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COMPLEX OF ACTIVATION TOOLS FOR ENERGY SAVING MEASURES IN HOUSING AND UTILITIES SECTOR OF THE CITY

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The complex of activation instruments for energy saving measures in housing and utilities sector of the city is presented in the article. Regulatory basis that promotes the development of renewable energy in Ukraine is analyzed. Influence on the behavior of final consumers of energy is determined as the way to overcome the problem of energy efficiency. The paper analyzes the main features of energy saving measures as a complex final consumption product. The specific features of marketing to be employed for activating the use of energy saving measures in housing and utilities sector of the city are defined. Examples of using activation tools in the cities of Ukraine and Europe are given. It is shown that in order to achieve the highest efficiency in the sphere of energy saving a complex of activation instruments being adjusted to the characteristics of individual objects should be used.

Key words: energy saving measures, activation tools, housing and utilities sector.

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КОМПЛЕКС ІНСТРУМЕНТІВ АКТИВІЗУВАННЯ ВИКОРИСТАННЯ ЗАХОДІВ З ЕНЕРГОЗБЕРЕЖЕННЯ В ЖИТЛОВО-КОМУНАЛЬНОМУ ГОСПОДАРСТВІ МІСТА

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Висвітлено комплекс інструментів активізування використання заходів з енергозбереження в житлово-комунальному господарстві міста. Проаналізовано нормативне підгрунття, що сприяє розвитку відновлювальної енергетики в Україні, а також визначено, що для вирішення проблеми енергозбереження необхідно здійснювати вплив на кінцевих споживачів енергії. Проаналізовано основні риси заходів з енергозбереження як комплексного товару кінцевого споживання, а також визначено особливості маркетингу, що доцільно застосовувати для активізування використання заходів з енергозбереження в ЖКГ міста. Наведено приклади використання інструментів активізування в містах України та Європи. Визначено, що для досягнення найбільшої ефективності в сфері енергозбереження необхідно використовувати цілий комплекс інструментів активізування, пристосовуючи його відповідно до особливостей окремих об'єктів.

Ключові слова: заходи з енергозбереження, інструменти активізування, ЖКГ.

Statement of the problem

However, the problem of energy saving is related not only with technical issues, or the presence of regulatory support, but mainly with the change of people's thinking. This is, first of all, due to the fact that the use of energy efficiency measures require investment of large sum of money that has to be seen by an

individual as an investment in a better future rather than current spending. Therefore, developing the complex of marketing tools for activation of the use of energy efficiency measures in housing and utilities services of the city is becoming relevant.

Analysis of recent research and publications

Highly important questions both in Ukraine and in Europe in general, are the question of reducing the energy intensity of the economy, reducing energy dependence of countries, respect the principles of sustainable development, etc.

Recently Ukraine has begun vigorous activity in the field of energy efficiency. For example, in the year of 2010, the Cabinet of Ministers of Ukraine approved the State Target Economic Program for energy efficiency and the development of energy production from renewable energy sources and alternative fuels for 2010–2015 (Resolution of the Cabinet of Ministers, № 243 of March 1, 2010), which contains a list of concrete actions to be financed from the budget [1]. This program provides in particular, the adoption of the Law of Ukraine “About Energy efficiency of the buildings” [2, p. 6–7], which defines the basic requirements for energy audits of building, certification of buildings, the rights and obligations of owners and others.

In addition, the Law of Ukraine “About Energy Saving” and the Law of Ukraine “About Alternative Energy Sources” and “green” tariff for electricity (assumes that electricity produced from wind or sun energy has to be bought at the energy market for higher price than electricity produced from traditional sources) stimulate the development of renewable energy in Ukraine [3, 4, 5]. Some projects in this area are given below [6, 7, 8, 9]:

1) solar power plant in the Ralivka village in Sambir area with approximately 600 kW of capacity, which will provide electricity to the whole village – 4,500 (enacted in 2012);

2) The solar garden with capacity of 80 MW in Career village (Crimea), which was funded by the Austrian company “Active Solar” (completed in 2011);

3) building of two wind parks for Donbass Fuel-Energy Company “DTEK Azov” (Zaporizhzhia region) with 500 MW of capacity and “DTEK Mangush” (Donetsk region) with 700 MW of capacity by the Danish company “Vestos”;

4) construction of solar parks in the Odessa area with capacity of 220 MW by Austrian company “Active Solar” and others.

The formulation of objectives

The objectives of the paper is the definition and analysis of activation tools of energy efficiency measures in housing and utilities sector.

Presentation of main materials

In practice energy efficiency measures should be treated as final consumption goods, since such measures are not designed for resale. In addition, energy saving measures should be considered as an integrated product because they contain material component and a set of services, however they shouldn't be confined only to services (replacement of windows, thermal insulation of buildings, energy audits, etc.). Obtaining results from energy efficiency measures is not possible without changing the physical parameters of production, supply and consumption systems of energy.

To determine the characteristics of the process of activation of the use of energy efficiency measures in housing and utilities sector, it is necessary to define the features of marketing that should be used for this process. To do this, let us examine the differences between consumer and industrial marketing. Marketing of services typically refers to business customers that buy goods to use them in productional process, or to resale to non-final costumers [10, p.176]. Marketing of goods is therefore marketing which is referred to the end user.

Energy saving measures are being purchased both by industry and by end users of energy. That is why marketing of services should be used for activation the use of energy-saving measures by such subjects as power producers (combined heat and power stations, boiler houses), industrial energy

consumers (industrial enterprises, water utilities). Marketing of goods is usually aimed to activate the use of energy-saving measures by final customers – population and by intermediaries between energy producers and end-users – housing offices, condominiums.

However, this situation is not advisable to clearly differentiate between industrial and final consumer. Manufacturers, power producers, business and so on are separate and integral objects, but they are not self-operated units. Every production enterprise is controlled by a person or group of persons who are themselves the final consumers. Since decisions about the use of energy saving measures depends actually on the individuals, complex of activation tools for energy-saving measures in the housing and utilities sector should include elements of goods marketing and consider consumers' peculiarities in the development of each element.

Given the above, we consider it appropriate to use next tools for the activation of the use of energy efficiency measures in housing and utilities sector:

1. Advertisement.
2. PR.
3. Propaganda.
4. Sales Promotion.
5. Personal Sales.
6. Standardisation.

Let us shortly describe each of the tools.

Advertising. Advertising performs two functions: an independent instrument of activation and as a supportive instrument for other instruments.

In the first case, ad may appear in the form of printed and outdoor advertising of energy efficient equipment, energy saving lamps, illustrating the development of events “before and after” the use of energy efficiency measures and so on. For example, LED lamps producers illustrate in their advertisements savings that can be obtained using such lamps in comparison with conventional incandescent lamps.

Advertising in the form of complementary tool performs mainly informational function about events related to energy saving and act in the form of public relations, propaganda, sales promotion – exhibitions, themed festivals, “Days of Energy”, themed events at schools, kindergartens and others. These advertisements are mostly located in thematic magazines, on billboards, on local television etc.

PR-measures as a tool to stimulate use of energy saving measures in housing and utilities sector can be divided into [own development]:

- Measures that include feedback from energy consumers to the organizer of the event;
- Measures involving representatives of education;
- Measures involving the media;
- Measures involving experts on energy saving.

Feedback tool used in the energy consumption process is aimed to influence the future behavior of consumers via retrospective analysis of energy consumption [11, c.16]. For example, there is an electronic record system of everyday energy consumption in the cities of Slavuta and Konotop developed in all governmental and public buildings, that allows to control energy use, identify deviations, unauthorized energy users, etc [12, 13].

Involving representatives of education. Schools of Kamianetz-Podilskyi and Konotop provide a course on energy saving and energy efficiency including special tutorials and work in monitoring groups that control the consumption of water, electricity and heat power [13, 14].

Another example – the city of Heidelberg (Germany). There are special “Energie-Team” created in local schools among pupils exploring the energy consumption of schools to develop energy efficiency programs and plans. Kindergartens in Heidelberg provide lessons on energy saving theme [11, c. 37].

Involving the media can appear, for example, in the form of holding the contests for journalists on themes of energy efficiency and energy saving. Competition “Energy efficiency. In simple words” (Ukraine, 2012) aimed to increase public awareness on the efficient use of energy, types of alternative fuels, renewable energy etc. [15].

Involving the experts. The Finnish Energy Agency “Motiva Oy” trains energy experts among the dwellers of the houses. These experts further advise other dwellers in the buildings in which they live, controlling overall consumption of energy and water in the house (in particular electricity at staircase, garden irrigation). The effectiveness of these measures is significant – reducing water use by 20 %, electricity by 10 % heat 5 % [11, c. 20].

Austrian Ministry of Life and Society “WKO – Der Elektrohandel” provide training of electrical equipment sellers for them to obtain a degree of “Master of energy saving.” They advise customers of energy efficiency devices about the advantages of new devices over old [11, c. 21].

Propaganda act in the form of free seminars for city residents including personal communication with experts, mass distribution of leaflets and brochures with detailed scenarios of with and without the use of energy-saving technologies of social advertising on television, posters, billboards etc.

Propaganda of energy efficiency measures manifests in the form of [16, c. 7, 10, 25]:

- movie festival on the theme of ecology and climate change;
- showing the thematic video clips on large screens in public places;
- showing short films in public transport;
- financing of documentaries and science fiction movies about energy saving;
- theatrical performances on the ecological theme;
- distribution of leaflets among the city residents with general information about energy saving measures, and so on.

The most common form of **sales promotion** of energy efficiency measures are financial incentives and explanation to the public ways and possibilities of using energy saving measures. Some examples of sales promotion of energy saving measures are shown in table 1.

Table 1

Sales promotion tools

Tool	Short reference
The return of interest on loans (Lviv region, Ukraine)	There is a Program of energy saving for public and condominiums in Lviv region that provides reimbursement of interest of loans taken by public and condominiums to buy energy saving measures.
Energy box (Arnhem, Netherlands)	“Energy box” is a box, which contains facilities that help to save energy (such as energy saving lamps, insulating tape for heating system, seals for windows, shower head, etc.). “Box” is presented in the events initiated by local government, enterprises and regional energy suppliers, after which interested persons can make an engagement with an expert to assist in installation of materials from boxes.
50/50 (Germany)	Tool 50/50 provides setting an agreement between the consumer of energy and the owner of the house, which in turn provides the ability to invest 50 % of money saved from reducing the energy use into their own projects, the other 50 % – for investment in energy saving measures. When investing savings in building the amount of energy saved raises up to 50 %.
Contracting (Germany)	Contracting is a type of agreement which is concluded between the consumer of energy and the energy service company which conduct energy saving measures, upgrade equipment, etc. This agreement provides that consumer pays for the energy for a certain fixed price, higher than the actual and lower than what has been paid before. Investments are returned to provider due to the difference between the actual price of consumed energy and the price fixed in agreement. After return on investment the consumer pays for energy already the actual amount that is significantly reduced due to energy saving measures.

Source: [own elaboration based on: 11, c. 19–20; 17; 18]

Examples of **personal sales** of energy saving measures are: negotiating between manufacturers or suppliers of energy-saving equipment and municipalities, signing contracts during thematic exhibitions for sale or rent of equipment, performances of manufacturers of energy saving equipment on seminars and conferences, etc.

The **standardization** of refers to the quality of the goods. That is why by considering the energy saving measures as product, standardization can be considered as an element of trade policy. In this context, the attention should be paid to the CMU Resolution “Approval of the Technical Regulation of the energy labeling of electrical equipment for domestic purposes”, according to which all domestic and imported electrical equipment (refrigerators, freezers, washing machines and dryers, dishwashers, ovens, water heaters, lighting, air conditioning, etc.) should be marked with appropriate labels indicating the level of energy efficiency and other information about the device [19].

International Organization for Standardization ISO on 15 June 2011 issued a standard ISO 50001:2011 “Energy management systems – Requirements with guidance for use”. The basis of the standard is to administer people who manage other resources that consume energy.

In addition, this standard aims to reduce the energy use, reduce the environmental stress, reduce greenhouse gas emissions and to financial gain [20, p. 128; 21, p. 6].

Standardization should also be considered from the standpoint of the ISO: 50001 standards.

ISO 50001:2011 suggests that the organization should [22]:

- establish, document and maintain in working condition energy management system in accordance with the requirements of the standard;
- determine and document the area and boundaries of energy management;
- identify and document compliance of requirements of this standard in order to achieve permanent improvements in energy efficiency.

Conclusions

The review on practical experience of cities shows that a wide range of instruments can be applied for activation of the use of energy efficiency measures. The analysis shows that all of the tools are used separately and there is no example of a complex application of them. However, to achieve the maximum efficiency in energy saving it is necessary to use the full range of activation tools adding propaganda and standardization to the standard complex of marketing communications.

Prospects for further research

Further research will be focused on analysis of capabilities of integrated use of all instruments of activation; definition of the characteristics of activation tools due to particular objects studied; practical research of efficiency of complex use of activation tools for energy efficiency measures in housing and utilities sector.

1. Про затвердження Державної цільової економічної програми енергоефективності і розвитку сфери виробництва енергоносіїв з відновлюваних джерел енергії та альтернативних видів палива на 2010–2015 роки [Текст]: постанова Кабінету Міністрів України від 1 березня 2010 р. № 243 // К: Офіційний вісник України. – 2010. – № 16. – Стаття 762. – 15 березня – С. 116. 2. Про енергетичну ефективність житлових та громадських будівель [Електронний ресурс]: Проект Закону України. – Режим доступу – https://www.google.com.ua/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCgQFjAA&url=http%3A%2F%2Fw1.c1.rada.gov.ua%2Fpls%2Fzweb%2Fwebproc34%3Fid%3D%26pf3511%3D45056%26pf35401%3D242757&ei=mrbvUcqTO8K2hAfhilG4BA&usq=AFQjCNEOxQu6-yIj-QwosuCbxbzVPgNxw&sig2=aU0qo GCQNSUGNFYcOn_ouw&bvt=bv.49641647,d.ZG4&cad=rja 3. Про енергозбереження [Текст]: закон України від 1 липня 1994 р. №74/94-ВР// К: Відомості Верховної Ради України (ВВР). – 1994. – № 30. – Стаття 283. – 26 липня. 4. Про альтернативні джерела енергії. [Текст]: закон України від 20.02.2003 № 555-IV // – К: Відомості Верховної Ради України (ВВР). – 2003. – № 24. – Стаття 155. – 13 червня. 5. Зелений тариф в Україні. [Електронний ресурс]: режим доступу – <http://www.biowatt.com.ua/informatsiya/zelenij-tarif-v-ukrayini/> 6. Іронія долі української енергоефективності. [Електронний ресурс]: газета “Дзеркало тижня. Україна” – 2011 – № 25. Режим доступу – http://gazeta.dt.ua/ECONOMICS/ironiya_doli_ukrayinskoyi_energoefektivnosti.html

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