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IMPROVEMENT OF ENERGY SAVING ECONOMIC MECHANISM IN HOUSING AND PUBLIC UTILITIES: DOMESTIC AND FOREIGN EXPERIENCE

The paper analyzes economic mechanisms of energy saving in Ukraine and abroad. It suggests measures on how to improve them, taking into account international experience. The article considers the development trends in alternative and renewable sources of energy.

Keywords: economic mechanism; housing and public utilities; energy security; energy saving; alternative and renewable sources of energy.

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УДОСКОНАЛЕННЯ ЕКОНОМІЧНОГО МЕХАНІЗМУ ЕНЕРГОЗБЕРЕЖЕННЯ ЖКГ: ВІТЧИЗНЯНИЙ ТА МІЖНАРОДНИЙ ДОСВІД

У статті проаналізовано економічні механізми енергозбереження в Україні та за кордоном. Запропоновано заходи з їх удосконалення, враховуючи міжнародний досвід. Розглянуто тенденції розвитку нетрадиційних та відновлювальних джерел енергії.

Ключові слова: економічний механізм; житлово-комунальне господарство (ЖКГ); енергетична безпека, енергозбереження; нетрадиційні й відновлювальні джерела енергії (НВДЕ).

Табл. 1. Літ. 16.

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УСОВЕРШЕНСТВОВАНИЕ ЭКОНОМИЧЕСКОГО МЕХАНИЗМА ЭНЕРГОСБЕРЕЖЕНИЯ ЖКХ: ОТЕЧЕСТВЕННЫЙ И МЕЖДУНАРОДНЫЙ ОПЫТ

В статье проанализированы экономические механизмы энергосбережения в Украине и за рубежом. Предложены мероприятия по их усовершенствованию, учитывая международный опыт. Рассмотрены тенденции развития нетрадиционных и возобновляемых источников энергии.

Ключевые слова: экономический механизм; жилищно-коммунальное хозяйство (ЖКХ); энергетическая безопасность; энергосбережение; нетрадиционные и возобновляемые источники энергии (НВИЭ).

Problem setting. Under contemporary conditions Ukraine is in a hard situation due to the need of purchasing energy resources abroad. The topicality of this issue is associated with vulnerability of governmental policies in industry and energy supplies becoming critical, since all sectors, including housing and public utilities are the basis for civilized and developed country.

An important condition of the energy security of Ukraine is economic reforms based on the implementation of energy efficiency policy and creation of a stable and active economic mechanism of energy saving.

Recent research and publications analysis. Currently Ukraine consumes approximately 30% of all energy resources in housing and public utilities. This group of con-

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sumers, the only one in the recent years, has not decreased the volumes of energy consumption. On housing with central heating Ukraine annually spends about 1.4 t of conditional fuel per dweller per 1 sq.m, which is 50% more than in the USA and 3 times more than in Scandinavian countries (The State Statistics Committee of Ukraine, 2010–2012; Wikipedia, 2013).

Analysis of developments in science and technology in Ukraine shows that it is feasible to decrease the losses in production, transportation and supply of electrical and thermal power by 23% on average (The National Institute for Strategic Studies, 2010; The best energy saving practices in cities, 2013; Kuzin, 2004).

Therefore, the main objectives in the development of housing and public utilities sector include the implementation of energy saving measures and provision of quality services to consumers. These objectives may be fulfilled only via the development of efficient economic mechanisms.

The notion "mechanism" in any context (economic mechanism, business mechanism, financial mechanism etc.), is characterized as semantically controversial.

In broad meaning the concept "mechanism" (from Greek μηχανή mechane – machine) is understood as a system, transforming motion of one or more bodies into the required motion of other bodies (Biletsky et al., 2004).

The concept of economic mechanism is debated in literature. Some authors, similarly to the above example, identify it within economic management system. Another group considers it as a complex of business and administrative principles, whereas the third group sees it as the total of economic forms and techniques etc.

Many contemporary economists consider mechanism as a self-triggered drive; they define business mechanism as the total of processes, administrative structures, management techniques and legal regulations which provide implementation of specific economic laws (Rayzberg, 2010). This approach is mainly typical of legal research publications.

Some scientists define business mechanism as a way of business system operations and emphasize that it is performed by the aggregate of industrial relations, underlying this operation method (Derevyanko, 2004).

The Nobel prize winner in economics fundamental contributions to the theory of the design of economic mechanisms (2007) L. Hurwicz identifies the concept of mechanism with process. In his theory "mechanism" is a self-motion force. A game, according to L. Hurwicz and S. Reiter (2006), has the following stages:

- participants of a game send a message to the centre (each individually);
- the centre processes all messages and finds the result;
- the centre announces the results.

In this case, participants of the game and their money are resources, the rules of the game are the laws, which, in economics, may include regulations, bills, the centre in this case only adopts, finds and announces the result. Thus, the game develops itself, its automation is evident.

Therefore, debate, variety, broadness of the concept "mechanism" uncovers numerous opportunities for research.

Unresolved issues. Despite the availability of a number of academic papers, devoted to the research into the economic mechanism of energy saving in housing and public utilities in Ukraine and abroad, this field is still insufficiently studied.

The aim of this paper is to analyze economic mechanisms of energy saving in Ukraine and abroad, as well as to suggest measures on their improvement.

Key research findings. Formation of the economic mechanism of energy saving by housing and utility enterprises is extremely urgent and provides for the use of alternative and renewable sources of energy.

An alternative and renewable source of energy is a way, device or facilities, which enable generating electric power, replacing conventional sources. The alternative power industry includes: solar power, wind power, alternative hydropower engineering (tide, wave power plants, use of smaller rivers power), biomass energy and geothermal power engineering (Kuzin, 2004).

The development of alternative power industry demands significant investments. This means the need for governmental support of large-scale power projects. Developed countries pay serious attention to alternative and renewable sources of energy in their power policies.

For example, in 2010, the US government invested 24 bln USD (20% of the total investments volume) into the development of alternative and renewable sources of energy. Using light detectors, installed on houses, 1.5 mln houses in the USA are supplied with solar electric and thermal energy. Moreover, Barack Obama declared the intention to provide tax exemptions in the amount of 2.5 bln USD to the companies, operating at the alternative energy market (The National Institute for Strategic Studies, 2010).

The Energy policy of the European Union provides for considerable rise of the alternative power share in the structure of the EU-members' fuel and energy complexes. According to the EU documents, 20% of electric power, consumed in the EU, till 2020 has to be generated using alternative and renewable sources of energy. Currently this share in Europe does not exceed 15% (Kuzin, 2004).

One of the global leaders in the alternative energy use is Germany, which in 2012 set the world record in the production of solar energy per hour. The produced power provided approximately 50% of the country's need in energy. No other country has approached this level. So far nearly 20% of the country electric power demand is supplied by alternative and renewable sources.

Despite successful use of solar energy, at the end of March 2012 Bundestag approved the reduction of governmental support of solar energy. Thus, the authorities decided to cut costs of the citizens for the energy reform, which is eventually funded by taxpayers. Currently each household annually gives on average 70 euros to support solar industry (Finance.ua, 2012). Thus, German producers of solar panels will have to independently compete with Chinese manufacturers of similar products.

This country has a significant potential of alternative and renewable energy sources development its energy potential is 80–100 mln tons of conditional fuel per year, distributed as follows: wind energy – 31.4%, smaller hydropower engineering – 2.9%, solar energy – 6.3%, bio energy – 27.1%, artificial fuel gases and methane from coal mines – approx. 16.9%. Other sources take up around 15.4% (The best energy saving practices in cities, 2013).

Analyzing the energy strategy of Ukraine for the period till 2030, Table 1 shows the forecast indices of using alternative and renewable energy sources by major development fields (Energy Strategy of Ukraine, 2013). The Table 1 shows that till 2030 it

is planned to significantly increase the volume of energy from alternative and renewable sources, whose share will exceed that, supplied by secondary energy sources.

Table 1. Forecast indices for the use of alternative and renewable energy sources in Ukraine by major development fields,
mln tons of conditional fuel per year

| Fields of developing alternative and renewable energy sources | Level of development of alternative and renewable sources of energy by years | | | |
|---------------------------------------------------------------|------------------------------------------------------------------------------|-------|--------|-------|
| | 2005 | 2010 | 2020 | 2030 |
| Off-balance (secondary) sources of energy, total | 13.85 | 15.96 | 18.5 | 22.2 |
| Including mine methane | 0.05 | 0.96 | 2.8 | 5.8 |
| Renewable sources of energy, total | 1.661 | 3.842 | 12.054 | 35.53 |
| Including: | | | | |
| - bioenergy | 1.3 | 2.7 | 6.3 | 9.2 |
| - solar energy | 0.003 | 0.032 | 0.284 | 1.1 |
| - smaller hydropower engineering | 0.12 | 0.52 | 0.85 | 1.13 |
| - geothermal energy | 0.02 | 0.08 | 0.19 | 0.7 |
| - wind energy | 0.018 | 0.21 | 0.53 | 0.7 |
| - ambient energy | 0.2 | 0.3 | 3.9 | 22.7 |
| Total | 15.51 | 19.83 | 30.55 | 57.73 |

Source: Energy Strategy of Ukraine up to 2030.

For the first time alternative and renewable energy sources were used in the housing and public utilities sector of Ukraine as early as in 1996 (Berezan, Kyiv region) in the form of a thermal pump to heat an administrative building. It is still in operation. Another example of the domestic pioneer application of alternative sources was the first solar system for street and yard lighting in the town of Ostrog, Rivne region.

Furthermore, currently in the Autonomous Republic of Crimea there are already 3 solar power plants in operation: "Rodnykove", "Okhotnykovo" and "Perovo", built by the well-known Austrian company "Activ Solar". The total capacity of these power plants is 187.5 MW (the need of Crimea in electric power is about 1200 MW), that means that the prospects for the development of alternative power industry are about 80%.

Considering a complicated situation in the community power industry in Ukraine, it is reasonable to take the advantage, provided by the Kyoto protocol. Efficiently using the mechanisms of joint implementation projects under this protocol, Ukraine may additionally gain foreign funds for the development and retrofitting home industries, and for significant improvement of its environmental situation.

The introduction of Kyoto protocol mechanisms in Ukraine is the aim of the National Environmental Investment Agency of Ukraine. However, according to the estimates of public experts, governmental activities are one-sided, since they are focused only on two priorities:

- joint implementation projects (what has been observed is more interfering with this mechanism due to constant changes of conditions, rules and procedures of the development, support and approval of these projects);
- trade in quotes, promoting implementation, however without transparency in the use of the funds, which this mechanism may provide in practice.

European countries dynamically develop "green" power industry, optimally using their nature potential. Ukraine makes attempts to keep up: in 2009 500 mln UAH

were allocated to the facilities of the Ministry of Housing Economy from the state budget to develop alternative power engineering. 1.5 bln UAH were allocated to the Ministry of Regional Development and Construction. It is apparent that the efficiency of the governmental policies in the field of alternative power engineering mainly depends on the applicable regulations.

Among the laws, regulating relations in the area of alternative power engineering, the main one is the law "On alternative sources of energy", adopted in 2003. And in 2008 the Verkhovna Rada of Ukraine passed the Law "On amendments to laws of Ukraine on establishing the "green rate", in February 2009 the Law "On amendments to regulations of Ukraine as to taxation and encouragement of using alternative sources of energy and fuel". In April 2009, the Verkhovna Rada passed the Law "On amendments to the law of Ukraine "On power industry" as to the encouragement of using alternative energy sources.

Pursuant to the Law on the "green rate", the wholesale market of electric power of Ukraine must purchase, at the "green rate", the electric power, generated by alternative and renewable energy sources. The "green rate" is approved by the National committee for electric power regulation of Ukraine for business entities, which are the producers of electric power from alternative and renewable sources of energy, for the period of 10 years. The law establishes a clear settlement procedure for the "green rate" by industries. This step enables facilitating the pricing procedures for energy companies and make them more transparent. This way of encouraging the production of electric power from alternative and renewable energy sources was applicable provided that the specific weight of materials, work and services of Ukrainian origin are at least 15%. However, on 30 May 2013 the Verkhovna Rada of Ukraine registered a draft law on amendments to the Law of Ukraine "On electric power industry", which was adopted and became effective on 1 July 2013. According to this law, for wind, solar and electric power plants operating on the biomass, whose construction started after 1 January 2012 and commissioned after 1 July 2013, the share of domestic components and work must be 30%, and for those commissioned after 1 July 2014 – 50%. Electric power plants operating on biogas must meet the requirements of 30% domestic work and service share since 1 January 2014 and 50% share – since 1 January 2015 (Biowatt, 2013). This law interferes with the rise of investments in the alternative power industry of Ukraine. If it was only about the total volume of domestic work and service, it would not yet become a serious problem. However, besides the 30–50% quotas, the document provides for more detailed segmentation: specific volume of investments has to be allocated to the purchase of boilers (percentage of the total value of construction), another to the purchase of a turbine etc. Today it is this requirement that can hardly be met by companies: they cannot find Ukrainian suppliers of respective products. They are practically non-existent, and it is not clear when they will be established. It should also be taken into account that the "green rate" is considered to be among the highest in Europe. Ukraine is not so rich, and domestic enterprises experience difficulties in purchasing energy resources at such high rates.

The governmental support is needed for research institutions engaged in studying alternative and renewable energy sources. It is necessary to organize governmental programs of professional training in alternative sources of energy. A number of

alternative energy sources research centers have already been established: the Institute of renewable energy of the National Academy of Sciences of Ukraine, the Centre of wind energy in Kyiv. Research in the field of solar power engineering is done in the Institute of Physics of Semiconductors of the National Academy of Sciences of Ukraine. It is required to consider the possibility of carrying out training courses in alternative power industry based on these institutions with governmental support.

Moreover, it is required to clarify the mechanisms and guidelines of providing preferences to the companies, operating at the market of alternative energy of Ukraine. It is necessary to:

- simplify the procedure of companies registration, operating with alternative and renewable energy sources, in the State Register, according to which a company may be given preferences in the form of profit tax exemption;
- create a register of products of the alternative power industry, manufactured abroad and imported with no import duty;
- form the procedure of arrangements with private regional energy companies regarding the connection of power producers that use alternative and renewable energy sources to the general electric grid.
- regulate the issue of compensation of the energy companies costs, operating with alternative and renewable energy sources, for the connection to the unified electric grid;
- provide priority access to low-interest loans for the producers of equipment, generating energy from alternative and renewable sources of energy, and for the energy companies, operating with alternative and renewable energy sources. All these are required since today there are no loan benefits for the development of alternative power generating industry, and the loan interest rates are too high, thus not promoting the development of this power industry in Ukraine.

Conclusion. The analysis of the situation at Ukrainian market of alternative energy demonstrates the need to improve economic mechanisms of energy saving at all levels, focusing on the housing and public utilities sector, as one of the least efficient energy resources consumer. This means the need of deeper understanding of the concept of "mechanism", improvement of the existing legislation in order to introduce mechanisms encouraging companies, operating with renewable energy resources, development and implementation of economic mechanisms of energy saving, considering international experience of applying alternative sources of energy.

References:

- Про альтернативні джерела енергії: Закон України від 20.02.2003 №555-IV // zakon.rada.gov.ua.
- Про внесення змін до деяких законів України щодо встановлення «зеленого» тарифу: Закон України від 25.09.2008 №601-VI // zakon.rada.gov.ua.
- Про внесення змін до деяких законодавчих актів України щодо стимулювання заходів з енергозбереження: Закон України від 16.03.2007 №760-V // zakon.rada.gov.ua.
- Про внесення змін до Закону України «Про електроенергетику» щодо стимулювання використання нетрадиційних джерел енергії: Закон України від 01.04.2009 №1220-VI // zakon.rada.gov.ua.
- Про затвердження Енергетичної стратегії України на період до 2030 року: Розпорядження Кабінету Міністрів України від 24.07.2013 №1071-р // zakon.rada.gov.ua.
- Альтернативні джерела енергоресурсів в Українському Причорномор'ї: Аналітична записка // Національний інститут стратегічних досліджень, 2010 // old.niss.gov.ua.

Деревянко О.В. Организационно-экономический механизм планирования бизнес-процессов предпринимательских структур: Дис... канд. экон. наук. — СПб., 2004. — 156 с.

ЕБРР может прекратить кредитование в сфере альтернативной энергетики // Интернет-платформа Biowatt, 2013 // biowatt.com.ua.

Енергетичний баланс України // Державний комітет статистики України, 2010–2012 // ukr-stat.gov.ua.

Житлово-комунальне господарство України // Енциклопедія вікіпедія, 2013 // uk.wikipedia.org.

Кузин А. Энергосбережение как основной фактор охраны окружающей среды // Интеграционные технологии энергосбережения. — 2004. — №3. — С. 21–26.

Лучшие практики энергосбережения в городах // misto.esco.co.ua.

Мала гірнича енциклопедія / За ред. В.С. Білецького. — Донецьк: Донбас, 2004. — Т. 2. — 640 с.

Райзберг Б. Хозяйственный механизм. — М.: София, 2010. — 264 с.

Уряд Німеччини скоротить фінансування сонячної енергетики // Інтернет-портал "Finance.ua", 2012 // finance.ua.

Hurwicz, L., Reiter, S. (2006). Designing Economic Mechanisms. Cambridge University Press. 356 p.

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КНИЖКОВИЙ СВІТ



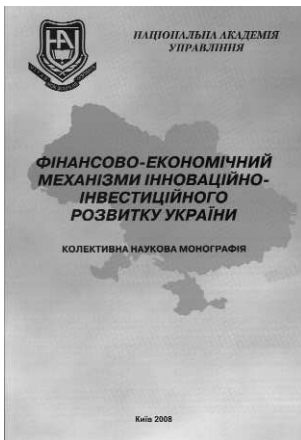
СУЧАСНА ЕКОНОМІЧНА ТА ЮРИДИЧНА ОСВІТА
ПРЕСТИЖНИЙ ВИЩИЙ НАВЧАЛЬНИЙ ЗАКЛАД

НАЦІОНАЛЬНА АКАДЕМІЯ УПРАВЛІННЯ

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Фінансово-економічні механізми інноваційно-інвестиційного розвитку України: Колективна наукова монографія / Кириченко О.А., Єрохін С.А. та ін.; За наук. ред. д.е.н., проф. О.А. Кириченко. — К.: Національна академія управління, 2008. — 252 с. Ціна без доставки — 25 грн.

Монографія присвячена актуальній проблемі світової та вітчизняної економічної науки, викладені теоретико-методологічні питання формування стратегії інноваційно-інвестиційного розвитку національної економіки та формування її фінансово-економічного механізму. В основу викладу матеріалу монографії покладені багаторічні дослідження науковців в галузі економічної теорії, фінансів та банківської справи, які були апробовані на сторінках авторитетного журналу "Актуальні проблеми економіки" в 2004–2007 роках. В монографії обґрунтовано шляхи переходу економічної системи України від підприємства до рівня держави на більш високий цивілізаційний рівень за рахунок створення ефективного фінансово-економічного механізму інноваційно-інвестиційного розвитку.