





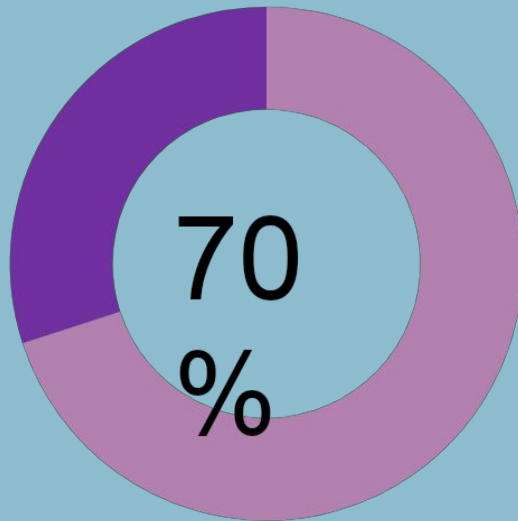
Ecological Renaissance

How planning a new urban and built environment can help Kazakhstan achieve a successful transition to sustainable and low-carbon energy systems





The reason is that we **burn coal**



According to official data, approximately 70% of electricity in Kazakhstan and more than half of all greenhouse gas emissions affecting the climate come from coal burning

In 2018, a decision was made to gasify Astana. The city administration has a plan for gasification, but they are slightly behind schedule



Previously, some officials argued that the capital did not need gasification because of the consistently **strong winds**. However, now we cannot rely on it, as there is **intensive urban development** within the city.



The measures should be **comprehensive**.
We proposed to the city administration to
expand the number of **socially vulnerable**
categories of citizens eligible for benefits in
gasification



It is also necessary to review the cost of the service itself. Owners of private houses complain that installing gas is **expensive**



The image shows a low-angle view of a modern building's facade, characterized by a series of parallel, dark-colored horizontal beams that create a strong sense of depth and perspective. On the left side, a circular logo is visible on a light-colored wall, with the words "WORLD BANK" written in a bold, sans-serif font. A large, light-colored, rounded rectangular bubble is superimposed on the right side of the image, containing text. The text is in a bold, black, sans-serif font, with certain words highlighted in red. The background is a clear, light blue sky.

10 years ago, the **World Bank** conducted a study on Kazakhstan and concluded that **coal burning** causes billions of dollars in damage to our economy in the form of **population illnesses**, disability, and lost working days



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And if we calculate the true cost of coal, taking into account the **damage to health** and the impact on the environment, coal would turn out to be **more expensive** than gas

MAIN CAUSES OF HIGH AIR POLLUTION LEVELS:

Climatic conditions (calm, fog) that lead to stagnation of air in the city, exacerbated by

Astana has 325,939 cars, not including the fact that 15,000 vehicles enter and exit the city through our checkpoints daily. About 2/3 of the vehicles are of operation (over 6 years)

Use of coal by private homeowners, numbering **29,000**

Limited use of renewable energy

Use of thermal power plants (TPPs) burning high-ash Ekibastuz coal (TPP) which is not even purchased in neighboring countries.

High prices for connecting to gas



The Solution





1. Use of public transportation. Despite its seeming simplicity, as demonstrated by the experiences of other cities such as London, Beijing, Zurich, Curitiba, Bangalore, Helsinki, and Freiburg, this is the most effective method

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2. In addition to public transport, a shift to energy-efficient vehicles, electric scooters, and bicycles. Cities like Chicago, Shanghai, Barcelona, Montreal, Malmo, Strasbourg, Munich, Amsterdam, and Copenhagen serve as bright examples of bicycle use

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3. Launching gas-powered thermal power plants (TPPs) and installing filters on existing ones

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**4. Population control in the city
(1.5 million)**

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Annually, the republic generates an average of 4.5-5 million tons of municipal solid waste (MSW), of which only 20% is sorted and recycled, while the remaining volume is disposed of in landfills



4.5
million
tons



According to calculations, in just 3 years, the volume of solid household waste, currently at 4.5 million tons, will reach 8 million tons per year.



**8
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tons**



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Will the country's waste management industry cope with such a load?





Calls for Kazakhstan to transition to waste sorting and recycling have been raised repeatedly, but in practice, state-owned facilities that sort and process municipal solid waste (MSW) exist only in Astana, Shymkent, and Zhanaozen

A young green plant with several leaves is growing out of a large pile of various types of trash, including plastic bottles, cans, and paper. The background is a clear blue sky. On the left side of the image, there are several vertical, rounded rectangular bars in shades of purple, orange, and light blue.

The Solution

1. Expansion of the sorting and processing plant network:

Developing infrastructure for waste disposal in other regions of Kazakhstan will help increase the overall recycling capacity.

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2. Increasing awareness and education:

It is crucial to conduct informational campaigns among the population about the importance of waste sorting and its impact on the environment. Educating the public can contribute to more active support and involvement in waste collection and recycling efforts.

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3.Support for private enterprises:

The government can provide financial and infrastructural support to private enterprises engaged in waste processing to stimulate their growth and increase the overall recycling rate.

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4. Implementation of modern technologies:

Utilizing advanced technologies in waste sorting and processing can enhance process efficiency and reduce the negative impact on the environment.

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5. Development and implementation of strict standards:

Strengthening regulations and standards in waste management, along with their more rigorous enforcement, can contribute to an improvement in the situation.

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"Everything is water"

-Thales of Miletus

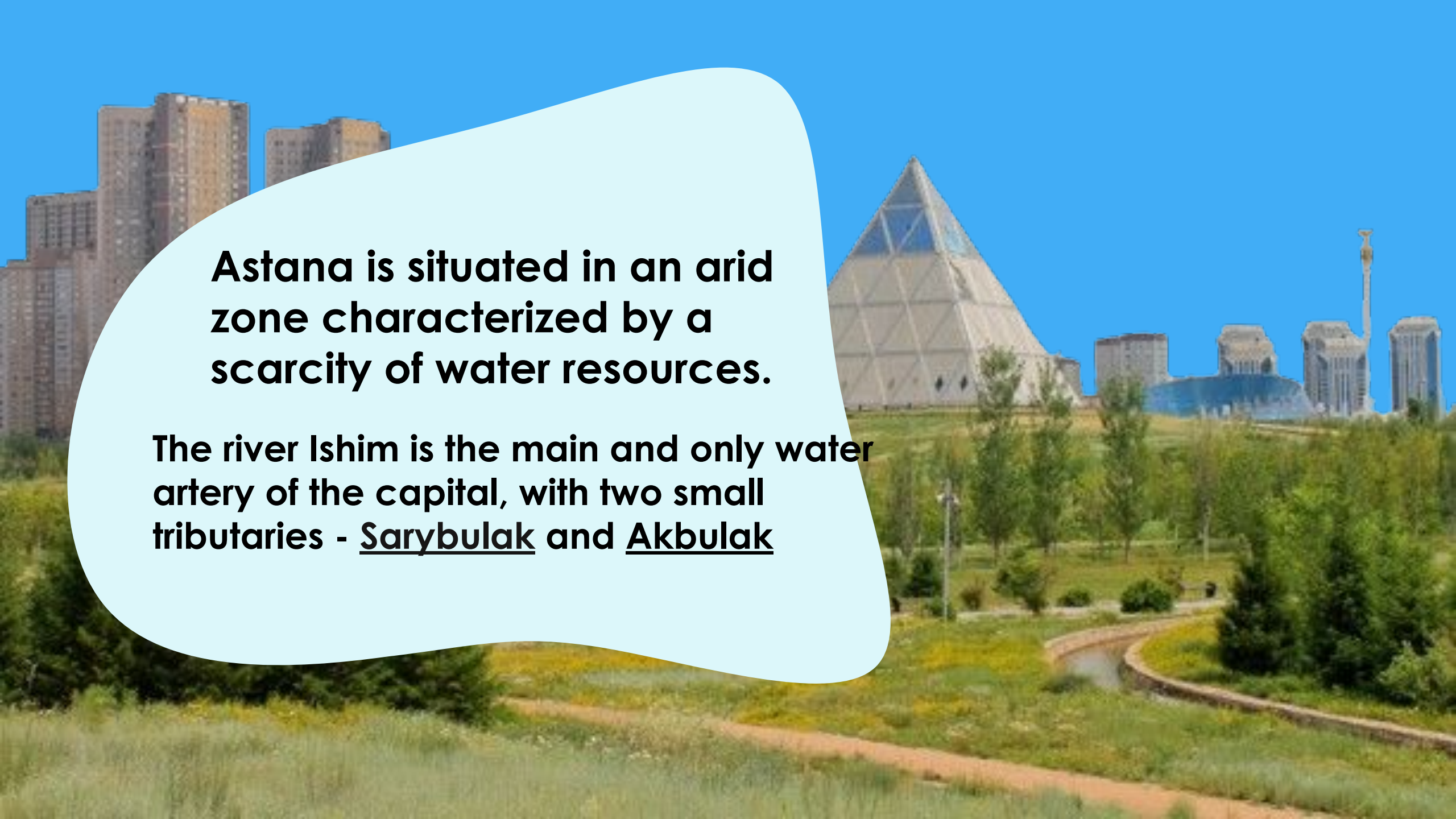
"Everything is water"

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**Water consumption
has increased by
↑15.6%**

**Five years ago,
Astana became a
city with a population
of one million, and
today, according to
official data, the city
is home to 1.3 million
people**



Astana is situated in an arid zone characterized by a scarcity of water resources.

The river Ishim is the main and only water artery of the capital, with two small tributaries - Sarybulak and Akbulak

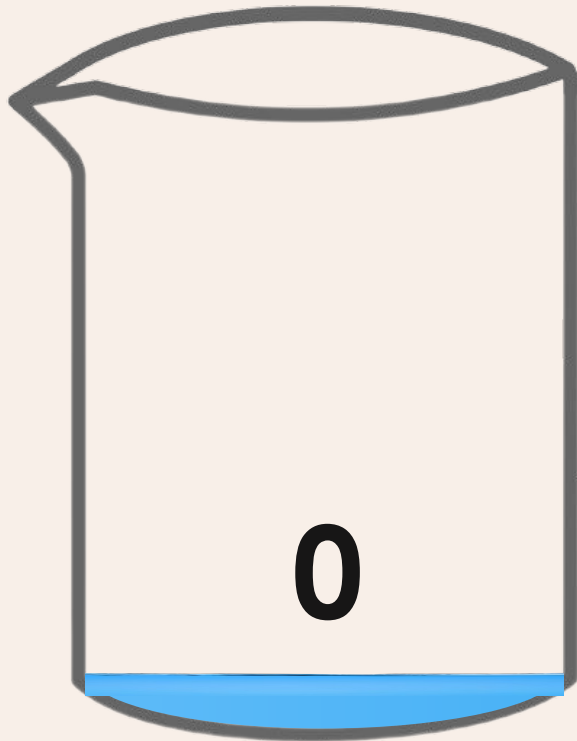


**The water demand in 2023 is
97 million cubic meters**

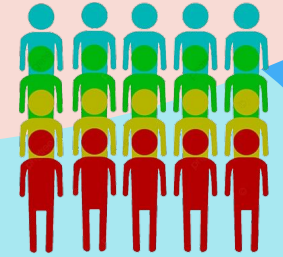


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**Of these, 46 million cubic meters
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In the year 2030, the population is projected to reach 2 million, requiring 150 million cubic meters of water

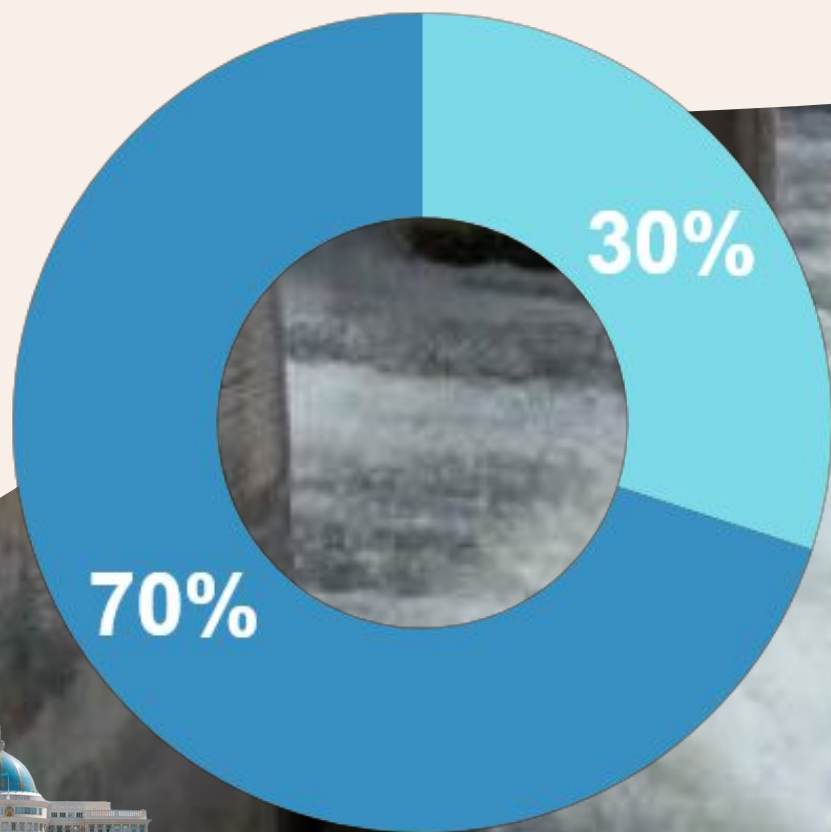


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Of these, 46 million cubic meters have been used

And there is a need for an additional volume of 51 million cubic meters by the end of the year


30% of the reservoir consists of sedimentation: **silt and sand**. Each year, approximately **1 million** cubic meters of water are filled with **sediment**



The only source providing drinking water supply to the capital is the Astana Reservoir, constructed in 1970

Only now, after 50 years of the reservoir's existence, have efforts begun to clean it





As stated by the mayor, the new facilities will ensure the required volume of water until 2035

Astana Akim (Mayor) Zhenis Kasymbek announced the construction of a second water pipeline, measuring 44 km in length

Do you know that:

Flushing the toilet once uses 8-10 liters of water

Filling a bathtub consumes 150-200 liters of water

Taking a 5-minute shower uses 100 liters of water

An open tap can pour out approximately 1000 liters of water per hour





The Solution



1. Construction of treatment facilities for industrial wastewater with a system for their transportation

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2. Reuse of treated wastewater in industrial water supply systems

ution



3. Implementation of closed-loop and zero-discharge water supply systems

ution



4. Development of wastewater treatment methods and liquid waste recycling

ution



5. Implementation of an automatic monitoring system for the composition of water bodies and the volume of wastewater discharge

ution

