



**Workshop to support establishing a
State Agency on Energy Efficiency and Renewable Energy in Georgia
19 June 2024**

«NDC Commitment»



1st NDC

- ❑ The Republic of Azerbaijan aims to reduce greenhouse gas emissions by **35% by 2030** vis-a-vis 1990 (base year).



**UN CLIMATE
CHANGE
CONFERENCE
UK 2021**

2nd NDC

- ❑ Reduction of greenhouse gas emissions – **40%** vis-a-vis 1990 (base year) by 2050
- ❑ Establish «**Net Zero**» **Emission Zone** in liberated territories.
- ❑ Increase the **share of renewable energy** in installed capacity to **30% by 2030**.



**COP28
UAE**

Endorsed initiatives

- ❑ **Triple renewable power** capacity and **double energy efficiency by 2030**.
- ❑ Mutual recognition of certification schemes for **renewable and low-carbon hydrogen** and hydrogen derivatives

Azerbaijan Renewable Energy Agency (AREA) under the Ministry of Energy of the Republic of Azerbaijan

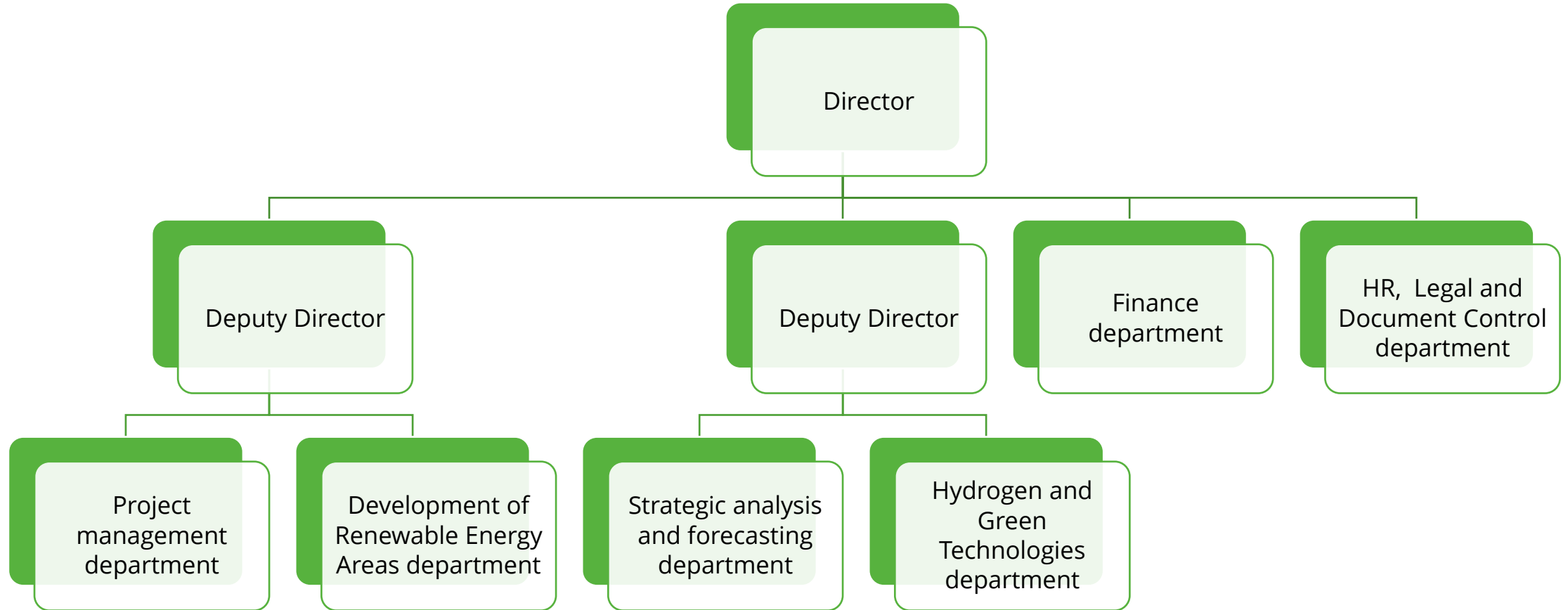


- Azerbaijan Renewable Energy Agency under the Ministry of Energy of the Republic of Azerbaijan was established in accordance with the Decree No. 1159 of the President of the Republic of Azerbaijan dated September 22, 2020 and the Charter of the Agency was approved.
- According to the Charter, the State Agency is a body involved in **the formation and implementation of state policy in the field of renewable energy sources and their efficient use.**
- The State Agency takes measures to **organize, regulate and coordinate activities in the field of renewable energy sources and their efficient use, as well as to increase the investment attractiveness of the relevant sector.**
- The main objectives of the State Agency are to increase the **share of renewable** energy sources within the installed electricity generation capacity **up to 30% by 2030**, to transform the liberated territories into the "Green Energy" Zone, to ensure the participation of the private sector in this area.

Main activities of AREA (as per Charter)

- To improve the legislative framework, develop/participate in development of a relevant concepts and targeted state programs;
- To coordinate the activities of state bodies and institutions to ensure efficient implementation;
- To determine the potential of renewable energy sources in the regions of the Republic of Azerbaijan and the main directions for their use;
- To guide R&D in RES application field
- To create an electronic information system on renewable energy sources that ensures the collection, processing, storage and sharing of data in the relevant field;
- To organize engineering-research, exploration, design work in the relevant field, preparation of FS for promising projects;
- to provide proposals to the Ministry regarding the creation of appropriate funds for ensuring efficient implementation of RES projects;
- To propose support mechanisms to ensure the attractiveness of the relevant area for investment;
- To monitor the implementation of RES projects
- To participate in the formation of tariffs including selection and approval of the relevant methodologies
- To develop package of measures aimed at reducing technological losses during production, transmission, distribution and consumption of RE
- to ensure environmental safety in the field of RES use

Structure of Azerbaijan Renewable Energy Agency



Socio-economic development strategy for 2022-2026 of the Republic of Azerbaijan" (July 2022)
5th National Priority - A clean environment and country of “green growth”



- **Regulatory reforms for energy liberalization**
- **Increase the efficiency of gas and heat supply systems**
- **Increase the use of renewable energy sources**
 - ✓ Public-private partnership to expand RES infrastructure
 - ✓ Develop offshore wind potential
 - ✓ Use of bioenergy and geothermal potential
- **Azerbaijani-Turkish-European energy hub**
- **Green technologies to combat climate change**
 - ✓ Use of low carbon transport and green technologies
 - ✓ Low emission hydrogen production and use
 - ✓ CCUS in the energy sector
 - ✓ Energy storage systems
- **Energy efficiency improvements**



The "I State Program on the Great Return to the liberated territories of the Republic of Azerbaijan"

Activities direction 6.4. Use of energy-efficient and clean technologies

- RES potential assessment (2022-2024)
- Studies on use of renewable energy sources (hydropower, geothermal energy and bioenergy, hydrogen technology, energy storage and hydroaccumulation) (2023-2025)
- Construction of solar and wind power plants (BP Jabrail/Zangilan -240MW solar) (2022-2026)
- Rehabilitation of decommissioned small hydropower plants (2022-2025).
- Construction of new SHPs (2022-2025)
- Pilot projects on use of green technologies (2022-2023)
- Establishment of Green Energy Zone Demonstration Pavilion (2023-2024)
- Energy efficiency in residential buildings (2022-2024)
- Energy efficiency improvement in various economic sectors



OFFSHORE WIND ROADMAP STUDY

**On 3 June 2022 - released
Support - World Bank, IFC**

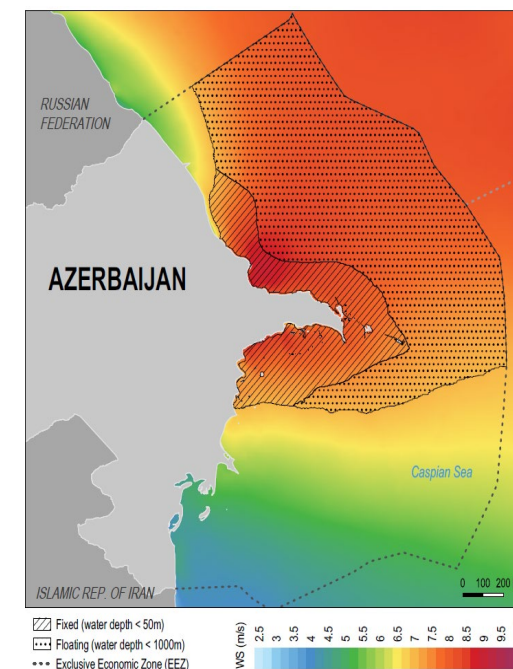
Low growth scenario – 1.5GW of fixed foundation capacity (7% of Azerbaijan Electricity needs by 2040)

High growth scenario – 7GW of fixed foundation capacity (37% of Azerbaijan Electricity needs by 2040)

Conditional

- Heat & transport demand is decarbonized
- Hydrogen incorporated as an energy vector
- Upgraded transmission network for improved dispatch and demand side management capability
- Interconnection with neighboring electricity markets – allow export of zero-carbon electricity

This scenario needs in spatial plan and framework for environmental and social legislation and use of Good international industry practice



Low-carbon hydrogen economy

- Inter - ministerial H2 working group was established (2021) (MoEnergy, MoEconomy, SOCAR)
- EBRD support provided for study on “Assessment of potential for a Low-Carbon Hydrogen Economy in Azerbaijan”.
- High RES potential allows development of hydrogen economy;
- Connection with EU gas markets via SGC - opportunity for blended gas export
- New H2 pipeline construction
- Low LCOH makes H2 production competitive on EU markets
- In-country application - green ammonia, green methanol, power generation, HFCV and district heating



European Bank
for Reconstruction and Development

Advisian

Green Energy Zone Concept FOR LIBERATED TERRITORIES



Within the framework of the project, on the basis of international experience, models for the development of territories were created using various scenarios depending on the economic development and resettlement of the population in the territories liberated from occupation:

Scenario 1: the area is fully supplied with electricity and no natural gas supply envisaged

This scenario considered “green” but require huge amount of green electricity production and considered most expensive

Scenario 2: the area fully supplied with electricity and only selected areas have natural gas supply

2A Scenario: gas supplied only for center of the cities/rural districts

2B Scenario: gas supplied only for center of the cities/rural districts, as well as for villages near pipelines

Scenario 3: the area fully supplied with natural gas

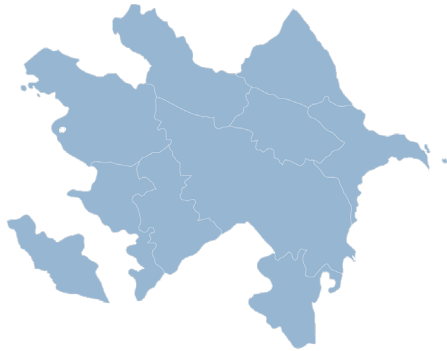
This scenario considered cheapest but with high GHG/air pollutants emissions rate



Renewable Energy Potential

Technical potential

135 GW

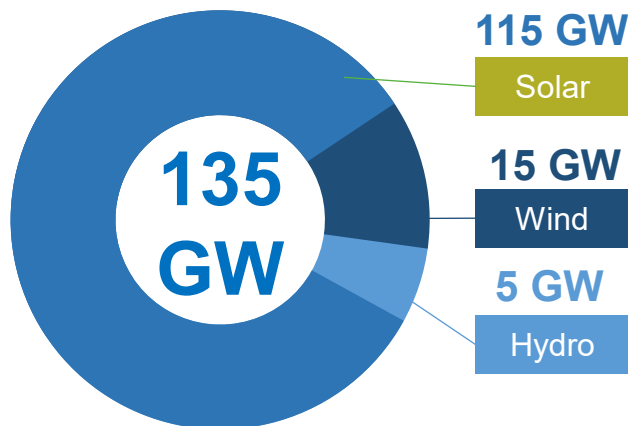


Onshore

157 GW



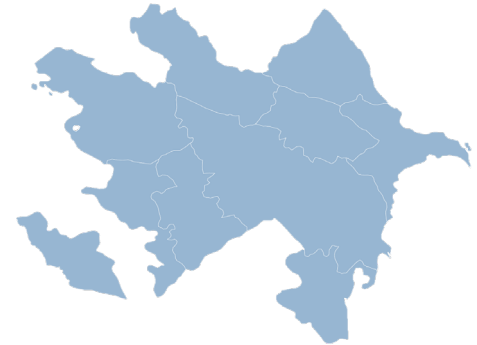
Offshore



including:
Karabagh and East Zangazur – 10 GW
Nakchivan – 5 GW

Economic Potential

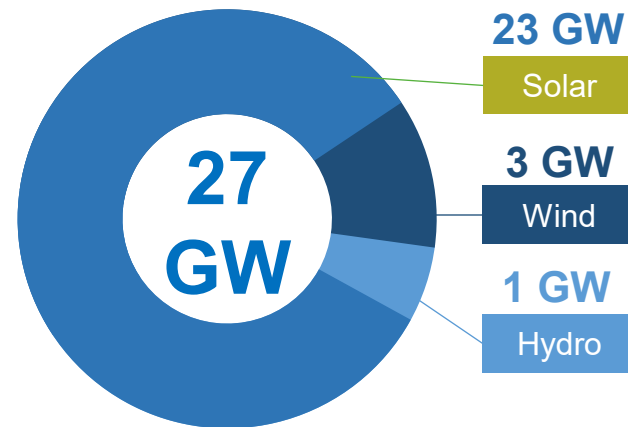
27 GW



Onshore

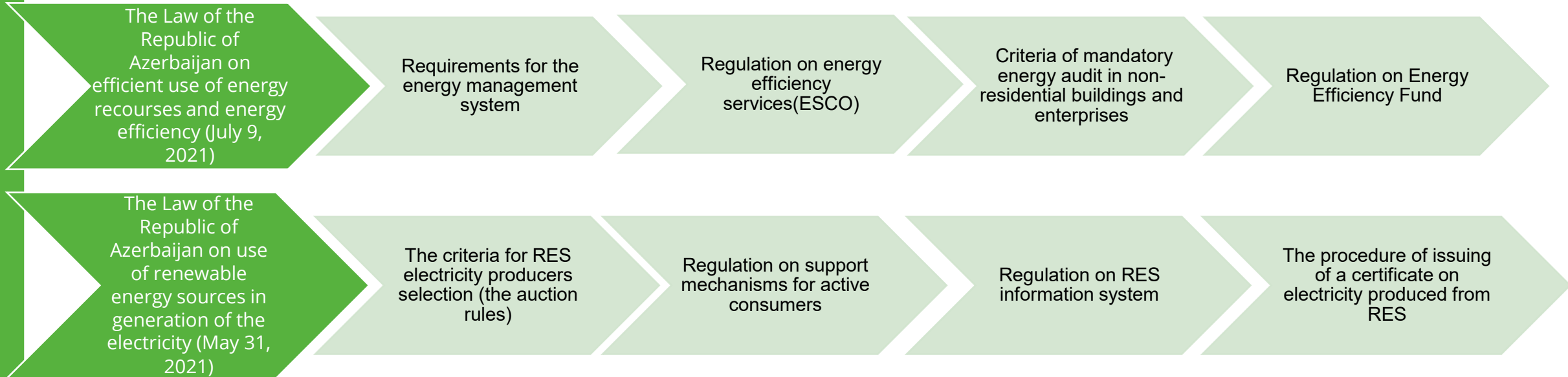


The estimated potential is currently being evaluated



including:
Karabagh and East Zangazur – 2.5 GW
Nakchivan – 1.5 GW

Legislation Update on the use of energy resources



First RE auction



- The Ministry of Energy announces an auction for the design, financing, construction and operation of a 100 MW Gobustan solar power plant. The purchase of electricity to be produced at the station is guaranteed by the Government in accordance with the law of the Republic of Azerbaijan "On the use of renewable energy sources in the production of electricity".
- The auction is conducted by the auction commission as an open auction in accordance with the "Rule for the selection of electricity producers in the area of renewable energy sources", in the form of request for qualification (RFQ) and request for proposals (RFP) stage.
- **EBRD supports the government by development of following documentation:**
 - Site selection
 - Develop all the tender documentation required for a renewable project
 - Auction rules
 - RFQ, RFP
 - Template Support Agreement
 - Template Power Purchase Agreement
 - Template agreement for connection to the grid
 - Template agreement for land lease
 - Final drafts of bid forms



European Bank
for Reconstruction and Development

Ongoing projects and opportunities for investment in RE sector

Wind

Commissioned

State owned 3 WPP total capacity - 55.3 MW

In implementation

ACWA Power (Xızı-Abşeron) - 240
 ACWA Power - 2.5 GW (1 GW onshore and 1.5 GW offshore)
 Masdar - 1354 MW (onshore wind)
 Masdar - 6 GW (offshore wind)
 FFI* - 11 GW (10 offshore + 1 onshore integrated green hydrogen and green ammonia)

MoU signed

ACWA Power -Battery Energy Storage System (BESS) - 200 MW
 TotalEnergies - 250 MW (onshore wind)
 Elecnor - 70 MW

Small Hydro

Commissioned

State-owned 43 SHPPs - total capacity 204 MW
 State-owned 2 SHPPs (Nakhchivan) - total capacity 5,9 MW

In implementation

State-owned (Karabagh and East Zangazur Economic regions) - 4 SHPPs with capacity 44 MW under construction stage
 5 SHPPs under the PPP mechanism - up to 13,8 MW

Large Hydro

Commissioned

Mingachevir - 424,6 MW
 Shamkir - 380 MW
 Yenikand - 150 MW
 Tartar - 50 MW
 Fuzuli - 25 MW
 Taxtakorpu - 25 MW
 Shamkirchay - 24,42 MW
 Araz - 22 MW
 Arpachay-1 - 20,5 MW
 Bilav - 20 MW

In implementation

"Khudaferin" - 100 MW
 Giz Galasi - 40 MW
 Ordubad - 36 MW
 Tivi - 15,6 MW

Solar

Commissioned

State-owned (Nakhchivan) - 39 MW
 Masdar (Garadagh)- 230 MW

In implementation

bp (Shafag) - 240 MW
 Masdar - 2460 MW
 FFI - 1 GW

MoU signed

TotalEnergies - 250 MW (Nakhchivan)
 China Gezhouba Group - 2GW RE, including solar
 Nobel Energy - 400 MW
 Baltech - 50 MW
 A-Z Czech Engineering
 MMC - 500 MW

Green Hydrogen

In implementation

Masdar* - 2GW offshore wind and integrated hydrogen
 FFI* - 10GW offshore + 1GW onshore integrated green hydrogen and green ammonia

Became hub for green energy



Governments of Azerbaijan, Georgia, Romania and Hungary signed an agreement on strategic partnership in the field of green energy in Bucharest

Along with the export of green electricity, it is planned to evaluate the export possibilities of green hydrogen and other green gases, and the CESI consulting company was involved to carry out work in this direction.

Joint Communiqué of heads of relevant ministries of Azerbaijan, Kazakhstan and Uzbekistan

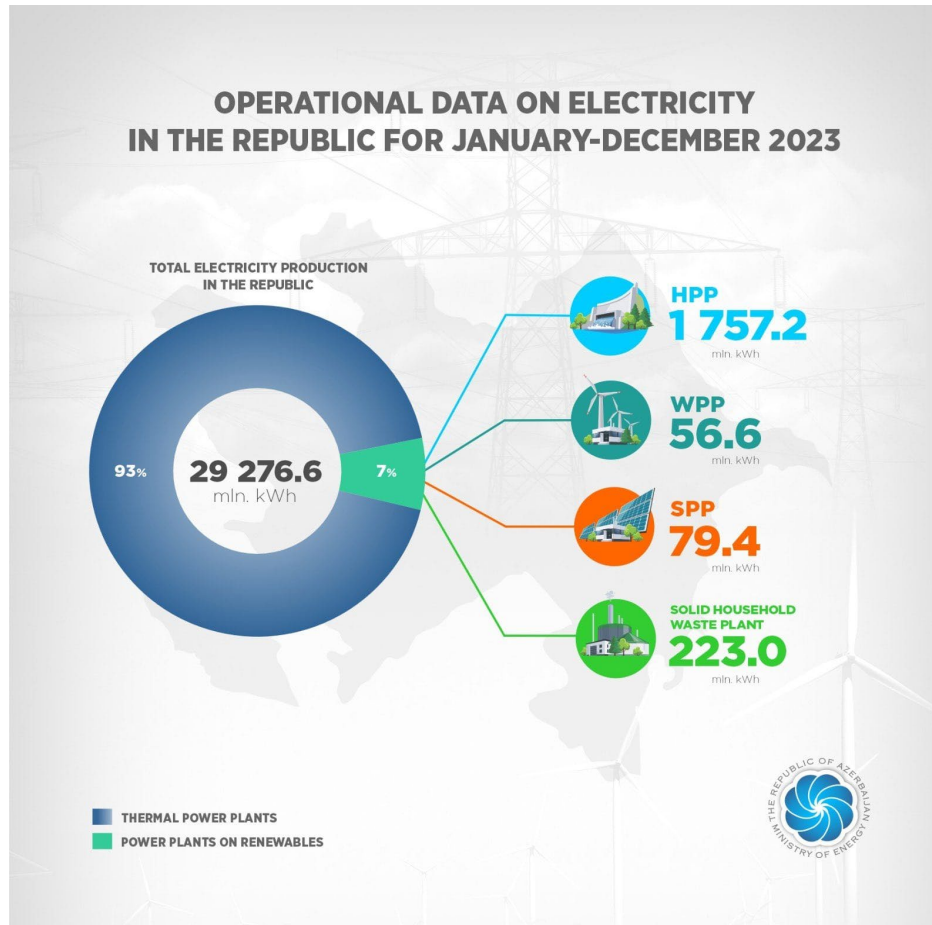
- cooperation in the field of energy exchange, focusing on renewable energy sources;
- cooperation in the development and export opportunities of "green" hydrogen and "green" ammonia;
- cooperation in creating appropriate infrastructure.



On May 2, 2024 the Memorandum of Cooperation on the merging of energy systems was signed in Uzbekistan between the heads of the relevant Ministries of Azerbaijan, Uzbekistan and Kazakhstan.

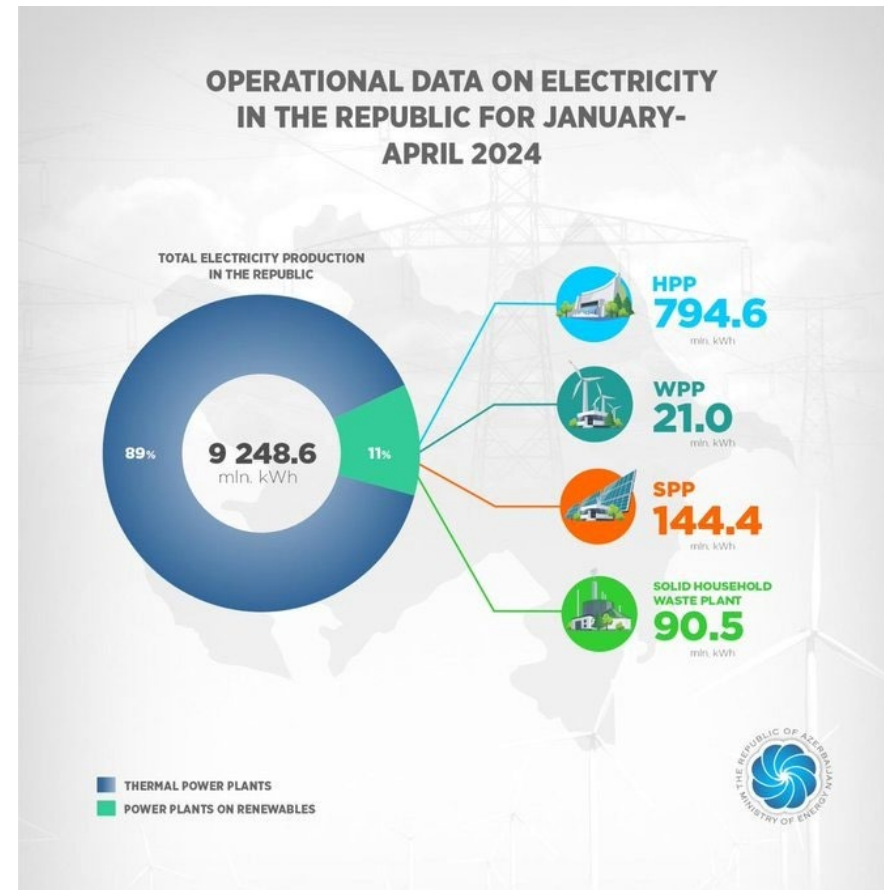
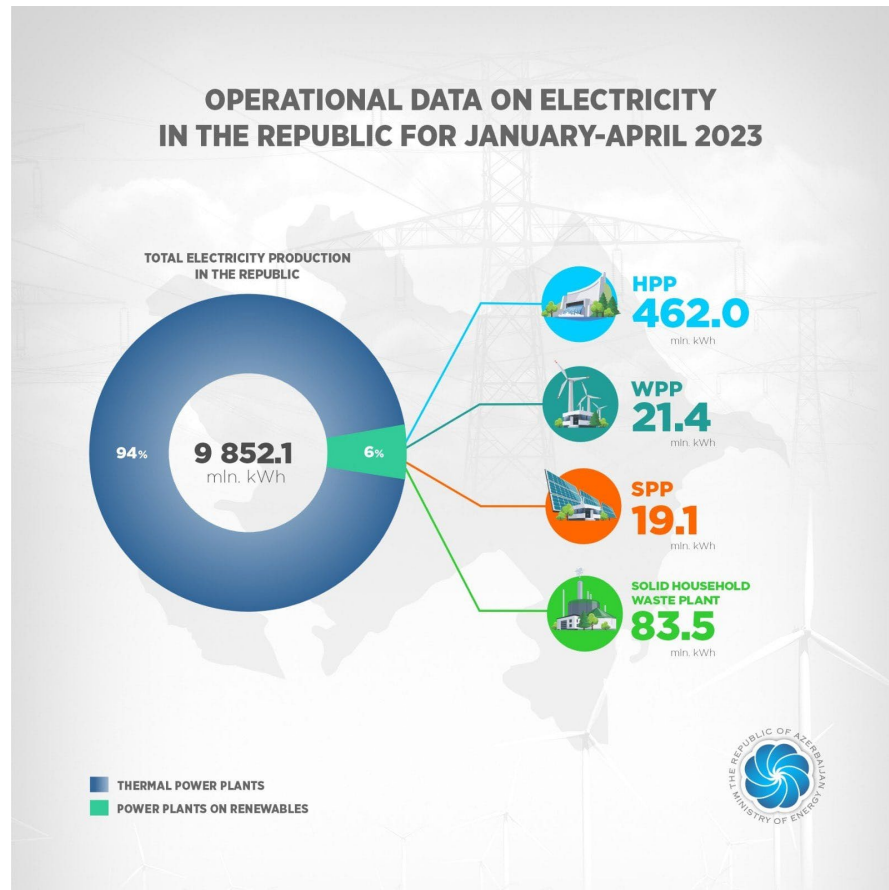
Renewable energy and transitional fuels

- By improving energy efficiency of power production from 284g/KWt in 2018 to 255 g/KWt in 2023 1.4 billion m3 of natural gas was saved
- RE deployment



Renewable energy and transitional fuels

- Increase in solar energy production by 7.5 times and small hydroelectric power production by 2 times for the period from January to April 2023 compared to the same period in 2024





THANK YOU FOR ATTENTION!

Rana Humbatova
Azerbaijan Renewable Energy Agency under the Ministry of Energy
rana.humbatova@area.gov.az

