 billion kWh (8%)
- Resources:
 - **Hydropower:** 18500 MW
 - Coal (recoverable): 1,3 billion tons
 - Hydrocarbons (gas, oil): 145-260 million tons

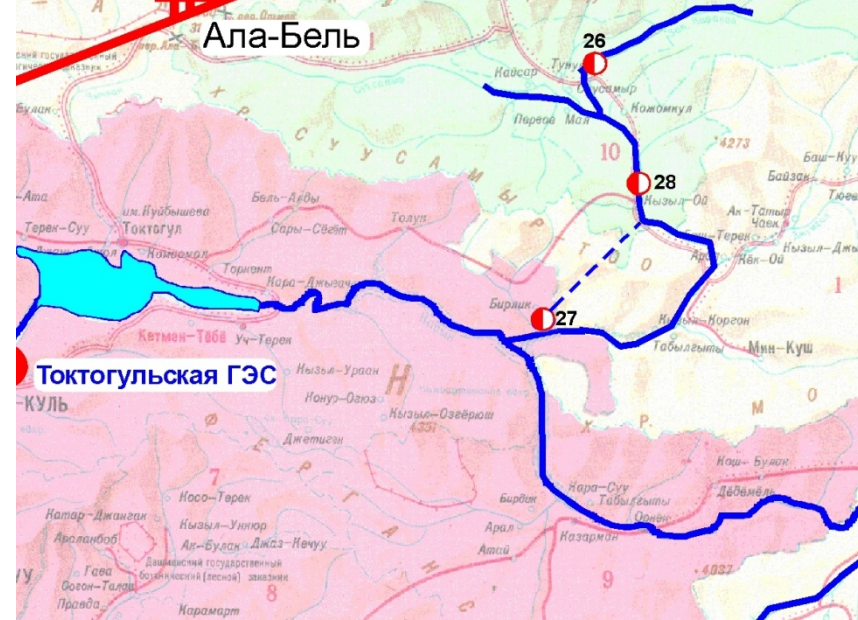
Prospects for development of hydroelectric potential of the Naryn River

No	Title of project	Description of project
1	The Series of HPPs on Suusamyr and Kokomeren rivers	Three HPPs with total capacity 1'305 MW and generation 3'317 million kWh (Preliminary negotiations are held with Chinese company "SINOGRIDRO")
2	The Kazarman Series of HPPs	Four HPPs with total capacity 1'160 MW and generation 4'661 million kWh
3	The Kulanak Series of HPPs	Five HPPs with total capacity 439 MW and generation 2'668 million kWh
4	The At-Bashy Series of HPPs	Six HPPs with total capacity 237 MW and generation 1'385 million kWh
5	The Series of HPPs on the Alabuga River	Four HPPs with total capacity 414 MW and generation 1'711 million kWh
6	The Upper Naryn Series of HPPs	Four HPPs with total capacity 191MW and generation 1'054 kWh

СХЕМА РАСПОЛОЖЕНИЯ СУЩЕСТВУЮЩИХ И ПЕРСПЕКТИВНЫХ ГЭС КЫРГЫЗСКОЙ РЕСПУБЛИКИ

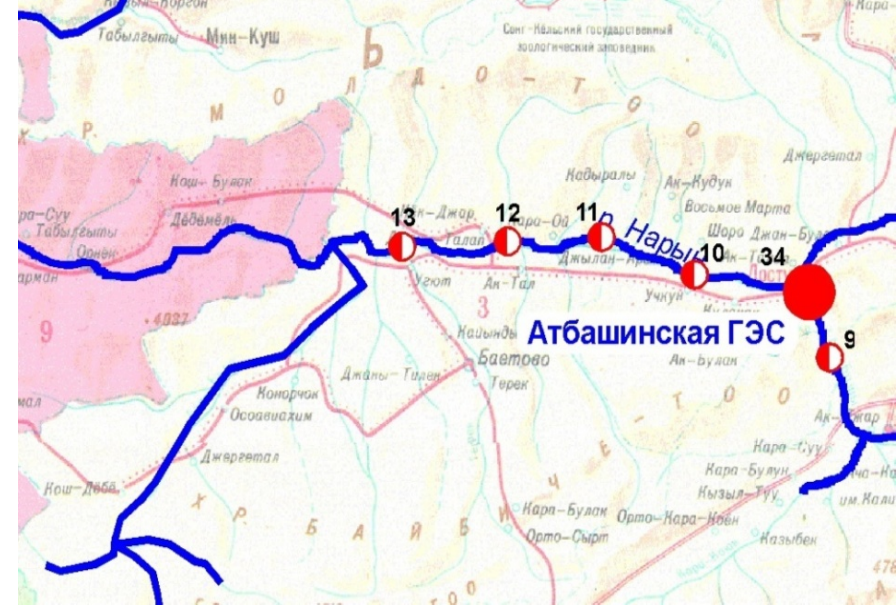


The Suusamyr- Kokomerren Series of HPPs



Title	Volume of the reservoir, million cbm	Installed capacity, MW	Generation, Million kWh
Karakol	400	33	95,0
Kokomerren-1	680	360	848
Kokomerren-2	19,5	912	2'374
Overall		1'305	3'317

The Kulanak series of HPP



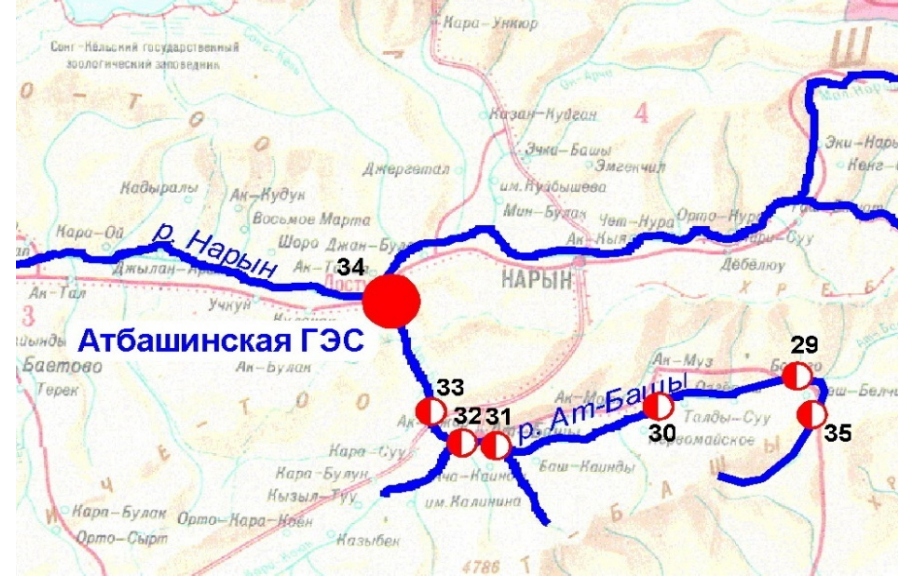
Title	Volume of reservoir, mln.m3	Installed capacity, MW	Output, mln. KWh
Atbashi (on Naryn stream)	16,0	135	756,7
Uchkum	8,6	88	551,8
Aktaly	24,0	38	238,9
Dzhilanaryk-1	-	80	503,0
Dzhilanaryk-2	-	98	617,4
Total		439	2667,8

The Kazarman series of HPP



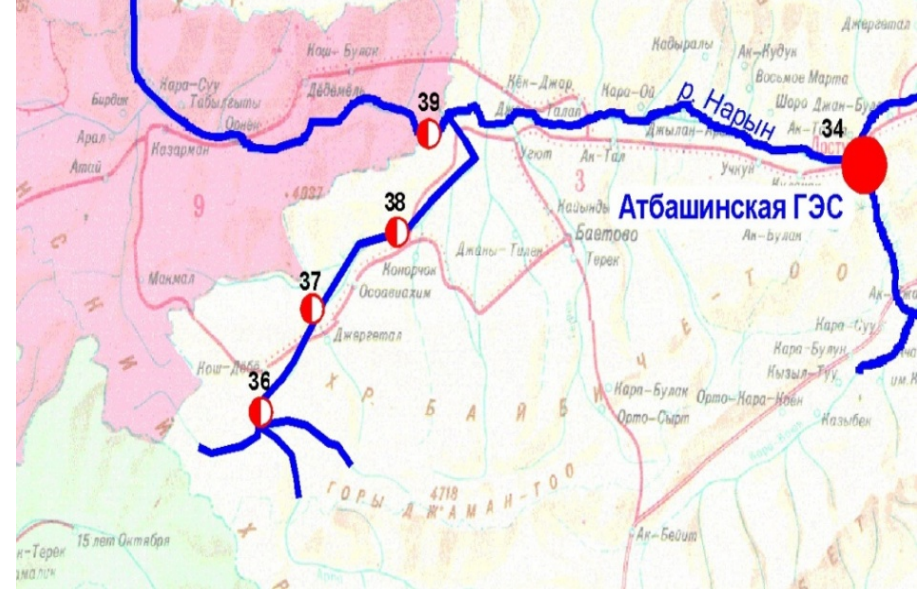
Title	Volume of reservoir, mln.m3	Installed capacity, MW	Output, mln. KWh
Alabuga	2835,5	600	2358,3
Karabulun-1	110,0	149	536,0
Karabulun-2	110,0	163	852,0
Toguztorouz	168,46	248	915,3
Total		1160	4661,6

The Atbashy series of HPP



Title	Volume of reservoir, mln.m3	Installed capacity, MW	Output, mln. KWh
Taldysuu 1	306,5	20,0	119,0
Taldysuu 2	-	26,7	161,0
Oytersken 1	-	28,5	172,0
Oytersken 2	-	17,0	102,0
Akjar	278,3	40,0	199,0
Atbashy	-	40,0	165,0
Total		172,2	918,0

The Alabuga series of HPP



Title	Volume of reservoir, mln.m3	Installed capacity, MW	Output, mln. KWh
Arpan 1	310,0	136,0	556,0
Arpan 2	200,0	58,0	217,0
Makmal	27,0	112,0	465,0
Saz	19,8	108,0	473,0
Total		414,0	1711,0

Small-scale hydropower in Kyrgyz Republic

- ▶ The hydropower potential of small rivers and streams is up to 5-8 billion kWh per year
- ▶ In nearest perspective 90 new small hydropower plants can be constructed with total capacity up to 180 MW and annual production - 1.0 billion kWh of electricity
- ▶ There is also an opportunity of reconstruction of previously existing 39 small hydropower plants with total capacity of 23 MW and average annual output about 10 million kWh of electricity

Existing small HHP in the Kyrgyz Republic

- ▶ Series of Alamedin HPP (7 stations) - 22.18 MW;
- ▶ Lebedinov HPP - 7.6 MW;
- ▶ Kemin HPP - 8.7 MW;
- ▶ Kalinin HPP - 1.4 MW;
- ▶ Issyk-Ata HPP - 1.6 MW;
- ▶ Naiman HPP - 0.6 MW.

The total capacity of small
hydropower plants - 42 MW

Ongoing projects on small hydropower

- ▶ The project "Strategic planning development of small hydropower in the Kyrgyz Republic" funded by the EBRD.

The first phase of the project has been completed and the implementation of second phase has been started. During the second phase 4 pilot feasibility studies are going to be developed and offered to investors for the implementation.

- ▶ Medium-sized project "Development of small hydro" is being implemented jointly with UNDP.

In this project the development of the regulatory framework in the field of renewable energy and small hydropower, increasing of the potential of professionals of the Ministry of Energy and development of renewable energy feasibility studies for 5 small hydro projects are stipulated.

4 pilot projects recommended by the project
"Strategic planning development of small hydropower
in the Kyrgyz Republic "

- 1.HPP Sokuluk-5 1.5 MW;
- 2.Oy-Alma HPP - 7.7 MW;
- 3.Ortho-Tokoi HPP - 20 MW;
- 4.Tortgul HPP - 3 MW.

Long-term markets for electricity:

<i>The Kyrgyz Republic</i>	(500 kV "Datka-Kemin")
<i>Kazakhstan</i>	(500 kV, "Kemin-Almaty")
<i>Tajikistan</i>	(500 kV "Datka-Khujand", the project CASA-1000)
<i>Afghanistan</i>	(500 kV "Sangtuda Kabul", the project CASA-1000)
<i>Pakistan</i>	(500 kV, "Kabul-Peshawar", the project CASA-1000)

The legislative framework of the Kyrgyz Republic

- ▶ The Law "On Energy" (1996);
- ▶ The Law "On Electrical energy" (1997);
- ▶ The Law "On Energy Saving" (1998);
- ▶ The Law "On Renewable Energy Sources" (2008);
- ▶ The National Energy Program for 2008-2010 years and the strategy of development of the energy sector up to 2025 year (2008);
- ▶ The program of development of small hydropower (2009)

Thank you for your attention!

