

УДК 338.24

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СВІТОВІ ПРАКТИКИ ЕНЕРГОЕФЕКТИВНОСТІ

Анотація. В статті розглядаються найбільш поширені світові практики енергозбереження та енергоефективності. Представлений спектр інструментів підвищення енергоефективності, зокрема державне регулювання енергозбереження, запровадження фінансових стимулів та надання відповідних пільг для просування та впровадження інформаційних програм.

Ключові слова: енергоефективність, ресурси, енергоаудит, сертифікація, практика.

UDC 338.24

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GLOBAL ENERGY EFFICIENCY PRACTICES

Abstract. The article deals with the most common world practices of energy saving and energy efficiency. A range of energy efficiency tools is presented, in particular, state regulation of energy saving, introduction of financial incentives and provision of appropriate benefits for the promotion and implementation of information programs.

Keywords: energy efficiency, resources, energy audit, certification, practice.

In world practice, various tools for improving energy efficiency are used, in particular, the state regulation of energy saving, the introduction of financial incentives and the provision of appropriate benefits for the promotion and implementation of information programs [1] (Table 1).

For many years in Europe, Scandinavia use energy-saving technologies in the construction and reconstruction of buildings. In these countries, the necessary legislation has been created, taking into account the economic interests of homeowners and investors. Increasing the level of energy efficiency is achieved through the use of effective thermal insulation, installation of heat pumps, modern window frames and doors, prevents leakage of warm air, the use of boiler plants with high efficiency and devices of apartment temperature control.

Table 1

World practice examples of energy efficiency improvement directions

№	DIRECTIONS	CHARACTERISTICS OF DIRECTION
1	Formation of a multi-level structure of public administration of energy sector with a sectoral area of responsibility and the presence of coordinating bodies, as well as the distribution of individual functions within the framework of the state policy in the field of energy saving and energy efficiency.	For example, in accordance with the laws of the United States authorized to carry out activities in the field of energy efficiency are distributed between the Federal government, state governments and authorities of local self-government. The Ministry of energy is responsible for monitoring and reporting on the efficient use of energy resources.

№	DIRECTIONS	CHARACTERISTICS OF DIRECTION
2	Creation and implementation of a system of objective key indicators of energy efficiency in development plans in all sectors of the economy and business, as well as the introduction of management incentives to improve energy efficiency.	In practice, the leading countries actively apply the procedure for assigning responsibility to public authorities for improving energy efficiency in the economy, the control of Federal (regional) organizations to implement measures aimed at achieving the state-level targets. This is actively used in categories of activities for the implementation of mechanisms for energy saving.
3	National and international resource efficiency standards, sometimes referred to as "portfolio performance standards", have been introduced.	For example, as regulatory options, standards for household appliances and building codes are introduced. In particular, the EU decided to abandon the sale and import of incandescent lamps by 2015. The program on reduction of sales of household appliances with the increased level of consumption of the electric power is put into operation. For this purpose, the system of labeling by efficiency classes (A, A+, A++, A+++) is built.
4	Programs of preferential crediting.	In particular, Japan provides for a ten-year program of concessional lending to enterprises using RES, and the purchase of surplus electricity. Sweden, Italy, Germany, Japan, South Korea and other countries provide subsidies and tax incentives for the purchase of energy-efficient industrial equipment. In particular, in Japan, the consumer, in the case of the purchase of energy-saving or energy-efficient equipment, within one year can take advantage of one of two tax benefits: - for small businesses – a tax credit in the amount of 7 % of the base cost of the purchased equipment, which can't exceed 20 % of the income or corporate tax paid; - for all enterprises – tax deduction up to 30 % of the base cost of the equipment.
5	State subsidies and grants.	In particular, the Government of Germany subsidizes the use of environmentally friendly alternative energy. In addition, private investors are given the opportunity to place solar panels on the roofs of public buildings with the possibility of transferring excess electricity to the power grid. Also, the consumer who installed an energy-efficient boiler (class A and above) in combination with a source of "green" energy, has the right to expect compensation up to 15 % of the cost of investments.

№	DIRECTIONS	CHARACTERISTICS OF DIRECTION
6	Implementation of energy audit and energy management system.	Voluntary energy management system operates in the United States, Denmark, Ireland, Sweden and other countries. At the state level, economic incentives are provided to achieve the target parameters. All enterprises that have concluded targeted energy efficiency agreements with the state must have a certified energy management system.
7	System of grants.	Several governments (Denmark, etc.) provide assistance to enterprises in the form of grants for the implementation of energy efficiency programs. In particular, Denmark has introduced investment grants for the construction of district heating networks and repair of heating networks with compensation of 30 – 60 % of capital investments, provided that they are connected to the main network.
8	Regulation of energy prices (tariffs).	In Sweden, the price at which electricity suppliers sell it to end users consists of: the direct cost of electricity, the price of "green certificates" for electricity, network fees and taxes (energy tax and value added tax).
9	System of fines.	In Japan, for enterprises simultaneously with the development of measures to reduce electricity consumption, the need to rationalize the use of fuel, reduce energy losses during their transportation is legally defined. In case of non-compliance with the requirements specified by the legislation, significant penalties are imposed.
10	Certification program.	To continuously improve the level of energy efficiency of enterprises, subject to the preservation of their competitiveness, in the United States, since 2012, there is a certification program "Higher energy performance" (Superior Energy Performance). The Central element of the program is the implementation of the provisions of the international energy management standard ISO 50001: 2011 with additional national requirements for improved energy performance. In Sweden, green certificates are provided for electricity generated from wind, solar, wave, peat, geothermal, certain biofuels and hydropower. All consumers electricity are required to buy certificates in accordance with their share of electricity consumption.
11	Mandatory energy saving policy includes the development and adoption of relevant codes and standards	In particular, on standardization energy efficiency (MEPS) for lighting, appliances and buildings, fuel economy, standards for vehicles and sectoral standards for industry and other industry.

Introduction of stimulating pricing and taxation of energy resources, promotion of investments in energy efficiency, tax support measures is one of the most common forms of state stimulation of energy saving and energy efficiency.

References

1. *EU experience in energy efficiency, energy audit and energy management for energy saving in the economies of countries //Prepared by the division of information and analytical work of the Department of international cooperation and European integration. – Kyiv, 2017. – 113p.*

Within the framework of a project EU Erasmus +: "The challenges of energy efficiency: cooperation of Ukraine with the EU", № 599740-EPP-1-2018-1-UA-EPPJMO-MODULE