



Eurasian Development Bank

Improving Energy Efficiency in SES Countries and Ukraine



Sector Report no. 17

УДК 338
ББК 65.9
156

Improving Energy Efficiency in SES Countries and Ukraine. – Almaty, 2013. – 78 pages.

ISBN 978-601-7151-37-9

The Eurasian Development Bank (EDB) is an international financial institution established to promote economic growth and integration processes in Eurasia. The Bank was founded by the intergovernmental agreement signed in January 2006 by the Russian Federation and the Republic of Kazakhstan. Tajikistan, Belarus, Armenia and Kyrgyzstan joined the Bank in 2009-2011. Electric power, transportation infrastructure and high-tech and innovative industries are key areas of the Bank's financial activity. In line with its charter, the Bank views information and research support for integration in Eurasia as a priority of its analytical work.

УДК 338
ББК 65.9

The authors:

Aigul Absametova –

Candidate of Economic Sciences, MSc, Senior Specialist of Strategic Analysis & Monitoring unit, Research and Strategy Department, EDB
E-mail: absametova_am@eabr.org

Ella Baybikova –

MBA, Head of Research and Strategy Department, EDB
E-mail: ber@eabr.org

German Trofimov –

Academician, Doctor of Technical Sciences
E-mail: depenergy@mail.ru

ISBN 978-601-7151-37-9

© Eurasian Development Bank, 2013

Copy-editor:

Gulnaz Imamniyazova, EBD

Address:

Eurasian Development Bank

220, Dostyk ave., Almaty, 050051,
Republic of Kazakhstan
Telephone: +7 (727) 244 40 44
Fax: +7 (727) 244 65 70, +7 (727) 291 42 63
E-mail: info@eabr.org, research@eabrnews.org
<http://www.eabr.org>

Design, layout and printing:

RUAN Publishing Company

This sector report is a part of the EDB series on regional integration in industries and economic sectors of the Bank's member states and other post-Soviet countries.

All publications from this series are available at the EDB's official website:

<http://www.eabr.org/e/research/industryres/>

Acknowledgements:

The Eurasian Development Bank express gratitude and appreciation to the Ministry of Energy of Belarus and the Ministry of Energy of the Russian Federation for the statistical and analytical information provided for the preparation of this report.

The authors are grateful for the reviews and comments:

Yuriy Miroshnychenko – senior energy specialist, Europe and Central Asia, The World Bank.
Kazakh National Technical University named after K. Satpayev, and Ernst & Young company (Moscow).

No part of this publication may be reprinted or reproduced in any form without due reference to this publication. The views expressed in this publication are those of the authors and do not necessarily reflect the views of the Eurasian Development Bank.

Contents

Abbreviations.....	8
Key conclusions.....	9
Introduction.....	11
1. Background and urgency of the energy conservation and energy efficiency issues for the region's economies.....	13
2. The current status of energy conservation in the SES countries and Ukraine.....	18
2.1. Belarus.....	18
2.2. Kazakhstan.....	21
2.3. Russia.....	24
2.4. Ukraine.....	27
3. Comparative analysis of legislative approaches towards energy efficiency.....	31
4. The main mechanisms for implementing public energy conservation policy.....	34
4.1. Energy conservation measures.....	34
4.2. Financing of energy conservation mechanisms and sources.....	35
4.3. Energy conservation and EE improvement programmes.....	41
4.3.1. Belarus.....	41
4.3.2. Kazakhstan.....	42
4.3.3. Russia.....	43
4.3.4. Ukraine.....	44
4.4. Budget funding of public programmes.....	46
4.4.1. Belarus.....	46
4.4.2. Kazakhstan.....	47
4.4.3. Russia.....	49
4.4.4. Ukraine.....	51
5. Main barriers to energy conservation.....	53
6. Finding efficient solutions to energy conservation, EE and RES issues.....	56
Conclusion.....	59
References.....	60

Annex 1.	The urgency of the energy efficiency issue for Belarusian companies.....	63
Annex 2.	The main laws regulating EE improvement, energy conservation and use of RES in the SES countries and Ukraine.....	64
	Belarus.....	64
	Kazakhstan.....	66
	Russia.....	69
	Ukraine.....	70
	European Union regulations.....	74
Annex 3.	Problems in project implementation in Belarusian companies.....	76

Tables

Table 1.1.	Atmospheric emissions from stationary pollution sources.....	16
Table 1.2.	Atmospheric emissions from stationary pollution sources by ingredient in 2011.....	16
Table 2.1.	Energy conservation in Belarus.....	19
Table 2.2.	Macroeconomic scenario and sustainable energy development in Kazakhstan.....	23
Table 2.3.	Primary FER consumption in Ukraine.....	29
Table 3.1.	The driving forces of the public governmental energy conservation and EE policy.....	31
Table 4.1.	Assessment of energy conservation potential.....	34
Table 4.2.	A package of basic technical measures to facilitate energy conservation and energy efficiency.....	36
Table 4.3.	The expected outcomes and socioeconomic efficiency indicators of Russia's public programme.....	44
Table 4.4.	Annual allocations from the federal budget.....	49
Table 4.5.	The sources and volumes of financing of the State targeted economic programme on energy efficiency for 2010–2015.....	51

Table 5.1.	Main barriers to energy conservation and energy efficiency in the region.....	53
Table 6.1.	Measures of energy conservation and EE policy.....	56

Figures

Figure 1.1.	Energy intensity in the world.....	15
Figure 1.2.	GDP and energy consumption in different countries.....	16
Figure 1.3.	Atmospheric emissions from stationary pollution sources per capita.....	17
Figure 2.1.	Use of alternative energy sources in Belarus.....	18
Figure 2.2.	Energy intensity dynamics in Belarus.....	19
Figure 2.3.	Energy intensity in Belarus in 2006–2010.....	20
Figure 2.4.	Changes in GDP, gross FER consumption and energy intensity in Belarus.....	21
Figure 2.5.	Energy intensity dynamics in Kazakhstan.....	21
Figure 2.6.	Energy intensity dynamics in Russia.....	25
Figure 2.7.	Public energy efficiency policy in Russia.....	25
Figure 2.8.	Forecasted decrease in FER consumption in Russia by industry.....	26
Figure 2.9.	The potential of energy efficiency improvement in Russia.....	27
Figure 2.10.	Energy intensity dynamics in Ukraine.....	28
Figure 2.11.	Planned volumes energy conservation in Ukraine by 2030.....	29
Figure 4.1.	Energy conservation measures taken by companies in Belarus.....	35
Figure 4.2.	Financing of energy conservation in Belarus and the outcomes.....	46
Figure 4.3.	The financing of energy conservation in Belarus.....	47

Figure 4.4.	The share of funding of energy conservation measures and the use of local energy resources in Belarus.....	48
Figure 4.5.	The funding structure of the governmental programme Energy saving and energy efficiency up to 2020.....	50
Figure 4.6.	The structure of the federal budget and federal subjects' budgets, by phase of the governmental programme Energy saving and energy efficiency up to 2020.....	50

Abbreviations

CIS – Commonwealth of Independent States
EBRD – European Bank of Reconstruction and Development
ECA – export credit agency
EDB – Eurasian Development Bank
EE – energy efficiency
ESCO – energy service company
EU – European Union
FEB – fuel and energy balance
FER – fuel and energy resources
GDP – gross domestic product
GEF – Global Environmental Fund
HPP – hydropower plant
IEA – International Energy Agency
IFO – international financial organisations
IPO – initial public offering
kWh – kilowatt-hour
OECD – Organisation for Economic Cooperation and Development
OPEC – Organisation of the Petroleum Exporting Countries
PPP – public-private partnership
RES – renewable energy sources
RF – reference fuel
SES – Single Economic Space
SPO – secondary public offering
TEF – tonnes of equivalent fuel
TOE – tonnes of oil equivalent
TPP – thermal power plant

Key conclusions

- The countries under consideration belong to the group of countries with low energy efficiency and high energy consumption. Energy efficiency issues are being widely discussed, and new legislation is being initiated. Energy intensity is being reduced through structural changes of the economy, decommissioning of energy-intensive and low-margin production, administrative and technical measures, and introduction of energy-saving technologies and energy-efficient equipment. However, despite some positive developments, these economies need further modernisation to achieve better energy efficiency.
- Belarus demonstrated the best performance, achieving a 50% reduction in energy intensity since 2000, due to the increased intensity of operation of existing assets in all sectors of the economy coupled with administrative measures. After adoption of the Law on energy conservation, energy efficiency (EE) improvement becomes systematic and a priority for the economy. To date, three five-year energy conservation programmes have been completed in Belarus.
- Reducing the energy intensity of the gross domestic product (GDP) is one of Kazakhstan's objectives for the near future. At present the Kazakhstani economy is considered as energy intensive, with over 2/3 of consumed energy being lost. The formulation of a state energy conservation policy began with the adoption of the Law on energy conservation (no. 210-I dated 25.12.1997). However, this law was mostly declarative in nature and many of its provisions did not work.
- In 2000–2008, after a long period of lagging behind other countries, Russia finally became a leader in terms of energy intensity reduction rates, although it remains one of the most energy-intensive economies in the world. The reduction was largely attributable to structural changes in the economy. In Presidential decree no. 889 dated 04.06.2008, On certain measures to improve energy and ecological efficiency of the Russian economy was declared the reduction of energy intensity not less than 40% by 2020 (from 2007 levels). Following this decree, large-scale systematic work towards this has begun.
- Ukraine's energy conservation potential is estimated at 42–48%; to realise this potential, in 2006 the Energy strategy for the period till 2030 was adopted. Although the energy intensity of Ukraine's GDP is 2.6 times higher the average for developed countries, this index has been decreasing since 2000 (a slight increase was observed only in 2009).
- The governments pay close attention to the issues of energy efficiency, energy conservation and use of renewable energy sources (RES), as the competitiveness of these economies directly depends on the ability to cope with these issues. Various laws, programmes and road maps are being implemented; not all of them generate the expected payback, although there are some success stories. For example, Belarus reduced its energy intensity two-fold through consistency in pursued policies in this area. The authors recommend that state agencies in other countries consider the experience of Belarus.
- The energy efficiency and renewable energy sources law of SES countries and Ukraine represents a voluminous corpus of acts and regulations of various levels, which provide the legal, economic and organisational framework for energy conservation and energy efficiency activities set forth the goals, forms and areas of support for the use of RES. All the countries have laws on energy conservation and RES (the exception is Russia, which lacks a basic RES law) in which the general principles of regulation are set forth. However, there are a number of issues that are not covered by the laws. In particular, the laws do not contain issues on the supervision and monitoring of the implementation of approved energy conservation programmes.

- Improving energy efficiency, reducing resource consumption and improving environmental situation all require sustainable and foreseeable financing. International experience suggests that energy conservation projects may be financed from different sources, but the key role in creating favourable conditions for investment in energy efficiency is that of the state. The forms of financing vary greatly, from direct investment to compensation through financial institutions. The latter is said to be more efficient but requires a high degree of coordination between the government, business and population.
- The objective basis of the integration of the energy policy in Single Economic Space (SES) countries and Ukraine is their differentiation on the energy surplus and energy deficit countries. Therefore, there is a natural incentive for these countries to seek mutually beneficial integration in terms of energy supply and conservation, based on their national potential and public energy policies. Moreover differences in the energy security levels of SES countries and Ukraine and their current energy security requirements should be taken into account.
- Governments possess a wide range of tools for reducing energy consumption in every sector of the economy. Typically, these include administrative and fiscal measures or a combination of them that are provided by laws or regulations of executive bodies at national, regional or local levels. This legislation provides a legal framework for the improvement of energy efficiency. The effectiveness of these tools, i.e. reduction of the volume of consumed energy per unit cost, depends on various organisational, financial and implementation details.
- To assist the enhancement of energy efficiency and resource saving, the state should first of all concentrate on disseminating information on EE improving measures and developing mechanisms for improving access to the long-term financing of EE projects. This will spur demand for EE technology. Then, the fastest and cheapest methods of enhancing EE should be identified. Typically, initial measures include reduction of energy losses (at company and national levels). These include elimination of leakages (of heat, water, compressed air, etc.) and implementation of administrative measures aimed at reducing energy losses and achieving more flexible energy resources management and stricter control over energy consumption. Companies can easily reduce their general energy consumption by 5–10% simply by introducing zero or low cost energy conservation measures.

Introduction

Over the last 30 years the issues of improving EE and using RES have been a focus of attention for economists and politicians throughout the world. To this end, many countries have adopted legislation aimed at the reduction of energy consumption and the development of RES. Thus, in the early 1990s European Union (EU) countries set the objective of reducing energy consumption by 20% by 2020, and initiated laws to promote energy conservation and use of RES.

Energy consumption levels in CIS countries dramatically exceed those in developed countries, which has a negative influence on the competitiveness of the region's economies, and in the 1990s some of these indicators deteriorated even further. Therefore, the SES countries and Ukraine view the enhancement of efficiency of fuel and energy resources (FER) and development of RES as key to achieving energy security and improving the competitiveness of national economies.

On the one hand, improving EE and using RES are priorities for national energy policy; on the other hand, they reduce adverse impact on the environment. For example, implementation of energy conservation measures costs 2–4 times less than the creation of new sources of energy generation. Therefore, enhancing energy efficiency may become a reserve source of economic growth due to redistribution of released financial resources. To this end, the governments of the SES countries and Ukraine are making efforts to:

- draft and perfect EE and RES laws;
- optimise the institutional structure of the energy conservation policy;
- develop additional mechanisms for improving EE and raising funds for energy conservation and RES projects, etc.

The SES countries and Ukraine have already formulated strategic goals and objectives to improve energy efficiency and use RES and have identified the main mechanisms through which to achieve them. These issues have all been reflected in national energy security concepts, sustainable development strategies, medium and long-term industry and regional programmes pertaining to energy development and conservation and socioeconomic development, regulations, and many other documents, as well as development strategies jointly with international financial institutions (a detailed analysis of programme documents is provided below in the individual country sections). Although these documents are drafted and adopted in different states, they contain similar objectives, as the same tools are being used in creating the legal, economic and organisational frameworks for stimulating energy conservation and enhancing EE. Usually these documents reflect the following issues:

- the creation of an energy conservation management system;
- the perfection of a legal framework for improving EE;
- the development of an energy conservation policy and EE improvement mechanisms;
- the reduction of non-production consumption and losses of FER at all stages;
- the maximum involvement of local and renewable energy sources in economic turnover;
- the search for additional sources of finance for planned measures, etc.

The documents differ from each other, due to the different energy and financial potential and specific features of national policies.

At present, energy security is becoming a cornerstone for sustainable economic development and political stability worldwide. Today, it is obvious that energy security is largely synonymous with national security. Therefore, the objective of each country's energy policy is to maximise the efficiency of natural energy resources and the energy sector potential in order to ensure sustainable economic growth and higher living standards for the population and to strengthen the country's foreign trade position.

1. Background of and urgency for the energy conservation and energy efficiency issues for the region's economies

Until the mid-1970s global economic development did not face any serious obstacles. Low oil prices from 1950–1970 allowed almost a 5% annual increase in energy consumption, which outstripped the global population growth rate by 2.5 times, hence an increase in primary FER per capita consumption.

However, in 1973–1974 the first global oil crisis occurred. On October 16, 1973 six Arab oil-exporting countries declared they would henceforth set oil prices independently or within the framework of the Organisation of the Petroleum Exporting Countries (OPEC), without consulting with oil producing companies. The oil market was disrupted for the first time in decades. A jump in oil prices immediately triggered a global economic crisis, effectively putting an end to the era of cheap fuel.

The crisis was caused by both the exacerbating struggle for oil resources in the world economic system and the deterioration of oil production conditions and stiffening environmental requirements. As a result, developed economies, heavily dependent on cheap oil, suffered a true shock. They responded with urgent measures to reduce the energy intensity of the industry and revised their energy policy with an emphasis on energy conservation. The crisis hit hard the traditionally energy-intensive sectors and households. In some sense, this played a positive role from the perspective of economic diversification, as investing in novel, less energy-intensive industries became more rewarding. In traditionally resource-intensive sectors the crisis necessitated the development and application of energy-saving technology on a scale never known before.

The diversification aimed at reducing the proportion of energy-intensive industries enabled those countries that had limited FER to improve their EE performance tremendously within 10–12 years. For example, the UK, Ireland, Luxemburg and Denmark achieved a 25–32% increase in EE by 1980. As a result, in the 1980s the rates of energy consumption growth had slowed globally.

Many countries placed an emphasis on energy conservation, which was viewed as an additional energy resource. Further, governments considered shifting from fossil fuel, developing nuclear power and using renewable and alternative energy sources.

This has led to the development of state programmes aimed to promote efficient use of available energy resources. In Denmark and the Netherlands a decline in oil consumption was accompanied by a boom in consumption of natural gas produced on the shelf. Many countries adopted energy efficiency laws. All these developments worked to weaken dependence on the import of oil and reduce its share in the energy balance.

Thus, the global energy crisis not only provided an impetus for EE improvement, but also led to the restructuring of energy balance. Efforts to improve EE brought about tangible results. The growth rate of global energy consumption slowed, although general energy consumption

1. Background of and urgency for the energy conservation and energy efficiency issues for the region's economies

increased by 35% in 1990–2008. However, the overall energy intensity of energy-dependent economies started to decline rapidly, and the rate of GDP growth started to outstrip that of energy consumption. In the last decade, energy efficiency in the industry was on the rise whilst energy intensity diminished by 1.7% a year on average (UNIDO, 2011). At the same time, per capita consumption of primary FER showed sustained growth.

Meanwhile, the socialist countries had developed centralised economic systems based on five-year budget plans, cheap energy and abundant energy resources, with little attention to energy conservation. The subsequent collapse of the centralised financial system and planned economy led to an economic crisis accompanied by inflation, production decline, loss of market outlets, increasing specific energy consumption, increasing losses of electric and thermal energy, and increasing cost of all types of energy sources. In all CIS countries the energy component of the final product cost assumed a key role, and the issue of the efficient use of energy became one of the most urgent priorities. As a result, in 1994 Ukraine adopted the Law on energy conservation, and similar legislation was subsequently adopted in other countries: in 1996 in Russia, in 1997 in Kazakhstan and in 1998 in Belarus.

Whereas the concept of energy conservation initially emerged as a mere appendage of existing technologies, it is now the mainstay of all technological patterns and new development philosophy based on self-restriction and ecological equilibrium (Stepanenko, 2012). Studies suggest that the energy intensity of the GDP does not directly depend on the country's possession of FER, but that a low availability of energy resources provides an additional stimulus to improve energy efficiency.

Kazakhstan and Russia have enough energy resources whereas Ukraine and Belarus are energy-deficient countries and economic development of them is impossible without importing energy resources.

Belarus' own FER can meet about 16% of domestic demand, and the balance has to be imported. The proportion of imported fuel and materials in GDP exceeds 43%. Belarus imports (mainly from Russia) all coal, over 90% of oil, all natural gas and one-fourth of liquefied gas it consumes. However, according to a forecast of the Unified Institute of Energy and Nuclear Studies of the National Academy of Sciences of Belarus (Delovaya gazeta, 2005), Belarus' own energy resources in its energy balance will account for 20.3% by 2020.

According to the State Committee on Energy Conservation Ukraine annually consumes a volume of FER equal to about 210 million tonnes of equivalent fuel (TEF). The country currently has energy resources to meet 53% of domestic demand and imports 75% of the natural gas and 85% of the crude oil and oil products it needs.

The efficiency of FER use is determined by the energy intensity of the GDP, which is used to assess the energy efficiency of national economies.

The energy intensity represents specific FER consumption per final product unit – this is a generalising indicator for energy consumption per GDP unit. Typically, the energy intensity of the GDP is understood as the ratio of gross FER consumption to the GDP. In some calculations, the numerical value of energy intensity is taken as being reciprocal to energy efficiency ratio – that is, high energy intensity means low energy efficiency. The energy intensity is an indicator that characterises not only the efficiency of FER use, but also the type of the final product produced. Some countries are orientated towards production with high-energy consumption and low final production cost. Other countries, typically those low in natural resources, are orientated towards production that does not require significant volumes of energy.

Energy efficiency has been improving all over the world at approximately 0.8% per annum (Dmitriyev, 2012) over the last 30 years, but the actual performance varies greatly between countries. Whenever low-added value products are exported, the energy used in production is exported as well.

1. Background of and urgency for the energy conservation and energy efficiency issues for the region's economies

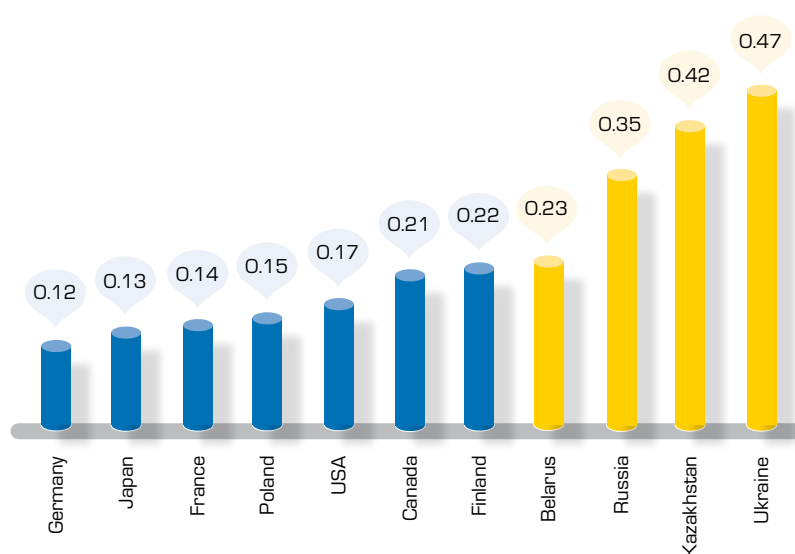


Figure 1.1.
Energy intensity in the world
(in 2005 prices, purchasing
power parity, TOE/\$)

Source: International Energy
Agency

In the past, it was widely held that high-energy consumption indicates the high level of a country's development. However, in recent decades, following the energy crisis, the correlation between GDP growth and energy consumption changed. Highly industrialised economies demonstrate sustained growth not only during a relative decline but also an absolute decline in energy consumption. In countries where economic and legal mechanisms for energy conservation are worked out, demand for energy conservation services is met, and a market of energy-saving technologies exists, the energy intensity is being kept down. In contrast, in countries where energy conservation issues are not properly addressed, the energy intensity remains high. Therefore, positive interrelation between GDP and energy consumption can only be observed in developing economies.

The countries under consideration, like the other post-Soviet countries, belong to a group of states with poor energy efficiency performance. They are shown in the lower left corner of the chart illustrating the correlation between GDP and energy consumption in different countries (see Figure 1.2). In these countries, FER consumption per GDP unit according to the purchasing power parity is higher than in the world generally or than in Organisation for Economic Cooperation and Development (OECD) countries. Although per capita energy consumption in the studied region albeit higher than the world's average, is 1.5–3 times lower than in some European countries. All countries consume large volumes of electricity due to their high industrialisation levels and possession of large enterprises that are major electricity consumers. The high electricity consumption indicates relatively poor energy efficiency. The high-energy intensity of the GDP is attributable to the persistent energy-intensive economic structure, coupled with low added value and a lack of regular investments in fixed assets and advanced technology.

However, there are some signs of EE improvement. In 1990–2009 the analysed economies became less energy-intensive. Belarus achieved the best results, having reduced its energy intensity almost three-fold from 0.69 to 0.24 of TEF. Energy intensity shrank from 0.47 to 0.33 TEF in Russia, from 0.6 to 0.47 TEF in Ukraine, and from 0.63 to 0.42 TEF in Kazakhstan. The energy intensity gap between these countries and European countries is also gradually shrinking. Energy intensity is being reduced through structural changes to the economy, decommissioning of energy-intensive and distressed production facilities, administrative and technical measures, introduction of energy-saving technology and energy-efficient equipment, and other EE activities. However, despite some positive developments, these economies need further modernisation and changes to achieve better energy efficiency.

1. Background of and urgency for the energy conservation and energy efficiency issues for the region's economies

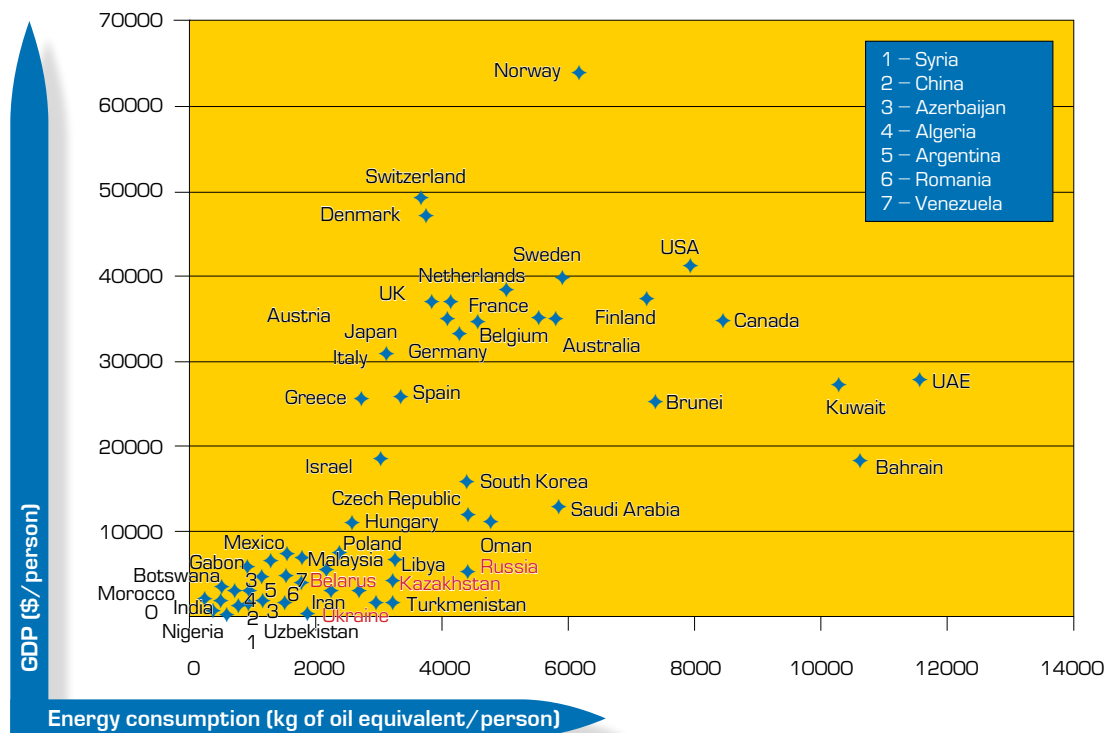


Figure 1.2. GDP and energy consumption in different countries (\$/person, 2004–2009)

Source: Syrlybayeva, 2010

Table 1.1. Atmospheric emissions from stationary pollution sources ('000 tonnes)

Source: Belarus, 2012

	2000	2005	2008	2009	2010	2011
Belarus	388	404	397	457	377	371
Kazakhstan	2430	2969	2643	2 320	2227	2346
Russia	18820	20425	20103	18021	19116	19197
Ukraine	3959	4449	4525	3928	4132	4375

Table 1.2. Atmospheric emissions from stationary pollution sources by ingredient in 2011 ('000 tonnes)

Source: Belarus, 2012

	Total	Including	
		solid	liquid
Belarus	371	40	331
Kazakhstan	2346	631	1715
Russia	19197	2283	16914
Ukraine	4375	607	3768

The high-energy consumption in the region means heavy use of energy resources, mainly fossil fuel, which has a negative impact on the environmental situation.

The above data underpin the magnitude of energy conservation and EE issues to the region's economies. All analysed countries have ratified the Kyoto Protocol, which imposes on them certain obligations to reduce emissions.

1. Background of and urgency for the energy conservation and energy efficiency issues for the region's economies

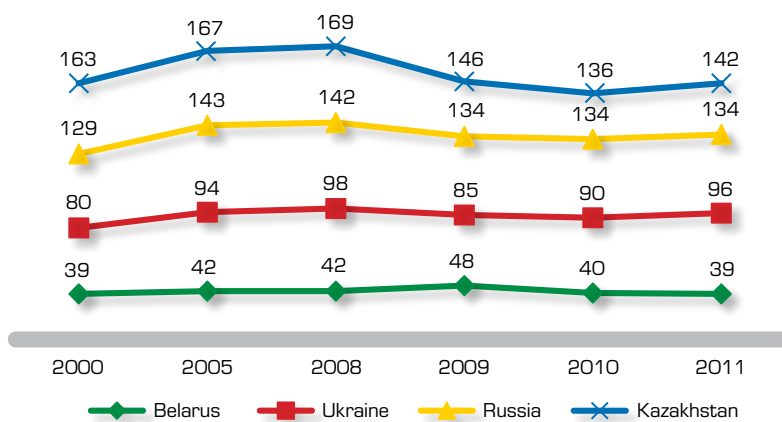


Figure 1.3. Atmospheric emissions from stationary pollution sources per capita (kg)

Source: Belarus, 2012

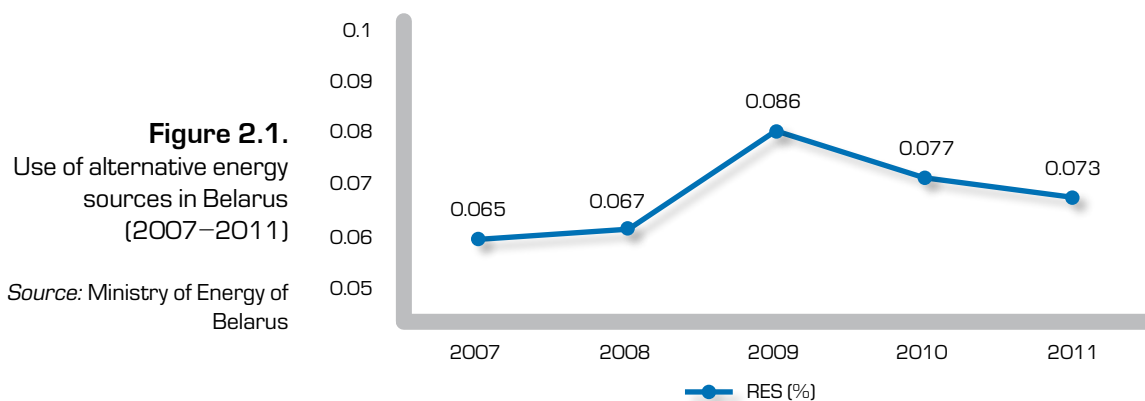
2. The current status of energy conservation in the SES countries and Ukraine

The current status of the energy conservation effort can be characterised by the: the formulation of state energy conservation policy was commenced; respective legislation was adopted (on 01.07.1994 in Ukraine, on 03.04.1996 in Russia, on 25.12.1997 in Kazakhstan, and on 15.07.1998 in Belarus); administrative and technical measures were taken; and a number of low-cost and fast-payback initiatives and projects were implemented (Stepanenko, 2008).

2.1. Belarus

Belarus falls into the category of FER-deficient countries: it has no significant reserves of oil, gas or other fossil fuel. This explains the country's keen interest in EE and energy intensity issues; notably, Belarus is home to a number of large chemical and mechanical engineering companies. National FER consumption totals about 40 million TEF (according to 2011 data). The structure of FER consumption is dominated by natural gas (in 2011 57.2% of the fuel – energy balance (FEB), 80% of the boiler and furnace fuels balance, and 97.2% of the fuel balance of the national energy system).

RES accounts for up to 80% of the country's own FER. The country's own energy resources only meet 15–17% of domestic demand. The structure of gross FER consumption is as follows: gas imported from Russia – 60%; oil and oil products – 23%; electricity imported – 6%; local FER (peat, firewood, biomass fuel) – about 10%; other FER – up to 1% (Grinkevich, 2012).



The Concept of Energy Security (approved by presidential decree no. 433 on 17.09.2007) sets forth the key priorities for development of the fuel and energy industry:

- to ensure efficient use of energy resources in all sectors of the economy by promoting EE and environmentally friendly technology and improve the FEB structure by introducing alternative fuels and energy sources; and
- to enhance energy independence and to supply energy needs using domestic energy sources.

Efforts to improve EE in Belarus began in 1993, when a centralised energy conservation body was set up. After the adoption of the Law On Energy Conservation, the national energy saving effort became a systemic and a priority for the economy.

To date, three five-year energy conservation programmes have been completed in Belarus. These outlined individual development tasks for each region of the country covering practically usage of the entire range of alternative energy sources: biogas plants, solar energy, rehabilitation of small hydropower plants (HPP), etc.

		Results	
		Target	Actual
Reduction of energy intensity (%)	2001–2005	20–25	25.1
	2006–2010	26–30.4	25.3
GDP (%)	2001–2005	135–140	143.4
	2006–2010	146–155	141.9
Share of local fuels in the boiler and furnace fuel structure (%)	2001–2005		
	2006–2010	20.5	20.7
FER saving (million of TEF)	2001–2005	5.53–7.17	6.1
	2006–2010	7.55	7.77

Table 2.1.
Energy conservation in Belarus

Source: Shenets, 2011

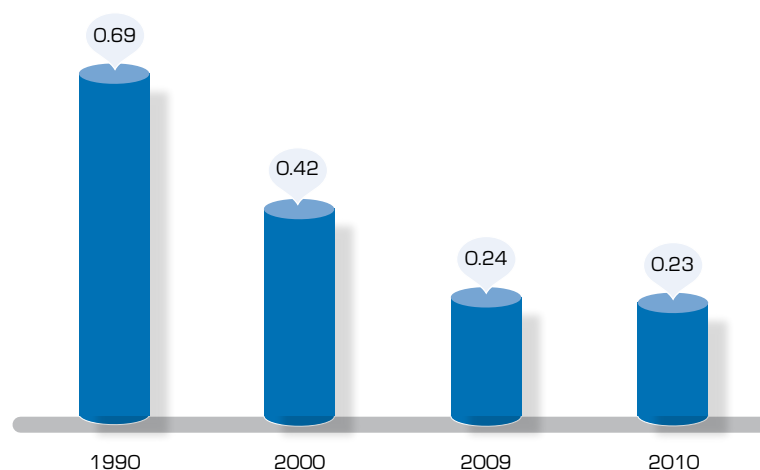


Figure 2.2.
Energy intensity dynamics in Belarus (TOE per \$1,000 in 2000 prices, purchasing power parity)

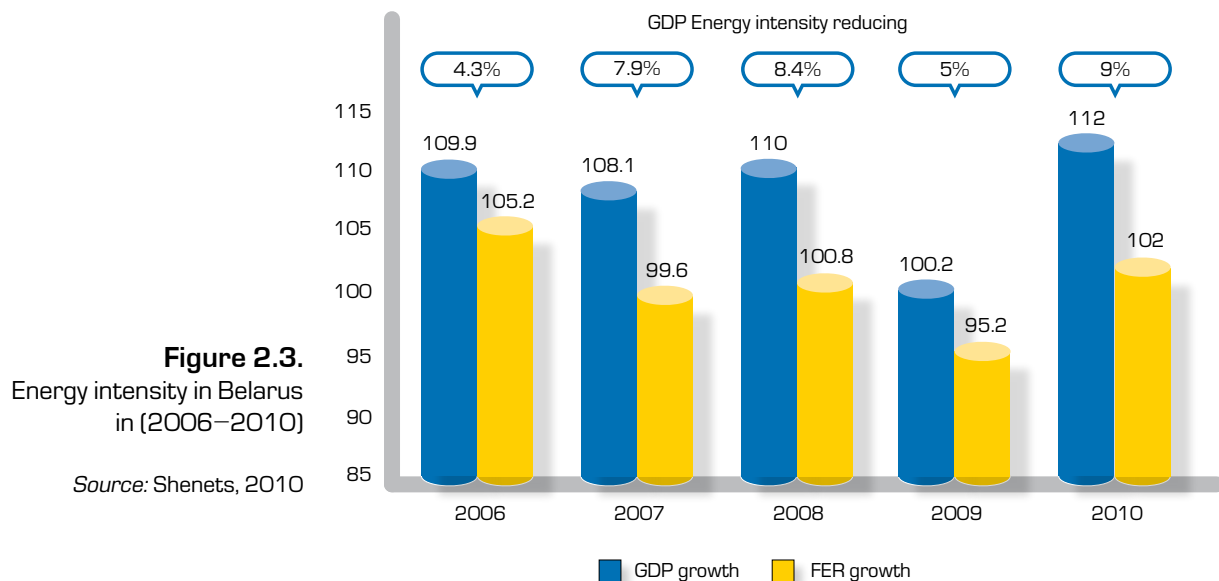
Source: International Energy Agency

The country's industry was reoriented towards enhancing the EE of particular technologies. Large-scale energy conservation measures are being taken in the housing and utilities sector. Work is under way to modernise and reequip the national energy system. This work has already brought about tangible results. During the last decade, specific fuel consumption of power plants reduced by 10%, and there is still much room for improvement, especially in power generation.

The key role in the administration of energy conservation in Belarus belongs to statutory regulation, including the drafting and adoption of laws and regulations that encourage potential stakeholders to implement EE measures and form a legal framework for EE activities. Despite the impressive achievements in this field, in 2012 large energy consumers were tasked to reduce electricity and gas consumption even further; and graduated energy consumption standards were imposed on the most energy-intensive industries.

Belarus' current energy and EE policy and strategy for the period until 2020 and the practice of its application in the field of energy conservation are aimed at the restructuring and modernising of the national economy on the basis of EE-technologies. The following objectives were set:

2. The current status of energy conservation in the SES countries and Ukraine



1. to reduce the energy intensity (from the 2005 level):

- at least by 50% in 2015;
- at least by 60% in 2020;

2. to save energy resources:

- at least 7 million TEF in 2011–2015;
- at least 5.2 million TEF in 2016–2020;

3. to increase the use of domestic energy resources in heat and electricity production:

- at least by 25% in 2012;
- at least by 26.6% in 2020 (Energy Charter Secretariat, 2013).

The following indicators are used for EE monitoring:

- energy intensity;
- electric power consumption;
- target for energy conservation (for companies, ministries and territories);
- energy saving from implemented projects (for all economic levels);
- norms of energy consumption on the unit (tonne, m², m³, kWh, Gcal etc);
- EE standards for appliances and equipment;
- the percentage of domestic energy resources in the boiler and furnace fuel structure.

As is seen from *Figure 2.4*, an increase in a country's GDP is not necessarily accompanied by an increase in gross FER consumption, but leads to a decrease in the energy intensity.

In the last decade Belarus made significant progress in reducing energy consumption per GDP unit. The decrease in energy intensity was achieved due to more intensive operation of existing assets in all sectors of the economy coupled with administrative measures taken by the government in the field of energy conservation (IFC, n/a).

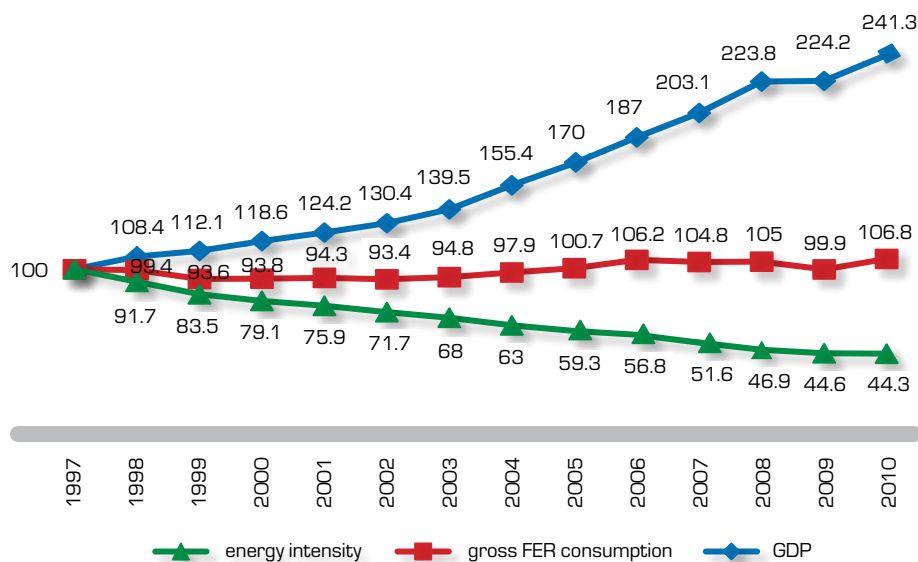


Figure 2.4. Changes in GDP, gross FER consumption and energy intensity in Belarus (%)

Source: Shenets, 2011

2.2. Kazakhstan

Kazakhstan traditionally is an energy-redundant country and an exporter of energy resources. In 1990–2008 the country's primary energy self-sufficiency increased by more than 2/3. Energy resources are Kazakhstan's staple export. However, the efficiency of internal fossil fuel consumption remains low. The Kazakhstan economy is energy-intensive. Integrated national energy consumption indicators of Kazakhstan exceed those of developed countries by 3–4 times (USA – 2.5 times, Japan – 3.5 times). Kazakhstan's GDP is energy-intensive whilst labour productivity is relatively low. The specific energy intensity according to purchasing power parity is 2.5 times the OECD average and 3.5 times the EU average.

The most energy-intensive industries are mining and metallurgy. These industries account for over 50% of total electricity consumption, with the fifteen largest companies accounting for over 35%. The power and heat generation sector accounts for another 20–25%. Households consume 27.9%; it is apparent that this sector needs modernisation.

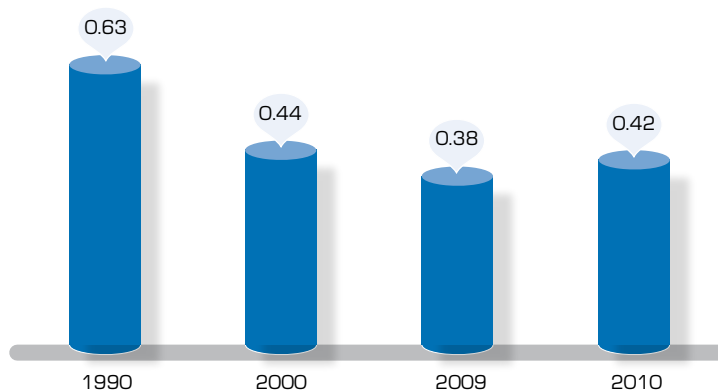


Figure 2.5. Energy intensity dynamics in Kazakhstan (TOE per \$1,000 in 2000 prices)

Source: International Energy Agency

The reasons for the high-energy intensity of the Kazakhstan economy are:

1. a large number of energy-intensive assets inherited from the Soviet period, which still use obsolete technology;

2. The current status of energy conservation in the SES countries and Ukraine

2. obsolete equipment used in the power sector and industry which causes significant losses at all production stages.

At present energy efficiency is a maximum of 30%, i.e. over two-thirds of consumed energy constitute non-production losses. At the same time, modern technologies allow energy efficiency to be easily maintained at a level of 50–60%. The adoption of these energy-saving technologies would be a permanent solution to EE problems. This high-energy intensity renders Kazakhstani products uncompetitive internationally, even if the prices of energy resources used in production are 2–4 times lower than the world prices (Syrlybayeva, 2010).

The formulation of state energy conservation policy began with Law on energy conservation (no. 210–I dated 25.12.1997). This law defined the efficient use of FER as the cornerstone of national energy policy. Unfortunately, as mentioned above, this law was rather declarative in nature and many of its provisions proved to be ineffective.

In 2009, in order to implement the state EE policy, the Programme of energy conservation for the period until 2015 was adopted. In 2011 the government approved the Comprehensive energy conservation plan, which is expected to bring about a 10% decrease in energy intensity and an annual saving of 16 billion kWh of electricity, 7 million tonnes of coal, or \$1.3 billion in monetary terms. In the Kazakhstan 2012–2015 Comprehensive energy efficiency plan notes that the required reduction of primary energy consumption can be achieved by the:

1. reducing specific fuel consumption for power generation from the current 350 g of equivalent fuel/kWh to 300 g of equivalent fuel/kWh;
2. reducing specific fuel consumption for heat production from the current 190 kg/Gcal to 170 kg/Gcal;
3. reducing total electricity losses in distribution networks from the current 25.9% to 15.1%;
4. reducing total heat losses in distribution networks from the current 32.8% to 18%;
5. reducing absolute electricity consumption in the industry by 10% from the current 42.1 billion kWh (without balance of plant (BOP) totalling 6 billion kWh);
6. increasing power generation from RES (0.5 billion kWh) including HPP (1 billion kWh) by 1.5 billion kWh by 2015;
7. containing greenhouse gas emissions at the 2008 level (229 million tonnes of CO₂ equivalent).

On January 13, 2012 the Kazakh President signed the new Law on energy efficiency and energy saving to replace the Law on energy conservation, and the new Law on amendments and supplements to certain enactments pertaining to energy conservation and improving energy efficiency. On the whole, the legislation adopted in Kazakhstan draws heavily on the Russian Law on energy conservation and improving energy efficiency and amendments and supplements to certain enactments of the Russian Federation (no. 261–FZ dated 23.11.2009).

According to the draft concept of Strategy of sustainable energy of future Kazakhstan up to 2050, presented at the 6th Astana Economic Forum in May 2013, the energy intensity of the Kazakhstani economy will be reduced by half, whilst annual GDP will be at least 2.5%.

In order to implement the Strategy, institutional changes were initiated by the president. The National Institute of Energy and Ecological Examination was founded to coordinate all national initiatives and examine proposed laws and decisions of executive bodies. Its activities facilitate the formation of public-private partnerships (PPP) not only in production and energy consumption but also in research and development aimed at building an efficient and environmentally-friendly energy sector (Abykayev et al., 2013).

2. The current status of energy conservation in the SES countries and Ukraine

	2013–2017	2018–2023	2024–2030	2031–2040	2041–2050
Per capita GDP growth	at least 6%	at least 6.4%	at least 6.4%	at least 4%	at least 2.5%
Generating capacity at the point of consumption	sufficient for economic growth until 2022 at least at 6.4% per annum	sufficient for economic growth until 2030 at least at 6.4% per annum	sufficient for economic growth until 2040 at least at 4% per annum	sufficient for economic growth until 2050 at least at 2.5% per annum	sufficient for economic growth until 2060 at least at 2.5% per annum
Reduction of energy intensity (from the 2012 level)	up to 0.9	up to 0.8	up to 0.7	up to 0.6	up to 0.5
Reduction of greenhouse gas emission	to the world average (in 2011 – 12.46 tonne/person)	by 1.5 times to 8.3 tonne/person	not exceeding the world average, about 4.2 tonne/person	not exceeding 3.86 tonne/person	not exceeding 3.86 tonne/person

Table 2.2.

Macroeconomic scenario and sustainable energy development in Kazakhstan

Source: draft concept Strategy of Sustainable Energy of Future Kazakhstan until 2050

The implementation of the objectives involves the targeting of production losses by:

- introducing variable-speed drives;
- increasing the efficiency factor and modernising existing equipment;
- introducing combined heat and power (CHP) technology at existing thermal power plants;
- introducing new coal burning and dressing technology;
- eliminating direct combustion of fuel in water boilers and introducing the combined cycle; and
- control over released energy.

One of the priorities for energy development in Kazakhstan is the utilisation of associated gas for power generation. Considerable volumes of heat energy can be saved by modernising heating and hot water supply systems, installing water temperature control equipment, heat insulation in buildings, etc. Kazakhstan belongs to a group of countries with the highest specific CO₂ emission per TOE of consumed primary energy. Kazakhstan's GDP is also hydrocarbon-intensive – almost 1.6 kg CO₂/\$. The energy sector accounts for 88% of all greenhouse gas emissions, which total 278.4 million tonnes of CO₂ equivalent (Abykayev et al., 2013).

Thermal power plants (TPP) are major source of greenhouse gases emissions. Experts roughly assess the environmental damage caused by Kazakhstan's TPP at \$0.05 per kWh, which is comparable to the cost of generated electricity itself. Accordingly, the external harm can be as high as \$4.3 billion annually. The implementation of the Strategy of sustainable energy of future Kazakhstan up to 2050 will allow a reserve of hydrocarbon resources in the magnitude of 1.15 billion TOE to be created in the country. In parallel with that, some \$90 billion or at least 0.6% of GDP will be saved cumulatively by 2040.

2. The current status of energy conservation in the SES countries and Ukraine

In November 2009 the Kazakhstan government approved the decision to voluntarily assume obligations to reduce greenhouse gas emissions by 15% in 2020 and further by 25% in 2050 from the 1990 level, and Kazakhstan applied to join Annex B to the Kyoto Protocol. As a party to the UN Framework Convention on Climate Change, Kazakhstan has obligations to implement certain measures and programmes to reduce the adverse impact on the atmosphere.

In recent years, all fuel and energy development projects have been subject to environmental impact assessment under the auspices of the Kazakh Ministry of Environmental Protection. Apart from energy conservation, the key measures to prevent the adverse impact of energy development on the environment include the increasing the level of RES in the FEB structure, adoption of environmentally-friendly coal technologies and partial replacement of coal with natural gas in the power sector.

Thus, reducing the energy intensity is one of Kazakhstan's principal targets for the next few years. Energy conservation was declared a strategic objective by the state as the main vehicle for ensuring energy security and environmental safety, and the only real way to preserve the country's high levels of income from its export of fossil fuel.

2.3. Russia

To date, Russia accounts for one-seventh of the world's primary energy resources production. The country holds 13% of the world's oil reserves (11% of global output) and over 36% of gas reserves (about 31% of output).

In 1990–1997 the energy intensity of Russia's GDP increased by more than 1.5 times, and is now slowly decreasing following a peak in 1996. However, this positive trend is attributable to structural changes in the economy rather than any real EE improvement. Since 2000 only 20% of the decrease in energy intensity has been attributable to improved EE. At present, the energy intensity of the Russian economy is twice the world's average. The main reasons are:

- the large size of the country;
- the natural and climatic conditions;
- the economic structure (high industrialisation level 44.5%, with energy-intensive industries accounting for 30%);
- the low proportion of service in its GDP;
- obsolete electric equipment.

The economic growth after 2000 inevitably spurred domestic demand for energy resources, and the situation called for the solution of the economic problems that were inherited from the past as well as those emerging in the course of reform. On August 28, 2003, Governmental resolution no.1234-r was issued to approve the Energy strategy for the period up to 2020 (cancelled in 2009). Its main purpose was to outline ways to achieve a new level in the fuel and energy sector, enhance international competitiveness by exploiting the available potential and focusing on development priorities, and develop state energy policy mechanisms with due regard to anticipated outcomes.

In 2000–2008, after a long period of lagging behind, Russia finally became a leader in terms of GDP energy intensity reduction rates, although it remains one of the most energy-intensive economies in the world. This reduction is largely attributable to structural changes in the economy, as the industry and residential sector did not develop as quickly as the services sector; and the growth in the production of less energy-intensive products outstripped others.

2. The current status of energy conservation in the SES countries and Ukraine

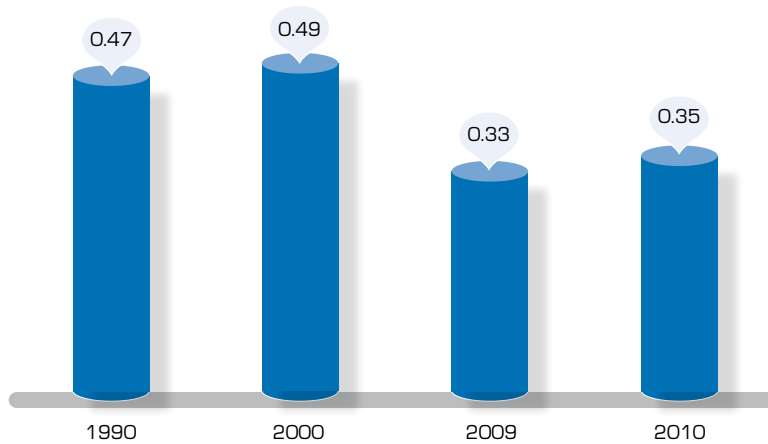


Figure 2.6.
Energy intensity dynamics in Russia (TOE per \$1,000, in 2000 prices, purchasing power parity)

Source: International Energy Agency

In Presidential decree no. 889 dated 04.06.2008, On certain measures to improve energy and ecological efficiency of the Russian Economy, an objective was formulated to reduce the GDP energy intensity at least by 40% by 2020 from the 2007 level. Following this, large-scale systematic work have began.

On October 23, 2009, Federal law no. 261-FZ, On energy conservation and improving energy efficiency and amendments and supplements to certain enactments of the Russian Federation was adopted. Governmental resolution no.1715-r dated 13.11.2009 approved the Energy Strategy of Russia for the period up to 2030. The goal and principles of the state energy policy were to make the best possible use of natural energy resources and the entire potential of the energy sector so as to promote sustainable economic growth, enhance living standards, and strengthen Russia's position in foreign trade.

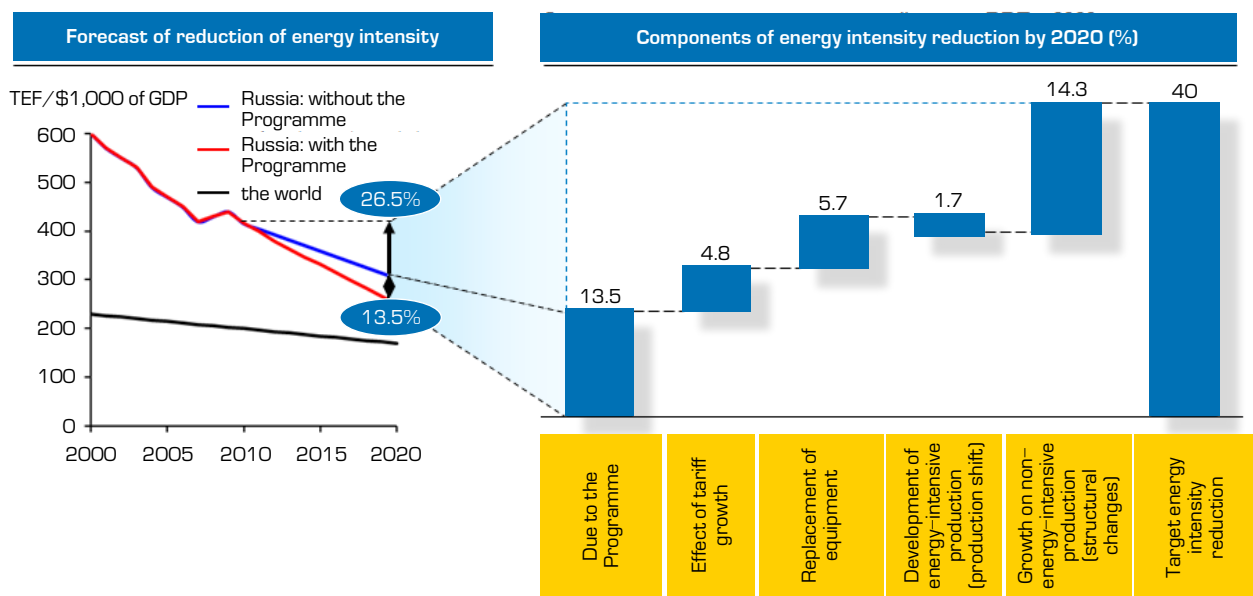


Figure 2.7.
Public energy efficiency policy in Russia

Source: Poleschuk, 2010

2. The current status of energy conservation in the SES countries and Ukraine

The implementation of the strategy is expected to bring about the reduction of:

- energy intensity of GDP by more than two-fold;
- electric intensity of GDP at least by 1.6 times.

Governmental resolution no. 2446-r dated 27.12.2010 revised and approved the second revision of the public programme Energy saving and energy efficiency for the period up to 2020. It aims to reduce the energy intensity of Russia's GDP by 13.5%, which in combination with other improvements is expected to enable a 40% decrease in energy intensity in 2007–2020.

Under this programme about 10.5 trillion roubles will be spent, resulting in energy intensity reduction by 7.4% in 2015 and by another 13.5% in 2020.

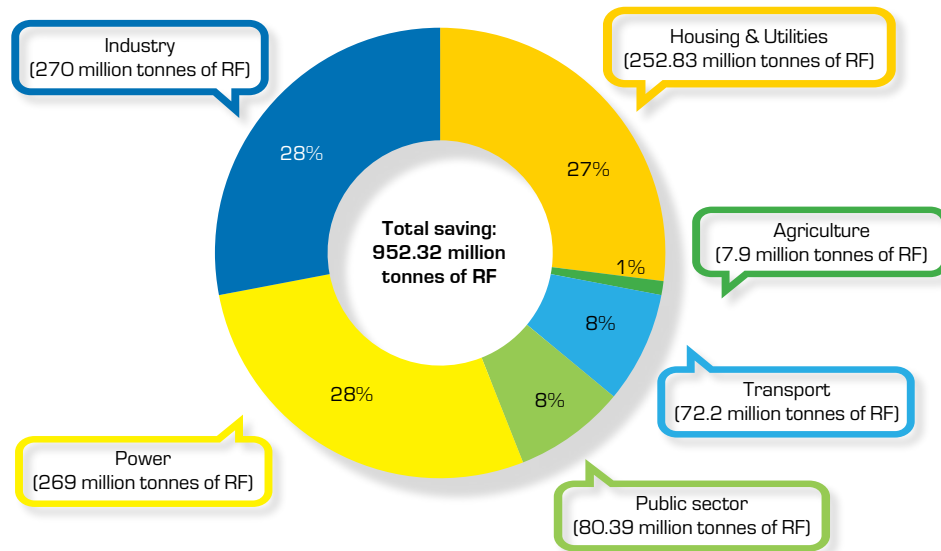


Figure 2.8.
Forecasted decrease in FER
consumption in Russia by industry

Source: Poleschuk, 2011

Draft laws were prepared and organisational work was carried out to establish the Federal Energy Services Company (FESCO) to perform a set of energy saving measures especially in public sector, aimed at reducing FER consumption by 30–35%. FESCO and its subsidiaries will become a critical element of the energy conservation and EE management in Russia, and will cover the following functions:

- the organisation of energy audits in the budgetary and production spheres;
- the provision of energy services;
- the implementation of energy conservation and EE equipment;
- the implementation of the financial mechanisms of energy conservation and EE enhancement.

An important component of energy conservation and EE improvement policy is government support for investment and the creation of a favourable investment climate. A lack of financial resources has a negative influence on the implementation of this policy. For achieving a sizeable

decrease in the GDP energy intensity set by the Russian President, a project entitled Energy Efficient Russia is being prepared, which will address the following through public–private partnerships:

1. energy conservation and improving EE in the urban utilities and residential sector, in particular in the lighting and water supply systems;
2. increased use of innovative solid fuels without compromising on the environmental standards of power plants, and utilisation of biomass fuel and associated gas;
3. the efficient use of energy resources by industry.

Completing these tasks alone will allow the use of the technical potential of energy conservation to be increased by 30% by 2015 and nearly doubled by 2020 from the current level, totalling 40% (INOSAT–Avtomatizatsiya, 2013).

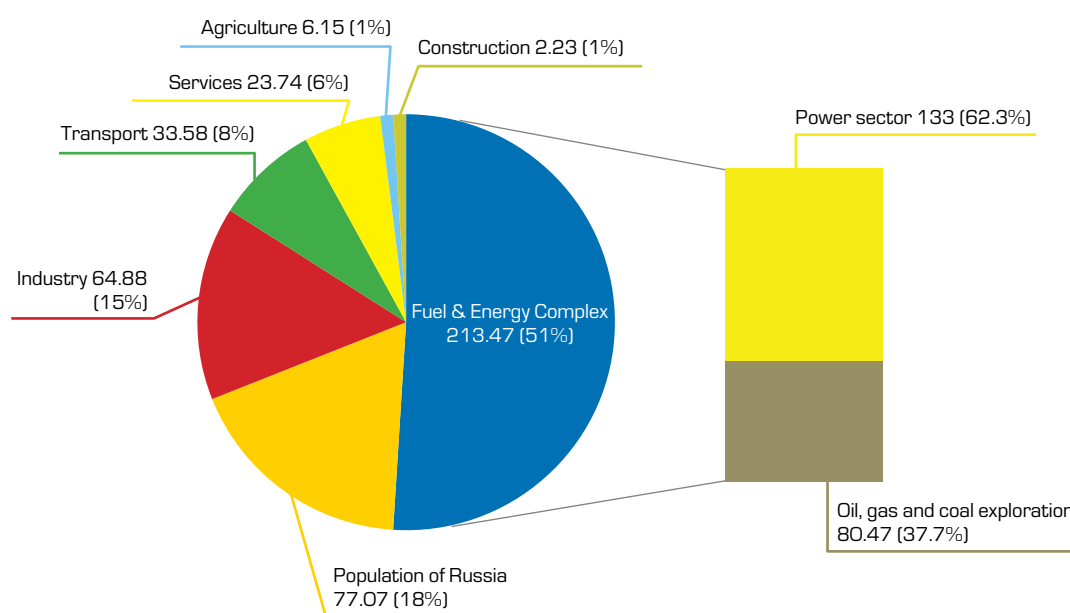


Figure 2.9.
The potential of energy efficiency improvement in Russia (million TEF)

Source: Poleschuk, 2010

Russia's energy conservation market is large. Thus, the World Bank holds that Russia has an additional energy efficiency potential of 45%, and that investment of \$320 billion in EE will pay back in four years. The European Bank of Reconstruction and Development (EBRD) estimates this potential at 30% (on average) and the payback period of five years. Thus, although the estimates of the country's energy conservation potential vary, it can safely be taken as a minimum of 30% (Kryazhev, 2010).

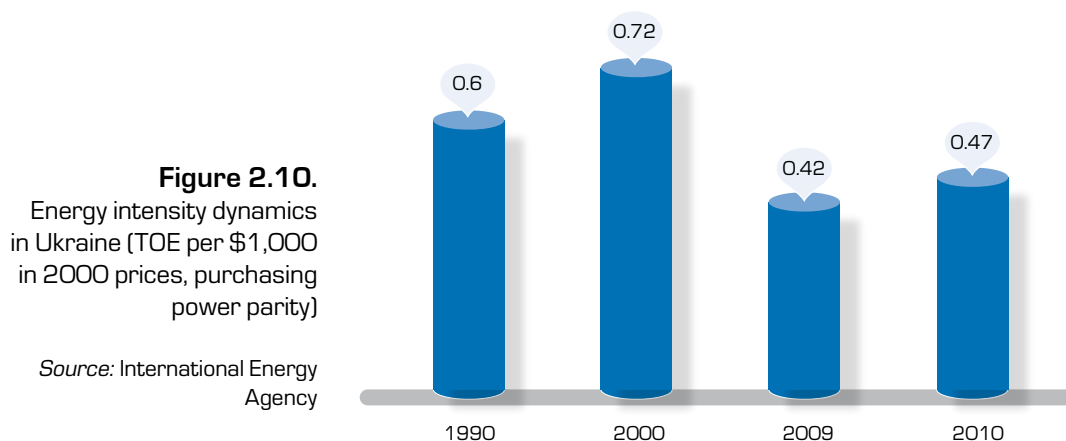
2.4. Ukraine

Ukraine belongs to a group of resource–deficient countries whose demand for conventional primary energy resources is supplied principally by imports. According to the State Committee on Energy Conservation, Ukraine annually consumes about 210 million TEF of fuel and energy

2. The current status of energy conservation in the SES countries and Ukraine

resources (FER) (Maiger, 2006). The country's own production meets 20% of the demand for oil, 25% of the demand for gas, and 80% of the demand for coal.

Ukraine's GDP energy intensity is 2.6 times that of the average for developed countries, which can be explained principally by extravagant approaches to energy use. Energy conservation measures in all sectors of the economy would fix the problem.



The General Energy Institute of the National Academy of Sciences of Ukraine estimates the country's energy conservation potential at 42–48%. Up to 38% of FER may be saved in industry, almost 30% in industrial utilities, and 17% in the fuel and energy sector itself.

RES barely account for 1% of the country's energy balance. Ukraine's national agency on energy efficiency in its Report on implementation of state energy efficiency policy in 2009 indicated that the country has an annual recoverable potential of RES equal to 98 million TEF (which is over 50% of the national energy consumption).

In order to realise this energy conservation potential, in 2006 Ukraine was adopted the Energy Strategy for the period until 2030 (approved by Governmental resolution no. 145-r on 15.03.2006), which was revised and supplemented in 2012. In addition, the Comprehensive state energy conservation programme and the Programme of state support for the development of non-conventional and renewable energy sources were drafted and energy conservation measures were defined aimed at realising economically feasible EE potential.

These programmes are expected to increase the energy conservation potential to 108 million TEF by 2015; spending on respective measures will have reached 52.4–64.8 million grivnas¹ by then (Maiger, 2006). Special structural departments were established within the most energy-intensive ministries and oblast administrations, and the Central and Regional Energy Conservation Inspectorates, the Central Agency on Energy Examinations, Ukrainian Energy Conservation Investment and Service Company (UKRESCO), and municipal EE centres.

In order to promote energy conservation, Ukraine's EE legislation provides for the switch from specific fuel consumption standards to an energy standard system. Within 2009–2015 over 600 national standards will be developed to govern the energy intensity of various production processes. Including in 2010 over 150 regulations were adopted:

¹ An equivalent of \$6.4–9 billion as of the date of this report.

2. The current status of energy conservation in the SES countries and Ukraine

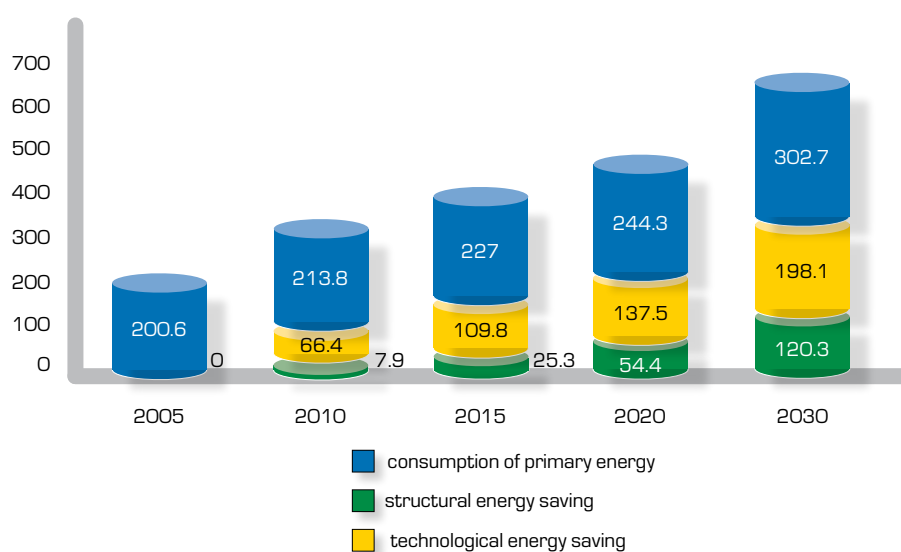


Figure 2.11.
Planned volumes energy conservation in Ukraine by 2030

Source: Energy Strategy of Ukraine for a period until 2030

Indicator	2005	2006	2007	2008	2009	2010
Primary FER consumption (in millions TEF ²)	200.6	211.9	214.5	203.6	170.5	н.д.
Natural gas consumption ³ (in billions of m ³)	76.4	73.9	69.8	66.3	51.9	57.6
Including consumption by population and housing & utilities	34.1	34.2	29.7	29.6	28.9	29.2

Table 2.3.
Primary FER consumption in Ukraine

Source: Aksakovskaya, 2011

- a governmental energy policy group comprising representatives of various ministries was set up;
- The state targeted economic programme on energy efficiency for 2010–2015 was approved (Dudkin, 2010).

The main measures to reduce GDP energy intensity in Ukraine include the decommissioning of energy-intensive and low-margin production facilities; administrative and technical measures; introduction of energy-saving technology, energy consumption standards and metering equipment; application of advanced fuel burners and insulated pipes in heating systems; installation of economic lighting systems, etc. These measures allow a total of 2.2 million TEF to be saved.

Ukraine has considerable potential for energy conservation in the production, supply, distribution and consumption of energy resources. The urgency of the energy conservation effort is justified by the simple fact that 30.3 billion kWh, or 19.36% of all Ukraine's electricity, is lost during grid transmission. In addition, power costs in transmission and distribution networks amount to 4.2 billion kWh and 25.6 billion kWh, respectively (Zerkalov, n/a).

² According to the National Academy of Sciences of Ukraine.

³ According to Neftegaz Ukrainy.

2. The current status of energy conservation in the SES countries and Ukraine

* * *

The analysis shows that all countries under consideration are energy intensive, but possess vast potential to reduce energy intensity. Their governments are paying close attention to the issues of EE improvement, energy conservation and use of renewable energy sources. Strategic documents are being adopted to this end, but not all public initiatives make a full impact on the real sector. Of particular interest is Belarus' experience of implementing public EE policy: the country successfully reduced its energy intensity by a half, and its economy consume the least amount of energy to produce goods and services and almost reached the European level of energy consumption. However, it is obvious that the approaches used in Belarus may be unfeasible in their purest form in other countries due to political, economic and social differences.

None of these countries fully realise the potential of programmes of public financing of measures aimed at EE improvement and reduction of emissions, which have proven to be instrumental elsewhere in the world. This is also true of other programmes aimed to encourage private owners to modernise their fixed assets and equipment that is being implemented by governments jointly with international organisations or via financial intermediaries.

3. Comparative analysis of legislative approaches towards energy efficiency

Energy conservation comprises legislative, scientific and technical measures aimed at the reduction of the energy intensity of products or services and the minimising the energy losses during production, processing, transportation, storage and consumption of FER and non-conventional and renewable energy resources. The ultimate goal of governmental energy conservation policy is to reduce the specific consumption of all energy sources per product unit. The benchmark should be the energy efficiency levels achieved by the most developed, high-end economies and domestic achievements in this field (IEA, EBRD, 2011).

Rationale	Task
Energy security	<ul style="list-style-type: none"> • to reduce energy imports • to reduce domestic demand in order to increase exports • to enhance reliability • to control demand for energy
Economic development and competitiveness	<ul style="list-style-type: none"> • to reduce energy intensity • to improve industry competitiveness • to reduce production costs • to make energy prices more affordable
Climate change	<ul style="list-style-type: none"> • to contribute to the global climate change and adaptation effort • to comply with international obligations under the UN Framework Convention on Climate Change • to comply with accession criteria or supranational directives
Public health	<ul style="list-style-type: none"> • to reduce the pollution of residential buildings and the environment

Table 3.1.
The driving forces of the governmental energy conservation and EE policy

Source: IEA and EBRD, 2011

All analysed countries have energy conservation and RES laws (except Russia, which lacks a basic RES law) in which the general principles of regulation are set forth. However, there are a number of issues that are not covered by the laws. In particular, the laws do not contain issues on the supervision and monitoring of the implementation of approved energy conservation programmes.

The EE and RES law of SES countries and Ukraine represents a voluminous corpus of acts and regulations of various levels (strategies, guidelines, laws, regulations and other subordinate legislation governing relations in the fields of energy conservation and RES). They provide the legal, economic and organisational framework for energy conservation and energy efficiency activities of individuals and legal entities and set forth the goals, forms and areas of support for the use of RES.

All current legislation can be divided into framework laws and directly applicable laws. The basic law in the analysed countries is constituted by framework laws on energy conservation and renewable energy sources (the only exception to this is Russia, which has an energy conservation law but no basic RES law⁴), which merely define the general principles of regulation in this sphere.

⁴ However, on May 28, 2013 governmental resolution no. 499, On the mechanism of stimulating the use of renewable energy sources in the Wholesale Electricity and Capacity Market was adopted; it sets forth the rules of setting prices depending on the capacity of RES-based generating facilities, methods of calculating prices and market players' costs, and other guidelines.

3. Comparative analysis of legislative approaches towards energy efficiency

Energy conservation laws are typically based on the model law on energy conservation adopted at the 12th plenary session of the Interparliamentary Assembly of CIS member states (Resolution no. 12-5 dated 08.12.1998, on resource conservation in CIS states at the Turn of the Third Millennium). These laws ensure a uniform approach towards the concept of "energy conservation", which is understood as organisational, scientific, practical and information measures to promote efficient and economic use of fuel and energy resources. The fundamental principles of public energy conservation policy are:

- prioritising the efficient use of FER;
- the need for economic support for energy conservation and encouragement of RES use;
- the compulsory and reliable reporting of produced and consumed FER;
- the common interests of the producers, vendors and consumers of FER;
- a systematic approach towards energy conservation;
- information, educational and scientific activities in the field of energy conservation;
- a commitment by corporate FER producers and vendors in the efficient use of FER;
- liabilities for the inefficient use of FER.

However, the way these states implement the energy conservation policy depends on their geopolitical position, the availability of domestic energy resources, and the specific features of the national fuel and energy sector. As Russia is a federal state, approaches towards energy efficiency may differ from one federal subject to another (EurAsEC, 2005).

Notably, provisions pertaining to energy conservation are also incorporated in other laws in addition to the EE and RES legislation. Each country's civil, tax, investment, pricing, anti-trust and other laws have a direct (and fairly strong) impact on energy conservation.

A list of the main EE and RES laws in SES countries and Ukraine is provided in Annex 2.

An example of an efficient legal framework for energy conservation is US law; it contains a number of fundamental acts which in turn served as a model for other countries' energy laws, such as the 2005 Energy Act. The latter has 654 pages and embraces the entire energy sector. Section one of the Energy Act begins with energy conservation provisions; it includes a number of subsections and a package of programmes of introducing energy-saving technology and new energy sources, covering almost all aspects of energy efficiency.

Also worthy of mention is the US Energy Policy Act of 1992, which contains 30 sections and 308 articles. The first fundamental section of the act is entitled Energy Efficiency; its 50 articles are grouped into seven subsections: buildings; energy systems; energy efficiency standards for appliances and equipment; industry; assistance to states and local administrations; energy management in federal agencies; etc. Each subsection represents one of the federal energy conservation programmes.

Thus, the legal framework of countries that have made significant progress in energy conservation and EE enhancement is different from that of the region.

First, these are directly applicable laws. Once enacted, they do not require any subordinate legislation, unlike the current laws of the analysed countries. This approach not only enables clear understanding of the entire process envisaged by the law, but also accelerates its implementation without the need for drafting numerous supplementary concepts, instructions and so on.

Second, these laws typically name the state body responsible for their implementation. Thus, it is clear from the outset who is to supervise each phase of the process.

Third, the developers provide for the financing of the implementation process. The law clearly defines the amounts that will be allocated for particular programmes and the timing of these

allocations. The responsible executive body does not need to handle the financing issues and can immediately proceed with planning, implementation and supervision work as per the approved budget.

Fourth, the executive body knows in advance when it is supposed to prepare a full report on the completion of its assignment (Berner, 2007).

Thus, a number of recommendations for improving the current legal framework on energy conservation and EE can be made:

- 1) formulate clear and feasible goals and tasks;
- 2) include quantitative goals and indicators with clear deadlines;
- 3) appoint the persons responsible for planning and implementation;
- 4) provide financial and other resources;
- 5) provide information support;
- 6) incorporate supervision, monitoring and reporting components;
- 7) justify government interference.

In recent years a great deal of work was carried out at a professional level to improve the energy conservation, EE enhancement and RES legislation in the region. However, there are still a number of gaps that await solutions.

4. The main mechanisms for implementing public energy conservation policy

4.1. Energy conservation measures

EE enhancement and energy conservation projects strengthen competitiveness by reducing product cost, ensuring stability against the backdrop of growing tariffs, reducing the cost of maintenance of inefficient equipment, reducing environmental risks, and enhancing goodwill. To implement product cost reduction projects, the most instrumental measures must be identified. In this sense, the term “energy conservation potential” is used; that is, the difference between the current energy efficiency level and the best practice or standard.

Sector	Efficiency indicators	Determination of energy efficiency potential
Energy sources	specific fuel consumption of heat and electricity production	difference between actual and standard (industry’s best) values
Heating networks	losses of heat and medium	difference between actual and standard values
Power grids	losses of electricity	difference between actual and standard values
Industry	specific FER consumption of production	difference between actual and standard (industry’s best) values
State-funded organisations	specific heat and electricity consumption per m ²	difference between actual and standard (for the respective building type) values
Transport	specific fuel and electricity consumption per tonne/km	difference between actual and standard (industry’s best) values
Housing	specific fuel consumption per m ² , annual electricity and water consumption per person	difference between actual and standard (for the respective building type) values
Services and trade	specific heat and electricity consumption per m ²	difference between actual and standard (for the respective building type) values
General system indicators	specific annual FER consumption per person, by sector	difference between actual values and required values (based on an assessment of energy conservation potential by sector and of the entire region)

Table 4.1.
Assessment of energy conservation potential

Source: IFC Advisory Programme in Europe and Central Asia

Energy conservation potential may be realised by:

- increasing efficiency through the application of energy-saving technology and measures; or
- reducing consumption of non-renewable fuels by increasing the proportion of renewable fuels in the overall fuel balance.

When identifying measures to be taken and their order of priority, the classification of potential realisation mechanisms should be taken into account:

1. technical (technological) potential is assessed on the assumption that all existing fleet of obsolete and inefficient equipment will be instantly replaced with the best available equipment (i.e., specific energy consumption will instantly be upgraded from the “medium level” to the “almost minimum level”). The costs or limits of implementation are not taken into account;

4. The main mechanisms for implementing public energy conservation policy

2. the economic potential is a part of the technical potential which may be expedient to realise using the main economic effectiveness criteria: rate of discounting, opportunity cost (export price of natural gas), environmental and other indirect impacts and external factors;
3. the financial potential is a part of the economic potential which may be expedient to realise using the investment decision criteria given the then current market conditions, prices and limits (IFC, 2010).

Therefore, EE improvement, energy conservation use of RES projects may focus on basic technical measures (see Table 4.2).

Sector	Technical measures
Production and transport of fuel	<ul style="list-style-type: none"> • introduction of technology for primary FER saving (e.g., gas flaring)
Power generation	<ul style="list-style-type: none"> • enhancing the efficiency of existing power plants: complementing generating units with gas-turbine power units; utilisation of flue gas heat; introduction of new technologies to improve efficiency of equipment and the entire plant; introduction of solutions to optimise the structure of energy sources, e.g. ensuring maximum load for the most efficient TPPs and switching boiler plants to peak-load operation or hot reserve mode • introduction of cogeneration and tri-generation technology • use of RES: replacing conventional fossil fuels (gas, oil, coal) with renewable resources (solar energy, water, wind, biomass, etc.)
Heating networks	<ul style="list-style-type: none"> • reducing heat losses by introducing efficient insulation technology • measures to increase the lifetime of heating networks (diagnostics, preventive repairs, comprehensive quality systems, controllable heating networks)
Electric grids	<ul style="list-style-type: none"> • reconstruction of transformer substations • reconstruction of overhead and cable transmission lines • creation of controllable power grids to optimise substation load and increase throughput capacity • introduction of filter compensating devices • measures to reduce the dependence of power consumption on air temperature (e.g., use of heat storages instead of electric heaters)
Water and sewage systems	<ul style="list-style-type: none"> • reconstruction and replacement of worn sections of water systems • creation of closed-loop water recycling systems • optimising pressure levels in all parts of the system • use of variable-speed drives in pumps
Residential and public buildings	<ul style="list-style-type: none"> • insulation of fencing structures • use of PVC double-glazed units • installation of water, heat, electricity and gas meters • installation of energy conservation equipment and control systems in buildings • enhancing the efficiency of lighting in buildings and apartments • automation of heating, air conditioning and ventilation systems
Industry	<ul style="list-style-type: none"> • modernisation of production equipment and optimisation of production processes, e.g. by introducing technologies which allow product energy intensity to be reduced • introduction of efficient lighting systems • use of secondary energy sources • modernisation of boilers • modernisation of compressors and pumps • modernisation of heating, air conditioning and ventilation systems • introduction of automated energy recording and management systems

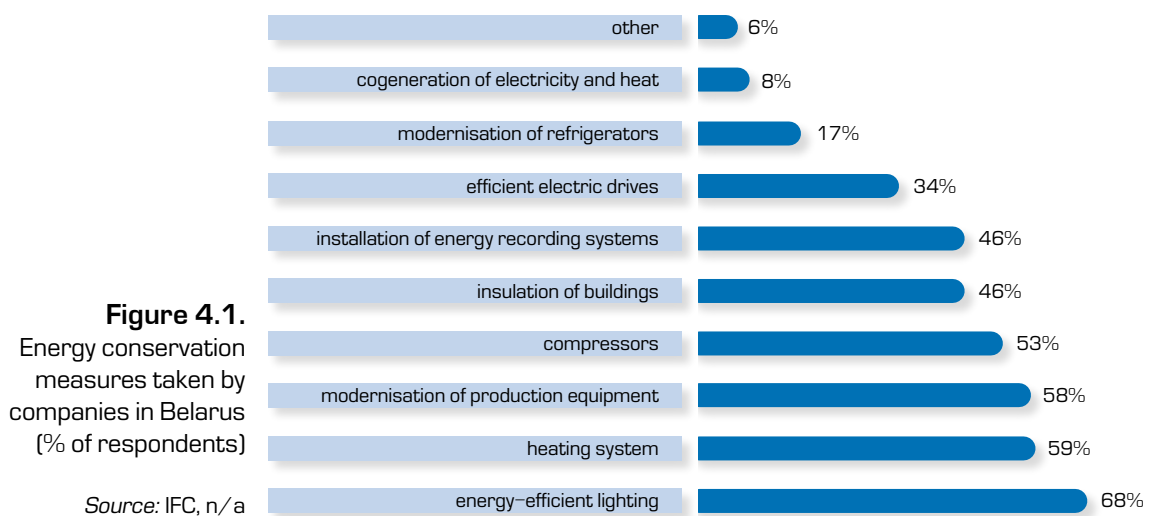
Source: IFC Advisory Programme in Europe and Central Asia

Table 4.2.

A package of basic technical measures to facilitate energy conservation and energy efficiency

4. The main mechanisms for implementing public energy conservation policy

We will discuss the structure of implemented measures using the example of Belarus as the most successful country in terms of EE enhancement, as shown in *Figure 4.1*. Heating and lighting systems are in need of energy conservation measures in view of the high losses. One of the real ways to facilitate energy conservation and energy efficiency is to modernise production equipment. Over a half of respondents have already done so. The other ways to reduce energy consumption include replacement of compressors (53%), insulation of buildings, and installation of energy metering systems.



Governments, businesses and households have at their disposal a wide range of tools to enhance energy efficiency. It is important to identify the optimum (from the economic and technical perspective) measures that can be expected to bring about maximum results at minimum cost (including financial, human and time resources).

4.2. Financing of energy conservation mechanisms and sources

A country's transition to an energy conservation policy requires investment in the magnitude of billions of US dollars. Therefore, choosing between a company's own and borrowed funds as a source of finance for EE projects and programmes becomes an important issue.

There are several mechanisms through which energy conservation projects can access funding:

- 1) a company's own funds;
- 2) debt financing (loan, bonds, leasing, etc.);
- 3) equity financing;
- 4) grants (from various international and private organisations, governments and NGOs);
- 5) governmental support (in various forms, e.g. PPP, subsidies and compensations);
- 6) energy service contracts (energy performance contract);
- 7) mechanisms provided by the Kyoto Protocol.

Financing a project from a **company's own funds** (including undistributed profit, working capital, private shareholders' investments and other sources) is the simplest and cheapest solution from the planning point of view. In some cases, depending on the project's size, a

company may implement the project phase by phase, as funds become available. This is suitable for small and medium-size businesses and relatively small projects (up to \$500,000). Where a project is sizeable and requires investment in excess of \$500,000, a company needs a long period of time to gather sufficient funds, and phase-by-phase implementation may complicate the process and increase the project cost. The “freezing” of working capital may have a negative impact on the company’s development, as it hinders reequipment and eventually affects the company’s competitiveness and financial standing.

Therefore, the most common and optimum choice for re-equipment projects is **debt financing** (borrowing). These projects typically pay back in three to five years. The availability of collateral is an essential precondition of financing.

The most common forms of debt financing are:

- loans;
- leasing equipment;
- bond issue.

Depending on the project’s nature, the sources of debt financing may be:

1. international financial organisations (IFO);
2. local development institutions;
3. second-tier (commercial) banks;
4. leasing companies;
5. export credit agencies (ECA); or
6. other financial organisations or private investors (in the case of bond issuance).

International financial organisations

may finance projects directly or via partner banks. Typically, an IFO is involved directly where the project cost is several million USD. Financial approaches differ from one IFO to another. The benefit of dealing with an IFO directly is a lower interest rate than a commercial bank would offer. However, consideration of a loan application may be a lengthy process. IFO requires a detailed study of the project with an emphasis on social and environmental responsibility. Practically all IFOs publish information on the projects on their websites; therefore, the reputation of the company implementing the project and the procurement terms used by it are critical.

To finance smaller projects, IFOs usually provide targeted credit-lines to second-tier banks.

In addition to project financing, an IFO may provide technical assistance to projects, including:

In April 2013 the EDB signed an agreement with the First Wind Power Plant LLP (owned by Samruk-Energo) of Kazakhstan on providing a ten-year loan for a total of 14.2 billion tenge (about \$94 million). Under this project, a wind power plant with a capacity of 45 MW will be built in the city of Yereimentau, Akmola Oblast, Kazakhstan. The plant will generate 172.2 GWh of electricity annually. This is the first industrial wind generation project in Kazakhstan.

In 2012, the EDB opened a non-revolving credit line of 300 million roubles for JSC Center-Invest Bank under the Programme of improving energy efficiency of the member states economies by providing targeted credit loans to financial institutions. The partner bank will provide sub-loans of 3 million roubles or more for projects to reduce energy intensity, build power plants using renewable energy sources, and enhance the efficiency of use of natural resources.

4. The main mechanisms for implementing public energy conservation policy

- a calculation of energy conservation effect;
- identifying opportunities for energy conservation and reducing the cost of energy resources;
- the selection of a technical solution;
- an assessment of technical risks.

National development institutions also finance large investment projects. Typically, the cost of financing (i.e. interest rate on the credit) is somewhat higher than that offered by IFOs (depending on the rate of fundraising, which in turn depends on the country's rating), but the eligibility requirements may be softer. Examples of national development institutions are the Development Bank of Kazakhstan, the State corporation "Bank for development and foreign economic affairs" (Vneshekonombank), and the Development Bank of the Republic of Belarus.

Commercial banks offer various financial products to finance EE improvement projects. Usually such products are provided under special programmes implemented jointly with IFOs in order to ease access to financial resources for small and medium-size businesses. Their projects are typically inexpensive, and interest rates may be higher; but, importantly, applications are processed promptly and the terms of financing are far more lenient (as concerns environmental and social impact assessment, procurement terms, etc.).

The mechanism of project financing via **leasing companies** is basically similar to loans however it has several differences:

- instead of collateral, the borrower is often required to pay the first instalment of at least 20% of equipment cost;
- the equipment remains the property of the financial organisation until the full repayment of the debt.

This approach enables companies to use financial resources efficiently, develop their technical capacity, and readily respond to the market situation and demand, thus preserving and improving their competitiveness.

In June 2013 the Minsk Automobile Plant of Belarus shipped 102 buses to Tolyatti, Russia, under a five-year lease agreement. This agreement was made between Sberbank Leasing and the Tolyatti Bus Company. The purchase of the buses was part of the target programme The Development of Passenger Transportation in Samara Oblast until 2016 and the long-term target programme The Development of Municipal Passenger Transportation in Tolyatti in 2012-2017.

In practice, there are two basic schemes of credit guaranteed by an ECA:

- 1) the borrower is a bank accredited by an ECA, i.e. the bank receives the credit to finance a particular importer's contract; or*
- 2) the borrower is the importer company itself, i.e. it receives the financing directly.*

An export credit agency (ECA) is a state-owned or private entity that promotes national exports. ECAs offer a wide range of services, including foreign trade loan, government guarantees for export loans, insurance of loans and transactions against political and other risks, administrative and information support of export transactions, etc. The involvement of an ECA in a credit scheme eventually results in softer loan terms (a longer loan term and a lower interest rate).

Another source of debt financing for projects is the **issuance of bonds**. The advantage of this instrument is that it provides access to cheaper capital without the need to provide collateral or cede control over assets (as compared with equity financing). Companies wishing to place their bonds on the financial market should meet the following criteria:

1. a large amount of financing needed. The public offering of bonds costs a company at least \$15,000 + 2–3% of the issuance volume. Therefore, bonds issue is only suitable for large companies;
2. the company's renown, heavy PR and IR support;
3. profitability over previous few years;
4. the possession of an investment programme that the funds are being raised for.

Bonds issuance is suitable for financing sizeable projects under investment programmes with a term of three to five years and low or moderate risk levels.

The so-called "Green Bonds" are gaining popularity in western markets; these are instruments intended specifically for financing "green" projects (combating climate change, reducing greenhouse gas emission, etc.). Usually these issuances attract socially conscious investors, which results in lower rates during placement. These instruments, however, are not yet readily available in the analysed region.

The World Bank Treasury jointly with the US Department of Environment launched innovative products to catalyse the financing of private sector initiatives to combat climate change with the assistance of capital markets. World Bank Green Bonds allow fixed-income capital to be raised for the support of climate change solutions that meet World Bank project criteria. Since the inception in 2008, the World Bank has issued Green Bonds to a total exceeding \$3 billion in 46 transactions denominated in 17 currencies⁵.

Equity financing of the projects is usually opted for where the project cost exceeds \$25 million. This financing is available from international financial organisations, direct investment funds, large state and private banks, etc.

This financing mechanism is associated with the risk of losing control over the company, as investors become direct shareholders. The benefit is an access to interest-free financial resources for an unlimited term (this term may be agreed prior to entering into a shareholders agreement, if the number of shareholders is limited). Withdrawal from the transaction is usually implemented in the form of initial public offering (IPO), secondary public offering (SPO), allotment, or sale to a strategic investor.

An IPO is a costly procedure suitable only for large projects with low or medium risk levels. After IPO the company turns public and its reporting system is expected to be clear and

In December 2012 the International Financial Corporation (the World Bank Group) provided a long-term investments of 425 million roubles to KKS Group, a heat and hot water supplier in Tula and Kemerovo Oblasts. Equity financing totaled 175 million roubles (\$7.67 million), and 250 million roubles (\$18.2 million) was provided in a long-term subordinated loan. The loan used to modernise the company's assets, which will enhance the quality and reliability of services provided by the Group in Central Russia and Siberia, and reduce losses and CO₂ emissions, thus minimising environmental impact.

⁵ According to the World Bank official website.

4. The main mechanisms for implementing public energy conservation policy

transparent, enabling easy access to financial resources in the future (once the company is listed on international stock exchanges such as the LSE or NYSE, it enjoys public recognition).

In April 2012 the Global Environmental Fund provided a \$4.5-million grant to implement the joint project by the Government of Kazakhstan, UNDP and the GEF entitled "Energy Efficient Design and Construction of Residential Buildings".

Grants from various organisations and governments are another source of finance for EE projects. Particularly, international organisations such as the UNDP and the Global Environmental Fund (GEF) commit considerable resources to combating climate change. Typically, grants are intended for very narrow purposes and rarely exceed one million dollars. They can be provided for the preparation of

technical documents necessary for project implementation and applying for IFO loans. Some non-financial organisations (such as the UNDP) also assist in applying for additional financing at arm's length terms and can even provide guarantees.

In 2009 a regulation on electricity tariffs for power generating facilities was enacted in Kazakhstan, which set a price cap for seven years for electricity generated by various categories of plants. Particularly, first category plants may raise their tariffs from 3.6 tenge in 2009 to 8.8 tenge in 2015, i.e. by 144% or by 24% a year on average. In so doing, plants will make contracts on investment obligations with the authorised body.

Government support may be provided in the following forms:

- targeted financing of regional energy conservation and EE improvement programmes directly from the state budget;
- setting long-term tariffs for energy resources and including them in the investment component of EE improvement projects;
- formulation of EE programmes within organisations whose tariffs are subject to regulation;
- tax shelter;
- subsidies from regional and local budgets to building owners as part of targeted capital repair programmes for implementing energy conservation measures, including installation of metering devices; and
- providing government guarantees for loans received for energy conservation programmes.

On July 21, 2007 the Russian President signed the Federal law About fund of assistance to reforming of housing and communal services. This law sets up the legal and organisational framework for providing financial support to Russian Federation subjects and municipalities for the purposes of capital repair of apartment buildings and rehousing people from hazardous dwellings by establishing a state-owned corporation. Since 2013 the Fund's resources have also been allocated to the modernisation of utilities systems.

Public-private partnership is a promising form of financing, especially in the municipal sector. PPP enables national and municipal bodies to engage private businesses in the provision of services on the terms of risk and responsibility sharing. Another principle of PPP is the provision of public infrastructure investments to support a private project or a group of projects. Examples of EE enhancement projects implemented using the PPP principles can be found in almost all analysed countries.

An energy service contract (energy performance contract) is a contract to introduce energy-saving technologies. It provides for a special energy service company (ESCO) providing a full package of services to introduce energy-saving technologies at the customer's facilities using a loan raised by ESCO. Usually, the customer pays for the financial resources used and

work done by ESCO after project implementation, from amounts saved by the introduction of energy conservation solutions. An energy service contract may be made for a period from six months to five years. The package of services includes pre-investment energy audit (establishing baseline energy consumption parameters), defining mechanisms of financing and implementation, and monitoring and verification of results. The key elements of an energy service contract are financing without the customer's participation and that the ESCO carries out all the work to introduce energy-saving technologies. To date, this instrument has not been a popular choice in the region.

The Kyoto Protocol sets out so-called "flexibility mechanisms" that help countries to lower the costs of complying with their commitments to reduce greenhouse gas emissions. Commitments may be fulfilled either domestically or through international cooperation mechanisms:

- CO₂ emissions trading;
- joint implementation;
- clean development mechanism.

At present, it would be expedient to use the joint implementation mechanism under the Kyoto Protocol which allows companies to receive foreign investments for their projects in exchange for Emission Reduction Units (ERUs) which represent emission reduction under the respective investment project (see Article 6 of the Kyoto Protocol). The Kyoto Protocol permits Annex B parties to jointly implement overseas projects to reduce greenhouse gas emissions and then use the resulting ERUs towards their own commitment goals (Semikashev et al., 2012).

Greenhouse emission trading earned Ukraine 4 billion grivnas in 2010-2011. However, at the end of 2011 the country's participation in the Kyoto Protocol was suspended for emission reporting violations. In April 2013 Ukraine and Japan agreed 536 projects that will be implemented using the proceeds of greenhouse emission trading under the Kyoto Protocol for a total of 3.8 billion grivnas (\$465 million).

Thus, the analysis shows that various mechanisms are now available for financing EE projects.

4.3. Energy conservation and EE improvement programmes

The main role in energy conservation and EE management in any country should be assigned to national, regional and industry-specific programmes. This is where practical energy conservation begins. Therefore, these programmes should be integral parts of public socioeconomic development programmes and address social, economic and environmental issues. Any decrease in energy intensity is only possible through the natural economic renewal process and implementation of targeted EE projects.

4.3.1. Belarus

According to the Belarusian Law on energy conservation, one of the basic elements of public energy conservation management is the formulation and funding of national, international, regional and industry-specific scientific and technical programmes. Article 8 of the Law, Energy Conservation Programmes, states that in order to implement targeted public policy and coordinate the activities of state bodies concerned national, regional and industry-specific programmes must be prepared and approved. The procedures of drafting and approval of the programmes are determined by the Belarusian government.

Scientific and technical support for conservation is rendered under national and international scientific and technical programmes and innovative projects to develop and introduce new energy-saving technologies, equipment and materials.

4. The main mechanisms for implementing public energy conservation policy

The preparation, implementation and financing of public scientific and technical programmes and innovative projects in the field of energy conservation are all governed by laws.

4.3.2. Kazakhstan

The Kazakhstani law On energy saving and enhancement of energy efficiency states that the government approves an industry-specific energy conservation and EE improvement programme proposed by the authorised body.

However, it is not clear which industry is meant. The law may refer to a public energy conservation and EE enhancement programme. Indeed, programmes of this type have been developed, yet not implemented in Kazakhstan. If it is the case, there is no indication who is responsible for the drafting and implementing of energy conservation and EE enhancement programmes for particular industries or privately-owned assets. As a result, it would be more logical to state that each ministry that has expertise in the respective sector must prepare an industry-specific programme. To date, no programmes like this exist in the country.

The law provides for local executive bodies at various levels to ensure that energy conservation and EE enhancement activities are all included in local development programmes. It is also stated that, in order to provide information support for these activities, central and local executive bodies and quasi-public sector players must hold discussions of energy conservation issues on a regular basis.

Notably, there are no provisions for the financing of energy conservation programmes from the national or local budgets. The absence of financing sources effectively reduces this initiative to a mere declaration of intentions, as was the case with Kazakhstan's precious energy conservation programmes.

It was in the Kazakhstan 2012–2015 comprehensive energy efficiency improvement plan that it was stated that the governments of oblasts and the cities of Astana and Almaty must devise comprehensive regional energy conservation plans for 2012–2015 no later than November 2012.

Kazakhstan announced three major national initiatives in the context of integration of the three basic elements of sustainable development (economic development, social progress, and environmental responsibility):

1. the “green economy” (or “green growth”), based on the final Rio+20 document, which states, “we recognise that poverty eradication, changing unsustainable and promoting sustainable patterns of consumption and resources base of economic and social development are the overarching objectives of and essential requirements for sustainable development” (Rio+20, 2012);
2. the “green bridge”, to promote cooperation with Europe, Asia and the Pacific in preparing plans of transition from traditional development models to “green growth”; and
3. a “global energy strategy”, to promote energy security by ensuring comprehensive use of all primary energy sources.

According to the draft concept Strategy of sustainable energy of future Kazakhstan until 2050, presented at the 6th Astana Economic Forum in May 2013:

- energy consumption will amount to 135 billion kWh in 2020, 200 billion kWh in 2030, 265 billion kWh in 2040, and 295 billion kWh in 2050, and the energy intensity of the GDP will be reduced by 2.4 times;
- consumption of energy from alternative and renewable sources will increase annually by 10.6% on average until 2050.

To date, however, there is no special regulation on national, regional and industry-specific energy conservation programmes and requirements for them.

4.3.3. Russia

Federal law no. 261-FZ On energy improving and enhancing energy efficiency addresses various issues of energy conservation and EE improvement programmes. In particular, it is stated that the government bodies and federal subjects should formulate and implement federal energy conservation and EE enhancement programmes, and formulate the requirements for regional and municipal programmes and similar programmes of entities engaging in activities that are subject to state regulation. Local self-government bodies also have these powers.

It is stressed that all energy conservation and EE improvement programmes must meet specific requirements. Regional and municipal programmes must include:

1. target indicators to be achieved as a result of programme implementation. These indicators are calculated by the authorised executive body of the respective federal subject or local self-government body;
2. a list of measures indicating their timing and expected outcomes in natural and monetary terms, including the economic effect of programme implementation;
3. information on the sources of financing of particular measures, indicating separately public and private sources.

Whereas formerly the developers of energy conservation programmes relied principally on their expertise, the needs of respective federal subjects and the available resources, now the law sets out a unified approach towards the preparation of these programmes and requirements for them. However, no specific requirements were provided for public programmes, and this is a serious flaw in the law.

At present, the public programme Energy saving and energy efficiency up to 2020 is being implemented in Russia. The Programme aims to reduce the energy intensity of the national GDP by 13.5%, which in combination with other factors will allow the said target to be achieved under any economic development scenario.

The ultimate targets of the programme are:

- to reduce the energy intensity of GDP at least by 7.4% at phase I (2011–2015) and by 13.5% during the entire programme period (2011–2020);
- to save at least 100 million TEF worth of primary energy annually at the end of phase I (by 2016) and 195 million TEF at the end of phase II (by 2021);
- to save a total of 334 million TEF worth of energy during phase I (2011–2015) and 1,124 million TEF during the entire programme period (2011–2020).

The main mechanisms of the programme are:

- the provision of subsidies from the federal budget to cofinance regional programmes;
- the provision of government guarantees for loans;
- the introduction of a system of target EE enhancement indicators for different economic sectors of the country and federal subjects;
- the formation of a single fuel and energy balance for the country and regions;
- the creation of a legal framework for the public programme (a number of regulations are to be adopted);
- support for R&D in the field of EE enhancement;

4. The main mechanisms for implementing public energy conservation policy

Table 4.3.
The expected outcomes and socioeconomic efficiency indicators of Russia's public programme (without RES)

	2010–2015	2010–2020
The results of measures and projects of the Energy Efficiency Enhancement Programme (without RES)		
Total primary energy saving (million TEF)	300	1000
Natural gas saving (billion m ³)	110	330
Electricity saving (billion kWh)	235	640
Heat saving (million Gcal)	500	1550
Reduction of the need for new power plants (GW)	14	25
Total reduction of greenhouse gas emissions (million tonnes of CO ₂ equivalent)	660	2200
Total saving on energy by all consumers (billion roubles)	2560	9590
Total budgetary saving at all levels on purchase of energy and related subsidies (billion roubles)	256	547
Economic potential of increasing export of oil, oil products and natural gas due to saving under the Programme (\$ billion)	40	130
Economic potential of reduction of greenhouse gas emissions (\$ billion)	9.3	31

Source: Strunin, n/a

- the development of a statistical monitoring and information support system; and
- the introduction of new standards and technical regulations for equipment and buildings.

According to the Russian Ministry of Energy, by 2011 the programme brought about the following improvements:

- 1) a 1.5% decrease in GDP energy intensity (target: 2%);
- 2) an annual saving of primary energy of 14.4 million TEF (target: 33 million TEF);
- 3) an electricity saving of 21.2 billion kWh;
- 4) a heat saving of 68.9 million Gcal;
- 5) oil and oil products savings of 740,000 tonnes;
- 6) a reduction of greenhouse emissions by 6.3 million tonnes of CO₂ equivalent.

According to the Ministry's, the failure to achieve certain target indicators was caused by:

- the fallout of the crisis and slow recovery;
- the slow launch of the public programme and the limited nature of measures in industry and in the transportation sector;
- a lack of qualified personnel;
- the allocation of lesser amounts from the state budget than planned and difficulties in accessing private financing sources;
- flaws in the legal framework defining the main instruments and mechanisms of the public programme, which do not work (government guarantees for loans) or are not used to their full capacity (energy service contracts).

4.3.4. Ukraine

Ukraine's law on energy conservation states that one of the main principles of public policy is that energy conservation problems must be addressed in parallel with the implementation of the national energy programme, including international cooperation initiatives.

In accordance with the Law, in order to coordinate the state's energy conservation efforts, national, regional, local and other programmes must be prepared and adopted. The procedures and terms of preparation of these programmes are determined by the Cabinet of Ministers.

Energy conservation funds are used to finance measures to promote the efficient use and saving of FER, such as cost sharing in economic restructuring programmes, energy conservation, development and adoption of energy-saving technologies and equipment, the provision of credit preferences and subsidies, and formulation and implementation of energy conservation measures and programmes.

The Law provides for the expert examination of energy conservation programmes. A negative conclusion by state experts constitutes grounds for follow-up revision.

Currently, the State targeted economic programme on energy efficiency for 2010–2015 is being implemented in Ukraine. This programme is expected to result in:

- a 20% decrease in GDP energy intensity from the 2008 level;
- optimised energy balance structure (a decrease in consumption of natural gas and oil products and greater consumption of alternative energy sources; replacement of natural gas and oil products will amount to 15 billion m³ and 1 million tonnes, respectively);
- higher energy security and competitiveness levels and reduced dependence on imported energy resources;
- improved state regulation mechanisms in the EE and alternative energy sector;
- a 10% decrease in production costs and a 25% decrease in non-production losses of energy;
- the elimination of cross-subsidisation of prices and tariffs;
- the creation of favourable conditions for raising funds for renewal and modernisation of fixed assets;
- the enhanced energy and economic efficiency and reliability of TPP equipment;
- a 50% decrease in public financing of utilities costs for public organisations;
- a 15–20% decrease in consumption of natural resources (water, minerals, etc.) due to reduced FER consumption;
- a 15–20% decrease in pollutant emissions.

The financing of the programme totals about \$31 billion, including \$4 billion from the state budget and \$2 billion from local budgets; the balance will come from other sources.

* * *

The analysis shows that the existing legal framework in the region includes provisions on the formulation of national and regional energy conservation and EE programmes. It may seem that all countries are unanimous in this matter. However, the legislative framework differs.

Notably, the energy conservation laws of these countries contain no provisions for the control over implementation of energy conservation programmes. In our opinion, each of these countries should have special structures with controlling and reporting functions. None of these laws name the bodies responsible for monitoring.

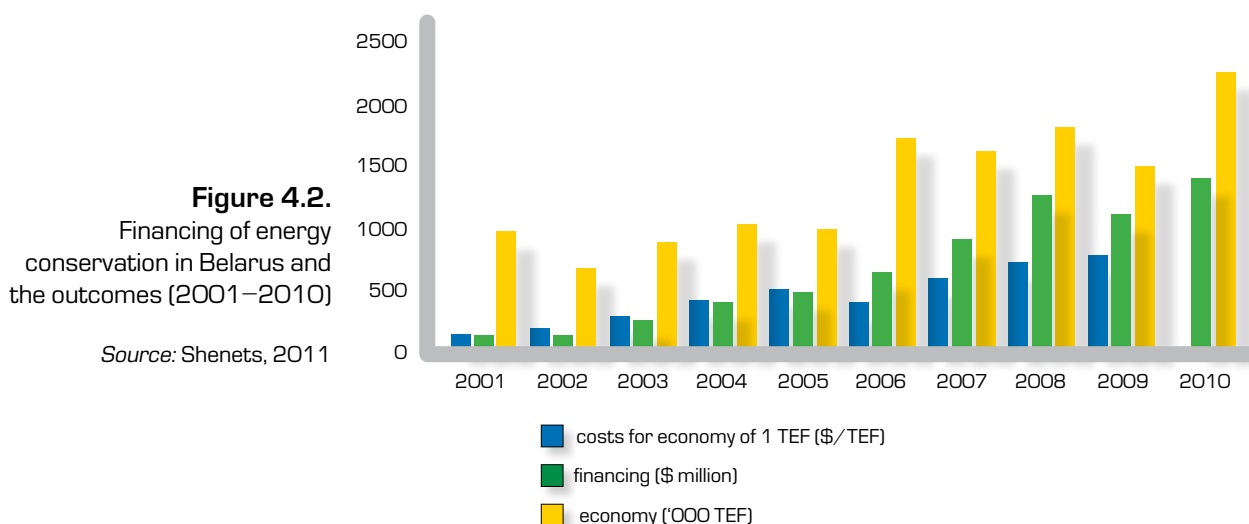
4.4. Budget funding of public programmes

4.4.1. Belarus

The law on energy conservation provides for the financing of preparation and implementation of national, international, regional and industry-specific scientific and technical energy conservation programmes. The financing issues are set out in more detail in the Regulation on financing of annual regional and national energy conservation programmes from the republic's budget approved by order no. 80 dated 31.05.2010 of the State Committee on Standardisation.

This Regulation provides a unified methodology of allocating funds from the national budget to finance national and regional programmes in accordance with law.

In addition, the Instruction on assessing the efficiency of application of funds allocated for energy conservation measures was approved by joint resolution no. 252/45/7 dated 24.12.2003 of the Ministry of the Economy, the Ministry of Energy and the Committee on Energy Efficiency of the Council of Ministers of Belarus. These documents govern the financing of all energy conservation programmes.



In 2011, a total of 7.2 trillion roubles was allocated from all sources for industry-specific and regional energy conservation programmes. The main sources of finance were the companies' own funds (4.1 trillion roubles or 56.8%) and borrowings (1.77 trillion roubles or 24.5%). Public sources, including industry innovation funds, contributed 1.347 trillion roubles or 18.7%. Planned allocations for regional energy conservation programmes from local budgets in 2011 amounted to 95.5 billion roubles for oblasts and 108.85 billion roubles for the city of Minsk.

The financing of measures to increase the use of local fuel and energy resources under energy conservation programmes from all sources totalled 562.3 billion roubles.

The Law on state budget provided for the allocation of 159.9 billion roubles in 2011 for regional and national energy conservation programmes. However, as a result of subsequent cuts in public spending, the target amount was reduced by 38% to 99.35 billion roubles; of this figure, 98.8 billion roubles (99.4%) was actually disbursed in 2011.

To achieve the set energy conservation goals in 2011–2015, a total of \$8.66 billion has to be allocated for measures to promote efficient use of FER and increase the use of local fuel. It is expected that the companies' own funds and borrowings will account for 38% and 20% of the

4. The main mechanisms for implementing public energy conservation policy

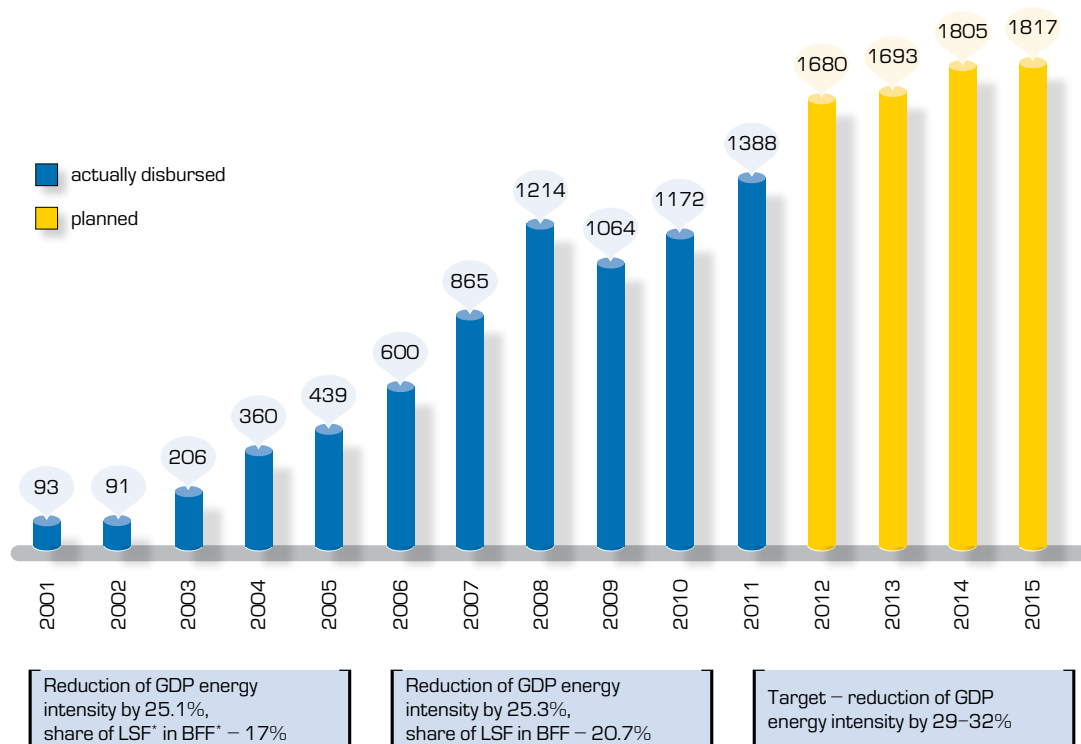


Figure 4.3.

The financing of energy conservation in Belarus in 2011–2015 (\$ million)

Note: *LSF – local sources of fuel
*BFF – boiler and furnace fuel

Source: Zenkevich, 2012

total financing, respectively. Public support in the form of shared financing from the national and local budgets (22%) and industry innovation funds (20%) will be made available to social and other public sector organisations to support their priority energy conservation activities.

Regional and national energy conservation programmes provide for shared financing of EE activities from public sources in the manner prescribed by the Regulation on the financing of annual regional and national energy conservation programmes from the state budget.

The criteria for “energy efficiency measures” are set out in the Instruction on assessing the efficiency of application of funds allocated for energy efficiency measures.

4.4.2. Kazakhstan

Kazakhstan’s law On energy saving and enhancing energy efficiency (no. 541–IV ZRK dated 13.01.2012) does not provide much detail on EE financing. Article 17, Directions of state support for energy conservation and improvement of energy efficiency, merely mentions the financing of work to develop methodology and legal framework in this field. Also, the Article states that another form of public support is to aid the owners of houses, residential buildings and apartments in paying for energy conservation and EE enhancement measures in accordance with the Kazakhstani housing law.

The Law on supporting the use of renewable energy sources (no. 165–IV dated 04.07.2009) does not mention any financing for promoting RES.

4. The main mechanisms for implementing public energy conservation policy

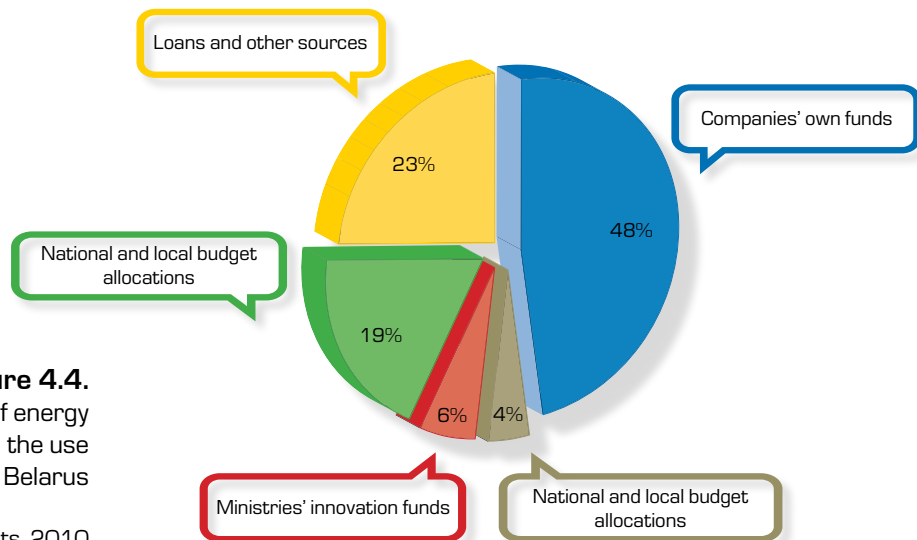


Figure 4.4.
The share of funding of energy conservation measures and the use of local energy resources in Belarus

Source: Shenets, 2010

Thus, the legislation of Kazakhstan doesn't provide funding sources for energy efficiency and RES programmes. At the same time, the Kazakhstan 2012–2015 comprehensive energy efficiency plan approved by the Kazakhstani government in 2011 provides a total of 84.618 billion tenge, including:

- in 2012: 9.3 billion tenge from the national budget,
 - 21.748 billion tenge in private investment;
- in 2013: 511.268 billion tenge from the national budget,
 - 9 billion tenge in private investment;
- in 2014: 7.5 billion tenge from the national budget,
 - 9 billion tenge in private investment;
- in 2015: 7.792 billion tenge from the national budget,
 - 9 billion tenge in private investment.

According to the draft concept Strategy of sustainable energy of future Kazakhstan until 2050 (2013), investment in this field should not exceed \$299.7 billion, including \$150 billion directly in generating capacity and \$150 billion in the production of sustainable energy systems and equipment and reconstruction of existing facilities and networks. The sources of financing are not specified, but it is indicated that the population will directly (through tariffs) or indirectly (through the charges of various organisations) pay for power generating capacity at a rate of \$15,000 per person or about \$21 per month (given a payback period of 25 years). The Concept also provides for the adoption of a selective tariff policy and a policy of deferred return on investment.

In December 2008 the Kazakhstan Sustainable Energy Financing Facility (KAZSEFF) was officially unveiled; this project was launched by the EBRD to finance the EE and RES activities of domestic companies. The project is unique in that, apart from loans, free assistance from an international team of energy conservation consultants is being made available.

4.4.3. Russia

The Russian Law on energy conservation and improving energy efficiency and amendments and supplements to certain enactments of the Russian Federation (no. 261-FZ dated 23.11.2009) addresses EE financing issues. Article 14, enhancement of energy efficiency of the economies of Russian Federation subjects and municipalities, states that target indicators in this field must reflect an increase in the non-budgetary financing of these activities.

	2011 – 2020	Including:			
		2011 – 2013	2011	2012	2013
Total cost of the Public Programme	9532.4	1909.1	540.1	611	758
Regional budgets (6.6% of total cost)	625.3	103.2	30.3	32.7	40.2
Non-budgetary sources (92% of total cost)	8771.9	1784.9	502.8	571.3	710.8
Federal budget (1.4% of total cost)	135.2	21	7	7	7
Subsidies	124.6	16.76	5.28	5.7	5.78
Information support (development and operation of State Energy Efficiency Information System)	2.2	1.12	0.68	0.25	0.19
Co-financing of educational measures	2.3	0.75	0.25	0.25	0.25
Forming a prudent behaviour model	4.1	1.56	0.5	0.53	0.53
General implementation costs	0.4	0.1	0.04	0.03	0.03
Development of methodology and standards	1.6	0.69	0.25	0.22	0.22
State guarantees	303	30	10	10	10

Table 4.4. Annual allocations from the federal budget (in billions of roubles)

Source: Poleschuk, 2011

The Law sets out the following financing mechanisms for energy conservation:

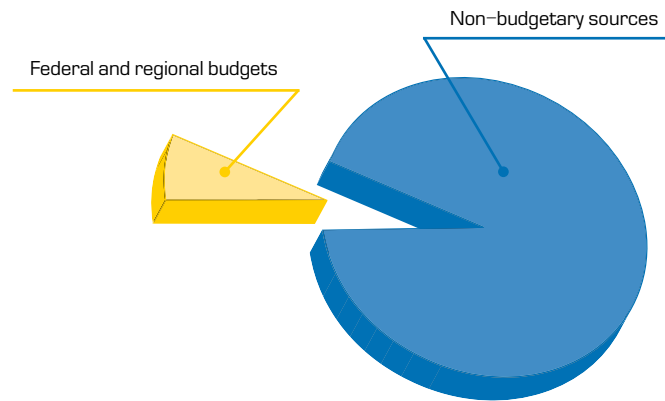
1. subsidies to federal subjects for EE improvement programmes (Article 27.Z);
2. partial compensation of interest on loans raised for implementing EE investment projects (Article 27.2);
3. setting long-term tariffs, which include an investment component (Article 31);
4. the provision of government guarantees.

A total of 9.52 trillion roubles will be allocated for the national programme Energy conservation and energy efficiency enhancement for a period until 2020. Federal and local budget allocations will account for 7.3% of all costs during the programme implementation period (0.73% from the federal budget and 92.7% from non-budgetary sources).

The programme also provides for subsidies from the federal budget to federal subjects for implementation of regional energy conservation and EE enhancement programmes. These subsidies will be provided in accordance with the rules approved by resolution no. 746 dated 05.09.2011. To cofinance the federal subjects' commitments. In 2011, subsidies were made available to 54 federal subjects.

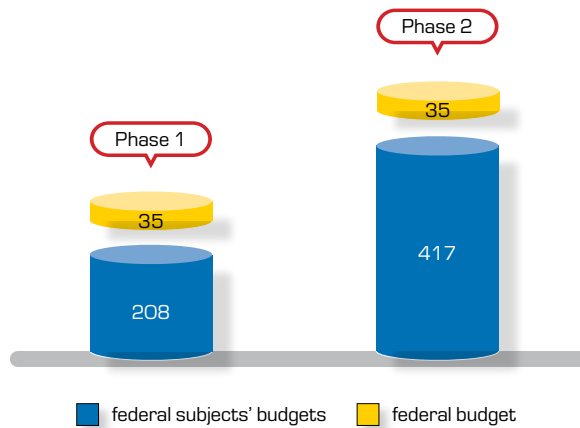
4. The main mechanisms for implementing public energy conservation policy

Figure 4.5.
The funding structure of the governmental programme Energy saving and energy efficiency up to 2020



Source: Investment Consulting Agency

Figure 4.6.
The structure of the federal budget and federal subjects' budgets, by phase of the governmental programme Energy saving and energy efficiency up to 2020 (in billions of roubles)



Source: Investment Consulting Agency

Non-budgetary sources will amount to 8.837 trillion roubles, including:

- phase I (2011–2015): 3.31 trillion roubles;
- phase II (2016–2020): 5.527 trillion roubles.

According to the Russian Ministry of Energy, in 2011 7 billion roubles was allocated to energy conservation and EE enhancement activities under the programme, and 6.313 billion roubles was actually disbursed. Cofinancing from budgets of various levels and non-budgetary sources totalled 8.762 billion roubles and 8.876 billion roubles, respectively. These funds were used to perform energy audits of state-owned facilities, introduce metering devices and energy-saving technology and equipment, develop original energy resource registration systems, train and retrain energy conservation and EE specialists, etc.

In 2012, 5.721 billion roubles was allocated to the cofinancing of regional EE enhancement programmes. On the whole, 70 billion roubles will be provided to federal subjects for the cofinancing of their programmes until 2020.

In accordance with governmental resolution no. 1016 dated 14.12.2010, On approval of the rules of selection of investment projects and principals for the provision of state guarantees of the Russian Federation for loans or bond issue for implementing investment projects, state guarantees can be provided for the purposes of energy conservation and EE enhancement projects. However, at present this mechanism does not function in practice.

In accordance with part 2 of Article 27 of Law no. 261–FZ, one of the forms of state support is partial compensation of interest on loans received from Russian financing institutions for implementing investment projects in the field of energy conservation and EE enhancement. But neither the national programme nor the 2013 federal budget law actually provide for any allocations to this end. The rules of providing respective subsidies from the federal budget have not yet been adopted.

4.4.4. Ukraine

Ukraine's law on energy conservation states that efficient use of FER will be achieved through public energy conservation policy in which economic stimulation methods are combined with financial responsibility.

Article 11, Economic measures to ensure energy conservation, states that the sources from which to finance these measures and the direction for financing must all be identified. Article 12 deals with the financing of measures to ensure the saving and efficient use of FER. These measures must be financed from the energy conservation fund, the companies' own and borrowed funds, the national budget of Ukraine, local budgets and other sources. Article 24 provides for a positive opinion by the state expert examination on energy conservation constituting grounds for the provision of subsidies, tax concessions and credit benefits at the expense of the energy conservation fund.

For the purposes of implementing the State targeted economic programme of energy efficiency and expansion of energy production from renewable sources and other fuels in 2010–2015, the Cabinet of Minister of Ukraine allocated 347.82 billion grivnas; of this figure 13.81 billion will come from municipal budgets, 15 billion from budgets and 319.01 billion from other sources.

Sources of finance	Financing by year (\$ billion)	2010	2011	2012	2013	2014	2015
National budget	3.8	0.57	0.6	0.62	0.65	0.66	0.7
Local budgets	1.9	0.23	0.25	0.29	0.33	0.38	0.42
Other sources	25.9	1.01	1.5	2.7	4.97	7.42	8.3
Total	31.6	1.81	2.35	3.61	5.95	8.46	9.42

Table 4.5.

The sources and volumes of financing of the State targeted economic programme of energy efficiency in 2010–2015

Source: Yerokhin, 2010

Ukraine will need investment totalling about 1.7 trillion grivnas (\$170 billion) by 2030 to modernise its energy sector and make it more competitive (IEA, 2012). The process of modernising energy production and distribution is at the initial stage. Additional investment is necessary to realise the country's potential for primary energy production.

According to the National agency on efficient use of energy resources, a total of 26.8 billion grivnas was spent on oblast energy conservation programmes from 2005 to 2010; including 16.4 billion committed by companies, 1.7 billion from the national budget and 2.6 billion from local budgets. The financing of the energy efficiency programme in 2010 totalled 714.11 million grivnas, including 173.77 million from the national budget, 381.31 million from local budgets and 159.03 million from other sources (Aksakovskaya, 2011).

In 2011 the Board of the World Bank approved a \$200–million loan for the Energy Efficiency Project in Ukraine. This facility will be used to finance energy conservation programmes implemented by industrial companies, municipalities and energy service companies. The project aims to assist Ukraine in achieving a 20% decrease in energy intensity by 2015 and a 50% decrease by 2030. This will reduce the country's dependence on gas imports, energy security risks and energy consumption.

4. The main mechanisms for implementing public energy conservation policy

* * *

Efforts to enhance energy efficiency, reduce resource consumption and improve the environmental situation all require sustained and predictable financing. International experience shows that energy conservation projects may be financed from various sources, but the key role in creating favourable conditions for investing in EE projects is that of the state. The forms of financing vary from direct investment to compensation via financial institutions. The latter are more efficient, but require a high degree of coordination between governments, businesses and the population.

5. Main barriers to energy conservation

Based on the experience of implementing EE programmes, it can be identified market, regulatory, institutional, financial, informational and technical barriers.

Barriers	Examples
Market	<ul style="list-style-type: none"> • lack of motivation (no possibility of placing the cost increase on the customers' shoulders, cross-subsidising, absence of mechanisms to regulate consumption) • market organisation and price disproportions prevent customers from understanding the benefits of energy efficiency • conflict of interests if the investor cannot benefit from energy efficiency • transaction costs (the cost of project design exceeds benefits from energy saving)
Regulatory and institutional	<ul style="list-style-type: none"> • flaws in the EE and energy conservation law • poor organisation and coordination • energy tariffs do not stimulate investments in EE • existing stimuli urge energy companies to sell energy rather than invest in EE • institutional orientation of investments towards demand
Financial	<ul style="list-style-type: none"> • costs to be paid in advance and deferred benefits discourage investors • notion of investments as complex and risky, with high transaction costs • poor awareness of financial benefits among financial institutions
Information	<ul style="list-style-type: none"> • lack of information and understanding necessary for consumers' decision-making on efficient use and investments
Technical	<ul style="list-style-type: none"> • lack of affordable quality EE technologies suitable for local conditions (e.g. temperature gradient up to 100°C) • low potential for identification, development, implementation and support of EE investments

Table 5.1. Main barriers to energy conservation and energy efficiency in the region

Source: IEA, EBRD (2011), supplemented by the EDB

In our opinion, the market barriers to spreading energy conservation practices are the most serious. The different price dynamics of energy and industrial products reduce the importance of the energy cost component in the cost of the final product. The situation is aggravated even further by the fact that industrial companies cannot pay for energy according to actual consumption. For example, contracts between industrial energy consumers and providers are of a "planned" nature and provide for severe fines for under-consumption, which contradicts all energy conservation principles. Under these contracts, industrial companies pay electricity and gas providers in advance, which enables the latter to meet their capital investment needs and maintain an uninterrupted supply. On the other hand, this practice leads to poor energy efficiency and excessive energy consumption, especially where contractual limits do not reflect actual consumption and the consumer has no opportunity to resell excess gas or electricity to third party or receive compensation for unused limits.

Some companies are forced to order electricity volumes that exceed their actual consumption by 1.5 times, as reduction of purchase volumes would entail reduction of the limits available to them in the next period. As a consequence, companies are often more concerned about preserving their limits than saving electricity or gas. Unused energy is typically wasted by no-load operation. This problem is especially urgent for countries in which energy prices are low (Energohelp.net, 2013).

The lack of motivation can be explained by budgetary limitations, withdrawals or saved energy volumes and comparatively low tariffs. In addition, the possibility of placing the burden of cost increase on the users' shoulders, cross-subsidisation, and the absence of mechanisms

5. Main barriers to energy conservation

Coordination can be horizontal, i.e. within a single governmental level or vertical, i.e. embracing several governmental levels (of a federation, province or state). The efficiency of horizontal and vertical coordination directly influences the outcomes of EE policy. Experience suggests that the choice of a mechanism for horizontal coordination depends on the distribution of duties relating to EE. Internal coordination is suitable where the EE effort is centralised. If two or more institutions have overlapping EE duties, efficient coordination can be established by a memorandum of understanding or other bilateral internal documents setting out duties, objectives, resources, etc.⁶ There are a wide variety of mechanisms that national governmental bodies can use for coordinating their EE activities with subnational bodies (in a federal or unitary system). Most vertical integration mechanisms are based on the notion that the national government should take the initiative, i.e. determine the principles and tasks and offers financing and technical assistance to subnational bodies⁷. (IEA and EBRD, 2011).

for regulating consumption all reduce motivation for energy conservation and energy efficiency even further. The current economic mechanisms are such that the beneficiary of energy saving is not named or defined officially (INOSAT–Avtomatizatsiya, 2013).

Regulatory and institutional barriers are common for all analysed countries. To date, they all have a legal framework governing energy conservation issues, but in many instances it has a declarative nature and does not help realise the existing potential. For example, in 2010–2011 the Russian government prepared at the federal level a package of regulations that allow the main provisions of the Energy strategy for Russia for the period until 2030 to be implemented. However, at a regional level energy conservation and EE enhancement laws were adopted or brought into compliance with the federal law only in every fifth federal subject (Abdullayev, 2011).

Another barrier is a lack of organisation and coordination at all levels of decision–making. EE enhancement is not viewed as a means of addressing a wide range of economic and environmental issues. Various areas of law are not synchronised: for example, urban–planning is not linked to energy systems development; public procurement law does not contain EE requirements, etc. (INOSAT–Avtomatizatsiya, 2013).

Coordination implies joint work by special or multi–function public bodies at all levels to achieve EE goals. Insufficient coordination between public bodies is one of the reasons why energy conservation and EE enhancement measures are not always conclusive (IEA and EBRD, 2011).

The financial aspect of energy conservation measures plays a key role. Investment banks have little experience in financing EE projects, and this may become a major impediment to energy conservation. The situation with energy service contracts remains difficult. Large businesses and industrial companies demonstrate little interest in energy services.

Information support for energy conservation and EE enhancement activities is inadequate. Behavioural stereotypes such as “do as the others do”, i.e., do nothing to save energy, are widely spread. The other impediments are a lack of qualified energy management specialists; inadequate personnel motivation systems in the EE and energy conservation; a lack of practical experience in implementing energy management systems and, as a result, application of ready–made standard solutions; and the absence of a social component from companies’ energy strategy (energohelp.net, 2013).

⁶ For example, the US Department of Energy and the US Environmental Protection Agency share responsibility for energy efficiency policy. After entering into a bilateral memorandum they jointly perform their duties, e.g. under the Energy Star programme. Where EE issues are being handled by many ministries, they should enter into inter–ministerial agreements or set up steering committees, such as: the Ministerial Council on Energy (Australia), Council of Energy Ministers (Canada), Sustainable Development Council (Kazakhstan), Green Growth Committee (South Korea), National Climate Change Committee (Singapore) and Energy Efficiency Coordination Board (Turkey).

⁷ A good example of a pragmatic coordination mechanism is the US house insulation programme.

As to technical barriers, the current situation is not too bad, as a variety of EE technologies are commercially available. However, the buyers of this equipment must fully understand its characteristics, because their choice must be dictated by the climatic conditions in which the equipment will be operated. The type of fuel the equipment will use also matters.

6. Finding efficient solutions to energy conservation, EE and RES issues

To date, public bodies have developed various tools and mechanisms of overcoming barriers to energy conservation and EE improvement. The theory is simple: these barriers can be successfully eliminated by formulating and implementing a targeted policy. Once the barriers are eliminated, economically justified EE levels will shape up under the influence of market forces. This type of policy is based principally on measures to create a market of equipment or infrastructure for EE enhancement and to realise the potential of the market of EE products and services.

Policy	Examples
Pricing mechanisms	• variable tariffs: higher specific cost for higher consumption
Regulation and control	• compulsory energy audit and consumption control • minimum energy standards • target levels for reduction of energy consumption • private companies' EE commitments
Financial and tax incentives	• grants, subsidies and tax incentives for EE • direct procurement of EE products and services
Market development mechanisms	• information campaigns • inclusion of EE issues in curricula • labelling of appliances and certification of buildings
Technology development	• development and demonstration of EE technologies
Commercial development and potential-building	• establishment of energy service companies (ESCO) • training programmes • development of the EE industry
Financing	• revolving EE investment funds • finance for project preparation • conditional financing

Table 6.1.
Measures of energy conservation and EE policy

Source: IEA and EBRD, 2011

Governments have at their disposal a wide range of instruments for reducing energy consumption in every sector of the economy. Typically, these include administrative and fiscal measures or a combination of these provided for by acts or regulations of executive bodies at national, regional or local levels. This legislation provides a legal framework for improving energy efficiency. The effect of these tools, i.e. reduction of the volume of consumed energy per cost unit, depends on various organisational, financial and implementation details. Administrative measures include:

- the state certification/licensing of energy-intensive equipment, both new and existing;
- a compulsory energy audit of companies whose energy consumption exceeds certain levels;
- approval of energy consumption levels by state inspectors; and
- fines for energy losses.

From the financial perspective, differentiated energy tariffs complement companies' measures to improve energy efficiency. The state may provide subsidies to help them pay interest on loans raised for EE activities.

To assist the enhancement of energy efficiency and resource saving, the state should first of all concentrate on disseminating information about these measures and developing mechanisms for improving access to long-term financing of EE projects available from financial institutions. This will spur demand for EE technology. Then, the fastest and cheapest methods of enhancing EE should be identified. Typically, initial measures include reduction of energy losses (at company and national levels alike). These include elimination of leakages (of heat, water, compressed air, etc.) and the implementation of administrative measures aimed at reducing energy losses and achieving more flexible energy resources management and stricter control over energy consumption. Companies can easily reduce their general energy consumption by 5–10% simply by introducing zero or low cost energy conservation measures. Any economy achieved through such zero or low cost measures will provide an impetus for greater EE effort.

The next step is the modernisation of energy-intensive production equipment, which requires significant investment. The maximum results in EE enhancement can be achieved by combining measures to modernise both production and power generating assets and to implement energy consumption management systems (IFC, n/a).

It is obvious that energy conservation, EE and RES tasks faced by SES countries and Ukraine have much in common. However, the current laws of these countries do not take full account of existing opportunities to regulate EE and RES relations.

There is still no consensus on creating a legal framework in this sphere and a common EE and RES market, based on common approaches towards public energy policy. In our opinion, adopting a common approach to EE law for SES countries and Ukraine is as important as harmonising fiscal, technical, macroeconomic and other conditions for creating a uniform business environment with uniform technical requirements in the region. Learning from each other's experience and sharing the most successful energy conservation solutions will enhance its competitiveness and make the region more attractive to investors. Moreover, a uniform EE policy will not only facilitate the restoration and development of mutually beneficial economic ties in the energy sector and emergence of a common energy market, but also enhance the region's energy security.

Formulating and implementing common EE policy mechanisms applicable to the entire region would be an economic solution. In so doing, differences in energy security levels should be taken into account, and therefore it is necessary to differentiate between energy-redundant and energy-deficient countries. The latter will allow motivation factors to be identified and the respective means of reducing energy consumption to be developed.

EE statistical reporting systems must be perfected, and a uniform methodology of collecting and calculating indicators that would characterise energy efficiency of the entire economy and by sector or company must be developed. The collection and analysis of these data will allow the most efficient ways to enhance EE to be identified, particularly, by developing various models and scenarios for stimulating energy conservation.

Adoption of unified statistical standards may entail standardisation of the EE requirements for new investment projects and for the EE assessment of existing assets and new investment projects. Naturally, new facilities, modernisation and new technology/equipment projects should have EE indicators at least equal to industry average, and in the case of new facilities projects EE performance should be near the top. At present, institutional investors, especially international ones, pay particular attention to EE and environmental issues, and any additional opportunities in this regard can improve the investment image of a project and the region as a whole.

Another positive effect of resolving statistical and methodological problems would be the introduction of EE labelling for particular product types, similar to that introduced for household electric appliances. When buyers are given a choice, they select the more economic brands.

6. Finding efficient solutions to energy conservation, EE and RES issues

The development of uniform standard EE programmes (municipal, industry-specific, implemented via financial agents, etc.), which can be implemented at any level depending on the source of financing, will facilitate economies of scale. This work can be contracted to specialists from international development institutions who have expertise in developing similar programmes in other parts of the world. This will allow the past experience to be used and known mistakes to be avoided, and the financing, compensation, supply and other procedures to be modelled on best practice. Importantly, programme development activities are eligible for grants.

The description of methods of financing must be a compulsory element for each programme. For example, if public support is provided in the form of subsidies for compensating interest paid on loans by the buyers of energy-efficient equipment, the criteria and characteristics of the equipment and persons eligible for the subsidies must be defined, access to the subsidies for small and medium-size businesses must be ensured, a convenient and cheap compensation procedure must be developed, the annual volume and public source of financing must be indicated, the efficiency criteria for making a decision on whether to extend the programme for the next financial year must be formulated, etc.

In addition to insufficient financial resources, serious impediments are the lack of awareness and the resulting inactivity of the population and business. Therefore, the EE policy must include not only legislative initiatives but also the spread of knowledge about energy-efficient behaviour. For example, in developed countries, EE certification and labelling of appliances emerged as a bottom-up initiative by business in response to consumer demand. Therefore, the EE policy should assist the gradual development of demand by enhancing the people's awareness of existing programmes, their progress reports and opportunities of using secondary energy resources, alternative fuels and local and renewable energy sources.

The EE policy must be pursued consistently at all government levels. Municipalities must play the key role in this process, as they closely interact with the population and small businesses.

Public sector and housing and utilities organisations can be, and should be the leaders in EE policy implementation. Belarus' positive experience demonstrates that administrative measures in these sectors can be highly efficient and then gradually spread to other sectors and industries. Individual EE enhancement projects may seem insignificant, but their mass effect on the economy may be tremendous, as is illustrated by the Belarusian economy. For example, the following measures have been implemented in public sector organisations:

- compulsory recording and control of consumption of all types of energy resources by state-owned companies including public disclosure;
- the introduction of EE technologies in buildings; and
- the installation of energy and water consumption management systems.

EE enhancement measures in the housing and utilities sector included:

- increasing the energy efficiency of heating networks by modernisation and by using efficient insulating materials, automated heat medium control systems, and optimised heating systems operation modes;
- energy audits, issuing energy passports for boilers and buildings, optimising the operation of boiler plants, and decommissioning of inefficient or low-load boilers;
- enhancing the energy efficiency of water supply systems, optimising the heating conditions of buildings, utilising the heat energy of return water and ventilation air;
- installing water and electricity meters in each house or apartment; and
- modernising lighting in the public areas of buildings using energy-efficient equipment and systems.

Conclusion

Energy conservation and EE improvement in all economic sectors is a priority directly linked to future sustainable development and raising the competitiveness of the economy. EE requires modernisation of fixed assets, improving the quality of management and qualifications of production personnel, heavy investments, and increasing the population's EE awareness. The preconditions to solving this are the use of available scientific and technical potential and innovative thinking, and improving the investment image of EE as a new special type of activity.

Introduction of energy-saving technology and projects in the production sector guarantees many benefits. The non-production sector also has a vast potential, which can be realised through economies of scale. Investments in energy-saving technologies have a payback period from several months to five years. In the case of the commissioning of new power generating facilities, the payback period may be two to three times longer.

Whereas in the past century sustainable economic development was synonymous with sustained growth in energy consumption, the 21st century reversed this trend. Nowadays, reducing heat and electricity consumption in all economic sectors is viewed as the basis of sustainable energy development. This is true of both industrial production and municipal energy planning. Energy conservation has become a synonym of sustainable development, as it has a positive impact on the environmental situation due to the reduced need for new capacity and the use of new technology. It is no longer just a tool for increasing profitability, it is the way for businesses and households to survive. Energy losses in cities and industry represent unused capital, and the main source of cost-cutting.

References

- Abdullayev T. (2011) Destined to Save. Low Energy Efficiency Causes Growth in Electricity Tariffs. *Rossiyskaya gazeta*. Available at: <http://www.rg.ru/2011/11/23/energo-site.html>
- Abykayev N. et al. (2013) About the Concept of Sustainable Energy of Future Kazakhstan until 2050. *The newsletter of the Kazakh National Academy of Natural Sciences*. no. 2.
- Aksakovskaya V. (2011) Ukraine's Energy Efficiency: the Irony of Fate. *Zerkalo nedeli. Ukraine*. no. 25. Available at: http://gazeta.zn.ua/ECONOMICS/ironiya_sudby_ukrainskoy_energoeffektivnosti.html
- Arzinger (2009) *The Energy Law of Ukraine. Brief Manual. Conventional Energy Sources. Alternative Energy. Emission Trading*. Available at: http://eneco.com.ua/data/Energy_book_rus.copy_1.pdf
- Bashmakov I., Myshak A. (2012) *The Russian System of Recording Energy Efficiency and Energy Conservation. The Center on Efficient Energy Use*. Available at: <http://www.cenef.ru/file/Indexes.pdf>
- Berner M. (2007) Analysis of Foreign Energy Conservation Laws. *Energy conservation*. no. 8.
- Concept (2013) Draft Concept Strategy of Sustainable Energy of Future Kazakhstan until 2050. *The newsletter of the Kazakh National Academy of Natural Sciences*. no. 2.
- Delovaya gazeta (2005) In 2020 Belarus' Supply of Domestic Energy Resources Will Increase from 15.1 to 20.3 Percent. *Delovaya gazeta newspaper*. Available at: <http://bdg.by/news/news.htm?72791,2>
- Dmitriyev G. (2012) *The Sustainable Development of the Energy Complex and Ensuring Belarus' Energy Security*. Hanoi. Natural Science and Technology Publishing House.
- Dudkin O. (2010) *Analysis of Political Reform in Energy Efficiency and Renewable Energy Sources Development in Ukraine*. Available at: http://www.unece.org/fileadmin/DAM/energy/se/pp/adhoc/EE21_16_AHGE_Oct10/19_Ukraine_Dudkin_r.pdf
- Energohelp.net (2013) *Barriers to Energy Management*. Available at: <http://www.energeff.ru/publ/view/163.html>
- Echarter (2013) Detailed Overview of Energy Efficiency Policy and Programmes: the Republic of Belarus. *Energy Charter Secretariat*. Available at: http://www.encharter.org/fileadmin/user_upload/Publications/Belarus_EE_2013_RUS.pdf
- EusAsEC (2005) Comparative Legal Analysis of the Energy Laws of EurAsEC Member States. Annex 2 to Resolution no. 7 dated 17.11.2005 of the EurAsEC Inter-Parliamentary Assembly's Permanent Commission on Economic Policy. *Eurasian Economic Community*. Inter-Parliamentary Assembly Bureau.
- Grinkevich M. (2012) The Energy Potential and Prospects for Development until 2015 in the Republic of Belarus. *Informatsionnyy tchas*.
- IEA, EBRD (2011) Energy Efficiency Management. Manual. Second edition. *The International Energy Agency and the European Bank of Reconstruction and Development*.
- IFC (2010) The Algorithm of Formulating Regional Energy Conservation Programmes. *IFC Advisory Programme in Europe and Central Asia with the support of the Ministry of Foreign Affairs of Finland*. Project to assist energy efficiency enhancement at the subregional level in Russia. *International Financial Corporation*.
- IFC (n/a) Energy Efficiency: a New Resource for Sustainable Development. Study of energy efficiency practices of Belarusian companies. *International Financial Corporation*.
- INOSAT-Avtomatizatsiya (2013) Energy Efficiency. Available at: <http://www.i-a.by/page/2>

- IEA (2012) Ukraine 2012, Energy Policies Beyond IEA Countries series. *International Energy Agency*. Available at: http://www.iea.org/publications/freepublications/publication/UK_Summaryplus.pdf
- IFA (n/a) The Financial and Economic Aspects of Projects to Enhance Energy Efficiency. Special Features of Energy Service Contracts. *Investment Financing Agency*. Available at: http://issuu.com/rasov/docs/portal-energo_ru_soveshchaniyu_gd_13_04_zazimko
- Kretskoy V. (2012) Energy Audit in the Republic of Belarus. *International Energy Forum "Energy Services in CIS Countries"*. Available at: <http://portal-energo.ru/articles/details/id/554>
- Kryazhev S. (2010) Energy Conservation and Energy Efficiency: Problems and Solutions. Available at: www.sicon.ru/download/seminar2010/10_Kryazhev.pps
- Maiger N. (2006) The Energy Conservation Market in Ukraine: Trends and Perspective. *The Environmental Systems electronic magazine*. Electric Services Company. no. 6. Available at: http://esco-ecosys.narod.ru/2006_6/art020.htm
- Melnik A. (2012) *Ukraine's Energy Security: the Reality and Prospects*. Available at: http://eho-ua.com/2012/01/26/jenergeticheskaja_bezopasnost_ukrainy_realnost_i_perspektivy.html
- Molodtsov S. (2010) *The Regional Concept of the Policy of Efficient Use of Fuel and Energy Resources in Central Asia in 2011–2015*.
- Poleschuk A. (2010) *Public Energy Efficiency Policy. The Role of Regulated Organisations*. The Russian Energy Agency.
- Poleschuk A. (2011) *Public Policy of Enhancing the Energy Efficiency of the Russian Economy*. The Russian Energy Agency.
- Rakova Y. (2010) *The Energy Sector of Belarus: Enhancing Efficiency*. Working material of the Research Centre of the Institute of Applied Mathematics. Available at: <http://www.old.research.by/pdf/wp2010r04.pdf>
- RB (2012) Belarus and CIS Countries. Statistical Handbook. *The National Statistics Committee of the Republic of Belarus*.
- Semikashev V., Martynov A., Kolpakov A. (2012) Energy Efficiency Financing. *The Energy Efficiency and Energy Conservation Community*. Available at: <http://solex-un.ru/energo/reviews/finansirovanie-energoeffektivnosti>
- Shenets L. (2010) The Main Directions of Energy Conservation in the Republic of Belarus. *The Conference "Energy Efficiency in the Housing and Utilities Sector and Industry"*. Available at: <http://www.mishor.esco.co.ua/2010/art01.pdf>
- Shenets L. (2011) *The Main Directions of Enhancing Energy Efficiency in the Republic of Belarus*.
- Stepanenko V. (2007) *Energy Conservation in Ukraine*. Available at: esco-ecosys.narod.ru/2007_4/art04.ppt
- Stepanenko V. (2008) *Energy Conservation in Ukraine: the Present and the Future*. Available at: <http://www.esco-ecosys.narod.ru/frames/sections.htm>
- Stepanenko V. (2008b) *The New Energy Conservation Policy in Ukraine*. Dnepropetrovsk.
- Stepanenko V. (2012a) ESCO in Ukraine: Again and Again... *Energosovet*. 1(20).
- Stepanenko V. (2012b) *Energy Planning as a Tool for Enhancing the Efficiency and Reliability of Heat and Electricity Supply of Cities and Buildings. Energy Conservation Strategies and Programmes: Identifying Priorities and Sources of Finance*.

References

Strunin Y. (2012) *The Working Group on Energy Supply, Energy Efficiency and Energy Conservation of the Public Chamber of the Russian Federation*.

Syrlybayeva B. (2010) *The Efficiency of Energy Use in the Republic of Kazakhstan: the Status and Development Vector*. Available at: <http://static.caspianworld.com/speech/power/2010/session-1>

Tikhonenko Y. (2012) *Organisation of Energy Conservation Abroad and the Russian Reality*. Available at: <http://portal-energo.ru/articles/details/id/483>

Tsibulsky V. (2012) *The Energy Efficiency of the World Economy*. The Report. The Energy Dimension of Sustainable Development at the 2nd Asian and Pacific Forum Russia's Chairmanship and New Prospects of Integration in the Asian and the Pacific Region. Available at: <http://ecpol.ru/index.php/syuzhety/392-energoemkost-mirovoj-ekonomiki>

UNIDO (2011) *Industrial Energy Efficiency for Sustainable Wealth Creation*. Industrial Development Report. *United Nations Industrial Development Organisation*. Vienna International Centre. Austria.

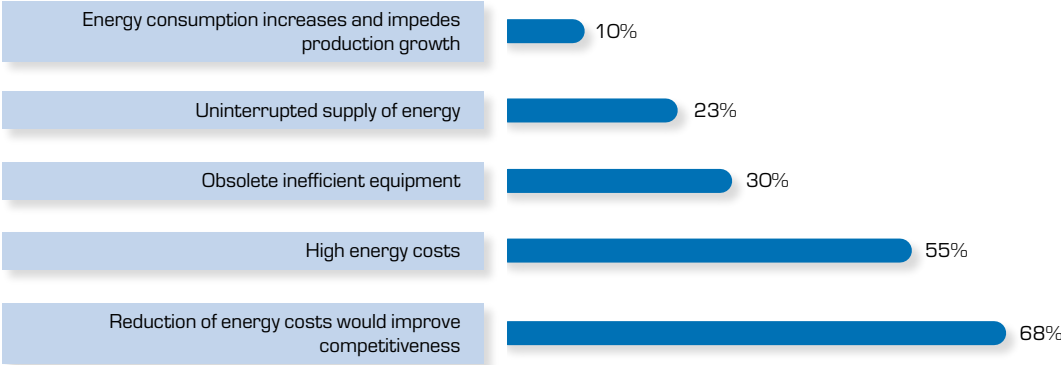
Yerokhin A. (2010) *The Public Policy and Legal Framework for Stimulating Investments in Energy Efficiency and Renewable Energy Sources in Ukraine*. *International Energy Efficiency Forum*. September 28–30. Astana. Available at: http://www.unescap.org/esd/Energy-Security-and-Water-Resources/energy/efficiency/2010/IEEF/documents/d2s1_4_Yerokhin_r.pdf

Zenkevich Z. (2012) *Energy Efficiency as a Factor of Sustainable Development of the National Economy and Interaction with International Organisations in Energy Conservation*. *International Energy Forum "Energy Services in CIS Countries"*. Alushta.

Zerkalov D. (n/a) *The Energy Conservation Policy of Ukraine*. Available at: <http://www.zerkalov.org.ua/node/2477>

Annex 1. The urgency of the energy efficiency issue for Belarusian companies (% of respondents)

Is energy efficiency enhancement an urgent task for your company at present?



Source: IFC, n/a

Annex 2. The main laws regulating EE improvement, energy conservation and use of RES in the SES countries and Ukraine

Belarus

The current energy law of the Republic of Belarus comprises a large number of acts; the most important are:

- resolution of the Cabinet of Ministers of Belarus no. 654 On the programme of energy development and conservation in the Republic of Belarus for a period until 2010 dated 29.10.1992;
- decree of the President of Belarus no. 109 on measures to enhance the efficiency of use of electricity and heat energy dated 20.03.1996;
- resolution of the Cabinet of Ministers of Belarus no. 855 on continuation of the introduction of instrument metering of gas, water and heat dated 09.07.1997;
- resolution of the Cabinet of Ministers of Belarus no. 13 on approval of the regulation on state supervision of efficient use of fuel and energy resources in the Republic of Belarus dated 08.01.1998;
- law on energy conservation no. 190-Z dated 15.07.1998;
- resolution of the Cabinet of Ministers of Belarus no. 1582 on the procedure of setting, approval and revision of fuel and energy consumption standards dated 16.10.1998;
- resolution of the Cabinet of Ministers of Belarus no. 1731 on approval of the regulation on the procedure of preparation and implementation of the Republic's industry-specific and regional energy conservation programmes dated 11.11.1998;
- resolution of the Cabinet of Ministers of Belarus no. 1667 on approval of the main Directions of the energy policy of the Republic of Belarus for 2000–2005 and until 2015 dated 27.10.2000;
- Programme of measures for implementation in 2001–2003 of the main directions of the Energy Policy of the Republic of Belarus for 2001–2005 and until 2015, no. 249, approved by resolution of the Ministry of the Economy dated 29.12.2000;
- resolution of the Cabinet of Ministers of Belarus no. 56 on the national energy conservation programme for 2000–2005 dated 16.01.2001;
- resolution of the Cabinet of Ministers of Belarus no. 1820 on additional measures for economic and efficient use of fuel and energy resources dated 27.12.2002;
- resolution of the Committee on Energy Efficiency of the Cabinet of Ministers of Belarus no. 7, on approval of the instruction on calculation of target energy conservation indicators dated 28.07.2003;
- presidential directive no. 3 Economy and prudence as the main factors of economic security of the state dated 14.06.2007;
- the Concept of the Energy Security of the Republic of Belarus (presidential decree no. 433 dated 17.09.2007);

- the Strategy of Energy Potential Development of the Republic of Belarus (approved by resolution of the Cabinet of Ministers of Belarus no. 1180 dated 09.08.2010);
- the National Energy Conservation Programme for 2011–2015 (approved by resolution of the Cabinet of Ministers of Belarus no. 1882 dated 24.12.2010);
- law on renewable energy sources no. 204–3 dated 27.12.2010;
- National programme The development of local, renewable and non-conventional energy sources in 2011–2015 (approved by resolution of the Cabinet of Ministers of Belarus no. 586 dated 10.05.2011).

There are also a number of acts pertaining specifically to RES:

- resolution of the Cabinet of Ministers of Belarus no. 400 on the development of small-scale and non-conventional energy dated 24.04.1997;
- resolution of the Cabinet of Ministers of Belarus no. 1232 on measures to develop small-scale energy in the Republic of Belarus dated 10.08.2000;
- resolution of the State Standardisation Committee of the Republic of Belarus no. 10 on approval of the instruction on the procedure of issuing opinions on identifying imported products as equipment for the generation, receiving, transformation, accumulation and/or transmission of energy from non-conventional energy sources dated 27.02.2009;
- resolution of the Ministry of the Economy no. 100 on the tariffs of electricity generated from renewable sources of energy and cancellation of certain resolutions of the Ministry of the Economy of the Republic of Belarus dated 30.06.2011.

A number of regulations were adopted to promote energy efficiency in the country:

- Regulation on state energy surveillance of the Republic of Belarus;
- Regulation on the Committee on energy efficiency of the Council of Ministers of the Republic of Belarus;
- Regulation on state surveillance of efficient use of fuel and energy resources in the Republic of Belarus;
- Regulation on high energy efficiency demonstration zones in the Republic of Belarus;
- Regulation on the energy conservation national fund;
- Regulation on the procedure of preparation and implementation of the Republic's industry-specific and regional energy conservation programmes;
- Regulation on the procedure of application and repayment of sums disbursed from the innovation fund of the Belenergo concern and intended for shared financing of energy conservation activities;
- Regulation on the experts council of the state committee on energy conservation and energy surveillance of the Republic of Belarus;
- Regulation on standards of fuel and energy consumption in the economy;
- Regulation on the procedure of issuance of special permits (licences) for energy audit of companies, institutions and organisations;
- Regulation on energy audit of companies, institutions and organisations;
- Regulation on the unified public approach to the setting and regulation of tariffs of heat produced by electricity suppliers other than members of the Belarusian state energy concern and supplied by them to legal entities on a contractual basis;

- Provisional regulation on the procedure of introducing apartment cold and hot water meters in the housing sector of the Republic.

Special programmes aimed at enhancing energy efficiency and use of domestic energy resources:

- Programme of construction of energy facilities using biogas in 2010–2012 (approved by resolution of the Cabinet of Ministers of Belarus no. 885 dated 09.06.2010);
- State programme of construction of energy facilities using local fuels in 2010–2015 (approved by resolution of the Cabinet of Ministers of Belarus no. 1076 dated 19.07.2010);
- State programme of construction of hydropower plants in the Republic of Belarus in 2011–2015 (approved by resolution of the Cabinet of Ministers of Belarus no. 1838 dated 17.12.2010).

Kazakhstan

The energy conservation law of Kazakhstan comprises acts of different levels. The most important are:

- law on energy conservation no. 210–1 dated 25.12.1997;
- Programme of electric power development until 2030, resolution of the Government of the Republic of Kazakhstan no. 384 dated 09.04.1999;
- Rules of energy conservation examination of existing facilities and facilities under construction, resolution of the Government of the Republic of Kazakhstan no. 16 dated 04.02.2000;
- Plan of measures until 2005 to ensure energy security of the Republic of Kazakhstan, resolution of the Government of the Republic of Kazakhstan no. 1700 dated 13.11.2000;
- Agreement on cooperation between members of the commonwealth of independent states in energy efficiency and energy conservation dated 07.10.2002;
- On further measures to implement the development strategy of Kazakhstan until 2030, presidential decree no. 1165 dated 15.08.2003;
- Rules of energy examination, order of acting Minister of Energy and Mineral Resources no. 214 dated 10.09.2004 (registered with the Ministry of Justice under no. 3089 on 22.09.2004);
- The issues of the Ministry of Energy and Mineral Resources of the Republic of Kazakhstan, resolution of the Government of the Republic of Kazakhstan no. 1105 dated 28.10.2004;
- The rules of using electric power and the rules of using heat energy, order of the Minister of Energy and Mineral Resources no. 10 dated 24.01.2005 (registered with the Ministry of Justice under no. 3455 on 23.02.2005);
- The concept of transition of the Republic of Kazakhstan to sustainable development in 2007–2024 (approved by presidential decree no. 216 dated 14.11.2006);
- Methodological instructions on energy conservation examination of existing facilities and facilities under construction (approved by the order of the Chairman of State energy surveillance committee no. 1–P dated 01.03.2007);
- Methodological instruction on setting fuel and energy resources consumption by energy conservation facilities (approved by the order of the Chairman of State energy surveillance committee no. 1–P dated 01.03.2007);
- Energy consumption standards of the Republic of Kazakhstan, governmental resolution on approval of energy consumption standards no. 50 dated 26.01.2009;

- Methodological recommendations on calculating energy efficiency indicators (Energy efficiency of GDP, Hydrocarbon intensity of GDP) (approved by resolution of the Statistics Agency no. 52 dated 27.03.2009);
- Building standard of the Republic of Kazakhstan 2.04–01–2009, Heat engineering standards for civil and industrial buildings and structures including energy conservation requirements;
- The comprehensive plan of enhancing energy efficiency in the Republic of Kazakhstan in 2012–2015 (approved by governmental resolution no. 1404 dated 30.11.2011);
- law on energy conservation and enhancing energy efficiency dated 13.01.2012 no. 541–IV which replaced Law on energy conservation no. 210–1 dated 25.12.1997;
- law on supplements to certain enactments of the Republic of Kazakhstan pertaining to energy conservation and enhancing energy efficiency no. 542 dated 13.01.2012 (as amended on 27.04.2012).

Recently a number of regulations were adopted to promote energy conservation and EE enhancement:

- The method of energy conservation examination of energy-consuming equipment of energy conservation facilities in civil buildings, approved by order of the Chairman of the State energy surveillance committee of the Ministry of the Industry and New Technologies no. 84–I dated 24.09.2010;
- Instruction on scanning, energy monitoring and energy audit in buildings, approved by order of the acting Chairman of Agency on building and the housing and utilities sector of the Republic of Kazakhstan no. 606 dated 29.12.2010;
- The method of energy conservation examination of construction and reconstruction projects, approved by order of the acting Chairman of Agency on building and the housing and utilities sector of the Republic of Kazakhstan no. 606 dated 29.12.2010;
- The rules of accreditation of energy examination organisations and electric laboratories, approved by the order of Deputy Prime–Minister/Minister of the Industry and new technologies no. 6 dated 12.01.2012;
- The methodological recommendations on energy conservation measures in residential buildings, approved by the order of acting Chairman of the Agency on building and the housing and utilities sector of the Republic of Kazakhstan no. 4 dated 10.02.2012;
- The forms of examination sheets and risk assessment criteria for private businesses in the field of energy conservation and energy efficiency, joint order of the Ministry of the Industry and new technologies no. 222 dated 29.06.2012 and the Minister of Economic development and trade no. 230 dated 31.07.2012;
- Requirements for energy efficiency of electric drives, resolution of the Government of the Republic of Kazakhstan no. 1040 dated 10.08.2012;
- The mechanism of assessment of activities of local executive bodies to promote energy conservation and energy efficiency, resolution of the Government of the Republic of Kazakhstan no. 1047 dated 15.08.2012;
- Energy efficiency requirements for transport, resolution of the Government of the Republic of Kazakhstan no. 1048 dated 15.08.2012;
- The rules of energy audit, resolution of the Government of the Republic of Kazakhstan no. 1115 dated 31.08.2012;

- Model agreement on energy conservation and energy efficiency enhancement, resolution of the Government of the Republic of Kazakhstan no. 1116 dated 31.08.2012;
- The rules of identification and revision of energy efficiency classes of building and structures, resolution of the Government of the Republic of Kazakhstan no. 1117 dated 31.08.2012;
- The rules of training centers for retraining of energy audit, energy conservation and energy efficiency specialists, and developing, implementing and organising energy management systems, resolution of the Government of the Republic of Kazakhstan no. 1179 dated 11.09.2012;
- The forms and timing of reporting on implementation of public energy conservation and energy efficiency policy by central executive bodies, resolution of the Government of the Republic of Kazakhstan no. 1180 dated 11.09.2012;
- Requirements for energy efficiency of buildings, structures and their fencing elements, resolution of the Government of the Republic of Kazakhstan no. 1181 dated 11.09.2012;
- Energy conservation and energy efficiency requirements for pre-project and/or project documentation (design estimates) of buildings and structures, resolution of the Government of the Republic of Kazakhstan no. 1192 dated 13.09.2012;
- order of the Deputy Prime-Minister/Minister of the Industry and new technologies no. 354 dated 03.10.2012, on approval of the form of energy conservation and energy efficiency certificates;
- Regulation on the energy conservation and energy efficiency accreditation commission, order of the Deputy Prime-Minister/Minister of the Industry and new technologies no. 358 dated 03.10.2012;
- Energy consumption standards, resolution of the Government of the Republic of Kazakhstan no. 1346 dated 24.10.2012;
- On approval of standard values of the electric power factor for the power networks of sole proprietors and legal entities, resolution of the Government of the Republic of Kazakhstan no. 1765 dated 29.12.2012;
- Rules of energy conservation and energy efficiency accreditation, approved by governmental resolution no. 146 dated 18.02.2013.

One of the serious barriers to RES development in Kazakhstan was the weakness of the respective legal framework. To fill this gap, the Law on support of the use of renewable energy sources was adopted. Subsequently, subordinate legislation was drafted to promote RES development. Currently the following RES legislation is in force:

- governmental resolution no. 857 dated 25.08.2003 on wind energy development;
- law on support of the use of renewable energy sources no. 165-IV dated 04.07.2009;
- The rules of determining the nearest terminal point for connecting to electric or heating networks and connecting facilities using renewable energy sources (approved by order of the Minister of Energy and Mineral Resources no. 270 dated 01.10.2009, registered with the Ministry of Justice under no. 5840 on 03.11.2009);
- The rules of monitoring of the use of renewable energy sources (approved by governmental resolution no. 2190 dated 25.12.2009);
- The methodology of the state energy surveillance committee for approving feasibility studies and projects to construct facilities using renewable energy sources (approved by order of the State energy surveillance committee of the Ministry of the Industry and New Technologies no. 46-P dated 04.06.2010);

- Handbook on the procedure of preparation, approval and implementation of projects to use renewable energy sources in the Republic of Kazakhstan, joint project of the Kazakh Government and the UNDP/GEF Kazakhstan wind power market development initiative. Prepared by Chokin Kazakh Research Institute of Energy for the UNDP, Astana, 2010;
- The rules of purchasing electric power from qualified energy producers, resolution of the Government of the Republic of Kazakhstan no. 70 dated 16.01.2012.

Russia

Russia's energy conservation and energy efficiency law is especially elaborate compared to that of other SES countries or Ukraine. The main federal level legislation includes:

- presidential decree no. 472 on main directions of energy policy and restructuring of the fuel and energy complex of the Russian Federation for a period until 2010 dated 07.05.1995;
- governmental resolution no. 1006 on energy strategy of Russia dated 13.10.1995;
- governmental resolution no. 1087 on urgent energy conservation measures dated 02.11.1995;
- Federal law on energy conservation dated 03.04.1996;
- presidential decree on state surveillance of efficient use of energy resources in the Russian Federation no. 1010 dated 11.09.1997;
- governmental resolution no. 588 on additional measures to stimulate energy conservation in Russia dated 15.06.1998;
- governmental resolution no. 938 on state energy surveillance in the Russian Federation dated 12.08.1998;
- governmental resolution no. 1234-r on approval of the energy strategy of Russia for a period until 2020 dated 28.08.2003;
- governmental resolution no. 197 The issues of the Federal Energy Agency dated 08.04.2004;
- presidential decree no. 889 on certain measures to enhance the energy security and environmental safety of the Russian Economy dated 04.06.2008;
- The main directions of public policy on enhancing energy efficiency of power generation using renewable energy sources for a period until 2020, approved by governmental resolution no. 1-r dated 08.01.2009;
- The energy strategy of Russia for a period until 2030, approved by resolution of the Chairman of the Government of the Russian Federation no. 1715-r dated 13.11.2009;
- Federal law on energy conservation and enhancing energy efficiency and amendments and supplements to certain enactments of the Russian Federation no. 261-FZ, replaced the above law, dated 23.11.2009;
- Plan of measures to promote energy conservation and energy efficiency in the Russian Federation aimed at implementing the federal law on energy conservation and enhancing energy efficiency and amendments and supplements to certain enactments of the Russian Federation, approved by resolution of the Chairman of the Government of the Russian Federation no. 1830-r dated 01.12.2009;
- governmental resolution no. 1225 on requirements to regional and municipal energy conservation and energy efficiency enhancement programmes dated 31.12.2009;

- Public programme energy conservation and energy efficiency enhancement for a period until 2020, approved by governmental resolution no. 2446–r dated 27.12.2010;
- order of the Ministry of Energy no. 454 and the Ministry of Economic Development no. 548 dated 06.10.2011 on approval of the procedure of calculating indicators of the public programme of the Russian Federation “Energy conservation and energy efficiency enhancement for a period until 2020”;
- federal law no. 382–FZ on the state information system of the fuel and energy complex, and others dated 03.12.2011.

The most important acts on renewable energy sources are:

- federal law no. 35 on electric power dated 04.11.2007;
- federal law no. 250–FZ on amendments to certain enactments of the Russian Federation in connection with measures to reform the unified energy system of Russia dated 04.11.2007;
- governmental resolution no. 426 on qualification of generating facilities which use renewable energy sources dated 03.06.2008;
- presidential decree no. 889 on certain measures to improve energy and ecological efficiency of the Russian Economy dated 04.06.2008;
- order of the Ministry of Energy no. 187 on the procedure of maintaining a register of issuance and cancellation of certificates confirming the volumes of electric power generation from renewable energy sources dated 17.11.2008;
- governmental resolution no. 1–r on main directions of public policy on enhancing the energy efficiency of electric power generation from renewable energy sources dated 08.01.2009;
- Regulation on the qualification of generating facilities which use renewable energy sources and maintaining a register of qualified generating facilities. Contract on joining the wholesale market trading system. Approved by the resolution of Supervisory Board of Market Council no. 27/2011 dated 19.09.2011.

Federal subjects have regional energy conservation, EE and RES legislation that complements federal laws. Each region of Russia differs from the others in the availability, composition and potential of energy sources, resulting in considerable differences in their energy structure and regional public policy. Each region develops its own EE documents and approach towards non-conventional and renewable energy sources: peat, wind energy, geothermal sources, biomass (wastes of the forestry and agriculture sectors) and solar energy. Notably, regional legislation of some federal subjects is very advanced, especially in the field of RES. At the regional level, local enactments are adopted by both executive and legislative bodies.

To date, there are over 60 enactments pertaining to energy efficiency at the federal level alone (amendments were made to 13 federal laws, and two presidential decrees, 36 governmental resolutions and 20 ministerial orders were prepared).

Ukraine

In Ukraine, the use of energy resources is governed by national laws, presidential decrees, resolutions of the Cabinet of Ministers, regulations, orders and other enactments. Ukraine's energy conservation, EE and RES legislation includes:

- Law on energy conservation no. 74/94–VR dated 01.07.1994;
- Law on electric power no. 575/97–VR dated 16.10.1997;
- Law on alternative liquid and gas fuels no. 1391–XIV dated 14.01.2000;

- Law on alternative energy sources no. 555–IV dated 20.02.2003;
- Law on combined production of heat and electric power (cogeneration) and the use of rejected heat potential no. 2509–IV dated 05.04.2005;
- Law on heating no. 2633–IV dated 02.06.2005;
- Law dated 22.12.2005 no. 3260–IV amending the law on energy conservation;
- Law on amendments to certain enactments of Ukraine pertaining to the stimulating of energy conservation activities no. 760–V dated 16.03.2007;
- Law on amendments to certain laws of Ukraine pertaining to green tariffs no. 601–VI dated 25.09.2008;
- Law on amendments to the law of Ukraine “On electric power” pertaining to the stimulating of the use of alternative energy sources no. 1220–VI dated 01.04.2009;
- Law on energy efficiency of buildings no. 4457 dated 12.05.2009;
- Law on amendments to certain laws of Ukraine pertaining to support of the production and use of biological fuels no. 1391–VI dated 21.05.2009;
- Law on amendments to the law of Ukraine “On electric power” pertaining to the stimulating of the use of alternative energy sources no. 5485–VI dated 20.11.2012.

Decrees of the President of Ukraine pertaining to energy efficiency:

- presidential decree no. 662/99 on measures to reduce energy consumption of state-funded institutions, organisations and companies dated 16.06.1999;
- presidential decree no. 201/2006 the issues of the interdepartmental commission on the energy security and defence of Ukraine dated 06.03.2006;
- presidential decree no. 1094/2003 on measures to develop production of biological fuel dated 26.09.2003;
- presidential decree no. 174/2008 on urgent measures to ensure efficient use of fuel and energy resources dated 28.02.2008.

In addition, a number of energy conservation and EE enhancement documents were adopted by the Cabinet of Ministers of Ukraine:

- resolution no. 699 on measures to ensure efficient use of gas and other fuel and energy resources in the economy dated 02.09.1993;
- resolution no. 483 on introduction of household water and heat regulation and metering equipment dated 03.07.1995;
- resolution no. 947 on the programme of phased introduction of household water and heat regulation and metering equipment in 1996–2007 dated 27.11.1995;
- resolution no. 20 on energy conservation management dated 09.01.1996;
- resolution no. 929 on strengthening control over electricity and heat consumption dated 07.08.1996;
- resolution no. 1358 on the procedure of switching companies to reserve fuels during cold weather periods dated 08.11.1996;
- resolution no. 786 on the procedure of setting specific fuel and energy consumption standards in public production dated 15.07.1997;
- resolution no. 731 on comprehensive measures to implement the national energy programme of Ukraine until 2010 dated 10.07.1997;

- resolution no. 1505 the programme of state support of non-conventional and renewable energy sources and small-scale hydro and thermal power generation dated 31.12.1997;
- resolution no. 1094 on state energy conservation examination dated 15.07.1998;
- resolution no. 256-r on efficient use of fuel and energy resources and reduction of technical heat consumption dated 31.03.1999;
- resolution no. 2183 on reduction of energy consumption of state-funded institutions, organisations and companies dated 30.11.1999;
- resolution no. 59 on ensuring orderly payment for consumed gas, heat and electricity dated 17.01.2000;
- resolution no. 826 on measures to introduce automated electricity record systems dated 18.05.2000;
- resolution no. 1039 the issues of state energy conservation inspection dated 29.06.2000;
- resolution no. 1071 on certain measures to ensure efficient use of fuel and energy resources dated 07.07.2000;
- resolution no. 241 on application of budgetary allocations towards energy conservation projects dated 14.03.2001;
- resolution no. 1089 on the concept of creating a unified natural gas record system dated 21.08.2001;
- resolution no. 439-r on setting a working group with representatives of the EBRD on preparation of joint energy conservation projects dated 20.09.2001;
- resolution no. 139 on approval of the programme of reform and development of the housing & utilities sector in 2002-2005 and until 2010 dated 14.02.2002;
- resolution no. 145-r the energy strategy of Ukraine for a period until 2030 dated 15.03.2006;
- resolution no. 420 the procedure of using budgetary allocations for compensation of interest on loans raised for energy conservation projects in the housing & utilities sector in 2009 dated 25.04.2008;
- resolution no. 594 on measures to reduce electricity consumption of state-funded institutions dated 31.10.2008;
- resolution no. 102-r on measures to utilise alternative energy sources dated 04.02.2009;
- resolution no. 159-r certain issues of implementing public policy in the field of efficient use of fuel and energy resources dated 11.02.2009;
- resolution no. 276-r on approval of the concept of the state targeted scientific and technical programme of development of production and use of biological fuels dated 12.02.2009;
- resolution no. 256-r on priority measures to reduce natural gas consumption for a period until 2010 dated 19.02.2009;
- resolution no. 384-r on approval of the plan of priority energy efficiency and energy conservation activities in 2009 dated 08.04.2009;
- resolution no. 323 on certain measures to attract foreign investments in biological fuel production dated 16.04.2009;

- resolution no. 960 the procedure of using stabilisation fund allocations for preparing design estimated and feasibility studies of innovative projects to install heat pumps in 2009 dated 19.08.2009;
- resolution no. 1176 on amendments to the procedure of using budgetary allocations for compensation of interest on loans raised for energy conservation projects in the housing & utilities sector in 2009 dated 04.11.2009;
- resolution no. 243 the state targeted economic energy efficiency programme for 2010–2015 dated 01.03.2010.

Orders, instructions and regulations of the State Committee on Energy Conservation of Ukraine:

- on the conditioning of energy users' facilities no. 101, dated 14.11.1997;
- on approval of the Instruction on the procedure of submitting documents and conducting state energy conservation examination in pursuance of clause 4 of resolution of the Cabinet of Ministers no. 1094 dated 15.07.1998, no. 15 dated 09.03.1999;
- on approval of the Regulation on the energy audit procedure no. 27 dated 09.04.1999;
- on organising and conducting energy audits of state-funded institutions, organisations and companies no. 78 dated 15.09.1999;
- on approval of the Interdepartmental standards of electricity and heat consumption for state-funded institutions and organisations in Ukraine no. 91 dated 25.10.1999;
- on additional measures and corrected indicators of the Comprehensive state energy conservation programme of Ukraine (on fulfilment of presidential decree no. 457/2000 dated 10.03.2000, On the resolution of the council of national security and defence of Ukraine dated 14.02.2000, On urgent measures to overcome the crisis in the fuel and energy complex of Ukraine);
- on approval of the Regulation on financial incentives to save fuel and energy resources in public production for personnel and individual employees no. 1123–2000–p dated 21.06.2000;
- order no. 64 On approval of the procedure of checking the efficiency of use of fuel and energy resources in companies, institutions and organisations and eliminating shortcomings dated 04.08.2000;
- on approval of amendments to enactments of the State Committee on Energy Conservation registered with the Ministry of Justice in 1997–2000 no. 76 dated 27.08.2000;
- The status of introduction of energy metering devices as of 01.02.2002;
- resolution of the Panel of the State committee on energy conservation on implementation of oblast energy conservation programmes and development of energy conservation management in regions, dated 19.06.2003;
- resolution of the Panel of the State committee on energy conservation no. 947 on the status of implementation of sections of state energy conservation programmes relating to the housing and utilities sector and implementation of resolution of the Cabinet of Ministers of Ukraine dated 27.11.1995, On the programme of phased introduction of household water and heat regulation and metering equipment in 1996–2007 (as amended by resolutions no. 1957 of the Cabinet of Ministers of Ukraine dated 19.10.1998 and 25.12.2002), dated 19.06.2003;
- Provisional regulation on the procedure of energy audit and attestation of special organisations to conduct energy audit no. 49 dated 12.05.1997.

Other regulations:

- National energy programme (approved by resolution no. 191/96-VR of Verkhovna Rada (Parliament) of Ukraine dated 15.05.1996, On the national energy programme of Ukraine until 2010);
- The energy strategy of Ukraine for a period until 2030 (approved by resolution no. 145-r of the Cabinet of Ministers dated 15.03.2006);
- Programme of construction of wind power plants (approved by resolution of the Cabinet of Ministers of Ukraine dated 03.02.1997 no. 137, on comprehensive programme of construction of wind power plants);
- Energy conservation programme (approved by resolution no. 148 of the Cabinet of Ministers dated 05.02.1997, on the comprehensive state energy conservation programme of Ukraine);
- programmes of state support of small-scale hydro and thermal power generation (approved by resolution no. 1505 of the Cabinet of Ministers dated 31.12.1997, The programme of state support of non-conventional and renewable energy sources and small-scale hydro and thermal power generation, as part of the National energy programme of Ukraine).

In order to promote EE enhancement in Ukraine, over 50 national energy conservation standards were developed. Ukraine's alternative energy law includes:

- Law on alternative fuels no. 1391-XIV dated 14.01.2000;
- Law on alternative energy sources no. 555-IV dated 20.02.2003;
- Law on amendments to certain laws of Ukraine pertaining to green tariffs no. 601-VI dated 25.09.2008;
- Law on amendments to the law of Ukraine "On electric power" pertaining to the stimulating of the use of alternative energy sources no. 1220-VI dated 01.04.2009;
- Law on amendments to certain laws of Ukraine pertaining to support of the production and use of biological fuels no. 1391-VI dated 21.05.2009;
- Law on amendments to certain laws of Ukraine pertaining to simplification of the procedure of acquiring land rights no. 1702-VI dated 05.11.2009.

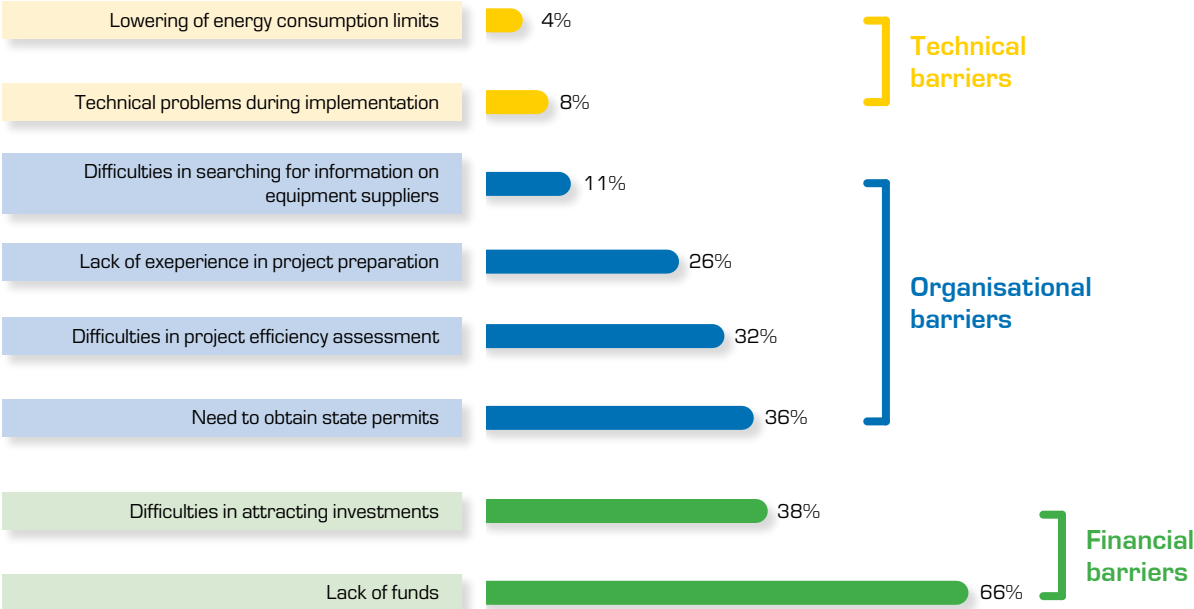
European Union regulations:

- Council decision 77/706/EEC of 07.11.1977 on the setting of a Community target for a reduction in the consumption of primary sources of energy in the event of difficulties in the supply of crude oil and petroleum products;
- Commission directive 98/11/EC of 27.01.1998 implementing Council directive 92/75/EEC with regard to energy labelling of household lamps;
- EU renewable electricity directive of 27.09.2001 (2001/77/EC);
- The European buildings performance directive from 2002 (2002/91/EC);
- 2003/30/EC Directive for the promotion of biofuels and other renewable fuels for transport;
- Commission decision 2005/42/EC of 22.12.2004 determining the Community position for a decision of the Management entities under the Agreement between the Government of the United States of America and the European Community on the coordination of energy-efficient labelling programmes for office equipment;
- 2006/32/EC Energy end-use efficiency and energy services Directive of 05.04.2006;

- 2006/1005/EC Council decision of 18.12.2006 concerning conclusion of the Agreement between the Government of the USA and the European Community on the coordination of energy-efficient labeling programmes for office equipment;
- 2006 Commission decision 2007/74/EC of 21.12.2006 establishing harmonised efficiency reference values for separate production of electricity and heat;
- 2007/742/EC Commission decision of 09.11.2007 establishing the ecological criteria for the award of the Community eco-label to electrically driven, gas driven or gas absorption heat pumps;
- Commission regulation (EC) no 106/2008/EC of 15.01.2008 on a Community 04.10.2006 energy-efficiency labelling programme for office equipment;
- Commission regulation (EC) no 1275/2008 of 17.12.2008 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment;
- Commission decision 2009/347/EC of 20.04.2009 determining the Community position under the Agreement between the Government of the USA and the European community on the coordination of energy-efficiency labelling programmes for office equipment;
- EU directive 2009/28/EC of April 2009 on the promotion of the use of renewable energy sources (RES);
- Directive 2010/30/EU of the European Parliament and of the Council of 19.05.2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products;
- Commission decision 2009/489/EC of 16.06.2009 determining the Community position for a decision of the Management entities under the Agreement between the Government of the USA and the European Community on the coordination of energy-efficiency labelling programmes for office equipment;
- Commission decision 2009/548/EC 30.06.2009 establishing a template for National renewable energy action plans;
- European Directive 2010/31/EU of 19.05.2010 on the energy performance of buildings.

Annex 3. Problems in project implementation in Belarusian companies (% of respondents)

What difficulties did you face while implementing energy efficiency projects?



Source: IFC, n/a

Journal of Eurasian Economic Integration

The Journal of Eurasian Economic Integration is a quarterly academic and analytical journal published in Russian by the Eurasian Development Bank. The members of Editorial board and Advisory council are distinguished academicians, practitioners and experts in regional integration. Eurasian Economic Integration brings together academic and analytical articles, reviews of books relating to regional integration, interviews and quarterly chronicles of regional integration. With its focus on economics, the journal is a rich source of material addressing a broad range of issues specific to Eurasian integration. These include integration theory and its relevance to the development context; economic integration (trade, investment, financial institutions); institutional integration; cooperation issues in the post-Soviet space; and international experience of regional integration. The first issue was published in the third quarter of 2008.

Requirements for submissions. Papers should be sent by e-mail to editor@eabr.org for blind review. There are no strict limitations on the length of articles. However, the Editorial Board recommends authors to adhere to 6,000–8,000 words or 30,000–40,000 characters. In addition to the main text, authors must supply a brief author(s)' biography (100–150 words), executive summary (100–150 words) and bibliography. These materials must be attached in a separate file.

EDB Eurasian Integration Yearbook

Eurasian Integration Yearbook publishes a wide range of articles and other materials in English on theory and practical aspects of Eurasian integration. The major part of the annual Yearbook consists of English versions of selected articles published in the Journal of Eurasian Economic Integration and other analytical publications of EDB. These are supplemented by integration chronicles for the respective year. The Yearbook improves access of the world community to the best papers on various issues of regional integration published in Russian. Apart from papers published in the Journal of Eurasian Economic Integration, papers written specifically for the Yearbook are also welcome (submission in English or Russian).

Sector reports

The EDB's Analytical Department publishes industry and country reports. Electronic versions are available at: <http://www.eabr.org/rus/publications/AnalyticalReports/>.

Consultancy

The Bank provides consultancy services to its strategic partners and clients. The Bank's Strategy and Research Department has in-house expert resources and can involve specialists from other departments, such as project managers, corporate financing, treasury, legal department. External experts from the extensive pool of the CIS countries' experts could be mobilised to work on consultancy projects.

Areas of expertise:

- Analysis of a current status and dynamics of development in selected sectors in the member states of the Bank and other EurAsEC countries;
- Financial markets' analytical reviews in the EurAsEC countries;
- Economic and legal analysis of integration agreements and institutions in the Eurasian space;
- Development banks' operations and activities in the CIS countries and issues of cooperation.

Contacts

Vladimir Yasinskiy

Member of the Executive Board,
Managing Director for Strategy and Research, EDB
E-mail: yasinskiy_va@eabr.org
Telephone: +7 (727) 244 68 75

Ella Baybikova

Head of Strategy and Research
Department, EDB
E-mail: baybikova_er@eabr.org
Telephone: +7 (727) 244 40 44, ext. 6908

ISBN 978-601-7151-37-9



9 7 8 6 0 1 7 1 5 1 3 7 9