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Article

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The Legal Regulation of Energy Efficiency and Energy Saving Policies in the Republic of Kazakhstan

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ABSTRACT

The paper focuses on one of the main challenges of Kazakhstan's economy – its high energy intensity of GDP. Contemporary scholarship states that high energy intensity of GDP is a common characteristic of almost all post-Soviet countries, which are also very affected by weak institutions and under-developed legal frameworks in the fuel and energy sectors. The paper analyzes the legal framework existing in Kazakhstan, the largest economy of Central Asia, with respect to energy efficiency and energy saving policies, which are considered a sufficient way of reducing energy intensity of GDP. A total of seven key documents adopted in 2010-2014 are carefully reviewed, which comprise the legal foundation of Kazakhstan's energy efficient economy. The paper also presents a “pyramid” of energy efficiency and energy saving development of Kazakhstan, on the bottom of which is the legal framework, based on the results of our analysis.

Keywords: Legal Framework, Energy Efficiency, Kazakhstan

JEL Classifications: E60, Q42, Q43, Q48

1. INTRODUCTION

After the collapse of the Soviet Union, Kazakhstan got not only independence as a sovereign state but also was in a deep economic recession. Relying on the exploration of its natural resources, Kazakhstan ensured an impressive economic growth by extracting and exporting oil, natural gas, coal, uranium, and other minerals. Despite the fact that the energy and fuel complex of Kazakhstan is one of the most important and developed sectors of its economy, it has a number of issues and challenges that could be divided into several groups.

The first group of challenges is related to the lack of production to meet the growing energy and fuel demand existing in the country. Many scholars argue that the economic growth and increasing demand on energy resources, including on electric and thermal energy, can cause energy shortages in the country in the near future (Karatayev and Clarke, 2016; Apergis and Payne, 2009; Atakhanova and Howie, 2007). There is also a need to build

new refineries in Kazakhstan; otherwise, the demand from the population and businesses would not be met.

The export orientation of resource industries and the dependence of the economy on energy exports comprise the second group of challenges. The tendency to increase energy exports is clearly articulated by the Government of Kazakhstan and biggest oil and natural gas companies (Devon, 2016; Kanyrov, 2018). Again, Kazakhstan may have energy shortages on the domestic market because of the growing exports. Revenues coming from exporting natural resources are highly for the national budget; therefore, all export supply contracts and liabilities are to be insured by the Government of the Republic even if there would be energy shortage in the country or rising prices on oil and natural gas in the domestic market. This dependency on exports causes the existence of the energy dependent economy in the country. Consequently, the national currency is too sensitive to any fluctuations in energy markets (Klimovets, 2015).

The third groups of problems is the lowering base of resources in oil, gas, nuclear resources, and coal in the country. It may lead to falling exports and lower export revenues. More than that, the technologies used in the fuel and energy complex of Kazakhstan, for the most part, are not environmentally friendly, do not correspond to “green standards” (Karatayev and Clarke, 2016). Thus, the level of environmental damage caused by the energy and fuel complex of Kazakhstan is quite high, which is another challenge for the country.

And one more serious challenge to the economy of Kazakhstan is its very high energy intensity, which is addressed in the current paper. According to the U.S. Energy Information Administration, Kazakhstan occupies one of the last places in the world in terms of energy intensity of the GDP (USEIA, n.d.). In general, this is very characteristic of all economies of the former Soviet Union, which is evidently presented in Table 1. Thus, despite Kazakhstan has managed to decrease its energy intensity since 2000, its level is still quite high if compared to the industrially developed world.

Having high energy intensity of GDP implies great opportunities for large amounts of energy to be more efficiently spent. Therefore, the Government of Kazakhstan is very interested in developing and implementing energy efficiency and energy saving policies. Actually, other post-Soviet countries also develop and implement ambitious plans to reduce energy intensity of GDP (Bashmakov, 2009; Orlov et al., 2013; Cui et al., 2014; Timilsina et al., 2016). In general, the post-Soviet countries are regularly characterized with weak institutions and under-developed legal frameworks in the fuel and energy sectors (Kalyuzhnova and Nygaard, 2008; Franke et al., 2009; Luong and Weinthal, 2010; Melville and Mironyuk, 2016). Thus, the development of a strong legal framework and strengthening of institutions can be considered as a necessary means for successful initiatives to increase energy efficiency and energy saving.

The purpose of this paper is to review the legal framework developed in contemporary Kazakhstan with respect to energy efficiency and energy saving policies. The paper fills the gap existing in the scholarly literature on energy efficiency and energy saving in Kazakhstan by comprehensively reviewing the appropriate republican legislation. Other papers, while analyzing energy efficiency and energy saving challenges and policies, primarily focused on either the economic side of the problem (Apergis and Payne, 2009; Xiong et al., 2015; Kerimray et al., 2018) or attempted to review particular ways to reduce energy

intensity of the country (Mukhtarova and Zhidebekkyzy, 2015; Uyzbayeva et al., 2015; Kerimray et al., 2015; Babazhanova et al., 2017; Karenov et al., 2016). In overall, this is the very first paper that is solely focused on Kazakhstan’s legal framework aimed at implementing policies reducing the energy intensity of its GDP and building an energy efficient economy.

2. METHODOLOGY

Within the scope of the research, the paper analyzes the legal framework that is developed in Kazakhstan at the republican level and aimed at implementing energy efficiency and energy saving policies in the country. In order to conduct such an analysis, we collected all the documents adopted either by the President of Kazakhstan, the Republican Government, or the Parliament of Kazakhstan. The data came from official website of the aforementioned government and legislative bodies (President of Kazakhstan, n.d.; Government of the Republic of Kazakhstan, n.d.; Parliament of the Republic of Kazakhstan, n.d.), as well as from the Kazakhstan’s national legal database (Paragraph Information Systems, n.d.). In the process of analyzing the collected documents, we primarily focused on the key goals, task, and measurement indicators. Such a detailed analysis of the documents allowed us to build an understanding of the legal framework developed in Kazakhstan with respect to energy efficiency and energy saving.

Before proceeding to an actual analysis of the existing legal framework, we briefly review the main challenges of the fuel and energy complex of Kazakhstan, which contributes to the necessity of developing and implementing effective policies aimed at reducing Kazakhstan’s high values of energy intensity.

In the next section of the paper we provide a general review of the development of Kazakhstan’s energy and fuel complex and discuss in greater details the challenges of energy efficiency and energy saving.

3. THE CURRENT STATE OF THE FUEL AND ENERGY COMPLEX AND CHALLENGES OF ENERGY EFFICIENCY AND ENERGY SAVING

3.1. The Current State of Kazakhstan’s Fuel and Energy Complex

Kazakhstan is the largest economy in Central Asia, the ninth largest in the world in oil reserves, and the fifteenth in natural gas reserves. In the export of crude oil, Kazakhstan ranks 10th in the world, second only to Russia in the post-Soviet space (Workman, 2018). As follows from the data presented in Table 2, the Kazakh oil exports have steadily increased since 1995. Export of natural gas, reaching its highest point in 2004 (674,320 TJ), decreased to its lowest level in 2011 (237,129 TJ) but then grew to 495,794 TJ in 2015. As for the whole structure of Kazakhstan’s exports, mineral resources occupy more than 75% in total exports (Figure 1), including crude oil (40%), refined copper (6.3%), petroleum gas (5.9%), radioactive chemicals (5.7%), ferroalloys (4.6%), and

Table 1: Energy intensity level of primary energy, selected countries, MJ/\$2011 PPP GDP

| No | Country | 2000 | 2008 | 2015 |
|----|----------------|--------|--------|--------|
| 1 | Kazakhstan | 9.677 | 9.291 | 7.923 |
| 2 | Russia | 12.587 | 8.412 | 8.413 |
| 3 | Ukraine | 23.685 | 13.909 | 11.793 |
| 4 | Uzbekistan | 34.059 | 20.45 | 9.993 |
| 5 | Sweden | 6.096 | 5.188 | 4.269 |
| 6 | United Kingdom | 4.818 | 3.729 | 3.017 |
| 7 | Unites States | 7.335 | 6.222 | 5.408 |
| 8 | Japan | 5.311 | 4.642 | 3.742 |

Source: (World Bank, 2016)

refined petroleum (2.7%). According to the World Bank (2018), “Approximately 60% of the assets [in the fuel and energy complex] belong to the state, while the majority of the assets are concentrated in the Samruk-Kazyna holding, which owns in whole or in part many important state-owned companies in the energy, transport, and finance sectors” (p. 5).

Being one of the most important sectors in the national economy, the oil industry plays the leading role and, as a result, deserves special attention. Being largely an exporting industry, it provides Kazakhstan with the opportunity to capitalize on its own mineral resources in international markets and, as a result, obtain sufficient capital inflows for the development of other sectors of the economy. For instance, the share of crude oil in the value structure of exports from Kazakhstan in 2012 amounted to 61.1% (\$92.3 billion) and the volume of tax revenues from subsoil users amounted to \$13.3 billion in 2012 (Trading Economics, n.d.).

The Republic of Kazakhstan has one of the largest resources of hydrocarbons in the world. In 2013, Kazakhstan was ranked by the BP company twelfth in the world in terms of proven oil reserves (Table 3).

Despite having one of the largest oil reserves in the world, the exploration and development of hydrocarbon resources is negatively affected by a number of factors. For instance, there are insufficient geological data on Kazakhstan’s subsoil. A significant proportion of geological information was formed even during the Soviet Union; therefore, those research projects and the data obtained can be considered insufficient and even outdated. However, the lack of the state’s funds allocated for geological exploration, along with the general degradation in geological technologies owned by the state research institutions, prevent further geological research (Wei et al., 2012; Bekturganov et al., 2014).

The active attraction of investments in the extraction of crude oil led to an increase in the level of production from 21 million tons in 1995 to 80 million tons in 2010. At the moment, Kazakhstan occupies the seventeenth place in the world with a production volume of 79.2 million tons in 2012. The main share (about 85%) of the oil produced is exported, the main foreign trade partners of Kazakhstan in the crude oil market are Europe (about 55 million tons) and China (11 million tons) (IEA, n.d.). At the moment, transportation of oil produced in the Republic of Kazakhstan is carried out by three main methods: Oil pipelines (the main transportation channel); sea transportation from the Aktau port; railway transport (Palazuelos and Fernández, 2012; Movkebaeva, 2013).

3.2. Energy Efficiency and Energy Saving Challenges

The high energy intensity of the economy of the Republic of Kazakhstan is explained in the scholarly literature by a number of factors which could be conditionally divided into three large groups. The first group (Sarbasov et al., 2013; Kerimray et al., 2015; Kerimray et al., 2016) of the research states that Kazakhstan has colder climate conditions if compared to other countries with

Table 2: Crude oil, natural gas, and coal exports by Kazakhstan, 1990-2015

| Year | Crude oil, thousand tones | Natural gas, TJ | Coal, ktoe |
|------|------------------------------|-----------------|------------|
| 1990 | 20.241 | 148.141 | 22.847 |
| 1995 | 9.782 | 96.738 | 9.296 |
| 2000 | 29.420 | 203.476 | 15.287 |
| 2005 | 54.639 | 601.986 | 10.924 |
| 2010 | 69.285 | 243.105 | 13.766 |
| 2015 | 63.581 | 495.794 | 18.649 |

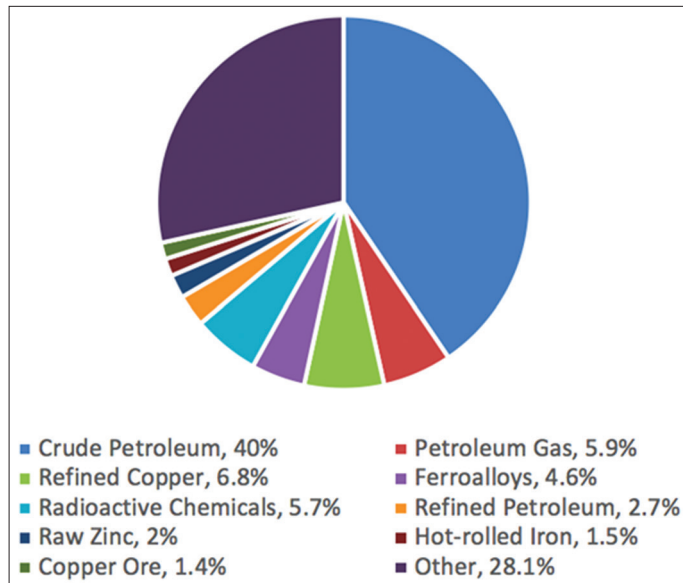
Source: (IEA, n.d.a, n.d.b., n.d.c)

Table 3: Proven oil reserves in the leading countries, 2013

| No. | Country | Proven oil reserves, bln tones | Share in the world reserves, % |
|-----|--------------------------|--------------------------------------|--------------------------------------|
| 1 | Venezuela | 46.5 | 17.8 |
| 2 | Saudi Arabia | 36.5 | 15.9 |
| 3 | Canada | 28 | 10.4 |
| 4 | Iran | 21.6 | 9.4 |
| 5 | Iraq | 20.2 | 9.0 |
| 6 | Kuwait | 14 | 6.1 |
| 7 | United Arab Emirates | 13 | 5.9 |
| 8 | Russia | 11.9 | 5.2 |
| 9 | Libya | 6.3 | 2.9 |
| 10 | Nigeria | 5 | 2.2 |
| 11 | United States of America | 4.2 | 2.1 |
| 12 | Kazakhstan | 3.9 | 1.8 |

Source: (BP, 2014)

Figure 1: The structure of Kazakhstan’s exports in 2016 (OEC, n.d.)



low energy intensity. The second group (Cornillie and Fankhauser, 2004; Xiong et al., 2015; Uyzbayeva et al., 2015; Mukhtarova and Zhidebekkyzy, 2015; Kerimray et al., 2018) focuses on the structure of Kazakhstan’s economy and concludes that the energy intensive industries comprise a large proportion of Kazakhstan’s GDP. For instance, >1/3 of Kazakhstan’s GDP was produced by mining and metallurgy. And those are highly energy intensive industries: They consume 67-70% of all the electricity produced in the country (Vassiliev, 2013). And the third groups (Alimgazin

et al., 2010; Gusev, 2016; Anisimova, 2016) argues that the vast territory of the country implies significant losses in electrical networks while transmitting electricity all over Kazakhstan.

Despite the existence of a number of unfavorable factors, the Republic of Kazakhstan has a significant potential for improving energy efficiency and energy saving. Scholars (Babazhanova et al., 2017; Kerimray et al., 2018) point out that the energy intensity of the Kazakhstan's GDP is twice that of the most developed countries, which are comparable in terms of cold climate and population density. More than that, a significant share of industry in total electricity consumption is explained not only by the predominance of heavy industry in the economy but also by the high depreciation of the assets of industrial enterprises and the use of outdated technologies (Eitzen, 2012).

Since Kazakhstan is an oil-dependent economy, it had to adapt to (a) the falling demand on oil and minerals and (b) the lowering rates of economic growth after the recent global oil crisis (2014). The Government of Kazakhstan had to start a number of ambitious programs aimed at ensuring economic diversification and increasing its competitiveness. Energy efficiency and energy saving were considered one of the main areas in developing the competitiveness of Kazakhstan's economy. In particular, the Government of Kazakhstan adopted the State Program of Industrial-innovative Development for 2015-2019 and the Concept of the Development of the Fuel and Energy Complex until 2030. These documents, along with the previously adopted ones, are discussed in details in the fourth section of this paper.

3.3. Summary

Thus, Kazakhstan is experiencing a number of problems in the fuel and energy complex, many of which are determined by the Soviet legacy and its high dependency on exports of natural resources. One of the most serious challenges to contemporary Kazakhstan is the high energy intensity of the economy. The development of energy efficiency and energy conservation can be an essential policy tool in meeting the demand for growing energy in Kazakhstan, leading to significant savings in energy resources, providing cheaper

and cleaner energy, increasing the competitiveness of the economy, creating new jobs, etc.

4. THE LEGAL FRAMEWORK OF ENERGY EFFICIENCY AND ENERGY SAVING POLICIES IN KAZAKHSTAN

In the context of the contemporary state of the fuel and energy complex of Kazakhstan and the strong need to reduce the energy intensity of GDP, it is highly necessary to analyze the legal framework existing in Kazakhstan with the purpose of increasing energy efficiency and energy saving. After carefully reviewing all the related legislation, we identify the key 7 documents which are listed in Table 4.

As it often happens in the states of Central Asia and the Middle East, the issue of increasing energy efficiency and ensuring energy saving in Kazakhstan was proclaimed the first person of the state and then became more institutionalized due to the adoption of a number of regulatory and legal documents. Thus, this task was voiced in the Message of the President of the Republic of Kazakhstan to the people of Kazakhstan on January 29, 2010 entitled "New Decade – New Economic Growth – New Opportunities of Kazakhstan" (President of Kazakhstan, 2010) and then fixed in the most general way in the State Program on the Accelerated Industrial-Innovative Development of the Republic of Kazakhstan for 2010-2014 years (Table 4) (Government of Kazakhstan, 2010). As part of these documents, a number of tasks were set, one of which was to reduce the energy intensity of the gross domestic product of the Republic of Kazakhstan by at least 10% by 2015 and by at least 25% by 2020. In addition, the documents emphasized the need to ensure the saving of electricity consumption by annually reducing the energy intensity of the economy by 10% during 2013-2015.

The second important document adopted on the all-republican level was the comprehensive plan to improve the energy efficiency of the republic of Kazakhstan for 2012-2015 (Government of Kazakhstan, 2011). The document provides a list of strictly-defined measures to be taken in the (a) industry, (b) electricity and heat production, (c) housing and utilities and budgetary sector

Table 4: The key documents adopted on the issues of energy efficiency and energy saving in Kazakhstan

| No | Year | Document |
|----|------|---|
| 1 | 2010 | State Program on the Accelerated Industrial-Innovative Development of the Republic of Kazakhstan for 2010-2014 (Government of Kazakhstan, 2010) |
| 2 | 2011 | Comprehensive Plan to Improve the Energy Efficiency of the Republic of Kazakhstan for 2012-2015 (Government of Kazakhstan, 2011) |
| 3 | 2012 | Approved by the Decree of the Government of the Republic of Kazakhstan No 1404 |
| 4 | 2012 | Law of the Republic of Kazakhstan on Energy Saving and Improving Energy Efficiency (Paragraph, 2019) |
| 5 | 2012 | Law of the Republic of Kazakhstan on introducing amendments and addenda to Some Legislative Acts of the Republic of Kazakhstan on energy saving and energy efficiency (Paragraph, 2012) |
| 5 | 2013 | 2020 state program on energy saving (Government of Kazakhstan, 2013) |
| 6 | 2014 | Approved by the Decree of the Government of the Republic of Kazakhstan No 904 |
| 6 | 2014 | State Program of Industrial-innovative Development of the Republic of Kazakhstan for 2015-2019 (Government of Kazakhstan, 2014) |
| 7 | 2014 | Approved by Decree of the President of the Republic of Kazakhstan No. 874 |
| 7 | 2014 | Concept of the development of the fuel and energy complex of the republic of Kazakhstan until 2030 (Paragraph, n.d.) |
| | | Approved by Decree of the President of the Republic of Kazakhstan No. 724 |

(Table 5). More than that, the comprehensive plan acknowledges the necessity to implement intersectoral measures and develop pilot projects in different regions of Kazakhstan, along with raising public awareness. Among the most important measures one could acknowledge the establishment of the state energy register (SER). The SER operator should collect information provided by local authorities on largest energy consumers and assess their energy efficiency performance.

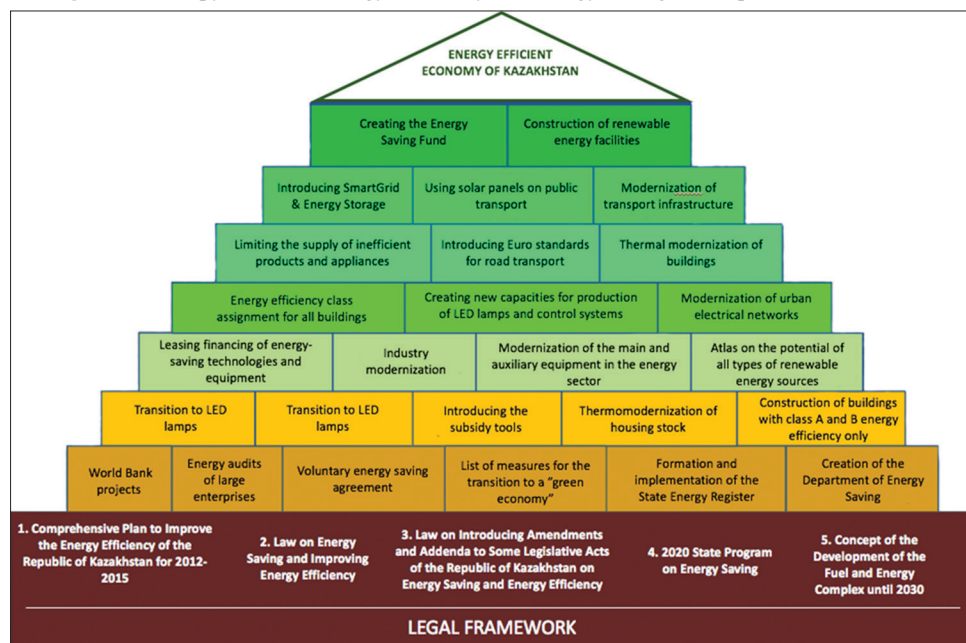
The Law of the Republic of Kazakhstan on Energy Saving and Improving Energy Efficiency was another highly important step in building the national legal framework for addressing the challenge of reducing energy intensity and increasing energy efficiency in the country. In particular, this document (a) describes the main mechanisms and methods of state regulation in the field of energy conservation and energy efficiency, (b) establishes general requirements in this area, (c) reveal the approaches of state support, (d) as well as establishes the rights and obligations of entities in

Table 5: The key measures proposed in the Comprehensive Plan to Improve the Energy Efficiency of the Republic of Kazakhstan for 2012-2015

| No | Direction/Area | Measures |
|----|--|---|
| 1 | Industry | Making a proposal on the possibility of partial reimbursement of the costs of energy audit for the subjects of the SER Organization of internal technical accounting of all types of energy resources by the SER subjects Developing the concept of the draft Law of the Republic of Kazakhstan, providing for the introduction of a tax on electricity consumption for the subjects of SER in the industrial sector within the SER |
| 2 | Electricity and heat production | Considering an issue of creating an automated system for monitoring the technical condition of power equipment Developing the concept of the draft Law of the Republic of Kazakhstan, which imposes a ban on the separate production of heat and electricity of projected energy sources without prior assessing the applicability of cogeneration technology Developing the concept of the draft Law of the Republic of Kazakhstan, which imposes a ban on direct gas flaring in steam boilers of gas power plants (replacement of steam boilers with gas turbine heat recovery boilers) |
| 3 | Housing and utilities and budgetary sector | Considering an issue of energy audit of typical budget facilities built from 1960 to 1990 Making a proposal for the implementation of criteria for energy efficiency and thermal modernization in the overhaul of budgetary organizations Making a proposal on introducing energy managers to the staffing level of regions and Astana and Almaty |
| 4 | Intersectoral measures | Introducing the SER Developing a mechanism for financing energy saving projects Considering an issue of subsidizing the cost of small and medium-sized enterprises to conduct energy audits Considering an issue of developing standard energy passports for legal entities operating in the field of industry Considering an issue of development and approval of a unified methodology for calculating indicators in the field of energy saving Considering an issue of financing research and development work in the field of energy saving |
| 5 | Pilot projects | Construction of energy efficiency centers Considering an issue of modernization of street lighting in the city of Aksu Considering an issue of installation of automated heat points in all schools in the city of Satpayev |

Source: (Government of Kazakhstan, 2011), SWE: State Energy Register

Figure 2: The “pyramid” of energy efficiency and energy saving development in Kazakhstan



the field of energy conservation and energy efficiency. The main focus of the Law is on the directions of state regulation in the field of energy saving and energy efficiency, which could be listed in the following order (Paragraph, 2019):

1. Implementing technical regulation in the field of energy conservation and energy efficiency;
2. Implementing a balanced tariff policy and pricing in the field of production and consumption of energy resources;
3. Stimulating energy saving and energy efficiency, including the use of energy-saving equipment and materials;
4. Implementing the state control over the efficient use of energy resources;
5. Promoting economic, environmental, and social benefits of the efficient use of energy resources, increasing public educational level in this area;
6. Ensuring compliance with the legislation of the Republic of Kazakhstan on energy saving and energy efficiency.

In addition, the Law establishes the competences of all authorities, starting with the republican and ending with local municipalities, in the field of energy efficiency and energy conservation. The general requirements for increasing energy saving and energy efficiency established by the Law include the following: (a) using energy-saving equipment and materials, restrictions on acceptance of new facilities and payment for consumed heat energy, (b) ensuring energy efficiency of buildings and structures, (c) electrical energy consuming devices, (d) restrictions on the sale and use of products with high energy intensity (for example, incandescent lamps of a certain type). The Law also lists measures aimed at ensuring energy saving and improving energy efficiency: (a) regular notification in the field of energy conservation and energy efficiency improvement; (b) comprehensive departmental expertise of construction projects in terms of energy saving and energy efficiency; and (c) energy audit.

Since there was a need to amend a great number of the previously adopted normative and legal acts with the adoption of the aforementioned Law, the Government and Parliament of Kazakhstan proposed and passed the Law on Introducing Amendments and Addenda to Some Legislative Acts of the Republic of Kazakhstan on Energy Saving and Energy Efficiency (Paragraph, 2012). This particular Law contains a great amount of amendment to the legal system of Kazakhstan in order to align with the Law on Energy Saving and Improving Energy Efficiency.

Another core document, the 2020 State Program on Energy Saving, deserves special attention (Government of Kazakhstan, 2013). The goal of the program is to create conditions for reducing the energy intensity of the GDP of Kazakhstan and improving energy efficiency by reducing both energy consumption and the inefficient use of fuel and energy resources in the country. The key tasks outlined in the program include the following: (a) modernization and improvement of energy efficiency of the country's industry; (b) reducing the level of losses in the power and heat networks; (c) large-scale propaganda of energy saving among the population; (d) development and implementation of mechanisms that stimulate energy saving and energy efficiency; (e) formation of mechanisms to stimulate the activities of energy

service companies; (f) training in energy saving and energy efficiency; (g) reduced fuel consumption in the transport sector. The Program includes the 2 main targets with the help of which the progress made by Kazakhstan in increasing energy efficiency and improving energy saving could be measured: (a) an annual 10% reduction in energy intensity of GDP during 2013-2015 and (d) reducing the energy intensity of GDP by at least 40% by 2020 (in comparison to the 2008 level) (Government of Kazakhstan, 2013). More than that, the Program is divided into 9 directions (Table 6), all of have own sets of measures and goals to be achieved. Despite its promising effectiveness, the Program was suspended by the Government of Kazakhstan 3 years after being adopted, on July 25, 2016 (Government of Kazakhstan, 2016).

The two key document adopted 2014 with respect to energy efficiency and energy saving are (a) the state program of Industrial-innovative development of the Republic of Kazakhstan for 2015-2019 (Government of Kazakhstan, 2014) and (b) Concept of the development of the fuel and energy complex of the republic of Kazakhstan until 2030 (Paragraph, n.d.).

The goal of the state program is to stimulate diversification and increase the competitiveness of the manufacturing industry. The key objectives of the program are, among others, (a) advancing the development of the manufacturing industry, (b) increasing efficiency and increasing the added value in priority sectors, (c) imparting a new level of technological effectiveness to priority sectors of the manufacturing industry and laying the foundation for the development of future sectors through the formation of innovative clusters. As a result of the implementation of the State Program, Kazakhstan should achieve in 2019, among other indicators, a reduction in the energy intensity of the manufacturing industry by at least 15% (Government of Kazakhstan, 2014).

The Concept is a strategic document that provides a long-terms view on how the country's fuel and energy complex should develop in the changing environment. With respect to energy efficiency, the Concept ranks this challenge as a priority and states that the intensive development of the fuel and energy complex industries should imply the use of advanced technologies aimed at (a) active involvement of renewable energy sources and alternative energy sources in the energy balance and (b) achieving better energy and resource saving, energy efficiency (Paragraph, n.d.).

Our review of the key legislation on energy efficiency and energy saving allowed to build a "pyramid" of energy efficiency in Kazakhstan, according to the main development directions and key priorities outlined in the republican legal documents. Figure 2 presents this "pyramid," on the bottom of which is the legal foundation of five documents (we consider them the most important: (a) the Comprehensive Plan to Improve the Energy Efficiency of the Republic of Kazakhstan for 2012-2015 (2010); (b) the Law of the Republic of Kazakhstan on energy saving and improving energy efficiency (2011); (c) the law of the republic of Kazakhstan on introducing amendments and addenda to some legislative acts of the republic of Kazakhstan on energy saving and energy efficiency (2012); (d) the 2020 state program on energy saving (2013); and (e) the concept of the development of the fuel and energy complex of the republic of Kazakhstan until

Table 6: The key development directions of the 2020 program on energy saving

| No. | Direction | Measures | Goals |
|-----|---------------------------------|--|---|
| 1 | Energy efficient enterprises | Leasing financing of energy-saving technologies and equipment 50% subsidy for energy audits 50% subsidy for the implementation of the energy management system | Increasing energy efficiency in the industry as a whole by 30% |
| 2 | Innovative energy | Modernization of energy enterprises at the expense of foreign investments Construction of renewable energy facilities Introduction of SmartGrid & energy storage systems | Reduction of specific energy consumption by electricity generation by 14% Increasing standard losses in power supply networks by 5% Increasing the share of renewable energy in the total energy balance of the country to 3% |
| 3 | Energy efficient utilities | Thermal modernization of the housing stock at the expense of the housing and utilities fund Modernization of urban electric heating networks at the expense of international financial institutions Introduction of incentives for the population to save energy | Reduction of specific energy consumption per 1 m ² by 30% Decrease in standard losses in heating networks by 3.6% |
| 4 | Energy efficient construction | Development of regulations and standards for the construction of energy-efficient buildings Construction of an energy efficient quarter | 100% provision of energy efficient construction since 2015 |
| 5 | Energy efficient transportation | Stimulation of purchasing the “hybrid” cars with engines less than 2000 cm ³ through the reduction of taxes on transport Modernization of transport infrastructure (introduction of hybrid transport) of large cities | Reduction of fuel consumption by road, rail and air transport by 30% Updating the fleet of the Republic of Kazakhstan to 50% |
| 6 | Energy efficient budget | Introduction of energy management in areas of cities and regions Attracting cities to join the “Covenant of Mayors” Attracting World Bank grants for energy conservation projects | Reduction of energy consumption by the public sector by 25% |
| 7 | Energy efficient lighting | Promotion of using the LED lamps Reconstruction of street lighting Changes to the building regulations and Sanitary-epidemiological rules and regulations and the introduction of new technical regulations | Reducing the cost of electricity for lighting up to 60% 100% use of energy-saving lamps |
| 8 | Energy efficient society | Creation of a public headquarters for monitoring the implementation of energy conservation policies under the Government of Kazakhstan Holding round tables, conferences, and seminars | 20 training centers for retraining and advanced training of personnel in the field of energy saving 90% public awareness in the implementation of the policy of Kazakhstan in the field of energy conservation |
| 9 | Economical payment | Requirements for consumers to install metering devices by 2015 The introduction of new standards for accounting systems. | Reduction of energy consumption in the residential and commercial sector by 20% Ensuring 100% payment of energy resources |

Source: (Government of Kazakhstan, 2013)

2030 (2014)). These five documents comprise the legal foundation upon which the whole development of energy efficiency and energy saving policies in Kazakhstan is possible.

In sum, the Government of Kazakhstan, facing the challenge of reducing the energy intensity of its GDP and developing a more competitive economy, has adopted a set of measures aimed at increasing country's energy efficiency and improve energy saving. All these measures were reflected in appropriate documents, which provide a strategic vision and have operational goals and tasks.

5. CONCLUSION

Kazakhstan has one of the most energy intensive economies among other post-Soviet countries. Consequently, opportunities for reducing

energy intensity through developing and implementing policies aimed at increasing energy efficiency and energy saving is quite high. In this paper, we reviewed the main challenges of Kazakhstan's fuel and energy complex, discussed key aspects of Kazakhstan's high energy intensity, particularly in the oil industry, and analyzed the legal framework developed in Kazakhstan with respect to energy efficiency and energy saving. Our analysis included the total of seven key documents that legally establish the long-term vision for building an energy efficient economy in Kazakhstan and provide a comprehensive set of measures to be done, making them embedded into the legal system of the country.

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