

Hydroelectric Dams and Conflict in Central Asia

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1) Policy – Constraints

Main constraints influencing Hydro Power Plant (HPP) and water-management policy choices for the countries of Central Asia.

	Electricity supply reliability	Water Consumption share as per treaty (Syrdaria)	Share of water resources allocated to agriculture	Estimated population growth 2050	Net import of food	Proportion of irrigated land in arable land	Share of agriculture in GDP
Kazakhstan	Satisfactory	44%	81%	33	25%	10% 20%	6%
Kyrgyzstan	Volatile	2%	93%	52	25%	50% 60%	33%
Tajikistan	Volatile	8%	91%	84	50% 100%	80%	18%
Turkmenistan	Volatile	NA	97%	33	25%	80%	20%
Uzbekistan	Volatile	46%	93%	54	25%	80%	23%

2) Existing HPP generation capacity and peak demand variations

(Expressed as the relationship between energy consumption during the seasonal summer slump related to peak winter consumption).

	HPP Power generation capacity	Peak demand variation
South Kazakhstan	550 MW	61.5%
Kyrgyzstan	2950 MW	55%
Uzbekistan	1700 MW	90%

Both Kazakhstan and Uzbekistan will withdraw from the Central Asia interconnected power system and develop their domestic systems independently. For now at least, Kyrgyzstan is assured of support from Kazakhstan thanks to the two countries' friendly relations.

3) Provenance of Aral-Sea basin natural water resources

Mean annual river runoff in the Aral Sea basin, km³ / year

Country	River basin		Aral Sea Basin	
	Syrdarya	Amudarya	km ³	%
Kazakhstan	2.43	-	2.43	2.1
Kyrgyzstan	26.85	1.60	28.45	24.4
Tajikistan	1.00	49.58	50.58	43.4
Turkmenistan	-	1.55	1.55	1.3
Uzbekistan	6.17	5.06	11.22	9.6
Afghanistan and Iran	-	21.59	21.59	18.5
China	0.76	-	0.76	0.7
Total for the Aral Sea Basin	37.20	79.38	116.58	100

4) Policy – options

The following table captures some of the main controversies with respect to the governance of the Aral-Sea basin natural water resources.

	Priorities of use		Water-trade regime		Release-regime		Water-sharing criteria		Quotas regime		Compensation for water storage	
	Electr. generation	Irrigation	Monetisation	Barter (status quo)	Power regime	Irrigation regime	Per capita	Status quo	Revisionist	Status quo	Revisionist	Status quo
Kaz.	NA		X			X		X		X	NA	
Kyrg.	X		X		X			X	X		X	
Taj.	X		X		X			X	X		X	
Turkm.		X		X		X		X		X		X
Uz.		X		X		X	X			X		X

NA: Not applicable

5) Basic information about bilateral and multilateral treaties and agreements that have been signed on water issues over the years.

- Agreement between the Republic of Kazakhstan , the Republic of Kyrgyzstan, the Republic of Uzbekistan, the Republic of Tajikistan and Turkmenistan on “Cooperation in the Field of Joint Water Resources Management and Conservation of Interstate Sources”, (1992).
- Nukus Declaration on Sustainable Development Issues of Aral Sea Basin (1995)
- Agreement between Republic of Kazakhstan, Kyrgyz Republic, Republic of Tajikistan, Turkmenistan, and Republic of Uzbekistan on “Joint activities in addressing the Aral Sea and the zone around the Sea crisis, improving the environment, and enduring the social and economic development of the Aral Sea region”, (1993).
- Agreement between the Government of the Republic of Kazakhstan, the Government of the Kyrgyz Republic and the Government of the Republic of Uzbekistan on Cooperation in the Area of Environment and Rational Nature Use (1998)
- Agreement between the Governments of the Republic of Kazakhstan, the Kyrgyz Republic, and the Republic of Uzbekistan on the Use of Water and Energy Resources of the Syr Darya Basin (1998)
- Protocol on Inserting Amendments and Addenda in the Agreement between the Governments of the Republic of Kazakhstan, the Kyrgyz Republic, and the Republic of Uzbekistan on the Use of Water and Energy Resources of the Syr Darya Basin, of 17 March 1998
- Agreement between the Governments of the Republics of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan, and the Republic of Uzbekistan on “the Parallel Operation of the Energy Systems of Central Asia”, (1999).
- Agreement between the Government of the Republic of Kazakhstan, the Government of the Kyrgyz Republic, the Government of the Republic of Tajikistan and the Government the Republic of Uzbekistan on “Cooperation in the Sphere of Hydromet”, (1999).