

REGIONAL WORKSHOP ON RENEWABLE ENERGY IN CENTRAL ASIA

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Preliminary Findings of the Gap Analysis for Central Asia

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Gap Analysis for Central Asia: Our Approach

IRENA	This Study	Methodology
<p>Ongoing efforts to scale up its support to Central Asia (Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan)</p> <p>In the process of developing a Regional Action Plan to provide a strategic framework for future engagement in Central Asia</p>	<p>Identify and analyse the key gaps hindering more accelerated renewable energy deployment in the region</p> <p>Feed into Regional Action Plan for Central Asia</p>	<p>Step 1: Survey with key government entities to identify their needs in terms of enabling technical, policy, regulatory, financial and institutional frameworks as well as capacity building</p> <p>Step 2: Identify, survey and interview key stakeholders and their past, ongoing and planned RE activities</p>

Central Asia: Energy overview

	Energy Imports, net (% of energy use)	Energy Subsidies (% of GDP)	Energy Use per Capita (MJ/capita)	Electrification (% of population)
	2013	2015	2013	2014
Azerbaijan	-328%	6.3%	61,714	100%
Kazakhstan	-107%	11.0%	200,408	100%
Kyrgyzstan	55%	26.4%	28,906	99.8%
Tajikistan	30%	7.1%	12,675	99.1%
Turkmenistan	-191%	23.2%	209,826	100%
Uzbekistan	-26%	26.3%	59,431	100%

Power generation installed capacity: ~50 GW

- Coal: 32%
- Hydro: 29%
- Gas: 26%
- Oil: 7%
- Other RE: <1%

Source: World Bank Indicators

- Oil & gas exporters (*AZE, KAZ, UZB & TUR*) vs. power exporters (*KYR & TAJ*)
- Large subsidies to conventional energy (*KRY, TUR & UZB: >20% of GDP*)
- Large differences in energy use / capita (*KAZ & TUR: most energy intensive*)
- Estimated 2 M households in energy poverty (mostly *KYR & TAJ*)



RE drivers depend on energy situations:

1. Energy producers aiming to diversify the energy mix
(*Azerbaijan, Kazakhstan, Uzbekistan, Turkmenistan*)
2. Energy importers highly reliant on hydropower
(*Kyrgyzstan & Tajikistan*)

Both energy producers & importers:

- Need to upgrade the region's aging power infrastructure leveraged for RE introduction (KRY, TAJ & UZB: more than 60% of power infrastructure older than 60 years)
- Increased government commitment to phase out subsidies to fossil fuels boosting RE economics
- Socio-economic benefits, improved health and environmental conditions

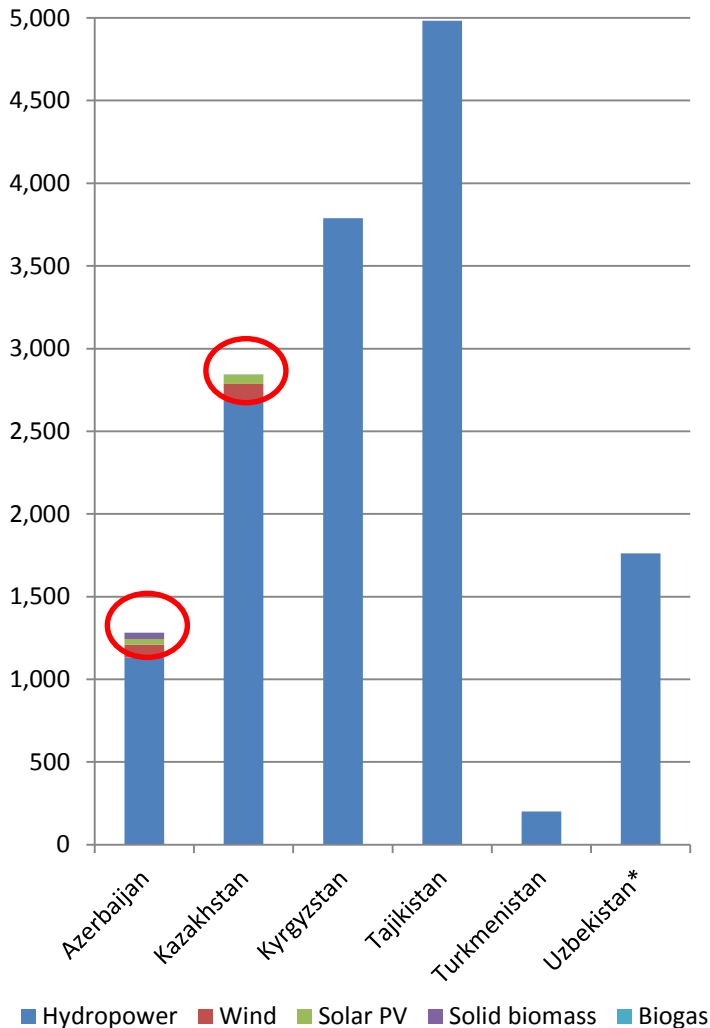
Mainly energy importers:

- Improved quality of energy access: heating and electricity
- Complementarity of non-hydro RE to optimize the operation of the largely hydro-based power systems

Mainly energy producers:

- Economic diversification through local job creation
- RE replacing fossil fuels in power generation

Non-hydro RE Installed capacity, MW, 2016



Encouraging developments in 2015-16:

- 470 MW RE added: 333 MW hydro, 58 MW wind, 79 MW solar PV and <1 MW biogas

Azerbaijan:

- 20 MW solar commissioned in 2015
- Close to 200 MW wind under development

Kazakhstan:

- First utility scale solar PV (45 MW) & wind (50 MW) in 2016

Uzbekistan:

- 100 MW solar PV under construction; large additions planned
- Wind under consideration

Kyrgyzstan & Tajikistan:

- Small HPP developments

Turkmenistan:

- 195 MW of hydropower added in 2015-16

Challenge 1: Inadequate policy and regulatory frameworks

- ❑ Despite the existence of RE targets in all countries (except Turkmenistan), they are not impactful if not accompanied by a practical implementation framework that addresses existing barriers.

- ❑ Deployment of RE policies and regulations is modest across the region with some exceptions:
 - Azerbaijan & Kazakhstan have FITs in place.
 - Kazakhstan is preparing for RE auctions.
 - All countries submitted INDC's.

Challenge 2: Electricity grid at national and regional level



- Lack of clear and enforceable rules for grid integration and modernization
- Limited regional power trade within Central Asia United Power System
 - KAZ, KRY, UZB
 - CASA 1000
- Future upgrades to electricity infrastructure as an opportunity to prepare the countries' systems for higher RE shares

Challenge 3: Institutional framework is not adapted to renewable energy



Source: UNDP

- Varying level of institutional readiness to RE across the region
- Energy Ministry (or equivalent) along with state-owned utility to play central role in policy making as well as operation of the sector
- One energy regulator (KAZ) and one RE agency (AZE)
- Empowered institutions required to implement and monitor RE policies and regulation

Challenge 4: Technical & scientific know-how does not reflect global trends



Source: <http://dgtl-smzd.at/Solar-Furnace-in-Parkent-Uzbekistan>

- Solid basis in engineering and technical education across all of the countries → skilled scientific and technical staff
 - ✓ Examples: Strong engineering school in Nazarbayev University (KAZ); Solar furnace facility in UZB since 1981; High technical skills on hydropower in KYR and TAJ; National Research Institute for solar in TUR
- Exposure to global technology developments is lacking
 - ✓ With some exceptions: Kazakhstan, Azerbaijan and Uzbekistan starting

Challenge 5: Investment flows to RE projects remain limited



Source: Burnoye Solar

- Very limited investment other than those financed by donors and development banks:
 - Burnoye Solar (EBRD in KAZ)
 - Samarkand Solar (ADB in UZB)
 - Yereymentau (EBRD & EDB in KAZ)

- Non-RE factors affecting investment environment: low economic growth in the region; quality & quantity of projects; readiness of developers for commercial funding; limitations of the banking sector to do business with internationals
- Need to isolate RE projects from the unfavorable macro-environment and target the niche RE applications

- ❑ Collection of additional feedback during this Workshop
 - Regional Action Plan
 - Draft Ministerial Communique, to be developed based on the Action Plan

- ❑ Development, review and finalization of:
 - **Regional Action Plan**
 - Comments to be sought from the governments and key stakeholders
 - To be used as an input into IRENA WP 2018-19

 - **Draft Ministerial Communique**
 - Clearance to be sought from the Central Asia governments
 - To be released by Ministers at Energy Ministerial Conference, Astana, 11 June 2017 (Central Asia Ministerial Session)