On approval of the Concept for the development of energy saving and increasing energy efficiency of the Republic of Kazakhstan for 2023 – 2029

Decree of the Government of the Republic of Kazakhstan dated March 28, 2023 No. 264.

The Government of the Republic of Kazakhstan DECIDES:

1. Approve the attached Concept for the development of the sphere of energy saving and increasing energy efficiency of the Republic of Kazakhstan for 2023 - 2029 (hereinafter referred to as the Concept).

2. Central, local executive bodies, government bodies directly subordinate and accountable to the President of the Republic of Kazakhstan (as agreed), and other organizations (as agreed) responsible for the implementation
Concepts:

1) take the necessary measures to implement the Concept;

2) provide information on the progress of implementation of the Concept in the manner and within the time limits established by Decree of the Government of the Republic of Kazakhstan dated November 29, 2017 No. 790 “On approval of the State Planning System in the Republic of Kazakhstan.”

3. Entrust control over the implementation of this resolution to
Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan.

4. This resolution comes into force from the date of its signing.

A. Smailov

Prime Minister of the Republic of Kazakhstan

Approved
Government resolution
Republic of Kazakhstan
dated March 28, 2023 No. 264

Concept
development of energy saving and energy efficiency improvement in the Republic of Kazakhstan for 2023 – 2029

Section 1. Passport

Designation	Concept for the development of energy saving and increasing energy efficiency of the Republic of Kazakhstan for 2023–2029
Reasons for development	Instruction of the President of the Republic of Kazakhstan K. Tokayev, given following a meeting on energy and engineering infrastructure issues dated March 2, 2022 No. 22-01-7.4, paragraph 2.6 "regarding the formation of proposals for changes

	energy saving policies and increasing energy efficiency of economic sectors, taking into account advanced international experience"
State body responsible for developing the Concept	Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan
State bodies responsible for the implementation of the Concept	Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan, Ministry of Energy of the Republic of Kazakhstan, Ministry of National Economy of the Republic of Kazakhstan, Ministry of Finance of the Republic of Kazakhstan, Ministry of Justice of the Republic of Kazakhstan, Ministry of Education of the Republic of Kazakhstan, Ministry of Science and Higher Education of the Republic of Kazakhstan, Ministry of Digital Development, Innovation and Aerospace Industry of the Republic of Kazakhstan, Ministry of Information and Social Development of the Republic of Kazakhstan, Ministry of Ecology and Natural Resources of the Republic of Kazakhstan, local executive bodies, Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, Agency for Protection and Development of Competition of the Republic of Kazakhstan
Implementation deadlines	2023-2029

Section 2. Analysis of the current situation

The beginning of a modern energy saving system was laid in 2012 with the adoption of the sectoral Law of the Republic of Kazakhstan “On Energy Saving and Improving Energy Efficiency” (hereinafter referred to as the Law), which provides for the main directions of the policy of energy saving and increasing energy efficiency.

The basis for creating an energy saving policy was the goal of reducing GDP energy intensity as an indicator of the level of efficient use of the state's fuel and energy resources by 25% by 2025 from the 2008 level

of the year.

At the first stage, the key emphasis was placed on the industrial and energy sectors, whose share in the structure of primary consumption accounted for the largest share of the country’s consumed resources (36.9%).

More than 30 regulatory legal acts were approved regulating activities in the field of energy efficiency and stimulating energy saving. The State Energy Register, within the framework of which the energy consumption of more than 81 thousand industrial and energy enterprises, agricultural enterprises, organizations in the transport and public sectors was monitored, became effective tools.

An energy management system was introduced by 100 large industrial enterprises. More than 2,000 organizations conducted an energy audit, based on the results

which implemented 8,500 energy-efficient measures worth 354 billion tenge.
The implementation of the measures made it possible to reduce energy consumption at these enterprises by 2.6 million tons of standard fuel per year, which is commensurate with the annual energy consumption of 17 thousand schools.

The next stage in the development of energy saving was the mechanism of energy service contracts. During 2015-2020, 92 contracts were implemented on the principle of energy service agreements in the amount of 71 billion tenge. The bulk of the contracts were concluded for the modernization of street lighting and heating systems (
boiler houses, heating points, etc.) of budgetary organizations.

To attract investment in the development of energy saving and energy efficiency, a fundamentally new financial support mechanism has been introduced
energy saving projects aimed at creating conditions for guaranteeing loans (up to 90% of the loan amount) provided by second-tier banks.

Thanks to an active commitment to energy efficiency policies, in 2021 a reduction in GDP energy intensity by 38.5% from the 2008 level was achieved (0.32 t.o.e./thous.
dollars in 2015 prices versus 0.52 t.e./thous. dollars in 2015 prices).

However, according to a review by the International Energy Agency based on the results of 2020, the energy intensity of Kazakhstan's GDP in comparison with the world average is 2 times higher (the world average is 0.17 t.e. per 1,000 $ in 2015 prices), with OECD countries 3 times higher. 2 times (0.11). At the same time, in this indicator we are ahead of Russia (0.53) and Uzbekistan (0.42).

To ensure a further reduction in the energy intensity of GDP in 2022, amendments to the Law of the Republic of Kazakhstan "On Energy Saving and Increased Energy Efficiency" were adopted, aimed at strengthening the policy of energy saving and increasing energy efficiency in the public sector ("energy efficient" public procurement, full coverage of energy consumption monitoring, issuing recommendations to budgetary organizations), expanding the role of local executive bodies in matters of energy saving, reforming the energy audit system in order to improve the quality of services and ensure their availability, increasing the level of responsibility of control subjects, regardless of categories, through the introduction of preventive control without visits, the introduction of an individual approach to reducing the energy intensity of manufactured products.

2.1. Industry

Work with large consumers of the industrial sector yielded positive results during the formation of energy saving policies.

According to the fuel and energy balance in the format of the International Energy Agency in 2021, energy consumption by the industrial sector (including, inter alia, the extraction and processing of coal, oil and gas) amounted to

38.5% of energy (26.4 million toe from 68.7 million toe) of the total primary energy consumption of the Republic of Kazakhstan.

During 2019-2021, the growth in energy consumption by the industrial sector amounted to 4.4% (2019 - 25.3 million toe, 2020 - 25.4 million toe, 2021 - 26.4 million t.c.e.).

In 2021, the energy intensity of the industrial sector decreased by 2.2% compared to 2019 (2019 - 0.4 t.e./thousand US dollars, 2020 - 0.391 t.e./thousand US dollars USA, 2021 – 0.391 t.e./thousand US dollars).

Despite the successful implementation of energy saving policies, the industrial sector still remains one of the main consumers of energy resources. In the structure of total final energy consumption (hereinafter referred to as TFEC), the industrial sector accounts for 30.3% of energy resources (in terms of the share of consumption in 2nd place after the residential sector).

The most energy-intensive industry is the manufacturing and mining industry, which accounts for more than 90% of the total energy efficiency of the industrial sector. Among the manufacturing industries, the largest energy consumption
accounts for ferrous and non-ferrous metallurgy.

According to the results of energy audits, the energy saving potential of the manufacturing industry is 7%, and the mining industry is from 5 to 20%.

One of the reasons for the significant potential of industrial enterprises of the Republic of Kazakhstan is the obsolescence of the technological process and physical wear and tear of equipment, which reaches 45–60%, which leads to underutilization of production capacity and high specific consumption
energy production lines.

Problems of the industrial sector:

operation of outdated equipment that does not meet efficiency requirements;

lack of financial opportunity to implement energy-saving measures, as well as incentives and preferential conditions for financing energy-saving projects;

lack of highly specialized qualified specialists, as well as low
level of consciousness in local energy efficiency issues.

2.2. Energy

According to the FEB in the IEA format, in 2021, the net consumption of energy resources in the energy sector (excluding mining and processing of coal, oil and gas) amounted to 21.7% of energy (14.97 million toe from 68.7 million toe .e.) from the total primary energy consumption of the Republic of Kazakhstan.

During 2019–2021, the growth in net consumption of energy resources in the energy sector amounted to 19.2% (in 2019 - 12.56 million toe, in 2020 - 11.05 million toe, in 2021 – 14.97 million toe).

In 2021, the energy intensity of the energy sector increased by 12.8% compared to 2019 (2019 – 3.68 t.o.e./thousand. US dollars, 2020 – 3.24 t.o.e./thousand. US dollars, 2021 – 4.15 t.o.e./ thousand. US dollars).

The energy sector includes generation, transmission, supply activities heat and electricity.

Within the framework of the State Energy Register, 192 energy enterprises are monitored. An analysis of the conclusions of energy audits of energy enterprises revealed an average energy saving potential of 8%.

The growth in energy intensity of the energy sector (generation, transmission, supply) is associated with a high level of wear and tear on the main and auxiliary equipment of energy enterprises, an increase in demand for secondary energy resources, the containment of low tariff prices, a lack of investment attractiveness, as well as low wages for specialists in the energy sector.

Electric power industry

The production of electrical energy in the Republic of Kazakhstan is currently carried out by 204 electrical stations with a total installed capacity of 24,523.7 Megawatts and available capacity of 19,024.3 Megawatts. Electricity production in 2022 in Kazakhstan amounted to 112.8 billion kilowatts per hour with consumption of 112.9 billion kilowatts per hour.

Today, 55.5% of generating equipment at power plants is over 30 years old, 5.8% – 21–30 years old, 13.1% – 11–20 years old, 18.2% – 5–10 years old, 7.4% – up to 5 years. The total physical wear and tear of the equipment amounted to 59%, which more than halved the efficiency of the stations.

The level of wear and tear of electrical networks in the Republic of Kazakhstan is on average 66%, which leads to losses of electrical energy during transportation of 5% against standards of 6-7%. The level of losses in regional power grids averages about 14%. The losses are associated with the operation of most power lines for more than 40 years and a significant length. Most of the electrical networks were created in the 1970s.

In addition to the inefficient use of fuel and energy resources by the energy sector, the above problems also reduce the reliability of the functioning of the energy system of Kazakhstan and, first of all, affect the country’s energy security and the sustainability of the economy.

According to the forecast balance of electrical energy and capacity in Kazakhstan for 2023–2029, a significant shortage of electrical energy and capacity is expected

due to accelerated economic growth and growing demand for electrical energy.

Thermal power engineering

The heat supply sector is characterized from production to consumption of thermal energy by low efficiency on average 75% for boilers and 58% for the entire system, high heat losses from 18 to 42% at the stage of heat transportation and distribution. Only 35–50% of fuel energy is converted into electrical and thermal energy,

released into the network, the remaining part is spent on production processes.

In the Republic of Kazakhstan there are 37 thermal sources with a total installed capacity of 43,231 gigacalories per hour, the available capacity is 37,566.7 gigacalories per hour. There are 15 thermal power plants owned by the state (the cities of Semey, Kostanay, Kentau, Uralsk, Arkalyk, Shakhtinsk, Astana, Kyzylorda, Taraz, Aktau, Almaty).

In 2022, heat energy production amounted to 95.6 million gigacalories, of which 55.9 million gigacalories came from thermal power plants and 32.6 million gigacalories from
boiler rooms

The number of emergency stops for 2022 increased by 23% (1,789) compared to 2021 (1,456). This increase is due to the high level of equipment wear, which is 66%. The average age of thermal power plants is 61 years.

The heat power industry covers centralized heat supply systems for public use, local, central and individual heat supply. There are significant technical and economic problems at all stages of the process (production, transmission, distribution and consumption of thermal energy).

The total length of heating networks in two-pipe terms throughout the republic is about 13.9 thousand kilometers. At the same time, 49.2% or 6.246 thousand kilometers of networks require replacement. The average wear and tear of heating networks is 57%.

Energy problems:

wear and tear of main and auxiliary equipment;

lack of investment attractiveness;

lack of highly specialized qualified specialists, as well as low
wage level.

2.3. Budget sector

Energy consumption in 2021 in the budget and commercial sectors increased by 20% compared to 2019 (2019 - 4.6 million toe, 2020 - 3.9 million toe and 2021 g. – 5.5 million toe).

The register of state enterprises and institutions, legal entities with state participation in the authorized capital of the Republic of Kazakhstan includes 27,378 organizations financed from the local or republican budget.

According to the State Energy Register (monitoring was carried out in relation to budgetary organizations with buildings and structures), government institutions and enterprises account for 4.76% of the OCPE.

Most government institutions have low energy efficiency classes (79% of buildings correspond to energy efficiency classes F and G, classes C and D - 11%, and classes B and A - only 6 and 4%, respectively),

The bulk of public sector buildings are not connected to district heating and are provided with gas, coal, diesel and electric boilers with 60–80% efficiency.

The energy saving potential for all types of energy resources in this sector is about 40%.

Problems of the public sector

lack of conditions for concluding energy service agreements in the budget sector;

lack of possibility of concluding contracts for public procurement of goods, works and services according to the criterion of greatest consumption savings.

2.4. Housing sector

The housing and communal services sector is one of the most energy-intensive sectors of the economy of the Republic of Kazakhstan and is the first largest consumer in the OCPE, accounting for 34%.

Energy consumption in the residential sector in 2021 increased by 28.3% compared to 2019 (2019 - 11.8 million toe, 2020 - 13.5 million toe and 2021 – 14.7 million toe).

According to the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, the total area of the housing stock of the Republic of Kazakhstan is 405.2 million square meters. meters, of which about 65% are in urban settlements and 35% in rural areas.

There are 54,731 small railways in the republic, a third of them are older than 1970 (50 years and more) and about 65% of the housing stock put into operation more than 25 years ago.

As of the end of 2022, the housing stock is equipped with central heating by 44%, central hot water supply by 38%, and is also provided with heat and water meters by 76%.

The housing and communal services sector is one of the largest consumers of heat and electricity (17% of generated electricity and up to 44% of heat). By

as of 2022, 82.1% of urban apartment buildings and 6.8% of apartment buildings in rural areas are connected to centralized heating.

The reasons for the high energy consumption of the housing sector in the Republic of Kazakhstan are the technical condition of the existing housing stock, low level of building codes and regulations in the design and commissioning of residential buildings, as well as a system for managing and maintaining residential multi-apartment buildings buildings, low public awareness.

Today in Kazakhstan there are no measures aimed at increasing public awareness of careful consumption of energy resources. So . According to a survey conducted by the United Nations Development Program in Kazakhstan, it was revealed that that only a third of respondents (35% of 2,500 respondents) are aware of the benefits of an energy-saving lifestyle.

Problems of the housing sector:

low level of compliance with requirements for energy saving and increasing energy efficiency during the design and commissioning of newly constructed buildings and low awareness of the population in matters of energy saving and increasing energy efficiency;

lack of organizational and financial instruments to promote energy efficient construction and modernization of buildings.

2.5 Transport sector

The transport sector is one of the most energy-intensive sectors of the economy Republic of Kazakhstan and is the third largest consumer in the OCPE (after the residential sector and industry), accounting for 18.6%. of total final energy consumption.

The use of fuel and energy resources by the transport sector in 2021 increased by 36% compared to 2019 and amounted to 8 million toe. The reasons for this growth are natural population growth with relatively low gasoline prices, as well as low population density and urbanization with large distances between cities and towns.

Structure of energy resource consumption by mode of transport as follows:

89.9% - road transport;

6.7% - railway transport;

2.1% - domestic air transportation.

Automobile transport

As of the end of 2022, the number of registered vehicles in Kazakhstan amounted to 4,403.6 thousand units (87.9% -

passenger cars, 10% - trucks and 2.1% - buses), 94.5% of road transport accounts for personal transport of the population.

Compared to the same period in 2021, the number of vehicles overall increased by 3.7% (passenger cars increased by 2.9%, trucks by 7.1%, buses by 24.7%).

By type of fuel consumption by passenger vehicles, 88% of the total amount is gasoline, 1.9% is diesel fuel and 10.1% is mixed (gas-gasoline, hybrid and various types of fuel).

Among registered passenger cars, vehicles with a year of manufacture over 20 years predominate - 49.6%, with a year of manufacture from 10 to 20 years - 21.1%, from 7 to 10 years - 14.8%, with a year of manufacture not exceeding 3 years, -8% with a year of manufacture from 3 to 7 years - 6.4%.

There is an increase in electric vehicles; in less than three years, their number has increased 16 times.

Railway transport

Railway transport is one of the important basic industries economy of Kazakhstan, ensures its internal and external transport and economic relations, and the transportation needs of the population.

The largest operator of the main railway network in Kazakhstan is NC Kazakhstan Temir Zholy JSC (hereinafter referred to as NC KTZ JSC).

According to the State Energy Register, in 2022 the total volume energy consumption of NC KTZ JSC amounted to 1,235,028.2 tons of standard fuel.

According to the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, at the end of 2022, the locomotive fleet in the republic is 1,730 units, of which 583 are electric locomotives and 1,147 diesel locomotives. The electrified share of tracks is 26.4%, non-electrified – 73.6%.

The enterprise has implemented an energy management system and an automated control system "Energy Dispatch Traction", due to which the reduction in specific electricity consumption for train traction amounted to 10% (121 kilowatts per hour/10,000 gross tons kilometers in 2021).

Transport sector problems:

operation of technically worn-out vehicles;

lack of monitoring of transport sector fuel consumption;

urban design is not optimized for access to city public transport.

Section 3. Review of international experience

3.1 Industry

The US Department of Energy has created the information platform "Better Plants" for voluntary partnership and exchange of experience, including many components that partners can use on their way to saving energy resources, with the goal of increasing energy efficiency in energy-intensive industrial enterprises.

To date, more than 270 industrial companies have joined Better Plants. enterprises that saved more than 9 billion US dollars and 47.9 million toe.

In addition, in 2019, the ENERGY STAR international partnership program was launched, providing consultation on energy conservation issues, which allowed industrial enterprises to save 35 billion kilowatts per hour of electricity and 2 billion US dollars.

As part of the "ENERGY STAR" program for industrial enterprises, there is a global call "Energy star Challenge for Industry" to reduce energy intensity by 10% over 5 years.

Between 2019 and 2022, 60 businesses that responded to the global call achieved reduced energy intensity and earned ENERGY STAR certification, as well as were included in the register of enterprises that achieved established goals.

China has invested more than US$300 billion in government subsidies into energy conservation at industrial plants, which receive US$95 in subsidies for every ton of coal saved.

equivalent per year.

Taking into account the above international experience, we believe that it is possible to use it in the Republic of Kazakhstan in terms of financing measures to replace physically worn out and technically obsolete equipment to reduce specific consumption.

3.2 Energy

The European Bank for Reconstruction and Development (hereinafter referred to as the EBRD) implements projects aimed at economic stability and inclusive growth of the energy sector. One such project is improving the safety of a large energy-producing facility in the Republic of Tajikistan worth $88 million, which reduced energy losses from 27% to 10%.

In addition, the EBRD opened a credit line in the amount of USD 49.4 million to finance projects for energy grid metering systems and modernization of the electricity distribution network of the Tajik Republic.

The EU is promoting cogeneration technology to improve energy efficiency in Europe installations that can achieve energy efficiency levels of up to 90%.

EU countries used the mechanism of incentive tariff formation (RAB-tariffs) to update power grids, the implementation of which in 7 years in Romania made it possible to update a third of power grids.

The EU also launched the Connecting Europe Facility (CEF) financing program for the period 2021-2027 to implement policies aimed at supporting investments in the construction of new energy infrastructure, as well as the rehabilitation and modernization of existing networks, with a budget of 5.84 billion
euro.

The Republic of Korea uses support measures that include pricing mechanisms based on end-user electricity consumption to promote sustainable energy consumption.

To reduce losses and improve efficiency in the energy sector
The Republic of Kazakhstan is most interested in the experience of the EU countries and the Republic of Korea.

3.3 Budgetary sector

EU member states have openly stated that they are prioritizing policies to improve energy efficiency in the buildings sector, given its share of energy consumption. A common measure is the thermal modernization of buildings. Thus, in Sweden and Germany, technologies are widely used for installing energy-efficient windows, insulating walls and roofs, installing heat pumps and ventilation systems with heat recovery, which reduce energy consumption for heating by up to 30%.

In France, the criteria for providing financial support are both the level of energy efficiency and the level of income (energy poverty).

Based on the Japanese experience, the Top Runner program encourages building owners to improve efficiency criteria and set standards and regulations. In addition, companies that fail to meet the standard's targets may be subject to penalties and recommendations.

For Kazakhstan, the most applicable experience is that of the EU countries in thermal modernization of public sector buildings due to harsh climatic conditions, as well as Japan in terms of applying liability recommendations and fines, which encourages more efficient consumption of energy resources by the public sector.

3.4. Housing sector and population

To address the issue of energy efficiency in buildings, new building codes and minimum energy standards for new and existing buildings are being actively developed in more than 30 countries.

In Ukraine, investments in the energy modernization of apartment buildings received new incentives for development from the Energy Efficiency Fund (hereinafter referred to as the Fund), founded in 2018. During the implementation period of the Fund, 818 applications were approved. The total cost of the projects is about 8.2 billion hryvnia, the amount of grants is 5.1 billion hryvnia, the expected energy savings after their implementation are more than 437 million kilowatt hours
in year.

The experience of Lithuania is also noteworthy, where the modernization of apartment buildings began back in 2004, after the country's government adopted the Program for the Modernization of Apartment Buildings, which established the conditions for modernization and support mechanisms. The project, which received assistance from the Lithuanian government's modernization program, must ensure that the buildings achieve an energy efficiency class of at least C. Since the beginning of the program, 1,800 multi-apartment residential buildings have been modernized, reaching

50% savings on heating costs.

Romania is implementing a national program to improve the energy efficiency of prefabricated residential buildings, the main goals of which are to reduce annual thermal energy consumption to below 100 kilowatts per hour/m² per year and improve the quality of interior spaces. The program is aimed at multi-story apartment buildings built between 1950 and 1990. During the program period, 1,518 residential buildings were modernized, covering 55,293 apartments, which made it possible to reduce annual energy consumption to below 225 kilowatt hours per square meter.

When developing the organizational and financial framework for energy saving in residential buildings, revolving funds and auctions common in EU countries also deserve attention.

The international experience described above can be applied in Kazakhstan through
borrowing and corresponding adaptation of its individual elements.

Raising awareness is a very important component in promoting
energy efficiency and dissemination of technologies that are widely used
in almost all countries.

In the Republic of Korea, to promote energy conservation and energy efficiency through
Information campaigns for the population were implemented throughout the country, which made it possible to achieve savings for the Korean economy of about 70 Gigawatts per hour of electricity per year.

Public and private institutions in the United States of America, together with the Alliance for Conservation of Energy (ASE), launched the Energy Hog campaign aimed at promoting energy conservation and energy efficiency, including through public information campaigns.

The Austrian Energy Education Initiative ETSIT was created in response to the EU Energy Efficiency Directive and the Austrian Energy Efficiency Law with the aim of increasing energy literacy among younger generations. Results show that ETSIT improves energy literacy
students at a cognitive, emotional and behavioral level.

It is worth noting that throughout the world, insufficient awareness of the energy efficiency of organizations and individual consumers is the largest obstacle to the implementation of energy-saving projects.

Taking into account the above international experience, we believe that it is possible to use it in the Republic of Kazakhstan in terms of educational, technical, organizational, economic and other areas related to energy saving and increasing energy efficiency.

3.5 Transportation

In the EU, the "Eco driving" program is included in the national energy and climate strategy as a measure to be implemented in the long term. This program actively promotes eco-driving, which achieves a 20% reduction in fuel consumption.

Japan sets and periodically updates fuel economy standards for cars, vans and trucks through its "Top Runner" program.
. Over the past two decades, the fuel efficiency of passenger cars has increased by 96%.

Japan has also updated standards under the Top Runner program, which will aim to increase fuel efficiency by 32% by 2030
year compared to the level of 2016.

An operational system with satellite monitoring is used in 150 countries
transport, which allows you to receive a real-time summary of data on
fuel level and consumption and vehicle location. As a result of the implementation of this system, a reduction in operating costs by 20% and energy consumption by about 30% was achieved.

The UK government has set a transfer target of 25%
government vehicle fleet to electric vehicles by 2025.

The Spanish government has introduced a program to replace old vehicles that consume large amounts of fuel with highly efficient models with
lower level of consumption.

The Internet resource "Energy Saver" operates on the basis of the US Department of Energy, which provides information to car owners on reducing the consumption of energy resources.

Finland has introduced a comprehensive policy package to improve energy efficiency in the transport sector, aiming to make public transport, walking and cycling more attractive than driving.

For Kazakhstan, the experience of EU countries in eco-driving and operational transport monitoring system, which will allow monitoring of consumption fuel.

Section 4. Vision for the development of energy saving and energy efficiency in 2023 - 2029

State policy in the field of energy saving and increasing energy efficiency will be aimed at realizing the energy saving potential of the most energy-intensive sectors of the country's economy, which will create additional cost and reduce costs in the country's economy.

The energy intensity of the industrial sector will decrease by 10%. It will be possible thanks to economic incentives for enterprises on energy saving projects and increasing energy efficiency, taking into account new solutions and technological modernization of industry, the appointment of energy managers at 800 industrial enterprises and the third stage of energy audits.

The tariff setting system will be improved, which will give impetus to updating the technical condition of energy facilities assets by 10%, increasing wages for energy workers and reducing the outflow of qualified specialists to related sectors of the economy.

In order to develop the market for energy service contracts and conclude energy service contracts, mechanisms for financing energy saving projects will be improved.

A real balancing electricity market will be introduced time.

Strengthening liability for violation of energy efficiency requirements in public procurement and exceeding energy consumption standards will allow saving budget funds allocated for paying for utilities, as well as efficiently and economically use energy resources, enter into energy-efficient public procurement of goods, works and services, and will have an effective effect on transforming the equipment market , including increasing share of local content.

Mandatory measures to save energy and improve energy efficiency, including major renovations of multi-apartment residential buildings

houses, training managers for the management of condominium facilities will lead to an increase in the number of buildings corresponding to an energy efficiency class of at least “C”.

A mechanism for post-project monitoring of newly commissioned and under construction buildings will be introduced to ensure compliance with the declared energy efficiency class.
For buildings constructed at the expense of the state budget of all levels, mandatory requirements for energy efficiency class will be established.

Introduction of monitoring of consumption of fuel and energy resources in transport sector, taking into account natural population growth and the development of the transport and logistics potential of the Republic of Kazakhstan, will ensure full coverage of energy consumption in the transport sector.

Improving urban planning and transport infrastructure by developing sustainable urban mobility, renewing the public vehicle fleet and modernization of vehicles, optimization of passenger and cargo transportation, the transition to domestic vehicles using alternative and renewable energy sources, and the creation of appropriate infrastructure will contribute to the fulfillment of the obligations of the Paris Agreement to reduce greenhouse gas emissions.

Section 5. Basic principles and approaches to development

The development of energy saving and energy efficiency will be carried out in accordance with the following principles:

policy with a focus on energy security - ensuring safe, reliable and stable functioning of the industrial and energy complexes of the Republic of Kazakhstan;

balance of interests of the state and private business in tariff setting - maintaining a balance in the implementation of energy saving and energy efficiency policies, as well as tariff setting through constant feedback from the state to business;

modernization with priority on energy efficiency - all sectors of the economy must give priority to energy efficient technologies and solutions;

creating a widespread “energy efficient” culture – attracting attention of all age categories of the population to energy saving;

reducing greenhouse gas emissions and achieving carbon neutrality – meeting Paris Agreement commitments to reduce emissions greenhouse gases.

Taking into account the analysis of the current situation, international experience, development vision and basic principles, it is planned to implement the following approaches.

Direction 1. Industry

In order to increase the competitiveness of production of manufactured products , development of energy saving and increasing energy efficiency of this sector, based on the experience of foreign countries, energy consumption standards will be revised taking into account results of analysis of specific energy consumption per unit production products.

In order to develop energy saving and increase energy efficiency in industry, conditions will be created, including financial ones, for modernizing technological processes and equipment and introducing energy-saving measures in all industries, which will reduce physical wear and tear by at least 10% and increase the efficiency of existing equipment , as well as reduce the cost of products.

In order to provide the sector with highly specialized specialists, it is planned to introduce a discipline on energy saving and increasing energy efficiency in higher educational institutions.

To increase competence and awareness in matters of energy saving and increasing energy efficiency, liability for violation of the current legislation of the Republic of Kazakhstan, including in terms of assignment, will be revised responsible persons for energy saving at the enterprise.

These approaches will ensure savings in energy resources and the realization of energy saving potential in the manufacturing (7%) and extractive industries (12%), which will ultimately result in an annual reduction in energy intensity industrial sector by 1.5%.

Direction 2. Energy

In order to ensure the stable functioning of the energy system, reduce deviations in energy production and consumption of subjects, improve the market for system and auxiliary services, and develop export potential, approaches to the maximum tariff of energy producing organizations will be revised. This will reduce the wear and tear of generating capacities by 10% and increase the efficiency of energy sources, as well as resolve the issue of increasing workers' wages

heat and electricity sectors.

It is planned to introduce a real-time balancing electricity market (with financial settlements).

Changes and additions will be made to the rules for selecting investment programs for the modernization of energy producing organizations, which

will allow you to coordinate and ensure the implementation of action plans for energy saving and energy efficiency improvements
for a period of five years, bring the actual performance of energy enterprises to regulatory, reduce the specific costs of energy enterprises for the production of enterprise products, increase the competitiveness and investment attractiveness of the enterprise. This will also contribute to their compliance with legislative requirements in the field of energy conservation and energy efficiency.

In addition, in order to reduce wear and losses during the transfer of thermal energy, legislative possibilities for tightening control over communal heat supply systems during their operation and repair will be considered.

Direction 3. Budgetary sector

In order to develop the significant energy saving potential of the public sector an increase in the share of purchased energy-efficient equipment will be ensured by monitoring public procurement of goods, works and services for compliance with energy efficiency requirements, as well as establishing administrative liability for their violation.

Local executive bodies will implement on an annual basis
measures to save energy and improve energy efficiency of at least 20 buildings through the mechanism of energy service agreements.

To implement energy saving and energy efficiency projects in the public sector, measures will be taken to eliminate legislative barriers in terms of concluding and financing the mechanism of energy service agreements from budget savings provided for

payment of utilities.

The practical experience of the facility modernization project will be scaled up social sector implemented by the World Bank.

Direction 4. Housing sector

Taking into account the high growth rates of energy consumption
housing sector, the development of energy saving and energy efficiency improvements will be based on international experience in energy-intensive construction for the purpose of further implementation in Kazakhstan.

Determining the need for major repairs of the housing stock will be carried out by identifying the most energy-intensive multi-apartment buildings

residential buildings.

Reducing the energy intensity of the housing sector will be achieved through the development of energy-efficient construction, for which the requirements for energy efficiency of building materials, products and structures will be revised and measures will be developed to stimulate the construction of high-class energy efficiency facilities.

New financing mechanisms will be created and existing ones will be improved, and additional incentives will be developed for developers who apply voluntary green standards in their projects to achieve multi-apartment residential buildings with an energy efficiency class of at least “C”.

The formation of an "energy efficient" society will be achieved through the implementation of a campaign to raise awareness of the issues of careful use of energy resources. The attention of teachers and children will be attracted to instilling energy-saving habits, and through children the influence will be exerted on their family members.

Information on the energy consumption of household appliances will be widely available. When choosing residential property, citizens will try to choose housing with the lowest energy consumption. Training seminars will be held for management bodies of condominium facilities with the dissemination of relevant methodological recommendations, which will help improve the efficiency of implementation of energy-saving measures in the residential sector.

Direction 5. Transport

Taking into account the annual population growth, as well as the increase in the number of vehicles, improving energy efficiency in this sector will be carried out by updating the public vehicle fleet and increasing its number in the most densely populated cities of Kazakhstan, which will lead to an increase in the attractiveness of using public transport.

Monitoring of the consumption of fuel and energy resources will be carried out through a large-scale analysis of the consumption of energy resources by the transport sector, which will become the basis for updating existing requirements for energy efficiency of transport.

The development of energy efficiency in the transport sector will also be carried out by revising the technical requirements and master plans of urban neighborhoods with access to public transport, as well as organizing and improving the existing bicycle road infrastructure.

Direction 6. General (intersectoral) approaches

To ensure the reliability of energy consumption data, the integration of the AIS GER with the information systems of Kazakhstan will be carried out, and also for the strategic planning of the development of the energy system, the integration of the main characteristics relevant for the infrastructure of network elements and equipment, specialized information for balancing the load on the network, consumption data and raw materials, demand and cost dynamics.

The most important aspect of the introduction of energy efficient technologies and measures is financial security, which will be achieved through the creation of an Energy Efficiency Fund, the capitalization of which can be carried out through special contribution systems from all enterprises or as credit lines from international financial organizations. The Fund's funds will be used to support programs for energy efficiency projects (subsidies, grants, or loans). This will take into account the opportunities that green bonds and the green taxonomy provide for long-term and large-scale investment activities in the medium and long term.

To comply with the requirements in the field of energy saving and increasing energy efficiency, the issue of introducing amendments and additions to the Code of the Republic of Kazakhstan “On Administrative Offenses” will be worked out to establish administrative liability in terms of exceeding energy consumption standards by government agencies, violating requirements for energy saving and increasing energy efficiency in public procurement, as well as commissioning of buildings, structures and structures that do not meet energy efficiency requirements.

In order to increase human resources in the field of energy saving and increasing energy efficiency for students studying in technical specialties, disciplines on energy saving and increasing energy efficiency will be introduced into the educational programs of higher educational institutions and technical and vocational education institutions.

Section 6. Target indicators and expected results

Target indicators

reducing the energy intensity of industry by 10% by 2029 from the 2021 level;

reducing the energy intensity of the energy sector by 5% by 2029 from the 2021 level

;

reduction in energy consumption per unit area of premises by 10% to 2029 from the level of 2021;

reduction in energy consumption per capita by 5% by 2029 from the 2021 level.

Expected results:

reducing the energy intensity of GDP by 10% by 2029 from the 2021 level;

reduction in wear and tear of electrical and heating networks by 5%;

reduction of wear and tear on the main and auxiliary equipment of power generating plants organizations by 5%;

attracting investments in the field of energy saving in the amount of USD 20 million;

increasing public awareness of energy saving issues with coverage of more than 50%.

Application
to the Concept of development of the sphere
energy saving and increasing
energy efficiency
Republic of Kazakhstan
for 2023 - 2029

Action plan
on the implementation of the Concept for the development of energy saving and increasing energy efficiency of the Republic of Kazakhstan for 2023 - 2029

ÿ n/p	Designation about the basics events	Completion form	Completion date	Responsible performers
1	2	3	4	5
Direction 1.Industry				
Target indicator 1. Reducing the energy intensity of industry by 10% by 2029 from the level of 2021 (2023 - 1.43%, 2024 - 2.86%, 2025 - 4.29%, 2026 - 5.71%, 2027 - 7, 14%, 2028 – 8.57%, 2029 – 10%)				MIID, ME, MNE, Ministry of Justice, Ministry of Finance, LIO, JSC "IREK" (by agreement)
1.	Carrying out comparative analysis of specific r a s h o d o v energy resources for production units of production in the fields of oil and production and enrichment mineral raw materials , production steel and non-ferrous m e t a l l o v foreign countries and Republic of Kazakhstan	analytical gas production, report	August 2023	MIIR, AD, JSC "IREEK" (by agreement)
	In n e s e n i e changes and additions to the prika			

2.	z Minister for investments and development of the Republic of Kazakhstan from 31 March 2015 No. 3 9 4 "About approval energy consumption standards" based analysis results	ministerial order industry and infrastructure DEVELOPMENT OF THE REPUBLIC OF KAZAKHSTAN	November 2023	MIID, ME, MNE, Ministry of Justice, JSC "IREEK" (by agreement)
3.	Attraction with r e d s t v international financial organizations on implementation of measures financial support energy saving projects	agreement	September 2024	MIID, Ministry of Finance, MNE, JSC "IREEK" (by agreement)
4.	Modernization and reconstruction main and auxiliary equipment industrial enterprises	input acts into operation	December 2023- 2029	MIIR, MIO, JSC "IREEK" (by agreement)
5.	Establishment administrative responsibility for non-performance responsibilities for purpose responsible persons By energy saving and increase energy efficiency these subjects of the State energy r e e s t r a consuming energy resources in volume, equivalent one thousand five hundred and more than tons standard fuel in year	draft Law Law	November 2023, March 2024	MIIR, MNE, Ministry of Finance, Ministry of Justice, Local Executive Office, JSC "IREK" (by agreement)
Direction 2. Energy				

Target indicator 2. Reducing energy intensity by 5% by 2029 from the level of 2021 (2023 – 0.714%, 2024 – 1.428%, 2025 – 2.143%, 2026 – 2.857%, 2027 – 3.571%, 2028 – 4.285%, 2029 – 5 %)				MIID, ME, MNE, Ministry of Justice, MENR, LIO, JSC "KEGOC" (by agreement), JSC "IREEK" (by agreement)
6.	Revision approaches to formation of the maximum tariff energy producing x organizations	ministerial order energy Republic of Kazakhstan	July 2023	AD, MNE, MIIR, Ministry of Justice
7.	Implementation of balancing market electricity in real time (with financial settlements)	information to the Government	September 2023	AD, MN, JSC "KEGOC" (by agreement)
8.	In n e s e n i e changes and additions to the selection rules investment programs for modernization energy producing x organizations	ministerial order energy Republic of Kazakhstan	July 2023	ME, MIID, MEPR, Ministry of Justice
9.	Improvement control at operation and carrying out repair work utilities s i s t e m heat supply	report to the Government	July 2023, December 2023	MIIR, AD, MNE, MIO, JSC "IREEK" (by agreement)
Direction 3. Budgetary sector				
Target indicator 3. Reducing energy consumption per premises area by 10% by 2029 from the 2021 level (2023 - 1.4%, 2024 - 2.86%, 2025 - 4.29%, 2026 - 5.71%, 2027 – 7.14%, 2028 – 8.57%, 2029 – 10%)				MIID, Ministry of Finance, LIO, JSC "IREEK" (by agreement)
10.	Increase in share purchased energy efficient about equipment public sector organizations	information to the Government	June 2023-2029	MIID, LIO, Ministry of Finance, JSC "IREEK" (by agreement)

11.	Development of recommendations for modernization socially significant objects	methodical allowance	August 2023	MIIR, MIO, JSC "IREEK" (by agreement)
12.	Modernization interior lighting of buildings, structures and structures of the public sector	acts of entry into exploitation	february 2024-2029	MIIR, MIO, JSC "IREEK" (by agreement)
13.	Carrying out thermal modernization buildings, structures and structures of the public sector with installation automated x heating points	input acts into operation	february 2024-2029	MIIR, MIO, JSC "IREEK" (by agreement)
14.	Development of proposals for eliminating legislative barriers to conclusion energy service budget contracts organizations	information to the Government	August 2023	MIIR, JSC "IREEK" " (by agreement)
15.	Conclusion energy service agreements on criterion of the greatest e k o n o m i i consumption energy resources	energy service the contract	September 2024-2029	MIID, LIO, Ministry of Finance, JSC "IREEK" (by agreement)
Direction 4. Housing sector and population				
Target indicator 4. Reducing energy consumption per capita at JSC "Kazcenter Housing and Communal Services" 5% of the 2021 level (2023 - 0.714%, 2024 - 1.428%, 2025 - 2.143%, 2026 - 2.857% . 2027 – 3,571%, 2028 – 4,285%, 2029 – 5%)				MIIR, MIO, MP, JSC "IREEK" (by agreement), " (by agreement) . JSC "KazNIISA" (by agreement)
	It's a lesson international building codes, rules and standards by energy intensity	report		MIIR, JSC "KazNIISA" (by agreement), JSC "IREEK"

16.	construction for further implementations c Kazakhstan	to the Government	August 2023	(by agreement), JSC "Kazcenter Housing and Public Utilities" " (by agreement)
17.	In n e s e n i e changes and additions to the price z Minister for investments and development of the Republic of Kazakhstan from 31 March 2015 No. 4 0 1 "About establishing energy efficiency requirements ty construction materials, products and design"	ministerial order industry and infrastructure December development Republic of Kazakhstan	2023	MIID, MNE, Ministry of Justice, JSC "IREEK" (by agreement)
18.	Carrying out inventory housing stock with diagnostics energy indicators existing buildings	report to the Government	June 2023	MIIR, MIO, JSC "Kazcenter Housing and Public Utilities" " (by agreement)
19.	Conducting training for managers and specialists facilities management bodies condominium by energy efficient content and operation of the common property of MZhD, spreading relevant methodological recommendations	report to the Government	December 2023-2025	MIIR, MIO, AO " IREK" (by agreement), JSC "Kazcenter Housing and Public Utilities" ", (by agreement)
20.	Implementation projects on capital R E M O N T apartment buildings residential buildings with mandatory activities for	input acts	October	MIIR, MIO

	energy saving (thermomodernization) providing class achievement energy efficiency you no lower "S"	into operation	2024-2029	
21.	Implementation pilot energy service projects of Moscow Railways in the regions	input acts into operation	December 2023-2029	MIIR, MIO, JSC "IREEK" (by agreement)
22.	Carrying out activities on increase awareness population in issues of careful relationship to energy information (resources explanatory materials, round tables, seminars)	report to the Government	July 2023-2029	MIIR, MIIR, JSC "IREEK" (by agreement)
23.	Carrying out class hours in the case of the thrifty use energy resources	report to the Government	June 2024-2029	MP, MIO, JSC "IREEK" (by agreement)
24.	Conducting a survey among the population about awareness in questions energy saving and promotion energy efficiency ty with definition speakers promotion awareness public	report to the Government	August 2023-2029	MIIR, MIO, JSC "IREEK" (by agreement)
25.	Inclusion information on class energy efficiency you are surrendered to portals searching for housing and online ad services	report V Government major	December 2023	MIIR, JSC "IREEK" (by agreement)

Direction 5. Transport				
26.	Implementation pilot projects "Technology pre-launch electric heating of a car engine block in winter time" and other	pilot projects	November 2023– March 2024	MIIR, MIO, JSC "IREEK" (by agreement)
27.	Carrying out analytical research consumption energy r e s u r s o v transport sector	analytical study	September 2023	MIIR, MIO, JSC "IREEK" (by agreement)
28.	In n e s e n i e changes and additions to the price z Minister for investments and development Republic of Kazakhstan from 31 March 2015 No. 3 8 9 "About establishing energy efficiency requirements you transport"	ministerial order industry and infrastructure development Republic of Kazakhstan	October 2023	MIID, MNE, Ministry of Justice, JSC "IREEK" (by agreement)
29.	Transfer of local public transport to more clean fuel (gas, electricity, biofuels and other)	report to the Government	December 2023-2029	MIIR, MIO, AO "IRÉÉK" (by agreement)
30.	R a z v i t i e infrastructure bicycle transport (Creation bike paths, increasing the number of bicycle parking)	report to the Government	December 2023-2029	MIIR, MIO
31.	Implementation of measures to stimulating use	information to the Government	December	MIIR, MIO

	energy efficient about public transport		2023-2029	
32.	Carrying out activities on reduction specific consumption for electric traction trains	information to the Government	December 2023-2029	MIIR, JSC "NC KTZ" (by agreement)
33.	In v e d e n i e information on indicator energy efficiency car the transport of search portals transport as well as to online ad services	report to the Government	August 2023	MIIR, MCRIAP, JSC "IREEK" (by agreement)
Intersectoral activities				
34.	Formation and in e d e n i e " State energy register" with By energy consumption from subjects natural monopolies of the city of Astana	"State Energy Data Receipt registry" with data on energy consumption	December 2023-2029	MIIR, Government d. Astana, JSC "IREEK" (by agreement)
35.	Integration automated th information s ystems " State Energy registry of " with information systems State Traffic Safety Inspectorate "E-Statistics" ", State Database "Real Estate Register", "E-Shanyrak", " E-Cadastre" and IS KGD	integration automated th information s ystems " State of Kazakhstan, like Energy Legal Entity, registry"	October 2023, December 2024	MIIR, MCRIAP, Ministry of Justice, Ministry of Finance, ASPIR (by agreement), JSC "NIT" (by agreement), JSC "IREEK" (by agreement)
	Introduction into educational programs in higher education			

36.	establishments and technical profession ional institutions disciplines in energy saving and increase energy efficiency ty in technical specialties	information to the Government	September 2024	MNVO, JSC " IREK" (by agreement)
37.	Elaboration of the issue creation of the Energy Efficiency Fund you	information on the Government	August 2023, December 2024	MIID, Ministry of Finance, MNE, AZRK (by agreement)
38.	In n e s e n i e changes and additions to the Codec from the Republic of Kazakhstan "On administrative offenses" upon establishment of administrative responsibility in part of the excess energy consumption standards state institutions, violations energy saving requirements and increase energy efficiency t and V state procurement, purpose responsible persons in the water V operation of buildings, structures and structures is not meeting energy efficiency requirements you	draft Law Law	November 2023, March 2024	MIID, MNE, Ministry of Finance, Ministry of Justice, Local Executive Office, JSC "IREEK" (by agreement)

Note: explanation of abbreviations:

MIOR – Ministry of Information and Social Development of the Republic of Kazakhstan;

REC – regional electric grid company;

Ministry of Justice - Ministry of Justice of the Republic of Kazakhstan;
AZRK – Agency for the Protection and Development of Competition of the Republic of
Kazakhstan; UNDP – United Nations Development Program in Kazakhstan; MNHE – Ministry of
Science and Higher Education of the Republic of Kazakhstan; EBRD – European Bank for
Reconstruction and Development; EU – European Union; LEB –
local executive bodies; TKPE
– total final energy consumption; SDB "Real Estate
Register" - state database "Real Estate Register"; GDP –
gross domestic product; State Database of Legal Entities – state database “Legal Entities”; MIID – Ministry of Industry
and Infrastructure Development of the
Republic of Kazakhstan; JSC NC KTZ – JSC National Company Kazakhstan
Temir Zholy; MZD – multi-apartment residential buildings; JSC "KazTsentrZHKKH" - joint-stock company
"Kazakhstan Center for Modernization and Development of Housing and Communal
Services"; Ministry of Finance - Ministry of
Finance of the Republic of Kazakhstan; t.b.e. – tons of oil equivalent; IS SRC – information system "State Revenue Committee";

AIS GER - automated information system "State Energy Register"; MP – Ministry of Education of the Republic of Kazakhstan;
FEB – fuel and energy balance; Efficiency – efficiency factor; ASPIR –
Agency for Strategic Planning and Reforms of
the Republic of Kazakhstan; KazNIISA –
Kazakhstan Research and Design Institute

construction and architecture;
JSC "NIT" - joint-stock company "National Information Technologies"; MNE – Ministry of National
Economy of the Republic of Kazakhstan; IEA – international energy agency;

MCRIAP – Ministry of Digital Development, Innovation and Aerospace
industry of the Republic of Kazakhstan; ME –
Ministry of Energy of the Republic of Kazakhstan; MENR – Ministry
of Ecology and Natural Resources of the Republic of Kazakhstan; OECD – Organization for
Economic Co-operation and Development.

JSC "IREK" - joint-stock company "Institute for the Development of Electric Power Industry and Energy Saving".