

Technical workshop: Practical aspects of sustainable energy development in Kyrgyzstan

Promoting small hydropower development in Kyrgyzstan
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Development of Renewable Energy in Kazakhstan – achievements and plans

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Ministry of Energy
of the Republic of Kazakhstan

Energy of Kazakhstan



Indicators of the energy industry of the Republic of Kazakhstan

Number of power plants of the Republic of Kazakhstan

206

Electric stations of various forms of ownership (pieces)

Power plant capacity at the end of 2022

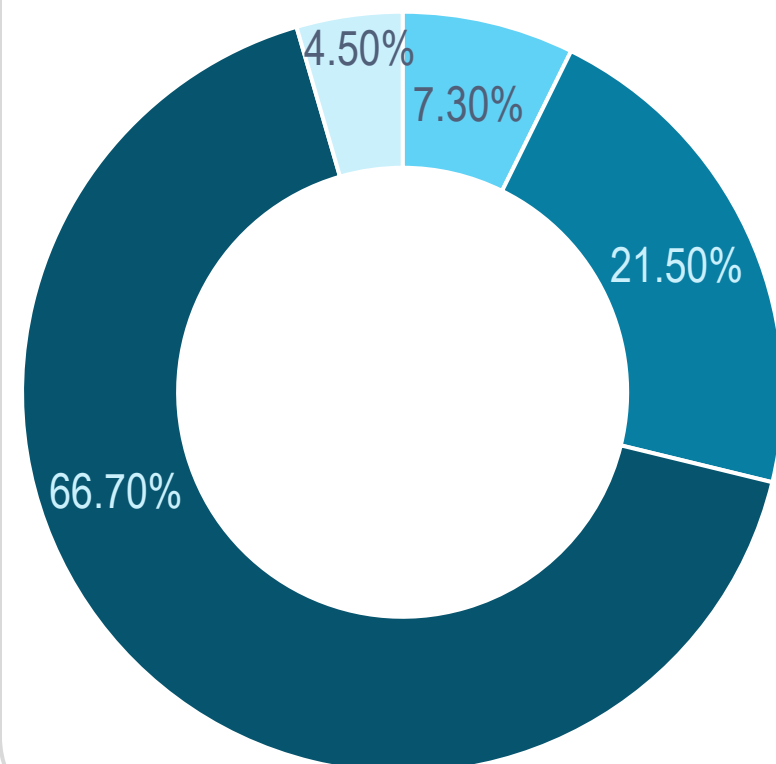
24 524

Total installed capacity, MW

19 024

Available power, MW

Structure of generation of the Republic of Kazakhstan as a percentage



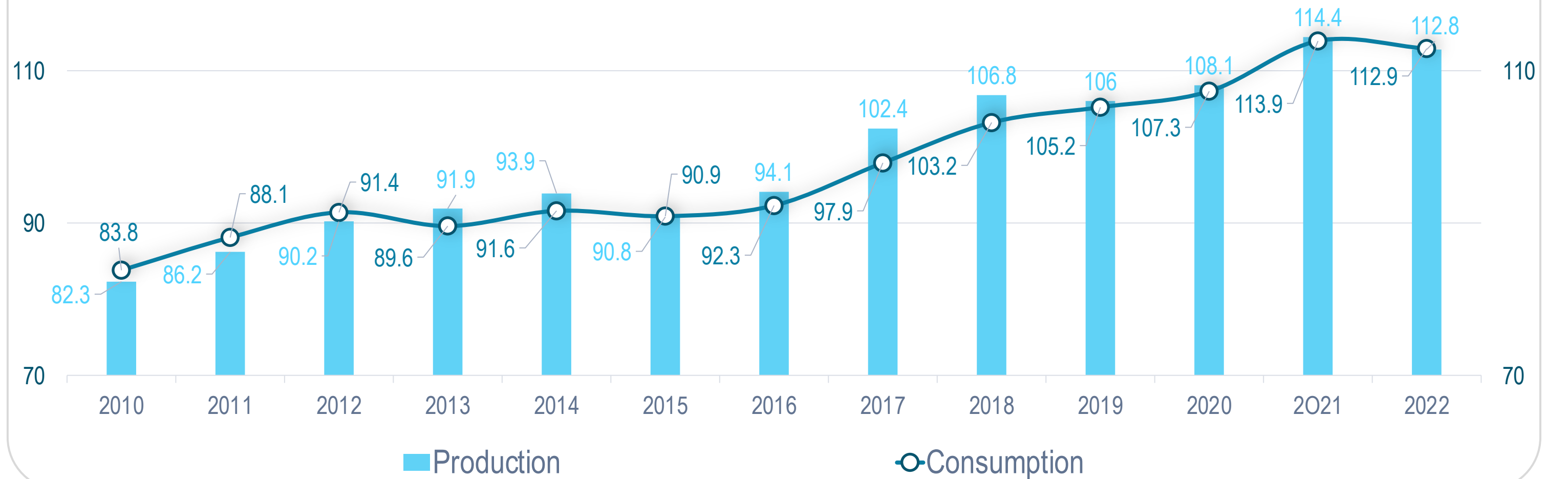
Coal TPP

Gas TPP

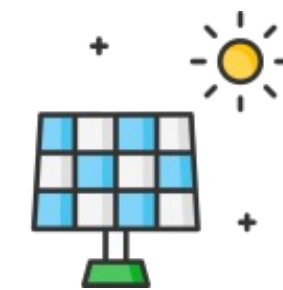
Large HPP

RES

Dynamics of electricity generation/consumption in the Republic of Kazakhstan



Power plants of Kazakhstan



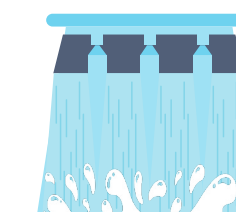
43

SPP



48

WPP



38

HPP



72

Traditional

Implementation of the policy on decarbonization of the economy of Kazakhstan

Work is underway to involve renewable energy sources (hereinafter referred to as RES) in the energy balance of the Republic of Kazakhstan. According to the results of 2022 :

2,5 GW

Installed capacity

>5 billion kWh

Production volume

~5%

From consumption in the country

2009

Start

- The beginning of RES development in the country
- The first legislative initiatives to support RES

2013-15

Green Economy

- The concept of the transition of the Republic of Kazakhstan to a «green» economy(2013)
- Application of fixed tariffs for RES (2014)

Fuel and Energy concept, Paris Agreement

- Tasks have been set for the development of RES in the general energy balance of the country
- Support of ecological integrity and adaptation to the changing climate in the world

2018

Launch of Renewable Energy Auctions

- An auction bidding mechanism has been introduced for the competitive selection of renewable energy projects
- Amendments have been made to the current legislation in the renewable energy support sector

2020-23

Setting goals and objectives to achieve carbon neutrality

- Forecast balance of electric energy of the Unified Electric Power System of Kazakhstan until 2035
- Revision of the law on RES support (exemption from property tax and land tax, as well as exemption from corporate income tax)
- Kazakhstan has joined the global movement to achieve carbon neutrality
- Strategy for achieving carbon neutrality of the Republic of Kazakhstan until 2060
- New Environmental Code of the Republic of Kazakhstan

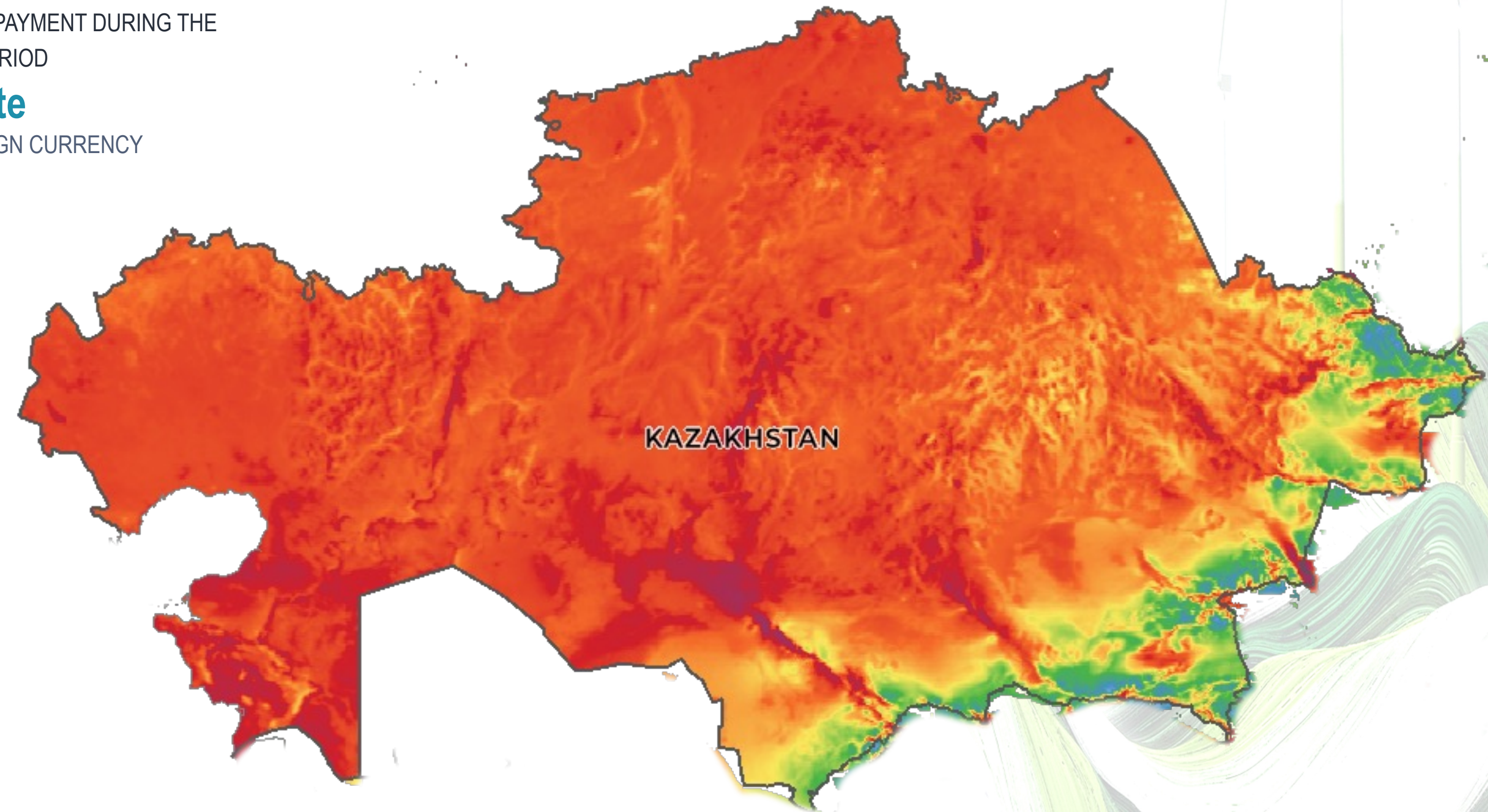
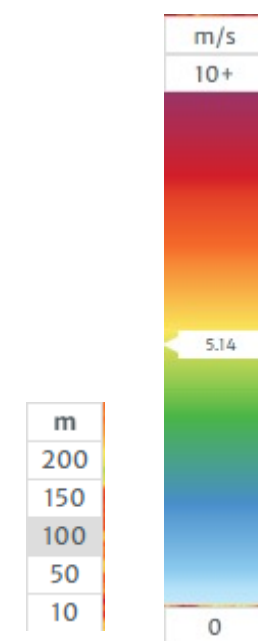
The Republic of Kazakhstan

- it occupies the 9th place in the world by area of territory
- significant potential of wind energy
- in the near future, it has every opportunity to take a leading position in the world in the development of wind generation, which will:
 - as stable as possible;
 - evenly distributed (throughout the country);
 - minimally affect the growth of tariffs for end consumers.

Legislative measures to support renewable energy in Kazakhstan

- ① **At least 20 years old**
GUARANTEED PERIOD OF MANDATORY PURCHASE OF ALL GENERATED ENERGY
- ② **Customs duties**
EXEMPTION FROM PAYMENT DURING THE CONSTRUCTION PERIOD
- ③ **Vacation rate**
LINKED TO A FOREIGN CURRENCY

Wind potential map



The climate in Kazakhstan is favorable for the construction of wind power plants due to the presence of wind corridors with a wind speed of more than 5 m/s, which is necessary for the operation of wind turbines.

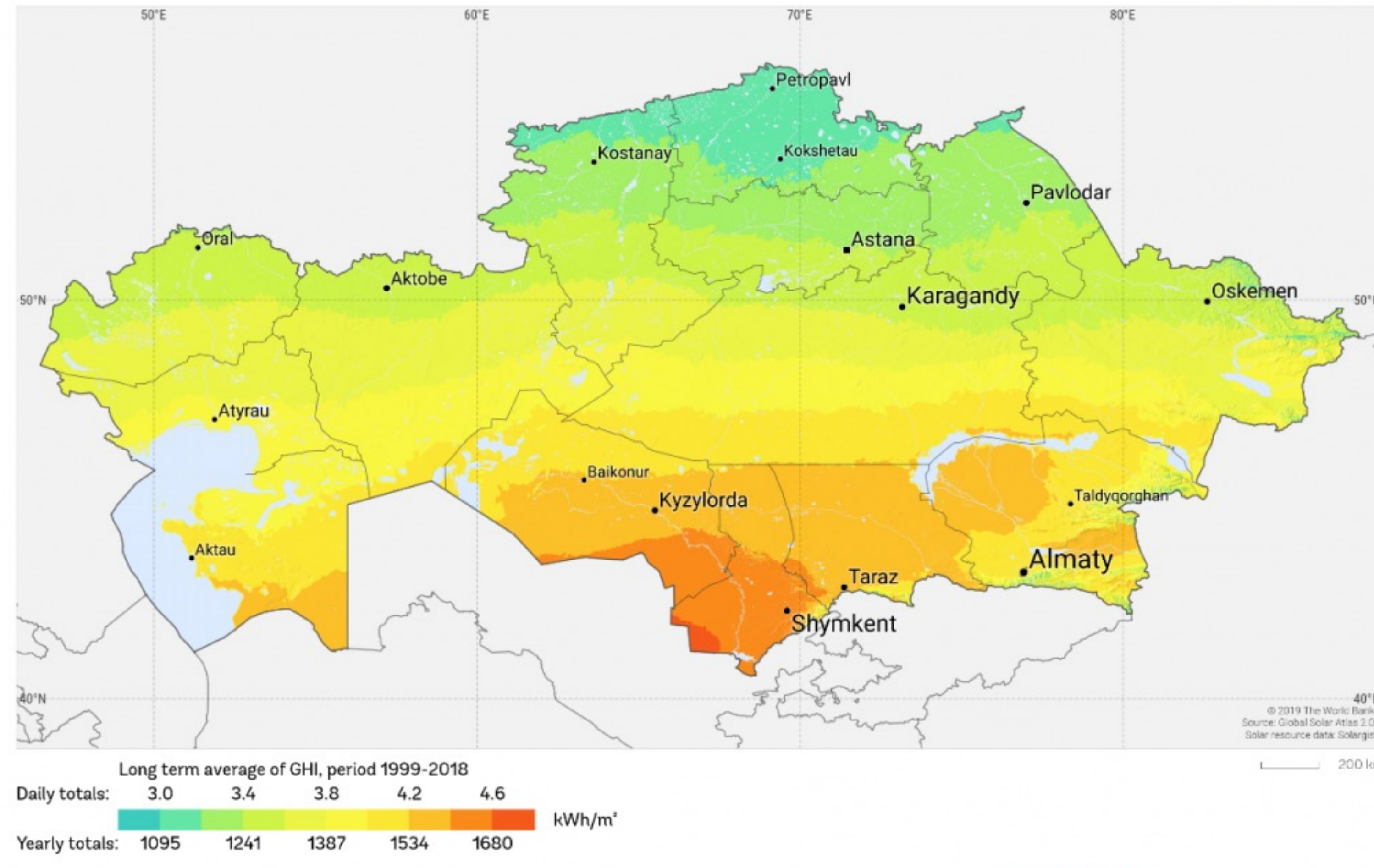
The Caspian region, central and northern Kazakhstan, as well as southern and southeastern Kazakhstan have the highest potential for wind energy.

According to the Ministry of Energy of Kazakhstan, the country's wind energy potential is estimated at 920 billion kWh of electricity annually.

Solar Potential map

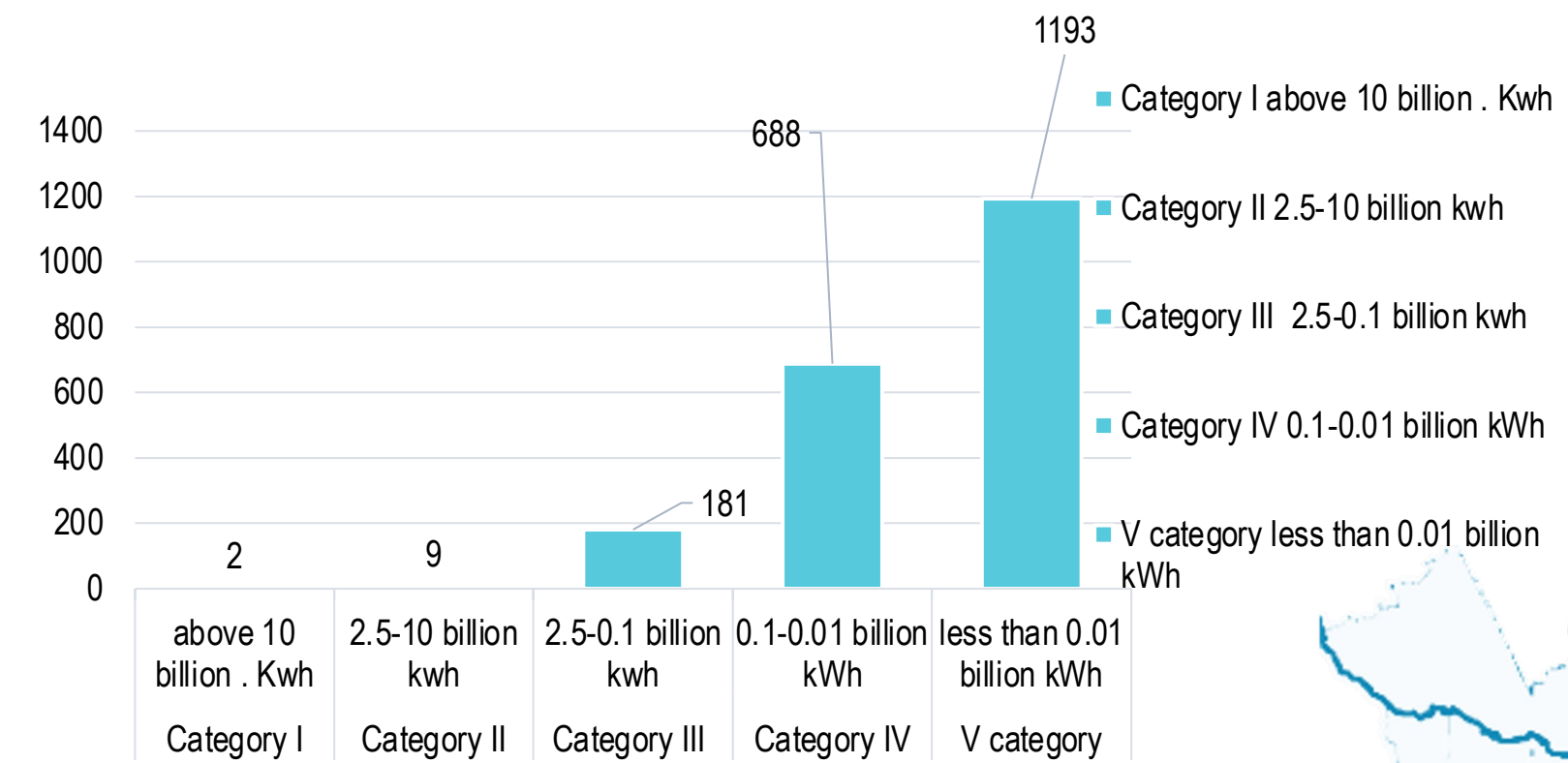
Solar energy has huge potential as a renewable energy source due to sparsely populated large territories and climatic conditions, especially in the south of Kazakhstan, where the sun shines from 2,200 to 3,000 hours a year

In Kazakhstan, the potential of solar energy is 2,5 billion kWh. The most preferred areas for solar generation are the Aral Sea region and the southern regions of Kazakhstan, experiencing a shortage of electricity.

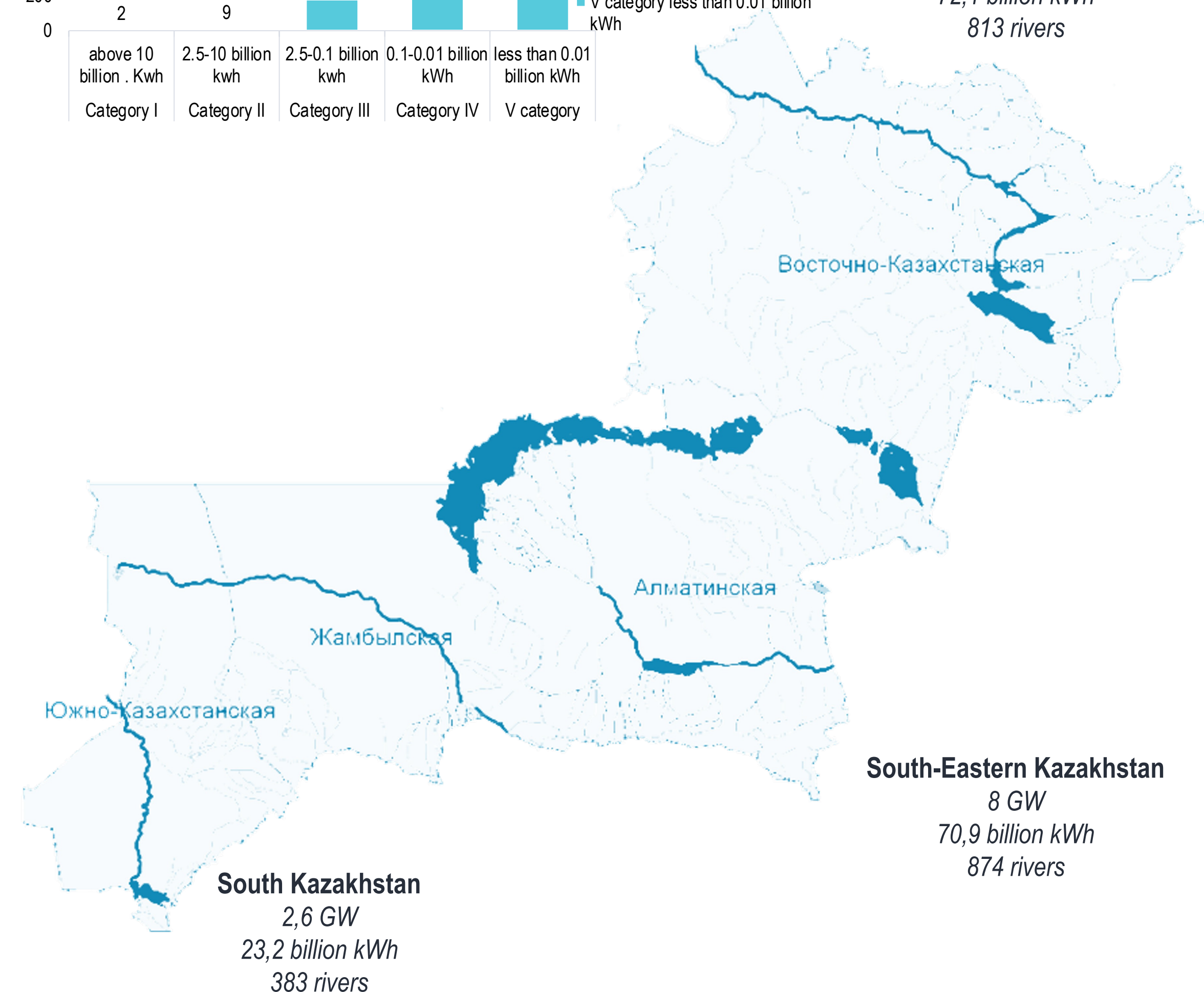
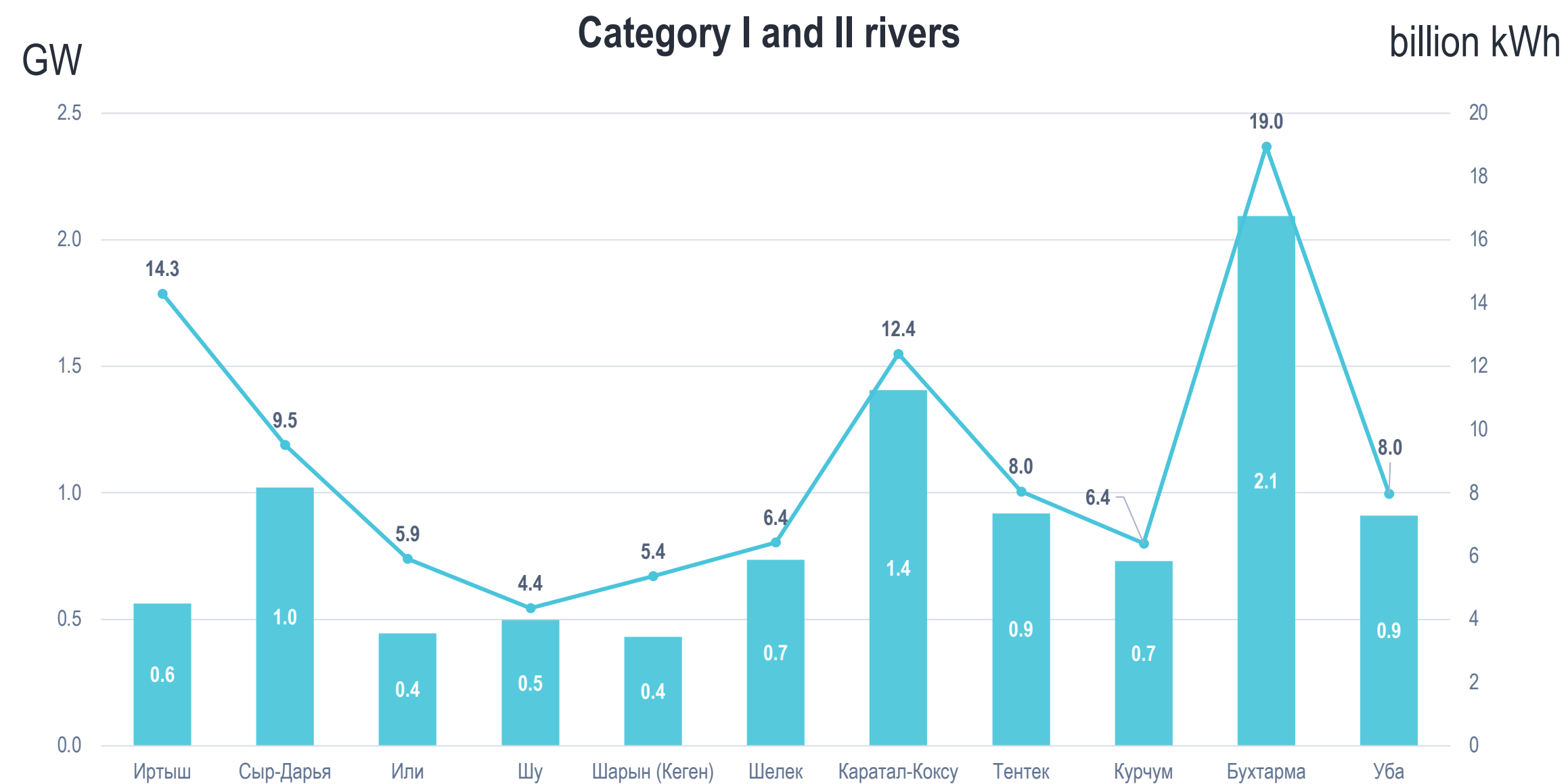


Information and characteristics of Kazakhstan's hydropower potential

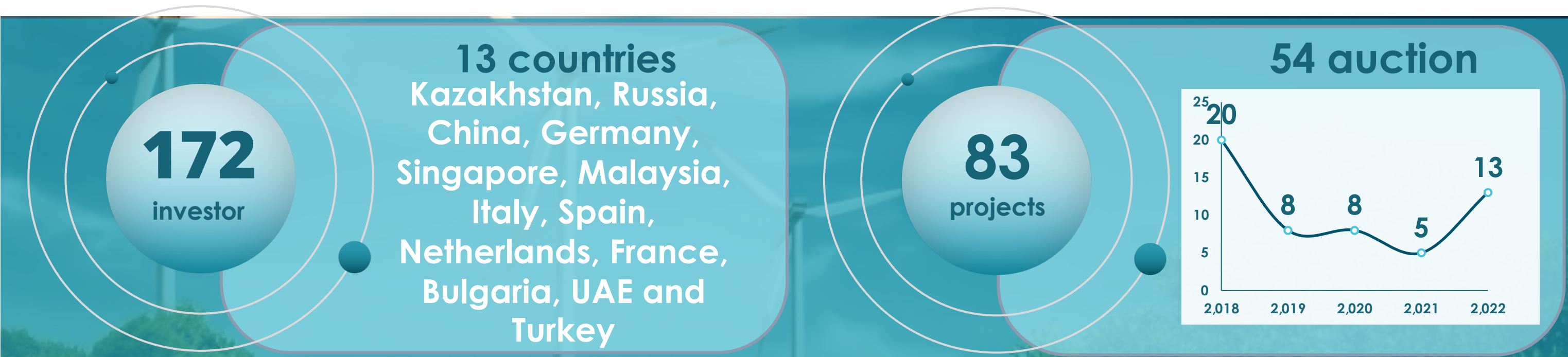
Hydropotential of Kazakhstan	Number of rivers	Category I above 10 billion kWh	Category II 2.5-10 billion kWh	III категория 2,5-0,1 млрд. кВтч	Category IV 0.1-0.01 billion kWh	V category less than 0.01 billion kWh
South Kazakhstan	383	1	1	20	74	287
South-Eastern Kazakhstan	874	-	5	89	340	440
East Kazakhstan	813	1	3	72	274	466
TOTAL	2070	2	9	181	688	1193



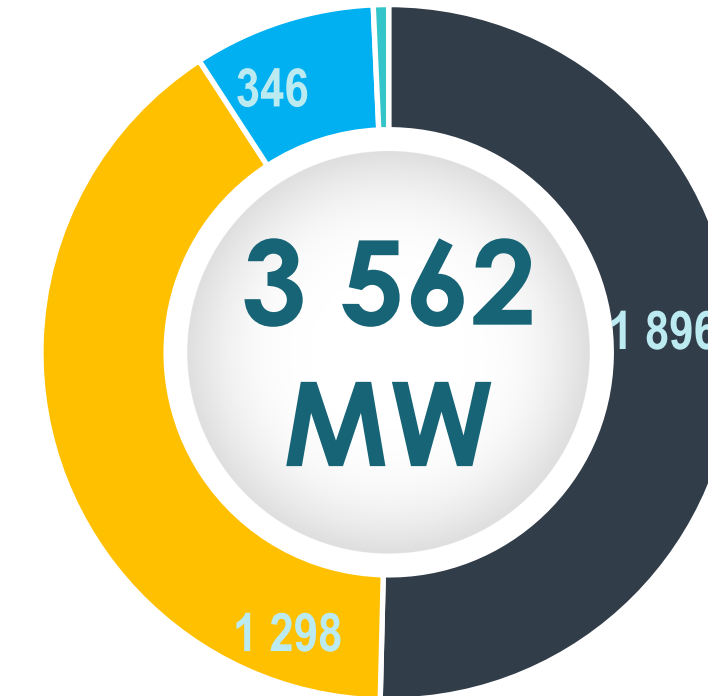
East Kazakhstan
8,1 GW
72,1 billion kWh
813 rivers



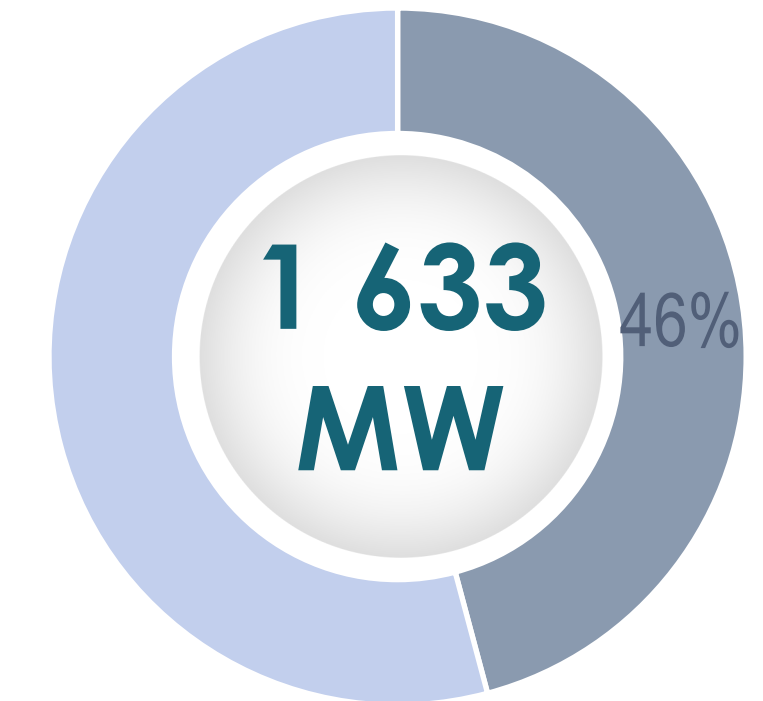
Auctions for the selection of projects for the construction of renewable energy sources



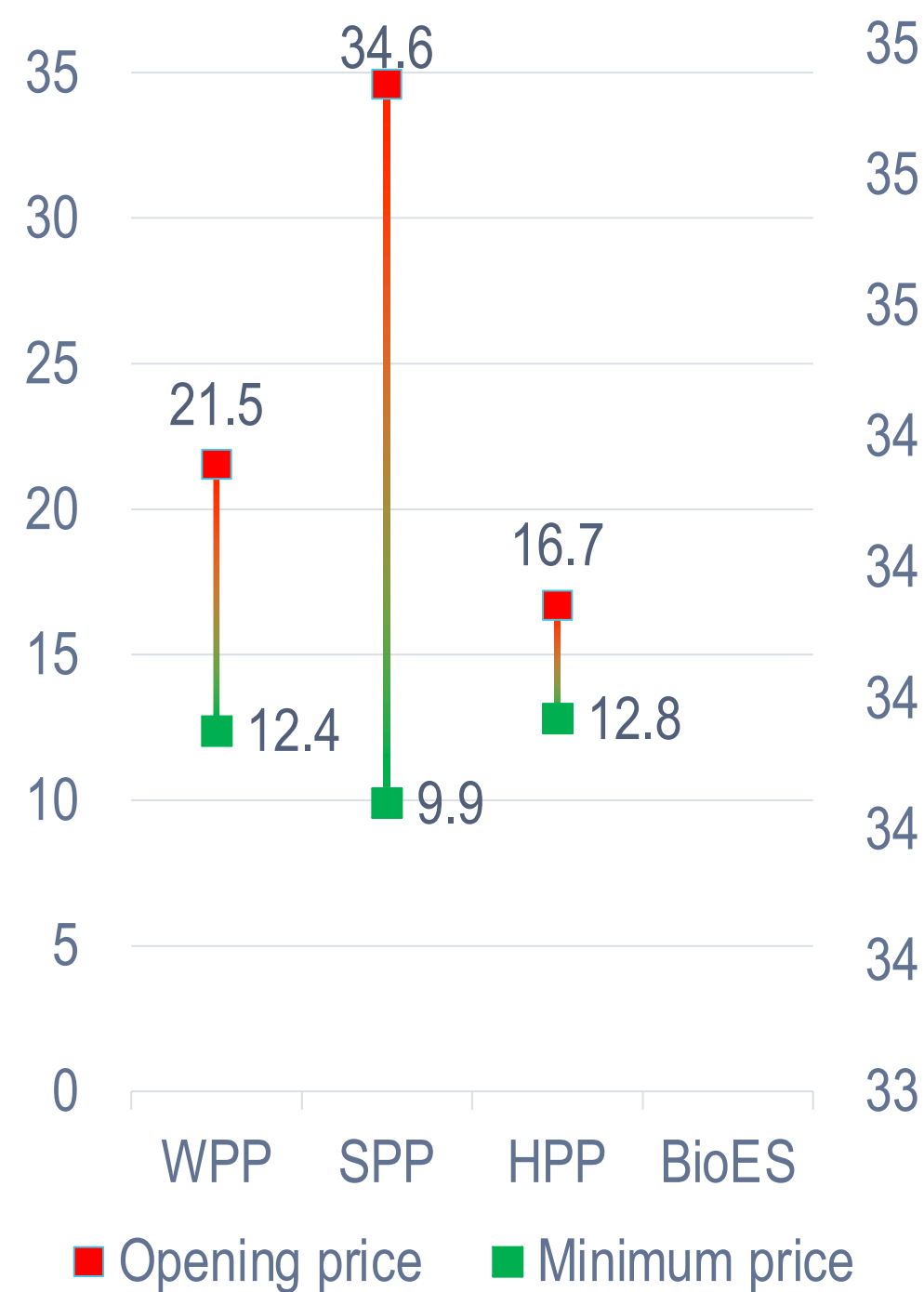
Total implemented



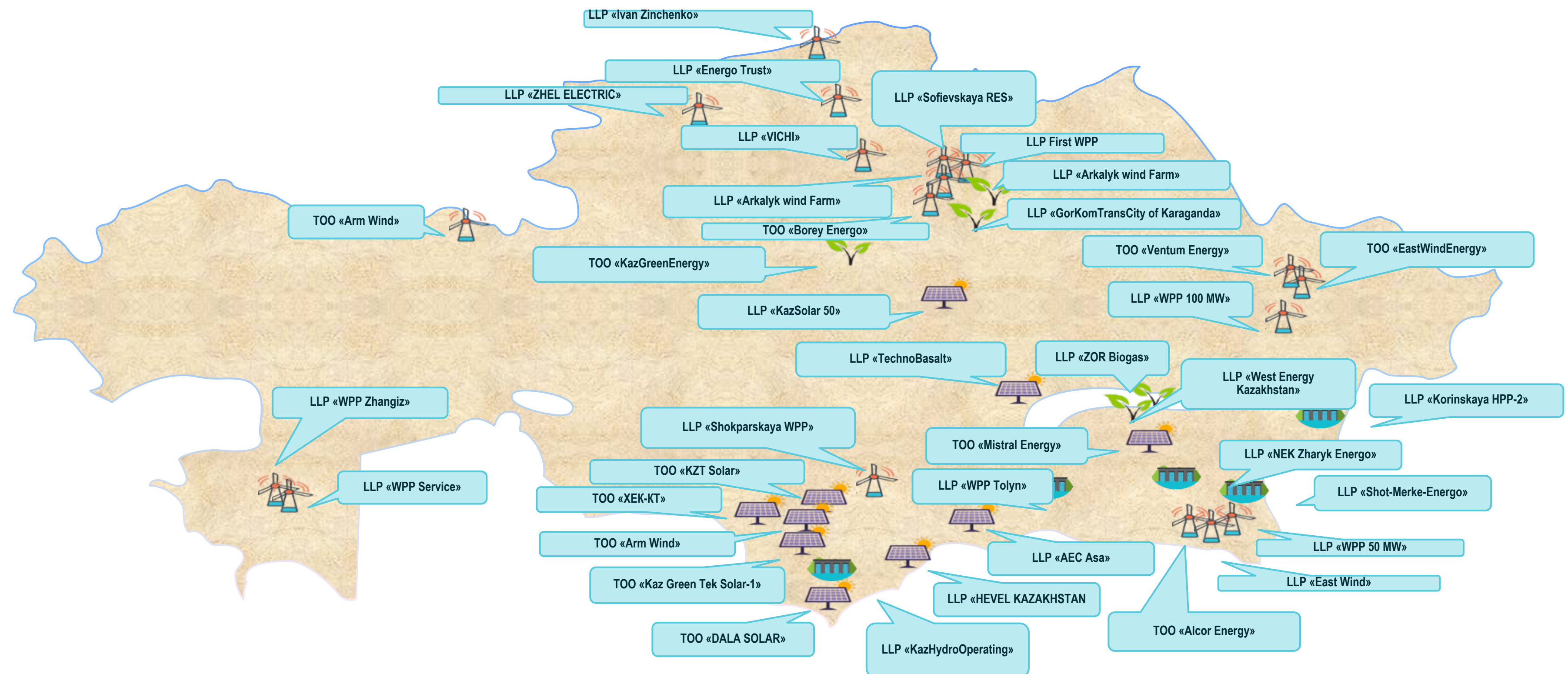
Including RES auctions



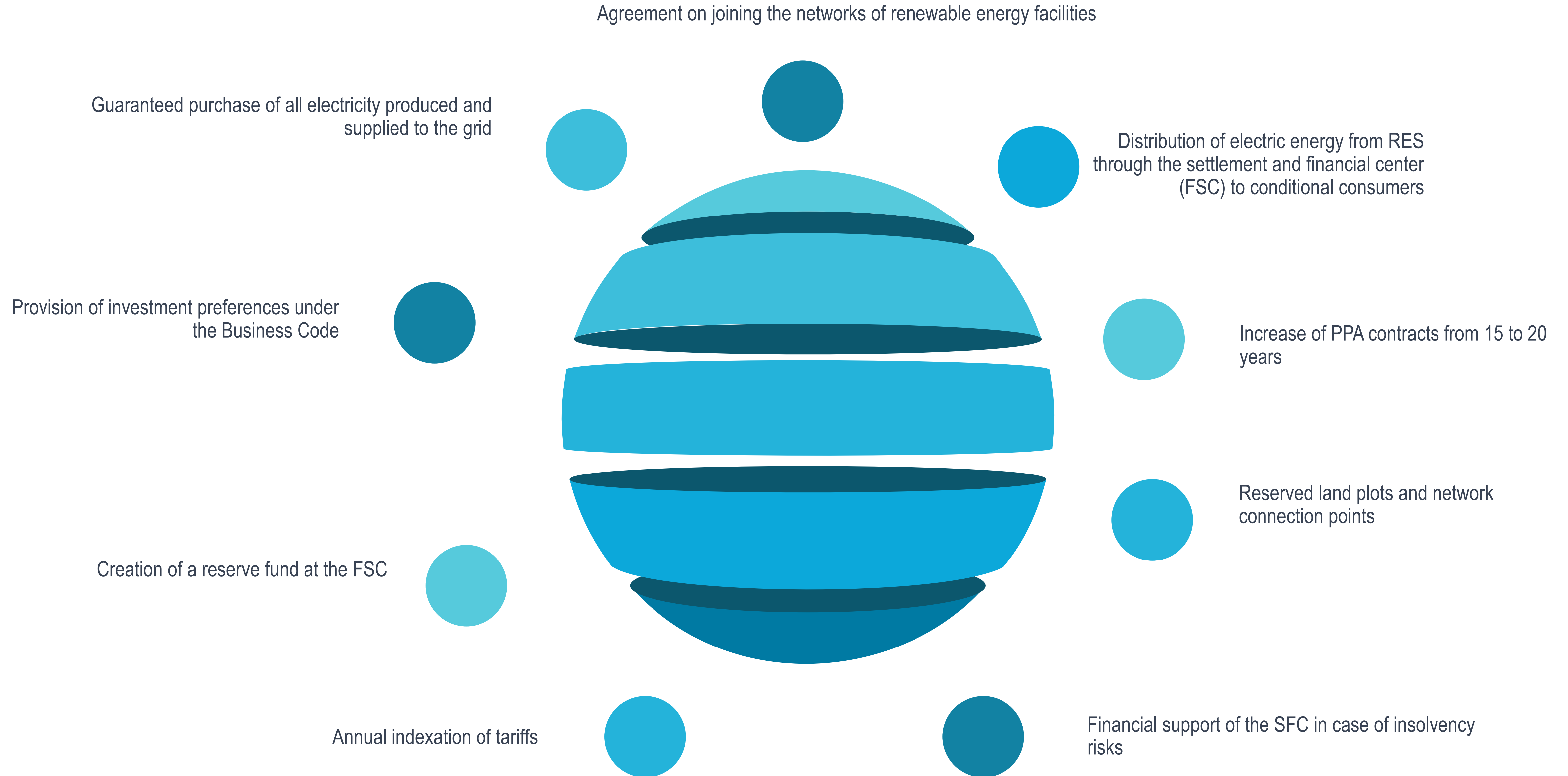
AUCTION PRICES, tg/kWh



Location of existing renewable energy facilities



Legislatively fixed preferential conditions for the development of renewable energy in Kazakhstan



Key indicators of industry development by 2050

Implementation of the strategy to achieve carbon neutrality of the economy of the Republic of Kazakhstan by 2060

01

5 year CHART

On the organization and conduct of auctions for the selection of projects for the construction of renewable energy facilities

Maximum auction price tg/kWh 2023-2027.
 HPP – 41,23
 SPP – 34,61
 WPP – 22, 68
 BioPP – 32,23

02

7 GW by 2030

It is planned to introduce renewable energy generating capacities

03

15% from the total generation

the share of renewable energy from the total generation in the country by 2030

04

50% from the volume of production

the share of alternative energy sources and RES by 2050.

