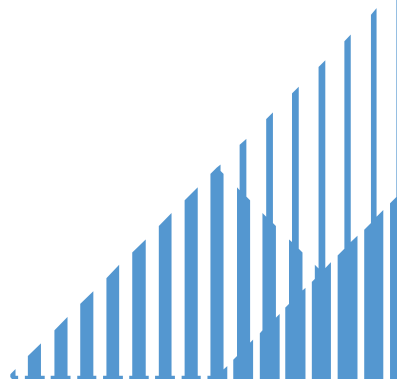




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Kyrgyzstan's Energy Sector Future: Decarbonization and Systemic Dependency

Kanat Tilekeyev, Senior Research Fellow, IPPA, GSD



Outline

1

Historical review of the energy sector in Central Asia

2

Energy System Development between 2005 and 2024

3

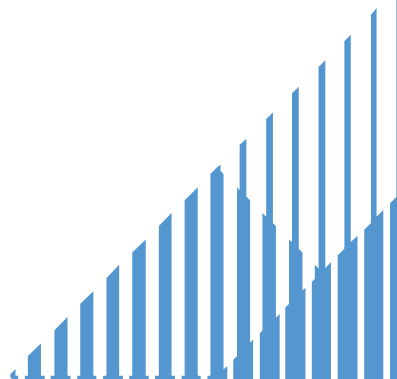
Green transformation prioritization in KG in 2023-2025

4

New carbon investment plans

5

Dilemma of choice

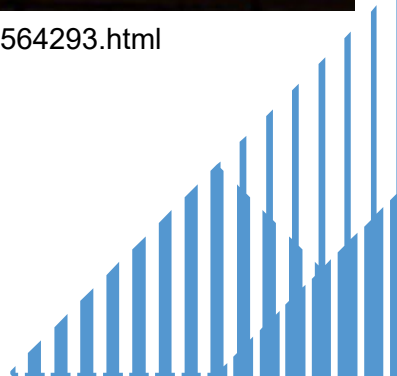


Central Asian Power System (CAPS)

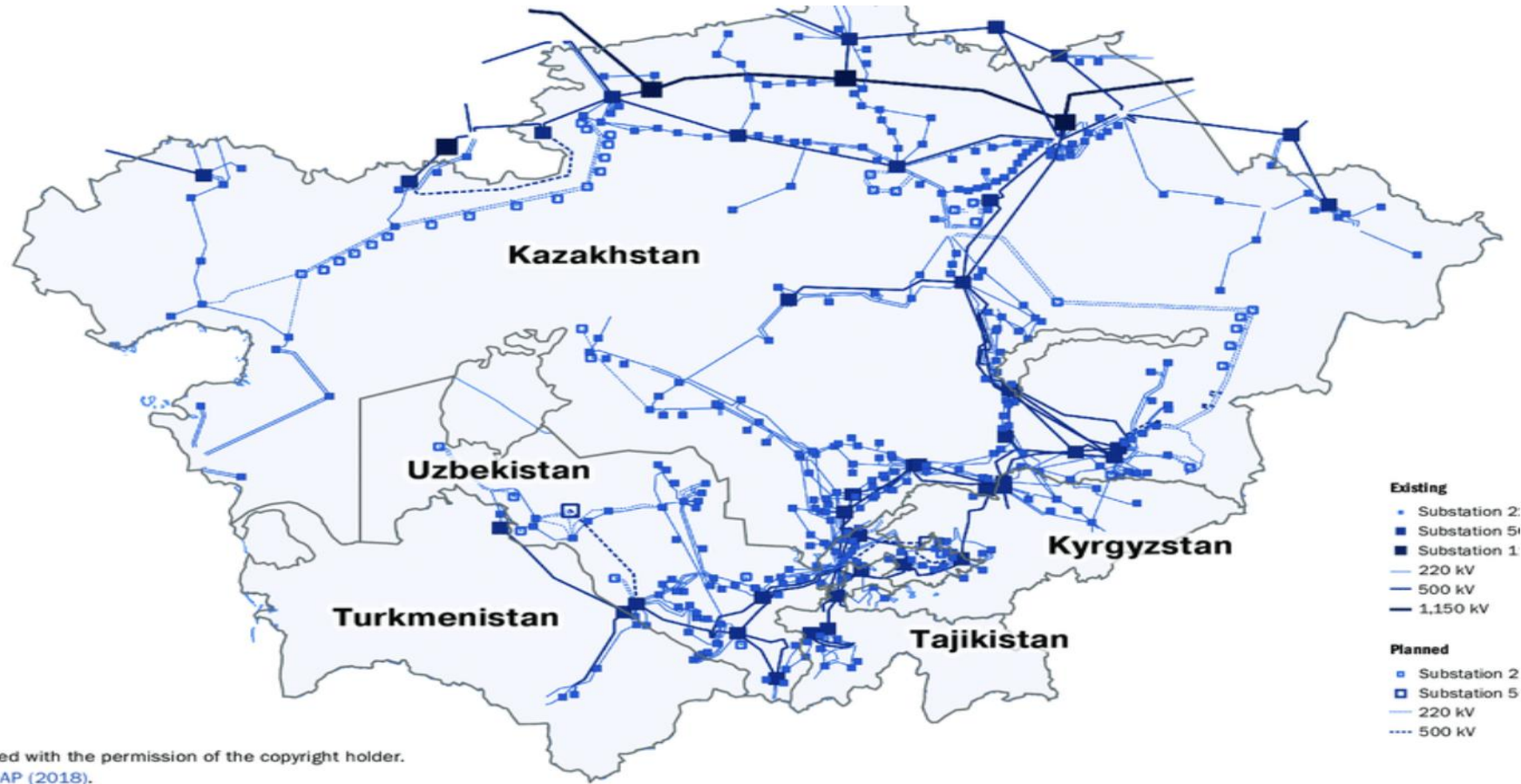
- Unified “electricity ring” linking Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan & Uzbekistan
- Operated under Moscow’s **Central Dispatch Center**, financed by USSR Ministry of Energy
- Design principle: **resource specialization**
 - ~30% Hydropower → Kyrgyzstan & Tajikistan (upstream, water-rich)
 - ~70% Thermal → Uzbekistan, Turkmenistan, Kazakhstan (downstream, fuel-rich)



Source: <https://www.rferl.org/a/central-asia-severe-electricity-shortages/31564293.html>



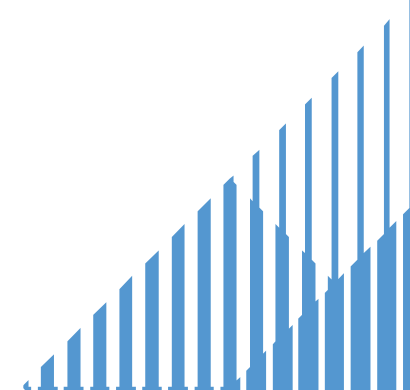
CAPS Map



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: ESCAP (2018).

Central Asia Power System (the main 220-500 kV grids)*

Source: https://www.researchgate.net/figure/Central-Asia-Power-System-the-main-220-500-kV-grids_fig3_353775600



— Kyrgyzstan – Energy System Profile

Energy Infrastructure – Kyrgyzstan

Total electricity generation capacity: **3.87 GW**

Hydropower plants (15 HPPs): ~3.0 GW (dominant source)

Thermal power plants (Bishkek & Osh): ~0.812 GW

Transmission Network

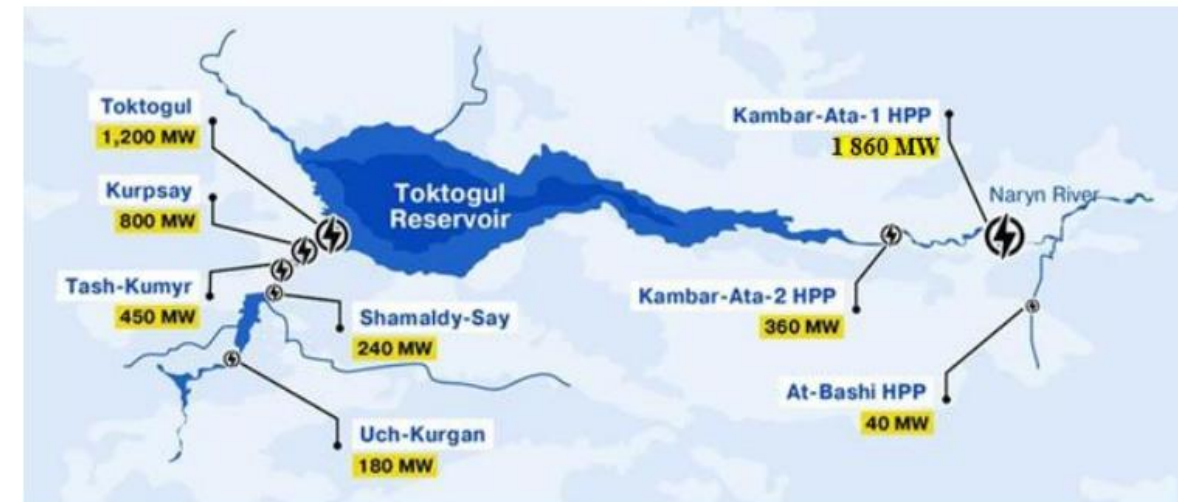
Total length: **80,000+ km** / **500 kV lines: 946 km** / **220 kV lines: 2,019 km** / **110 kV lines: 4,613 km** / ~190 transformer substations

Spatial Imbalance

~80% of hydropower capacity located in the **south**

~60% of electricity demand concentrated in the **north**

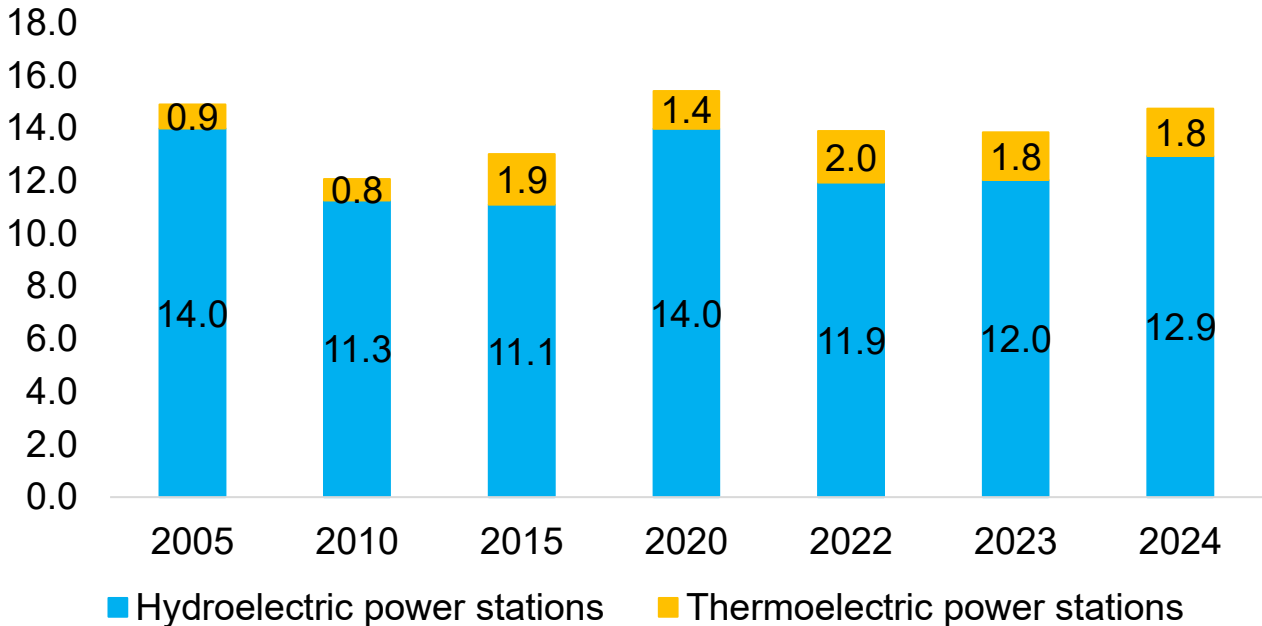
Connected via **500 kV transmission line** (critical for system balance)



Kyrgyzstan – Energy System Profile (2)

Electricity balance	2005	2010	2015	2020	2022	2023	2024
Production	14.9	12.1	13.0	15.4	13.9	13.8	14.7
Imported	0.0	0.1	0.7	0.4	2.8	3.5	3.8
Distribution - consumption+losses	14.9	12.2	13.8	15.8	16.7	17.3	18.6
Incl.export	2.7	1.8	0.2	0.3	0.6	0.1	0.2

Production of electricity by type of power-stations (billion kilowatt-hours) in 2005-2024



High dependence on hydropower (~90% of electricity generation)

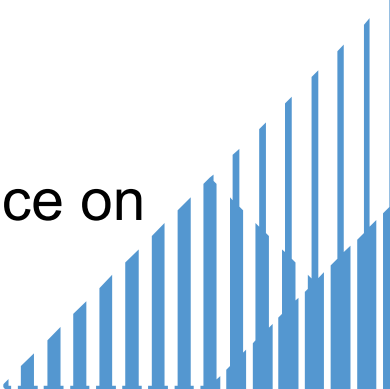
Coal and natural gas mainly used for heating

Key infrastructure: Toktogul hydropower cascade

Aging infrastructure and high transmission losses

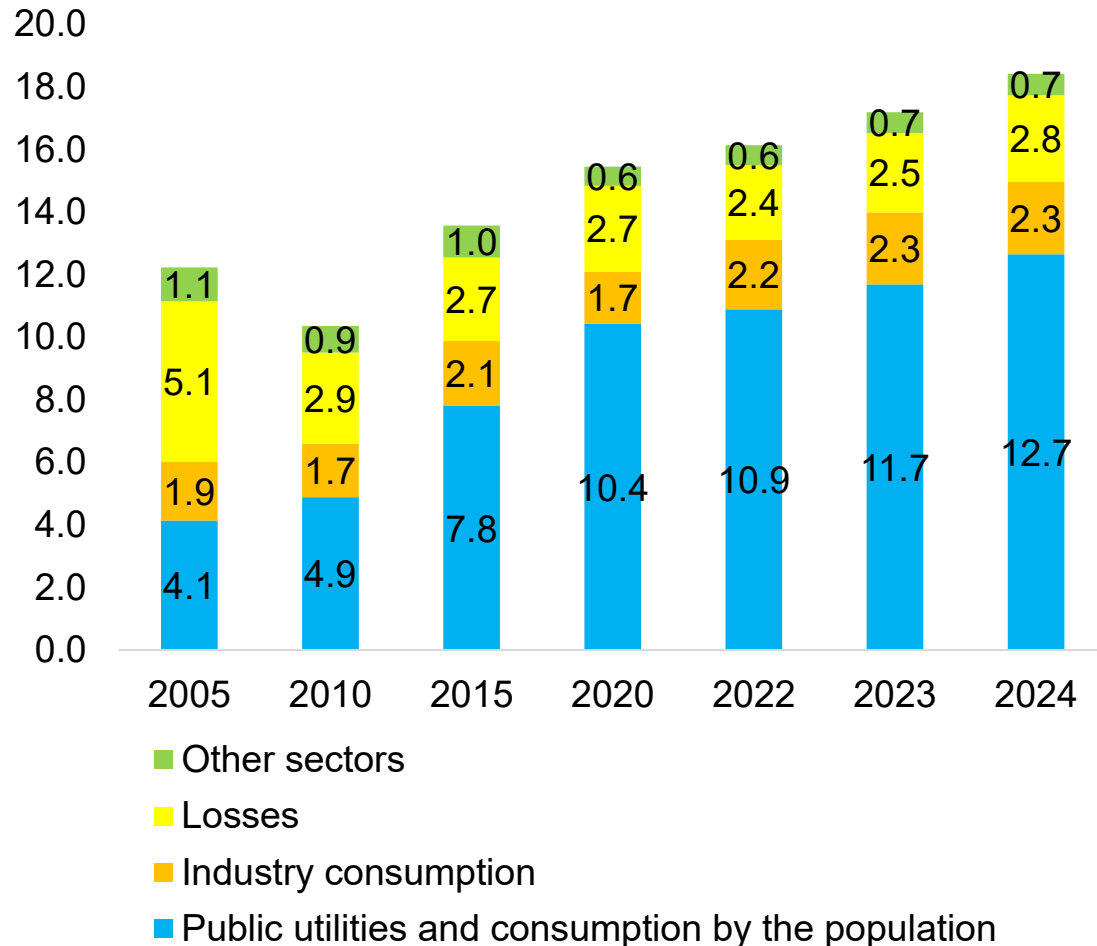
Winter energy shortages; reliance on imports increased

Source: National Statistical Committee

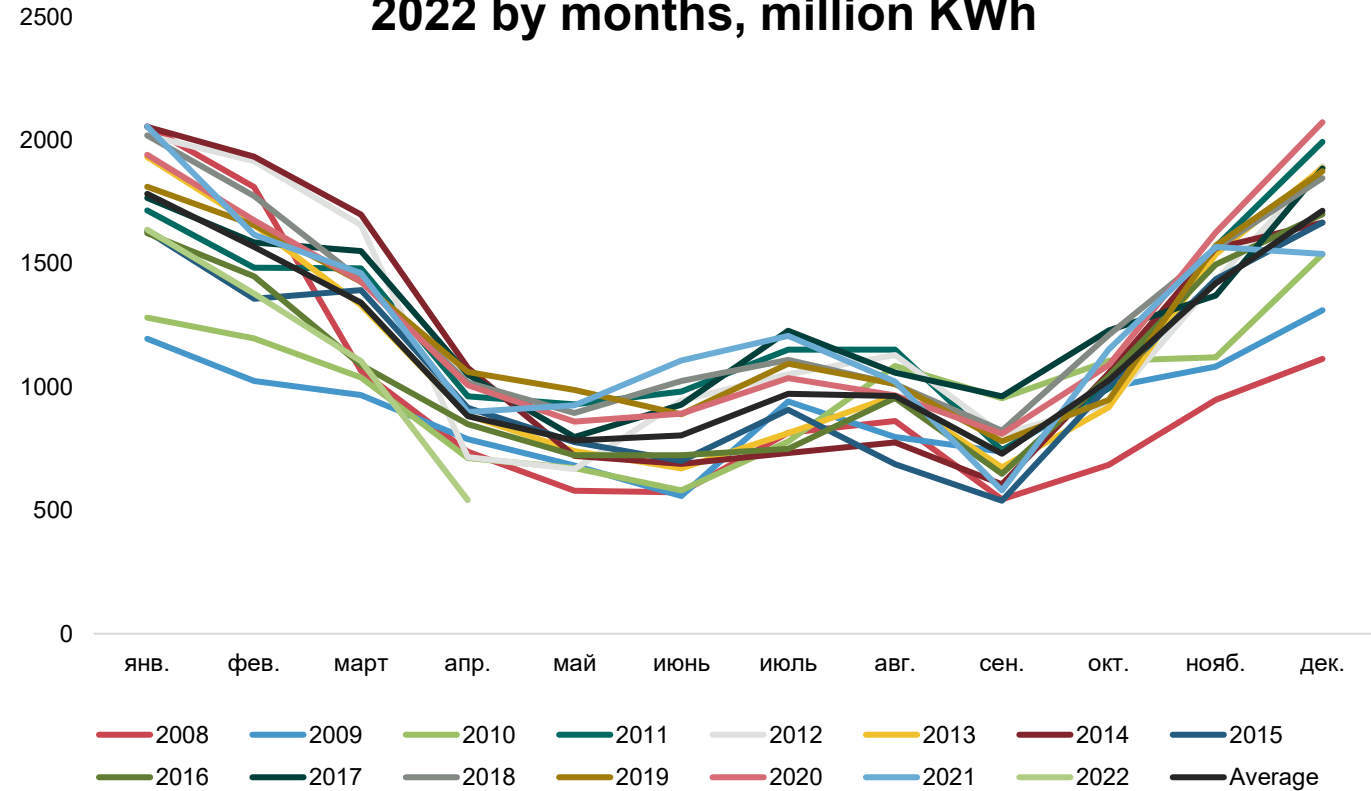


Kyrgyzstan – Energy System Profile (3)

Electricity consumption by sectors in 2005-2024, billion kWh



Electricity production in Kyrgyzstan in 2008-2022 by months, million KWh

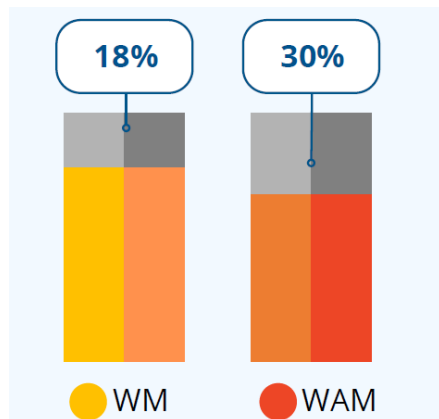


Source: National Statistical Committee

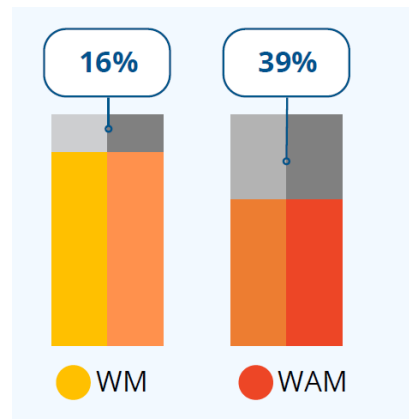
Green Agenda and New Commitments of Kyrgyzstan

- Kyrgyzstan joined the Paris Agreement on **18 February 2020**
- First NDCs was adopted in Kyrgyzstan in October 2021. Most recent NDCs (third version) was adopted in September 2025.
- According to NDC (3.0) Kyrgyzstan committed to decrease emissions:

By 2030

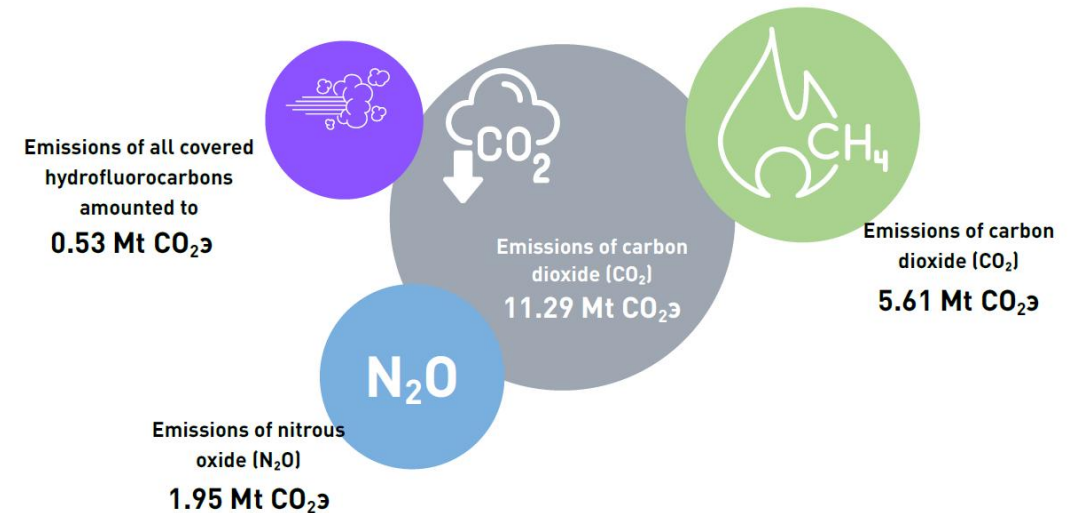


By 2035

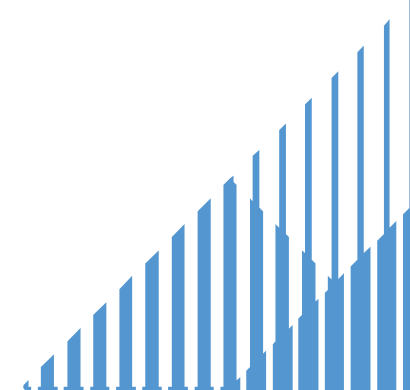


17.78 Mt CO₂e in 2030, and 23.95 Mt CO₂e in 2035

Total emission in 2023 - 19.38 Mt CO₂e – energy sector 55% of emissions

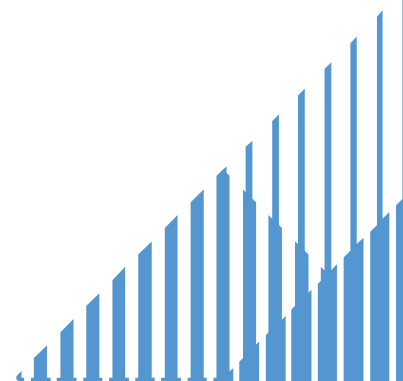


Source: NDC 3.0



Green Agenda and New Commitments of Kyrgyzstan (2)

- The **Concept of achieving carbon neutrality** in the Kyrgyz Republic was officially adopted on July 3, 2025, by Resolution No. 397 of the Cabinet of Ministers of the Kyrgyz Republic. This is the first document approved by the Kyrgyz government with a clear action plan.
- Action Plan based on the NDC 2.0 and consists of the measures to accelerating the development of renewable energy sources:
 - Hydropower – increasing the capacity of existing hydroelectric power plants, construction of new hydroelectric power plants, support of existing and construction and launch of new small hydroelectric power plants;
 - Expected an updated version of the Action Plan with the solar and wind projects in remote and mountainous areas of Kyrgyzstan

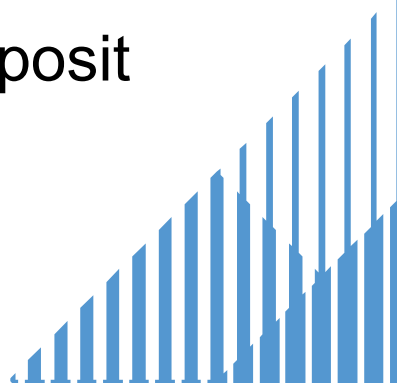


Kyrgyzstan plans construction of Kara-Keche Coal Thermal Power Plant (TPP) with a capacity of 1,200 megawatts by 2030

- Coal reserves: ~2 billion tons; largest deposit at Kara-Keche (operated by Kyrgyzkomur)
- In June 2025: Electric Stations OJSC launched tender for 1,200 MW coal plant
- Two phases: 600 MW (\$934.4m) + 600 MW (\$370.6m)
- Expected output: 7.8 billion kWh/year
- September 2025: tender cancelled due to incomplete bids



- Land area allocated for the plant : 118 ha
- Location: Zhumgal district, Naryn Province
- 8 km upstream of Dyikan village
- 35 km from Kara-Keche coal deposit



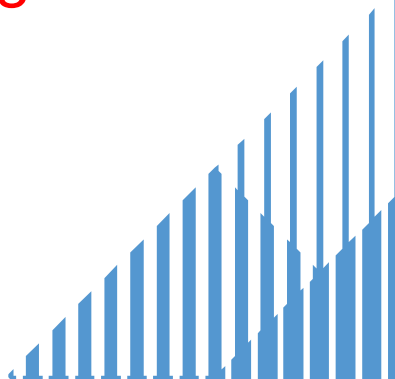
New Coal Power Plant Location



- January 22: Energy Minister Taalaibek Ibrayev met with an international consortium (including GPRC, NRP, and KCG)
- March 21, 2026: President Sadyr Japarov announced the start of construction of the 1,200 MW Kara-Keche thermal power plant in Naryn

Dilemma of Choice

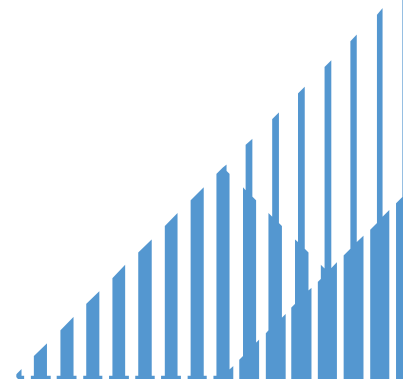
- Energy system highly dependent on hydropower (~90% of electricity generation)
 - Coal and natural gas mainly used for heating
 - Significant untapped potential in solar and wind energy
 - Key infrastructure: Toktogul hydropower cascade
 - Aging infrastructure and high transmission losses
 - Winter energy shortages; reliance on imports
 - Vulnerable to climate change and water variability
 - Policy focus on diversification, renewables, efficiency, regional cooperation
- Loss of credibility among international partners and development society
 - Inability to meet Paris Agreement commitments
 - Expected harm for the health of the people, loss of natural resources including glacier melting
 - Weaken cooperation to regional partners





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Thank you!



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