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Model of sustainable development of the national economy of Ukraine: assessment of current state and prospects of development

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Abstract. The article considers the research of sustainable development model of national economy of Ukraine at the modern conditions. Determine the structural changes of national economy of Ukraine at the period of 2001 – 2012. During the period from 2001 to 2012 increase of the share of economic activities of the sphere of immaterial production, while reduction of the share of economic activities of the sphere of material production. The lack of progress in the development and implementation of new technologies prevented the improvement of industrial competitiveness, which partly led to a deep structural crisis and drop in production. The share of type of economic activity in the structure of the national economy does not affect its importance for the development of national economy. The poor energy efficiency of Ukraine poses a serious threat to its economic security that results in a deformed structure of production and consumption, in the usage of old technology of production of energy and in slow implementation of energy saving technologies. For sustainable development of Ukrainian national economy at unstable modern conditions must improving public-private partnership in the field of energy efficiency are substantiated.

Key words: economic model, sustainable development, structural changes, national economy, system of public administration, energy saving, Ukraine.

INTRODUCTION

The transformation of the global economy results in the changes of the public perception of global economy and the modification of values, where special attention is getting the value of the individual, self-realization, human life and health, social stability, preservation of natural resources and biodiversity.

Conceptual grounds of the model of sustainable development were established in numerous international contracts, “Rio Declaration on Environment and Development” [1], United Nations Millennium Declaration [2], Johannesburg Declaration on Sustainable Development and Plan of Implementation of the World Summit on Sustainable Development [3], “The Future We Want” [4]. The issue of sustainable development occupies prominent place in the Sustainable Development Strategy “Ukraine – 2020”, in which “...creation of a country with a strong economy and significant innovations...” and “...Ukraine's achievement of the leading position in the global economy” were defined [34].

Sustainable development is defined as a form of interaction between society, the state and nature, which provides human survival and preservation of the environment; today's generation provides its vital needs without depriving future generations’ opportunity to meet their own capabilities and needs.

THE ANALYSIS OF RECENT RESEARCHES AND PUBLICATIONS

The problem of the formation and development of national model of sustainable development is widely explored by Ukrainian scientists: [5; 6], [7], [8], [9], [10], [11; 12], [13; 14], [15], [40] and others.

Thus, the founder of the national theory of "sustainable development" [13, 8; 14] defines it as a permanent reproduction of the so-called state of homeostasis (dynamic equilibrium) with a periodic change in its level at which there is a permanent solution to the contradictions between the internal components of the system, meanwhile change of the parameters of the biosphere does not exceed beyond catastrophic transformations for the system. Sustainable development, as noted by [13; 14], characterized by dynamic equilibrium with periodic changes of its level and elasticity.

[12, 14] gives a definition of the "sustainable development": "The process of harmonization of the productive forces, providing of guaranteed satisfaction of needs of all members of society for the preservation and reproduction of integrity of the natural environment, creating opportunities for a balance between the potential and requirements of all generations". This interpretation of the term "sustainable development" was recorded at the national level in the Concept of Sustainable Development of Ukraine in 1997.

[16] interprets "sustainable development" as a "development that can satisfy the needs of the current generation of people without putting at risk the capacity of future generations to meet their own needs". At the same time, the economy should provide people with capability to meet their needs and legitimate desires, but their growth should not go beyond the environmental capacity of the ecosphere.

[15, 84] defines "sustainable development" as development of society with the growth of gross domestic product in which the needs of natural resources present generations are met and should not jeopardize the ability of future generations to meet their needs under the conditions when economic, environmental and social components of development are aligned and human impacts do not exceed the ability of the natural environment to restore itself, and society will realize an advantage of environmental priorities over others.

Examining the nature of the concepts "development" and "sustainable", [17] gives the following definition: "sustainable (harmonious, balanced) development – it is a development that provides specific type of balance, i.e. the balance between the socio-economic and environmental components; balance should be the basis of a regional development".

Sustainable development is considered as a process of harmonization of productive forces, while ensuring that the essential needs of all members of society under conditions of maintaining the integrity of environment and creating opportunities for the balance between the potential and requirements of all generations [18].

OBJECTIVES

The aim of this article is the empirical research of sustainable development model of national economy of Ukraine at the modern conditions.

THE MAIN RESULTS OF THE RESEARCH

Model of sustainable development of the national economy is characterized by a balanced solution of problems of economic and social spheres with concurrent solution of environmental problem, maintaining good conditions, which is a prerequisite for the viability of current and future generations of humanity.

The economic component consists of the optimum use of scarce resources and usage of energy and technology to create gross income flow, which would provide the saving of gross capital (physical, natural or human) using which this gross income was generated. The transition to post-industrial (information) society causes changes in the structure of gross capital, by increasing intangible flows of finance, information and intellectual property. Already, these flows exceeded the volume of material goods in seven times. The development of the new economy is stimulated not only by the shortage of natural resources, but also by increasing amounts of information and knowledge, which are emerging as an important commodity.

The environmental component focused on ensuring the integrity of natural systems and their sustainability, which determines the global stability of the whole biosphere. Particular importance obtains the ability of such systems to self-restoring and adaptation instead of staying in a static state or degradation and losing of biological diversity.

The social component focused on human development, preservation of social stability and cultural systems, reduction of the number of conflicts in the society. Human becomes a subject of development rather than an object of development. The social component should participate in the formation of human activity, making and implementation of decisions, monitoring of implementation of decisions. In order to ensure these conditions, an equitable distribution of wealth among people, pluralism and tolerance in relations, preservation of capital and its cultural diversity are essential.

System alignment and balance of these three components are the main tasks of enormous complexity. In particular, the interconnection of social and environmental components results in the necessity to preserve the equal rights of present and future generations to exploit natural resources. The interaction of social and economic components requires the achievement of equity in the distribution of wealth between people and the provision of targeted assistance to the poor segments of society. The interconnection of environmental and economic components requires evaluation of technogenic impacts on the environment and reassessment of the value of the natural environment and resources, the increasing role of natural capital as such.

Thus, the model of sustainable development assumes biocentric (anthropocentric) way of providing vital needs of society with the active and equitable use of factors of production.

The national economy of Ukraine can be characterized by the following features: instability of growth, a high level of shadow economy, technical and technological backwardness, significant physical and moral depreciation of fixed assets, low utilization of production capacity, high level of material and energy input, lack or low level of innovation.

The lack of progress in the development and implementation of new technologies prevented the improvement of industrial competitiveness, which partly led to a deep structural crisis and drop in production. Since declaration of independence of Ukraine, large high-tech complexes (aviation, electronics industry, production of machine tools, instrumentation, etc.) had degraded as well as the potential, which could be the basis of economic development of the state.

The structure of the national economy of Ukraine by the types of economic activity for the period 2001–2012 is shown in Table 1.

Table 1. Structure of the national economy of Ukraine by the types of economic activity for the period 2001–2012, in % to GVA

Type of economic activity	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Comparison of, 2012 to 2001 (p.p.)
Agriculture, hunting and forestry	16.05	14.62	11.89	11.70	10.24	8.42	7.22	7.57	7.76	8.26	9.49	9.30	-6.75
Fishery and fish farms	0.07	0.06	0.05	0.04	0.04	0.03	0.02	0.02	0.03	0.03	0.02	0.02	-0.05
Industry	30.19	30.73	29.79	27.98	30.30	30.81	30.20	28.80	25.30	25.90	25.61	25.74	-4.45
- mining industry	4.64	4.97	4.43	3.93	4.53	4.52	4.824	6.31	4.81	6.56	7.47	6.78	2.13
- processing industry	19.41	20.07	20.32	20.14	21.93	22.46	21.83	19.14	16.74	15.85	14.28	14.65	-4.77
- production and distribution of electricity, gas and water	6.12	5.67	5.02	3.91	3.830	3.82	3.53	3.34	3.75	3.50	3.86	4.32	-1.81
Construction industry	3.98	3.80	4.20	4.54	4.13	4.35	4.64	3.39	2.54	3.25	3.19	3.33	-0.65
Trade, repair of motor vehicles, household appliances and goods for personal use	12.23	12.22	12.93	12.90	14.15	14.08	14.50	15.25	15.34	16.48	17.48	17.26	5.04
Hotels and restaurants	0.63	0.65	0.66	0.72	0.60	1.11	1.04	1.13	0.95	1.03	1.01	0.94	0.30
Transport and communication industry	13.41	13.68	14.35	13.41	11.98	11.51	10.67	10.12	11.45	11.10	11.43	8.53	-4.89
Finance	2.87	3.08	3.83	6.68	4.99	5.21	6.45	8.01	7.87	7.05	5.50	5.12	2.24
Real estate, lease, engineering and services for entrepreneurs	6.91	7.44	6.91	7.39	7.71	7.98	9.70	9.92	11.28	9.97	10.18	12.06	5.14
Public administration	4.05	4.37	4.17	4.43	5.17	5.38	5.10	5.23	5.54	5.22	4.88	5.28	1.23
Education	4.86	5.38	5.64	5.11	5.27	5.39	5.01	5.06	5.81	5.57	5.33	6.17	1.31
Healthcare and social assistance	3.28	3.66	3.74	3.44	3.53	3.64	3.43	3.39	4.08	4.22	3.93	4.37	1.09
Public and personal services, cultural activities and sport	1.45	1.86	1.85	1.66	1.88	2.11	2.03	2.12	2.04	1.91	1.94	1.90	0.45
Total	100	100	100	100	100	100	100	100	100	100	100	100	-

Note: compiled and calculated by the authors according to [19 – 26]

Table 2. Results of regression analysis between the growth rate of gross value added (*Y*) and investment in fixed assets (*X*) for the 2001–2012 period

Type of economic activity	Coefficient of determination (R^2)	Equation of linear regression
Agriculture, hunting and forestry (X_1)	0.0243	$Y = 0.1135X_1 + 93.766$
Fishery and fish (X_2)	0.1725	$Y = -0.2644X_2 + 130.689$
Industry (X_3)	0.8313	$Y = 0.9303X_3 + 9.083$
Mining industry (X_{31})	0.8173	$Y = 1.2281X_{31} - 20.934$
Processing industry (X_{32})	0.8559	$Y = 0.5669X_{32} + 45.407$
Production and distribution of electricity, gas and water (X_{33})	0.4824	$Y = 0.9545X_{33} + 8.224$
Construction industry (X_4)	0.7959	$Y = 0.3151X_4 + 73.566$
Trade, repair of motor vehicles, household appliances and goods for personal use (X_5)	0.6266	$Y = 0.3708X_5 + 65.011$
Hotels and restaurants (X_6)	0.3413	$Y = 0.2229X_6 + 80.422$
Transport and communication industry (X_7)	0.7066	$Y = 0.8330X_7 + 16.109$
Finance (X_8)	0.6370	$Y = 0.2989X_8 + 72.088$
Real estate, lease, engineering and services for entrepreneurs (X_9)	0.5536	$Y = 0.4346X_9 + 57.225$
Public administration (X_{10})	0.1650	$Y = 0.5310X_{10} + 51.987$
Education (X_{11})	0.1760	$Y = 0.7867X_{11} + 25.485$
Healthcare and social assistance (X_{12})	0.2244	$Y = 1.0457X_{12} - 1.808$
Public and personal services, cultural activities and sport (X_{13})	0.7148	$Y = 0.5876X_{13} + 42.559$

Note: compiled and calculated by the authors according to [19–26]

During the period from 2001 to 2012, certain structural changes in the Ukrainian national economy took place:

– increase of the share of economic activities of the sphere of immaterial production (11.92 p.p.), while reduction of the share of economic activities of the sphere of material production;

– during the studied period the real economy as a whole fell almost by 1.3 times, mainly in agriculture, its share fell by almost half (from 16.05 % to 9.30 %), industry – by 4.4 p.p. (from 30.19 % to 25.74 %) and construction industry (from 3.98 % to 3.33 %). Among the economic activities that belongs to the non-material production: proportion of transport and communication services decreased (from 13.41 % to 8.53 %), while the share of the following industries increased: trade (from 12.23 % to 17.26 %), real estate (from 7.44 % to 12.06 %) and public and personal services, community services (1.45 % to 1.90 %).

The type of economic activity that lays in the basis of the financial sector – financial activities, during the study period, increased its share by more than 1.8 times (from 2.87 % to 5.12 %). This increase may indicate the gradual formation of the financial market and the gradual development of financial services in Ukraine.

During the research, regression analysis of the relations between economic development of Ukraine and types of economic activities was conducted (Table 2).

Regression analysis of the "impact of growth of types of economic activity on the economic development of Ukraine" for the period 2001–2012 allowed us to classify the types of economic activity by the coefficient of determination, *F* – criterion and *t* – criterion as follows:

First Group – types of economic activities that are crucial for the economic development of country during the studied period (R^2 > 80 %). This group includes traditional types of economic activities of the national economy of industrial society: Industry (X_3) (R^2 =83.1 %), including the Mining industry (X_{31}) (R^2 =81.7 %) and Processing industry (X_{32}) (R^2 =85.5 %).

Second Group – types of economic activities that have medium impact on the economic development of the country during the studied period (50 % < R^2 < 80 %). This group includes Construction industry (X_4) (R^2 =79.5 %), Trade, repair of motor vehicles, household appliances and goods for personal use (X_5) (R^2 =62.6 %), Transport and communication industry (X_7) (R^2 =70.6 %), Finance (X_8) (R^2 =63.7 %), Real estate, lease, engineering and services for entrepreneurs (X_9) (R^2 =55.3 %) and Public and personal services, cultural activities and sport (X_{13}) (R^2 =71.4 %).

Third Group – economic activities that are potentially crucial for economic development in the conditions of post-industrial society. This group includes Education (X_{11}), Public administration (X_{10}) and Healthcare and social assistance (X_{12}), Agriculture (X_1) and Production and distribution of electricity, gas and water (X_{33}). Despite the fact that all these types of economic activities in the structure of the national economy have shares in the range of 4–6 % and their

actual correlation with economic development is average (40–47 %), but change (increase) by 1 % can stimulate the growth of the national economy: Education – by 0.7867 %, Public administration – by 0.5310 % and Healthcare and social assistance – by 1.0457 %.

According to the "Rio Declaration on Environment and Development" [1], the sustainable development defined as a priority of human development, which involves minimization of human impact on the environment (environmental aspect).

Governments in many countries are increasingly aware of the urgent need to make better use of the world's energy resources. Global energy intensity decreased by 1.3 %/year between 1990 and 2011 [39] that is explained by the combined effect of high energy prices, energy efficiency programs and, more recently, CO2 abatement policies in OECD countries, as well as other economic factors, such as the move by economies towards tertiary activities. The global economic crisis in 2008–2009 induced a net slowdown in the energy intensity reduction in all regions. This poor performance was mainly caused by industry, a sector in which energy consumption did not decrease at the same pace as the value added due to the fact that part of the consumption is independent of the production volume and that industrial equipment operates with lower efficiency during periods of recession.

Ukraine has a very high energy intensity of GDP (high energy consumption) and it is the least energy efficient country in Europe. The amount of energy that was used to produce a unit of goods and services has been still 3.8 times higher than the average indices in the European Union [37]. The researchers found that poor energy efficiency of Ukraine poses a serious threat to its economic security that results in a deformed structure of production and consumption, in the usage of old technology of production of energy and in slow implementation of energy saving technologies. Ukraine needs to overcome the drawbacks of the real sector by reducing the proportion of resource- and energy-intensive activities, promoting the reduction of energy- and ecology-intensive production through the introduction of modern technologies, rationalization of resource usage, and optimization of territorial distribution of production.

The main drivers of the industrial sector growth should be industries that have lower energy intensity and technological processes, which can be characterized as high energy-efficient. Production and distribution of electricity, gas and water occupies only 4.32 % in the structure of national economy and stimulates 0.9545 % growth of the national economy. However, we believe that this type of economic activity for Ukraine should be developed more, especially taking into account the current critical situation in the Eastern Ukraine and strained relations with Russian Federation.

German Advisory Group with Ukrainian Institute for Economic Research and Policy Consulting [37] studied the trends of primary energy consumption for the period 1990–2010, and found that the energy intensity of the Ukrainian economy has evolved according to economic growth:

1) structural recession during 1990–1996 resulted in a significant decline in demand for primary energy (demand fell by more than 40 % over the period). However, energy intensity to weighted purchasing power parity increased from 0.58 kg of oil equivalent (kgoe) in 1990 to 0.82 kgoe in 1997. This explains the fact that industrial production and total output fell faster than overall energy consumption;

2) in the period of economic recovery (1997–2008) demand for primary energy had stabilized at average level of 136 Mtoe. Meanwhile, energy intensity was declining gradually and reached 0.44 kg of oil equivalent per unit of gross domestic product in 2008, due to the strong recovery of economic growth and the emergence of more effective types of economic activity;

3) during the period 2009–2012, positive trend changed in reverse because of the global economic crisis, which severely affected Ukrainian economy, and in 2012 energy intensity rose again to 0.49 kgoe.

The structure of energy consumption in Ukraine is dominated by fossil fuels (oil, natural gas and coal), which constitute 80.4 % of the total energy consumption. Given the dominance of fossil fuels in energy balance structure and inefficient energy use, Ukraine has one of the world's carbon intensive economies. This leads to significant pressure on the environment and complicates the country's fulfillment of possible future commitments under international agreements on reduction of carbon emission. Pollution limits the development of industries that are based on the use of high technology, such as nanotechnology, because they need the relevant environmental quality standards [36].

In 2013, according to Ukrainian Energy Index (UEI) [38] Zakarpatska, Chernihivska and Vinnytska regions were the most energy efficient regions in Ukraine, with 64.3 %, 63.8 % and 62.9 % of the EU level respectively. During the period 2011–2013 Zakarpatska and Vinnytska regions were in the top three most energy efficient regions, however for the Chernihivska region it was first time on the second place in 2013.

Thus, during the period 1990–2012 energy intensity of the national economy decreased by 20 % as a result of reduced economic activity, and not due to the efforts to reduce power consumption. Low level of energy efficiency of Ukrainian economy can be explained by two factors:

1) excessive market regulation ("The state failure argument");

2) insufficient measures to encourage energy efficiency practices ("The market failure argument").

According to a study conducted by UN representatives in Ukraine [36], 32.2 % of the participants prefer the protection and restoration of the environment as a priority of development; a significant

proportion (43.4 %) of respondents does not just agree with the need to save energy, but also confirms willingness to do so in their own houses/apartments. This indicates a fairly high level of understading of the importance of environmental issues in Ukrainian society, especially given the relatively low standards of living and priority focused on satisfaction of primary needs. The significance of fuel resources for the national economy cannot be overestimated: lack or insufficiency of fuel resources prevents the production process in all types of industry, agriculture, transport and public services.

Energy Strategy of Ukraine [35] determines the goals and ways to implement the energy policy of Ukraine for the long term (until 2030) and outlines mechanisms for its implementation. The key objective is to develop systems which can ensure energy security of the country and guarantee a stable energy supply of the national economy and social needs. Energy Strategy foresees that the fixed capacity of renewable energy to 2020 will reach almost 12000 megawatts, and production of "green" energy will reach the level of approx. 25 billion kilowatts.

The main factor of improvement of energy efficiency of the Ukrainian economy is creation of efficient system of public administration of energy saving practices that will improve the structure of energy consumption, in particular through further expansion and deepening of electrification in all sectors of the economy by replacing scarce fuels while increasing efficiency of production. National strategy of energy conservation and alternative energy sources implemented through special laws of Ukraine "About Energy Saving" [27] and "About Alternative Energy Sources" [28]. However, state only declares development of bioenergy, but currently economic instruments of encouragement have virtually no legal binding.

According to art. 6 of the Law of Ukraine "About Energy Saving" [27] national, regional, local and other programs were developed for effective and focused governmental regulation of the organization and coordination of actions in the field of energy conservation.

According to the Energy Strategy of Ukraine, 49 project proposals (with total cost of 1.3 bln. UAH) were prepared and will be funded exclusively through the balance of funds, that were received from the European Union to the special fund of the state budget.

Ukrainian cities organized five consortia and in 2014 with the support of the government signed a memorandum with the German Office of International Cooperation (GIZ) for implementation of the project "Energy Efficiency in the Communities". The Project GIZ will provide technical assistance to Ukrainian cities for the amount of 4 million EUR. During 2010–2013, Project GIZ "Energy Efficiency in Buildings" was successfully implemented in four Ukrainian cities (Chernihiv, Ivano-Frankivsk, Myrhorod, Novograd-Volynskiy), where modernization of buildings for energy conservation was conducted. With the support of the GIZ each of the four cities will develop a municipal plan of energy efficiency for buildings with a particular focus on the following measures:

–collection of data on energy consumption;

– development of a long-term strategy, i.e. energetical plan and measures of demand management;

– development of an action plan and preparation for its implementation;

– development of funding mechanisms and incentives;

– conducting of public information campaigns;

– development of monitoring and reporting systems.

Thus, within the framework of GIZ "Energy Efficiency in Communities", energy conservation project "Modernization of street lighting by using innovative energy efficiency of renewables (solar energy) of the city of Myrhorod" was implemented.

According to the dynamic of energy efficiency indices of the regions [38], L'vivska region achieved the biggest improvement during 2011–2013 by rising in the overall ranking by 10 positions (from 22 to 12 place). Efficiency of energy consumption has increased from 42 % to 57 % due to the improvements in the service and residential sectors, as well as in the mining and food industries.

As part of the "Governmental economic program of energy efficiency and the development of energy production from renewable energy sources and alternative fuels for 2010–2015" [32], budget program "Regional energy efficiency program of Lviv region for 2010–2014" [33] was implemented. This program provides refund of the interest rates on loans that were granted to owners of individual households for energy projects or for acquisition of appropriate equipment. According to the Lviv regional state administration, as a result of implementation of this program in 2011 natural gas consumption in the population decreased by 8.6 % or by 98.6 mln. m^3 compared to 2006.

Regional and local authorities solve problems of energy efficiency through the development and implementation of energy efficiency programs and joint projects with international organizations. Thus, Lviv participates in several loan programs of the European Bank for Reconstruction and Development and Scandinavian project "NEFCO" on energy conservation and rehabilitation of residential buildings; moreover an energy audit of municipal buildings of medical and educational organizations was scheduled. Since 2012, German-Ukrainian project "Energy Efficient Cities" has been implemented in the city Zholkva (Lviv region). In 2014 in the framework of competition EuropeAid / 131230 / L / ACT / UA "Support of the implementation of energy saving technologies in the small towns of Ukraine", project

"Implementation of energy saving technologies in Hlynyanska regional hospital" (Hlyniany, Lviv region) was completed, which was funded by the European Union (80 %) and local government (20 %).

Pilot project on energy efficiency and alternative energy, which was carried out with the support of GEF / UNIDO "Improving energy efficiency and promoting the usage of renewable energy in the agrarian and food and other small and medium-sized enterprises (SMEs) in Ukraine" was implemented in the village Luky (L'vivska region). The local plant had installed biodiesel production line that based on cavitation technology, which can reduce power consumption for production of 1 ton diesel by 50 kW×hour, as well as can use less methanol due to more precise dosages system. This project involved technical assistance grant funds in the amount of 147 000 USD.

Moreover, within the framework of the Project GEF/UNIDO, the heat recovery systems for four baking ovens were installed at the L'viv Bakery №5, which belongs to PAT "Konsern Khlibprom", one of the largest companies in the grain market of Ukraine. Heat recovery systems were designed to produce low-pressure steam and hot water for technological needs. Grant funds in the amount of 160000 USD were used to implement this project. Experts estimate that the expected savings of natural gas amount to 170 000 cubic meters per year.

Implementation of pilot projects in Ukraine, and especially in L'vivska region, facilitates the adaptation of the national economy to the principles of sustainable development .

So, in conditions of worsening economic and political crisis, the most important become issues of intensification of energy saving technologies, improvement of public-private partnerships in the effort of energy saving and as a result, reduction of gas dependence of the national economy from the Russian Federation.

CONCLUSIONS

In conclusion of the research, we can identify the following features of the national economy development in the context of the model of sustainable development:

1) the growth of the national economy for the period from 2001 to 2012 is provided by traditional for Ukraine economic activities – Mining and processing industry;

2) despite the priority of economic activities of industrial society for the national economy, during the studied period non-material production sphere gained value, which is characteristic of post-industrial society: Financial activity and Real estate, lease, engineering and services for entrepreneurs;

3) the share of type of economic activity in the structure of the national economy does not affect its importance for the development of national economy. Thus, the growth of the Financial sector (X_8), which holds 5.12 % of the national economy (for the year 2012), 1 % stimulates only 0.2989 % growth of the national economy, while the growth of Transport and communication industry (X_7), which holds 8.53 % for 1 % stimulates 0.8330 % growth;

4) low level of energy efficiency poses a serious threat to the sustainable development of the national economy of Ukraine, hence improving public-private partnership in the field of energy efficiency becomes the main task for the authorities.

REFERENCES

1. Agenda for the XXI century [Electronic resource] – Access mode: http://www.un.org/ru/documents/decl_conv/conventions/agenda21.shtml (in English).
2. The Millennium Declaration of the United Nations [Electronic resource] – Access mode: http://www.un.org/ru/documents/decl_conv/declarations/summitdecl.shtml (in English).
3. The Johannesburg Declaration on Sustainable Development [Electronic resource] – Access mode: http://www.un.org/ru/documents/decl_conv/declarations/decl_wssd.shtml (in English).
4. Plan of Implementation of the World Summit on Sustainable [Electronic resource] – Access mode: http://www.un.org/ru/events/pastevents/pdf/plan_wssd.pdf (in English).
5. Socio-Economic Situation in Ukraine: Implications for People and the State: national report / ed. by O.I. Amosha; National Academy of Sciences of Ukraine. – Kyiv: Vernadsky National Library, 2009. – 687 (in Ukrainian).
6. Structural Economic Reforms: International Experience, Institutions, Strategies for Ukraine: monograph / ed. by O.I. Amosha; National Academy of Sciences of Ukraine, Institute of Industry Economics. – Ternopil; Donetsk: Economic thought TNEU, 2011. – 846 (in Ukrainian).
7. **Haidutsky P.I. 2004.** Corporate aspects of Strategy of economic and social development of Ukraine until 2015 // Formation of market relations in Ukraine. – 2004. – №10 (41). – 5–8 (in Ukrainian).
8. **Generalova Yu. 2006.** Economic growth in the transition to post-industrial society // Actual problems of economics. – 2006. – №11. – 14–21 (in Ukrainian).
9. Ukraine's economy: the long-term strategy and policy development / ed. by V.M. Geyets. – Kyiv: Institute of Economic Forecasting, National Academy of Sciences; Phoenix , 2003. – 1008 (in Ukrainian).
10. **Gerasymchuk Z. 2001.** Comprehensive assessment of sustainable development level of regions of Ukraine // Economy of Ukraine. – 2001. – №5. – 34–42 (in Ukrainian).
11. **Danilishin B. 2010.** The post-crisis reformation // New Economist of Ukraine. – 2010. – №3. – 4–9 (in Ukrainian).
12. **Danilishin B. and Veklich A. 2008.** Ukraine at the international rankings of sustainable development // Economy of Ukraine. – 2008. – №7. – 13–23 (in Ukrainian).

13. **Melnik L.G., Skokov S.A. and Cotnik I.N. 2006.** Environmental and economic bases of resource saving: monograph. – Sumy: ITD “University Book”, 2006. – 299 (in Russian).
14. Fundamentals of Sustainable Development / ed. by L.G. Melnyk. – Sumy: ITD “University Book”, 2005. – 654 (in Ukrainian).
15. Recommendations of economic development for Ukraine and its regions: Offers plenums Ukrainian Union of economists and scientific conferences for the period 2004–2011 / ed. by V.V. Oskolskiy. – Kyiv, 2012. – 218 (in Ukrainian).
16. The State policy of sustainable regional development / ed. by T.A. Savostenko. – Kyiv: NAGM, 2008. – 40 (in Ukrainian).
17. **Baranovskiy B. 2001.** The concept Ukraine's transition to sustainable development model // Economy of Ukraine. – 2001. – № 2. – 45–50 (in Ukrainian).
18. **Pyrog O.V. 2010.** Trends at the economic development of countries of European Union and Ukraine: comparative analysis // Journal of Dnipropetrovsk University. Series: “The world economy and international economic relations”. – 2010. – № 10/2. – 64–73 (in Ukrainian).
19. Gross regional product at 2001–2009 / State Statistics Committee of Ukraine; ed. by I.M. Nikitina. – Kyiv: LLC “August Trade”, 2011. – 150 (in Ukrainian).
20. Gross regional product at 2010 / State Statistics Committee of Ukraine; ed. by I.M. Nikitina. – Kyiv: LLC “August Trade”, 2012. – 162 (in Ukrainian).
21. Gross regional product at 2011 / State Statistics Committee of Ukraine; ed. by I.M. Nikitina. – Kyiv: LLC “August Trade”, 2013. – 167 (in Ukrainian).
22. National Accounts of Ukraine at 2001 – 2009 / ed. by O.H. Osaulenko. – Kyiv: State Statistics Committee of Ukraine, 2010. – 472 (in Ukrainian).
23. Statistical Yearbook of Ukraine at 2001 / ed. by V.A. Golovko. – Kyiv: Technology, 2002. – 509 (in Ukrainian).
24. Statistical Yearbook of Ukraine at 2005 / ed. by O.H. Osaulenko. – Kyiv: Publisher “Consultant”, 2006. – 570 (in Ukrainian).
25. Statistical Yearbook of Ukraine at 2010 / ed. by O.H. Osaulenko. – Kyiv: LLC “August Trade”, 2011. – 560 (in Ukrainian).
26. Statistical Yearbook of Ukraine at 2012 / ed. by O.H. Osaulenko. – Kyiv: LLC “August Trade”, 2013. – 552 (in Ukrainian).
27. About Energy Saving: Law of Ukraine on 01.07.1994 #74 / 94 VR [Electronic resource] – Access mode: zakon. rada.gov.ua – Legislation. Verkhovna Rada of Ukraine (in Ukrainian).
28. About Alternative Energy Sources: Law of Ukraine on 20.02.2003 # 555-IV [Electronic resource] – Access mode: zakon.rada.gov.ua – Legislation. Verkhovna Rada of Ukraine (in Ukrainian).
29. Basic Principles (strategy) of State Environmental Policy of Ukraine for the period up to 2020: Law of Ukraine on 21.12.2010 # 2818-VI [Electronic resource] – Access mode: zakon.rada.gov.ua – Legislation. Verkhovna Rada of Ukraine (in Ukrainian).
30. Approval of Energy Strategy of Ukraine for the period up to 2030: Resolution of Ukrainian Government on 24.07.2013 # 1071-p. [Electronic resource] – Access mode: zakon.rada.gov.ua – Legislation. Verkhovna Rada of Ukraine (in Ukrainian).
31. Sectoral energy efficiency and conservation program for the period until 2017: Order of Ministry of Industrial Policy of Ukraine on 25.02.2009 # 152 [Electronic resource] – Access mode: zakon.rada.gov.ua – Legislation. Verkhovna Rada of Ukraine (in Ukrainian).
32. Approval of Governmental economic program of energy efficiency and the development of energy production from renewable energy sources and alternative fuels for 2010–2015: Resolution of Ukrainian Government on 01.03.2010. # 243 [Electronic resource] – Access mode: zakon.rada.gov.ua – Legislation. Verkhovna Rada of Ukraine (in Ukrainian).
33. Regional energy efficiency program of Lviv region for 2010–2014: Resolution of Lviv Regional Council on 11.10.2013 #447-PR [Electronic resource] – Access mode: www.oblrada.lviv.ua/ – Lviv Regional Council (in Ukrainian).
34. About Strategy of Sustainable Development “Ukraine – 2020”: Decree of Ukrainian President on 12.01.2015 # 5/2015 [Electronic resource] – Access mode: zakon.rada.gov.ua – Legislation. Verkhovna Rada of Ukraine (in Ukrainian).
35. About Approval of Energy Strategy of Ukraine till 2030: Order of Ukrainian Ministers Cabinet on 24.07.2013 # 1071-r [Electronic resource] – Access mode: zakon.rada.gov.ua – Legislation. Verkhovna Rada of Ukraine (in Ukrainian).
36. Ukraine after 2015: The future we want: National report / ed. by E.M. Libanova. – Kyiv, 2013. – 114 (in Ukrainian).
37. **Meissner F., Naumenko D. and Radek J. 2012** Energy Efficiency in Ukraine: reducing regulation and promoting energy saving series of consultative work [PP / 01/2012]. – Berlin / Kyiv, 2012 (in Ukrainian).
38. Energy effectiveness rating of Ukrainian regions at 2013 [Electronic resource] – Access mode: http://www.energy-index.com.ua/ – Ukrainian Energy Index (in Ukrainian).
39. The state of global energy efficiency. Global and sectorial energy efficiency trends [Electronic resource] – Access mode: http://www.abb-energyefficiency.com/assets/documents-download/ABB-Trends-in-global-energy-efficiency-2013.pdf (in English).
40. **Alekseyev I., Khoma I. and Shpak N. 2013.** Modelling of an impact of investment maintenance on the condition of economic protectability of industrial enterprises Econtechmod: an international quarterly journal on economics in technology, new technologies and modelling processes. – Lublin–Rzeszow, Vol. 2, No. 2., 3–8.