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ENERGETIC SECURITY AND FINANCIAL SECURITY OF COMMUNITIES/REGIONS. ECONOMIC CONDITIONS OF LOCAL DEVELOPMENT

Анотація. У цій статті авторами представлено проблеми розвитку відновлюваних джерел енергії, як невід'ємної частини місцевої та регіональної економіки. Грунтуючись на правових, соціальних та економічних умовах розвитку на місцевому рівні, авторами характеризується вплив поновлюваних джерел енергії на виробництва фінансів громад та проаналізовано проблеми фінансово-економічної безпеки громад / регіонів. Їх міркування були зареєстровані з великою кількістю прикладів ініціатив в діапазоні поновлюваних джерел енергії з регіону Великої Польщі.

Ключові слова: місцева економіка, енергетична безпека, фінансова стабільність, енергії вітру, біопалива, енергії водного господарства, сонячна енергія, геотермальна енергія.

Summary. In this article the authors introduced a problem of development of renewable energy sources as integral part of local and regional economy. Basing on legal, social and economic conditions of local development the authors characterized influence of renewable energy sources production on finance of communities and analyzed problems of financial and economic security of communities/regions. Their considerations were documented with a lot of examples of initiatives within the range of renewable energy sources from the Wielkopolska region.

Key words: local economy, energetic security, financial security, wind energy, biofuels, water energy industry, solar energy, geothermal energy.

Statement of the problem. 1. Legal, social and economic conditions of local economy development

In 20th century, among many definitions of local societies, the most accurate seem to be those given by R. M. French, Florian Znaniecki, Robert E. Park. They believed that they are constituted of the following parts:

- place of living of a certain set of people,
- separated natural unity of space,
- way of living,
- social system [1].

In Poland at the end of 20th century there were changes both at macro-structural as well as local level. Currently these processes are developing dynamically in Poland thanks to building and strengthening of Polish state of law, civic and information and market economy.

At local level building of democratic state means that:

- organs of authority are created, organized and controlled according to law (regulation about local authority entities: about direct election of local community leader),
- relations between state organs and citizens are defined by stable legal agreements,

- the most important place in the hierarchy of legal acts is occupied by a regulation,
- methods of rule are in accord with law,
- citizens have means of protection in case of abuses of power (referendum),
- law is apparent, everybody can learn its contents (apparent regulations) [2].

The main material of the study. In the Constitution of the Republic of Poland of 2nd April 1997, there is a statement that 'the Republic of Poland is a democratic state realizing principles of social equality'. It means that the Polish territorial self-government in 21st century has a clearly outlined economic function, because it is treated as a service company, property owner, investor, strategic planner, and employer. It can appear also in: gaining of local and foreign investors, financial, especially in public and foreign finance sector, localizing of administration, financial, scientific, service and other, organization of cultural, political, sport, economic events, access to market, tourism, education etc [3].

Legal, economic and social conditions of local community development cause that this territorial self-government entity is perceived as:

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— service company supplying public services both to inhabitants as well as economic subjects,

— property owner. The property includes: land, buildings, company's buildings are important element of local community independence under the law,

— investor, because a community is the biggest investor, apart from central administration possessing big financial means becomes unusually interesting orderer of supplies of goods, services and construction work,

— planner, because it decides about economic development in long term perspective. Thus planning work covers space, economic and social planes,

— employer, because community offices give working places,

— legislator, creating local law binding within area of the community. It is also applied both for internal as well for external subjects running economic activity [4].

These functions of a local community, important from the point of view of its promotion, creation of its development points also at economic development. Currently, which is noticed by K. Pająk, L. Wojtasiewicz and others, among the most important there are:

— economic boom of a community. It causes that aside from traditional ways of economy there is a need to implement a new, so called information sector, which consists in generating, gathering, storing, processing and supplying of information. It means also liquidation of educational, technological, language, political and legal gap,

— improvement of material status of local community inhabitants, including limiting of unemployment, improvement of conditions of existence, residence, social conditions etc,

— improvement of community financial situation. It refers both to cash management as well as its role on capital market. Essential matter here is in mutual penetration of state, local and business finances.

The regulation about local community self-government does not define character or program range of community economy. Local development plans built in communities in conditions of market economy does not have strictly binding character. They have a prognosis character, but they are coordinated both with a community budget, condition study, as well as with a local plan of space development. Communal economic programs are shaping sources of competitive advantages of communities [5].

The community self-authority is first of all responsible for all sphere of economy with public use character. In actual reality of local economy special meaning is given to these activities of self-government which are associated with creation of proper conditions for private business activities. In a local political and social system organs of territorial self-government has a special role to perform. They carry responsibility for certain spheres of economy, coordinate actions of economic subject, solve local conflicts, define goals of local development. Ac-

ording to contemporary legislation and economic solutions they are related to provision to people living on given area possibly the highest living level.

Natural conditions of development strategy found also a series of legal regulations. Among the most important in this respect there are:

— strategy of balanced development of Poland to 2025,

— 2nd ecological policy of the state,

— policy and principles of balanced development in strategic program in view of projects and concepts of space development policy, strategy of voievodships and selected sector projects,

— concepts of space development policy of the country,

— national plan of activities for health of environment,

— regulation of 8 Jan 2010 about energy law,

— regulation of 7 June 2001 about collective water supply and waste water discharge,

— regulation about nature protection,

— regulation of 27 March 2003 about space planning and development,

— construction law [6].

In local development resources of natural environment play essential role. Their meaning is indicated by M. Przewoźniak, by building three universal groups of potentials. They are selfregulating-immunological, resource-usage and perceptive-behavioural [7].

J. Parysek insists that space development is understood simultaneously as economy of space (shaping of structures) and management of functions. Thus its basic chains are among others [8]:

— geographic space treated as area for development,

— mineral raw materials, shaping material wealth of communities,

— land relief having impact on investment localisation, development of construction, agriculture, forestry and tourism,

— surface and underground water, shaping water resources of a community both in terms of microclimate as topoclimate, having meaning for development of local agriculture,

— soils, which classification influence the choice of a community strategy,

— plant and animal resources which shapes environmental value of the commune impacts on tourism development,

— others [9].

The above natural values found full development in the 2nd ecological policy of the state, in which particular attention is paid to:

— rationalization of water usage,

— lowering of material consumption and waste volume during production,

— lowering of energy consumption and increasing of rate of renewable energy sources,

- soil protection,
- enrichment and rational forest resources exploitation,
- protection of mining resources,
- waste management,
- water relations and water quality,
- air quality and climate change,
- town stress, noise, radiation, chemical and biological security,
- extraordinary environmental threat,
- biological and landscape diversity [10].

Natural conditions of local development strategy is confirmed by European law. According to accepted solutions government and local authorities are obliged to ensure environment protection through:

- allocating of production means in a way which is the least harmful to environment,
- providing of future or existed economic activity with required protection of natural elements or their parts,
- local investments in the range of purity of atmospheric air, water, biosphere and others.

The regulation of 27 March 2003 about planning and space development (Dz. U.03.80.717) put on communities an obligation to set destination and principles of area development. This causes that a commune is to develop two types of documents:

- study about conditions and directions of space development,
- local plan of space development.

The Study, according to art. 9 paragraph 1 of the Regulation about local planning and space development has a character of a strategic plan. It is an act of a local law binding internally. It is prepared for the area within administrative borders of the community. The resolution about creation of this document is made by a community board and the president (mayor) prepares its text and graphic part.

The Study is a document expressing the space policy of the commune, its resources of space development taking into account its conditions resulting among others from:

- 1) current designation, development and area infrastructure;
- 2) state of area orderliness and requirements for its protection;
- 3) environment state, including the state of agricultural and forest production space, volume and quality of water resources and environment protection requirements, nature protection and culture landscape needs;
- 4) state of culture heritage and monuments and contemporary culture goods;
- 5) conditions and quality of inhabitants life, including their health protection, etc [11].

The area development plan is an act of a local law. Necessity for its preparation both for village and municipal communities results from the need to define the directions of development of their spatial structure

in adopting to new needs. The decision about creation of area development plan is made by a community board and the president (mayor) creates its project. In the area plan, according to article 15 of the regulation it is obligatory defined:

- 1) designation of land and lines bordering areas of different destination or different principles of economic use;
- 2) principles of protection and shaping of spatial orderliness;
- 3) principles of environment, nature protection and culture landscape protection;
- 4) principles of protection of cultural heritage and memorials of contemporary culture goods;
- 5) requirements resulting from needs of public space shaping etc [12].

One of the basic instruments of local development management is a strategy. It is a programme for setting goals and intentions of organizations and for directions of activities, with relation to environment reaction. A strategy as a local development concept fulfils a series important functions i. e.:

- enables more effective development of local resources: human, natural, and capital,
- indicates weak points of the community and identifies threats for local development,
- provides a stable direction of development of a self-government unit, in its fundamental assumptions, independent of political option from changing local authorities,
- sets and increases cohesion of decisions made by local authorities, is an action plan for local authorities and indicator of current actions.
- it's an important element of education of local society, increases sense of local identity, etc.,
- increases community chances on getting additional supporting means from outer sources [13].

The above implies that a strategy is a certain concept of systematic action consisting among others, in: formulating the set of prospective development goals and their modification according to changing conditions both internal as external, setting necessary human goods, financial and natural resources required to achieve assigned goals, defining ways of procedure ensuring realizing development goals and optimum use and allocation of resources.

Depending on strategic goals and their addressees, the particular function fulfil various roles. The polity change in Poland, the process of building of a democratic state of law, new economy based on market economy and legally based property cause that currently there is strong emphasis on information, coordination and promotion functions, although not meaningless are regulation, control and simulating functions.

The strategy of community development, fulfilling regulating, control and stimulating functions, possesses the following features:

— innovativeness because it is based on looking for new connections between ongoing social, integration and politic changes,

— programmability expressed by owning precisely planned and integrated development concept,

— usability, because it allows to realize plans according to schedule, concerning for example preventing unemployment, attracting investors etc.,

— institutional partnership perceived through cooperation with other subjects, for example powiat self-government [14].

From the above considerations it can be concluded that for the community self-government development it is essential to obey the following principles: concentration of means; programming of development; broad partnership; summability of means; complementarity of actions; subsidiarity; coordination; compatibility; cohesion; monitoring and evaluation. There is a difference between these three terms associated with stages at which there is a certain procedure. Evaluation is made before (ex ante), monitoring — during the program, evaluation — after (ex post) [15].

2. Profits of local self-government units from construction of wind farms and realization of public tasks by units of local self-government

Wind energy is currently a dynamically developing sector of energy industry in the world. Poland having problems with diversity of energy sources started to perceive these opportunities not sooner than in 1990s.

Necessity of development of this energy source as an important chain of execution of balanced development of the country and region is noticed by everybody. Profits brought to state by development of wind energy are also meaningful. There are many arguments: technological progress, eco-technology, development of local and regional labour market and building its competitiveness toward surroundings; increasing of energetic security of the state, including diversification of energy sources and limiting of harmful pollutions.

In this way Poland can essentially add into realization of 2009/28/WE Directive, and power consumption can increase from nearly 15 % to about 62 % in 2020, and its share in gross final energy consumption can reach amount of 3,8.

Limiting or direct reduction of greenhouse gases is currently a challenge for civilisation, but it is not the only one positive environmental effect of wind energy. Adding economic aspect to these considerations, it is worth noticing that basing on technology of electricity production from wind and coal it can be approximated the total reduction of greenhouse gas emission in 2020 at 47 million tons and 92 million tons in 2030 [9]. These values can be translated into so called external costs which are responsibly: 8,735 million € in 2020 and 17,206 million € in 2030. Thus taking into account national, regional and local labour market and economic activity of self-government communities it would be that wind energy share in total energy

consumption, shaped by market, aimed at direction of full diversification of produced energy.

Ecological profits in wind energy production are huge and in short review they include:

— reduction of greenhouse gases emission, including carbon dioxide (CO₂), (in 2020 about 30 million tons to nearly 65 mil tons in 2030),

— air quality improvement, avoiding sulphur dioxide emission to (SO₂), NO_x and dust to atmosphere,

— avoiding solid and gas wastes, wastewater, water and soil pollution, area degradation and water system losses which take places during energy production in conventional power plants and thermal power plants,

— technology without pollution, most often ecotechnology,

— technology which does not need vast areas comparing to conventional technologies (areas occupied by mines, thermal power plants, transport lines for raw material supplies), its use causes the least impact on ecosystems among known technologies [16].

It is also important that wind power plants occupy little space (a turbine needs only about 250–450 square metres) and can coexist with other types of activities such as agriculture or horticulture. It helps in balanced development and energetic security — a 1.5 MW wind turbine can produce energy necessary to supply 400 houses all year round; a 100 MW wind farm working for 20 years eliminates consumption of nearly one million tons of coal or 600 billion cubic metres of natural gas [17].

Local/regional development which takes into account investment in wind farms should go in the following economic categories: economic; social; psycho-social; cultural; technological; and political [18].

It is necessary to notice that data about budget realization by territorial self-government units have not proved pessimistic announcements about remarkable worsening of self-government financial situation. The dynamics of revenue decrease in 2010, caused among others by flow of funds from the European Union to budgets of territorial selfgovernments units says that it is a fact that their increase followed after the end of investment. Apart from it, for example 2010 was a period of intensive work on infrastructure development, and spendings in this segment reached 43,3 bil PLN.

The above data means that 19.7 billion was spent by communities, 12.7 billion by powiat towns, 5.2 billion by powiats and 5.7 billion by voievodships. For comparison, it is estimated that until 2020 investment spendings on wind energy will be close to 23 billion PLN, comparing to over 80 billion for total investment. Wind farms do not influence the cost of land, which in Poland varies between 20–40 thousand of PLN.

For example an area of grounds to be sold (ha) and average transaction price (zł/ha) in Communities of Karlino and Gościno (Voievodship of Zachodniopomorskie) between 2000–2011. Installation of a wind power plant of 90 MW in 2008 in Community of Dobrzyń (Voievodship of Kujawsko-pomorskie), or

Community of Kisielice (Voievodship of Warmińsko-mazurskie) the price of 1 ha, is a sum of about 18–27 thousand according to data from 2011.

Construction of wind turbines brings profits to investors, but also a lot of profits to communities. They are solid profits mostly in form of construction tax, that is 2 % of multimillion values of constructed buildings. Additionally, a community has profits from its share in PIT and CIT taxes if a company is registered at the community's territory. Then comes money from a lease rent and shares in profits. Apart from these measurable profits, communities take advantage from investor participation in technical infrastructure (road quality improvement, rebuilding of crossings, building of roads to wind turbines, which can be used by farmers) social infrastructure associated with education (improving of education infrastructure, building of sport stadiums, ice rinks etc.). Some example of economic and social profits of communities in association with localisation of wind companies are as follows:

Table 1

List of selected wind farms in Poland for analysis

Location	Installed power [MW]	Number of turbines	Date of start
Jagniątkowo	30,6	17	2007
Kamieńsk	30	15	2007
Karcino	51	17	2010
Kisielice	40,5	27	2007
Margonin	120	60	2010
Piecki	32	16	2011

Source: *Inwestycje w energetykę wiatrową. Oddziaływanie na rozwój gmin i lokalne społeczności. FUNDEKO, Warszawa 2012, p. 3.*

Incomes to community budget because of existence of wind farm (excluding Margonin and Kobylnicy) reach nearly 6,1–6,2 % total income these territorial self-government units (total incomes are: own income, general subvention, educational subvention and donations).

From available data (Report by Ernst&Young – March 2012) it results that a statistical wind farm brings about 653 thousand PLN of income for a community because of real property tax which constitutes on average about 2 % of income of communities in Poland. For example the Community of Wolin (Voievodship of Zachodniopomorskie) has a budget of 36 mil of which over 2 million PLN comes from a tax from 32 wind plants. It enables the community authority running investment of 3 million annually, associated for example with construction of a sewage-treatment plant, leading water to two locations. Means gained from wind farms prevented liquidation of 7 schools. Additionally, the community obtained a bus worth 150 thousand PLN from investor for free, to transport handicapped people [19].

The Community of Mściwojów has a budget of about 14 million PLN. A wind farm of 23 wind plants supplies this budget with over 2 million annually. It enables selfgovernment organs to plan investments concerning: modernization of school building, office computerization, building of sewage system and sewage-treatment plant.

In the Community of Potęgowo there are located 6 wind plants of 2 MW each. Under the regulation of the community President No 90/2010 the budget of the community in 2011 reached 24,130,923 PLN, and real estate tax (from farms) is a sum over 500,000 PLN.

Table 2

Basic factors of communities concerning their spendings

Item	Community name	Total spendings in thousands of zł in 2010	Investment spendings	Share in total spendings [%]	Spendings per capita
1	Kamieńsk	38 140,20	7158,1	18,77 %	4 271,92 zł
2	Wolin	25943,4	6588,4	25,40 %	3 087,27 zł
3	Filipów	12284,5	1194,5	9,72 %	2 731,09 zł
4	Kisielice	21466,4	3246,7	15,12 %	3 481,41 zł
5	Kołobrzeg	37904,4	15511,3	40,92 %	3 829,11 zł
6	Margonin	31228,4	10777,1	34,51 %	4 808,82 zł

Source: Own calculation basing on data of GUS.

While analysing the regulation No III/19/2010 of 29 Dec 2011 by the Community of Kobylnica President, it can be noticed that its budget amounted to 53,701,587 PLN where income from local fees for existing 24 wind plants is a sum over 2,000,000 PLN.

The Community of Kobylnica, in relation of the President Leszek Kuliński, will get from the investor of a wind farm during 2012–2013, nearly 5 million for community roads, and get co-financing of cultural

and entertainment, support of sports club and even building of a chapel in Lulemin [20].

It is worth noticing that the Community of Karolino, where 51 wind plants of 1.5 MW is located, gets additional income. The President of Community, Waldemar Misko analyzing the budget for 2012 indicated that on income side there is nearly 61 million PLN. Investments amounts to nearly 18 million PLN, from which 10 million PLN are from EU means. Among

real estate tax payers a solid item in the budget are means obtained because of functioning of wind plants in amount over 4 million PLN [21].

The analysis of these few examples indicates that communities where wind farms work have fixed incomes in the budget reaching nearly 10 % of their incomes. It lets self-government organs manage substantial amounts for development of technical, social, ecological, and security and public order infrastructure.

A special study of possible impact of wind farms on economic and social profits of local self-government communities is Margonin in the Voievodship of Wielkopolska. There are 60 wind plants of 120 MW total power. They are located in area of: Dębiniac (1), Kowalewo (4), Lipiniec (2), Lipiny (13), Margońska Wieś (5), Próchnowo (22), Sypniewo (1), Zbyszewice (1), Studźce-Adolfowo (3), Radwanki (7), and Klotyldzin (1).

They are generators by GAMESA, 2 MW each, installed on steel towers 100 m over ground level. They are equipped with a generator producing current of 690 V and internal transformer changing voltage to 30 kV. For the needs of this current the investor rebuilt energetic line between GPO Sypniewo and GPZ Piła/Krzewina, changing existing 110 kV power line to double wire power line of 110 kV (line plus poles).

The new built GPZ improved power supply conditions of the Community of Margonin and adjacent ones. It made possible to run a paper mill factory in the community employing finally nearly 150 workers (data obtained from the Community Office) [22].

Income increase, mostly in form of real estate tax of 2 % from value of arisen structures is growing systematically and it is presented by Table No 3.

Table 3

Income of the Community of Margonin from wind farm in 2010–2012

	2010	2011	2012 — planned
Community of Margonin total income	25,098,592	26,317,240	23,965,568
Including: Real estate tax	5,270,150	6,034,796	7,548,500
Including: 2 % tax on wind plant building	3,331,319	3,956,974	4,711,993

Source: data obtained from the Community Treasurer.

It is also worth to mention that increase of income to community budget because of land tax associated with economic activity (price depends on the land area and tax rate set by the Community Council) in case of Margonin amounts to about 40 thousand PLN.

Not without meaning there is also improvement of communication infrastructure — a road about 20 km long. Investment realized in the area of community in 2011 and 2012 is linked with modernizing, reconstruction of community road network being access

to wind plants, which are used also by other road users, including local society. Road surface is hardened with breakstone 30 cm thick put on a geofibre 5 m wide. Only in 2010 Relax Wind Park company paid compensation for destroyed roads to the community budget of 1.600.062 PLN.

Additionally investor (owner) takes active part in social life of the community, participating in some its undertakings. In the Community of Margonin it concerns: sponsoring of a sports club and local events; equipping of schools in electronic devices; organizing of contests; funding of scholarships etc. Their total costs exceed thousands of zlotys annually, thanks to means arising from taxes on wind farms the market square of Margon was rebuilt, sports and event hall was built and a water ski tow was built at the Lake of Margonińskie.

Among economic and social benefits for local selfgovernment community there is evident increase of welfare of community inhabitants. All wind plants are localized on private land so about 50 families have profits from the functioning farm.

The average amount (agreements are covered with commercial confidence so they surely differ between particular farmers because of road length, area of assembling and maneouvering plan and other conditions) is over 15 000 PLN brutto for one plant, which totally gives amount over 1 million PLN. It must be noticed that big turbines (1–2 MW) mostly occupy area about 200–300 m², foundation (2–2.5 m deep) 500–1300 m² for maneouvering yard, which totals to about 15 acres (0.15 ha) and if we add an access road through fields, than a wind plant covers about 0,2 ha of grounds [23].

3. Development of local labour market and human capital shaped by OZE.

Among legal regulations concerning OZE, there are also such which refers to production of energy by agriculture. One of them is biomass that is a substance of plant or animal origin and various wastes originating as a result of so called social metabolism. The main suppliers of biomass are: agriculture, forestry, communal economy of territorial self-government units [24].

One of Polish legal acts directed at use of biomass is a regulation by Ministry of Economy of 14 Aug 2008. Basing on this regulation, biomass used in energy production is divided into three basic components ie. solid biofuels, gas biofuels and liquid biofuels.

In Poland the technical potential of biofuels is estimated at about 684.6 PJ annually, of which the biggest share — 407.5 PJ is contained in solid biofuels. Their resources contain excess biomass achieved from:

- agriculture — 195 PJ
- forestry — 101 PJ
- orcharding — 57.6 PJ and
- wood industry wastes — 53.9 PJ.

Northern and western Poland possesses big potential of biomass because of excess of straw in farms, also northern, north-east and north-west regions of

the country have the biggest possibilities to use biogas from animal wastes.

According to analysis of the European Centre for Renewable Energy, the technical potential of wood and its wastes from forests and orchards, possible to use in energy sector amounts to 8.81 million tons while excess of straw for energetic use amounts to 7.84 million tons annually [25].

Biomass, the third as to amount energy source in the world, constitutes meaningful substitute of mine fuels, especially coal. It was calculated that 2 tonnes of biomass are roughly equal 1 ton of coal. It must be noticed that natural environment has limited ability to receive pollutions arising in burning of mine fuels. So burning biomass together with coal positively impacts reduction of CO₂, SO₂, NO_x and organic pollutions. There is growing demand for high quality factories prepared for burning of biomass. While in 2006 there were 32 then in 2010 there were 43 of high efficiency power plants — thermal industrial power plants.

Poland has good conditions to wind energy industry. There are 9 wind zones and the most favourable conditions are present in the following regions: Zachodniopomorskie, Pomorskie and Kujawsko-pomorskie, Warmińsko-mazurskie and Wielkopolskie, where the energy zone ranges between 1500–2000 kWh/m²/year [26].

According to accession treaty Poland is obliged to increase share of RES in sources of electric energy to 15 % in 2020. Without proper investment into distribution and transmission infrastructure, reaching this goal will not be possible.

The number of wind plants in Poland is growing successively as well as their power. While in 2011 there was about 920 MW, then in 2015 it is planned to reach nearly 6000 MW.

It is estimated, for example basing on 2011 that full time work places generated by wind energy was ~1,911 and estimated value of income tax from physical persons reached amount ~10 million PLN. The biggest income of 4 835 million PLN will flow to state budget, 3 897 million PLN to community budget, 1 015 million PLN for powiat and only 159 thousand PLN to voievodship. The average CIT tax per 1 MW of power installed in wind farms is nearly 98.2 thousand in 2011. It means, that public sector gained about 158,6 million PLN of income tax charging profit from sales of electric energy produced by wind farms. The state budget will be supplied with 122.3 million PLN, voievodships with 23.4 million PLN, while for communes 10,642 and powiats 2,220. By 2020 the CIT tax per 1 MW is a sum of over 1 billion PLN

It should be noticed that legal solutions concerning RES can positively influence the labour market, especially in a sector producing devices for renewable energy, in construction sector associated with building or rebuilding of producing units, in bank sector supplying services associated with certification of RES in-

stallers and installation of microinstallation, and in a sector producing and selling biomass for energy sector.

Conclusions:

— in 2020 wind power plants will be the cheapest renewable energy source — technology in which the costs of energy production will be compared to costs of energy production in functioning nuclear power plants. According to information 2/2012 by President of URE of 8 Feb 2011 unit substitute fee after its valorization amounts 286.74 zł in 2012. Unit price for electric energy produced OZE, also in wind plants is about 450–470 zł/MWh.

— Forecast for development of wind energy predicts instalment of power about 13 GWe in 2020 — including 11 GWe in land wind farms, 1,5 GWe in sea wind farms 600 MW in small wind plants. Thus innovation is estimated at 23 billion PLN in 2020.

— Forecast says that a share of wind plants in production of electric energy will be quickly increasing to 17 % in 2020 and nearly 29 % in 2030.

— Reduction of CO₂ emission to the atmosphere due to wind energy will amount 33 mil tons in 2020 with further increase potential to 65 million tons in 2030.

— Forecast for increase of employment number in wind energy is from over 2000 persons (equivalent of full-time jobs) in 2008 to 66 thousand. Tax from legal persons (CIT) in 2020 should reach 1,068,813 thousand PLN, and estimated value of personal income tax (PIT) paid by employees of wind energy sector — 80,539 thousand PLN.

— Development of wind energy will influence local economic activeness. In 2020 community budgets can expect even 212 million zł/year (about 2 % of total income of rural communities, and in communities with proper wind condition even to 17 %).

— Income of leaseholders (farmers) from areas designated for wind plants in 2020 can reach over 100 million zł/year.

Bibliography

1. Park R. E. Human Ecology / R. E. Park // American Journal of Sociology. — 1936. — Vol. XLII. — P. 4 and next.
2. Ibidem, p. 412; also: Mikołajczak-Bezak H., Wybrane zagadnienia ustroju Polski. Sity zbrojne w Rzeczypospolitej Polskiej, Warszawa 2000, p. 56; also: Kojder A., Łojko E., Staśkiewicz W., Turska A., Elementy socjologii prawa. Prawo zwyczajowe. Wybór tekstów, vol. 5, Warszawa 1993, p. 407 and next.
3. Wojnowski K. (editor), Poznawanie społeczności lokalnych. Ludzie. Potrzeby, Leszno 2001, p. 8 and next.
5. Wojciechowski E., Zarządzanie w samorządzie terytorialnym, Warszawa 2003, p. 42 and next.
6. Potoczek A., Polityka regionalna i gospodarka przestrzenna, Toruń 2003, p. 139 and next, also: Wojciechowski E., op. cit. p. 57 and next.

7. Papuziński A. (editor), *Polityka ekologiczna państwa 1989–2000* [w:] *Polityka ekologiczna III Rzeczypospolitej*, Bydgoszcz 2000, p. 41 and next.
8. Pająk K., *Samorząd terytorialny i jego wewnętrzna transformacja*, Toruń 2011, p. 38 and next.
9. Parysek J., *Podstawy gospodarki lokalnej*, Poznań 2001, p. 203.
10. Macias A., *Przyrodnicze uwarunkowania rozwoju lokalnego*, [w:] J. Parysek (red.), *Rozwój lokalny i lokalna gospodarka przestrzenna*, Bogucki Wyd. Nauk. 1996, p. 71 and next.
11. Papuziński A. (editor), *op. cit.*, Bydgoszcz 2000, p. 34 and next.
12. Ustawa z dnia 27 marca 2003 r. o planowaniu i zagospodarowaniu przestrzennym, *Dz. U.* from 2003, No 80, pos. 717, Niewiadomski Z., *Planowanie przestrzenne. Zarys systemu*, Warszawa 2003, p. 92.
13. Leoński Z., Szewczyk M., *Zasady prawa budowlanego i zagospodarowania przestrzennego*, Bydgoszcz-Poznań 2003, p. 70 and next.
14. Nowakowska A., *Strategia jako narzędzie stymulowania rozwoju gmin*, [w:] Jewtuchowicz A. (editor), *Strategiczne problemy rozwoju miast i regionów*, A. Łódź 2000, p. 87.
15. Pająk K., *Samorząd*, *op. cit.*, p. 115.
16. *Ibidem*, p. 102.
17. Eeves E., *Energia przyszłości*, «Forbes», <http://gospodarka.gazeta.pl> [Access date 17.10.2007].
18. Ministerstwo Środowiska, *Program rozwoju energetyki wiatrowej w Polsce na lata 2002–2005*, Warszawa 2001, p. 56.
19. Chądzyński J., *Rola organizacji pozarządowych w rozwoju lokalnym*, [w:] Jewtuchowicz (editor) A., *Wiedza, innowacyjność, przedsiębiorczość a rozwój regionów*, Łódź 2004, p. 246.
20. Based on data from the Community Board; also: *Inwestycje w energetykę wiatrową. Oddziaływanie na rozwój gmin i lokalne społeczności*, FUNDEKO, Warszawa 2012, p. 11.
21. Based on budget resolution of the Community of Kobylnica and information received from Leszek Kuliński, Community President.
22. Based on budget resolution of the Community and interview of Mayor Waldemara Misko, for local media.
23. Based on information received from Mayor Janusz Piechocki and data from the Investment Department of the Community of Margonin.
24. Based on data received from Danuta Bogacz, Community Treasurer.
25. Wereszczaka J., *Grunty orne a produkcja biomasy w Polsce na tle polityki Unii Europejskiej*, «Czysta Energia», No 5 (93), 2009.
26. Śródkowski Ł., *Czy na biomasie można zarobić? W jaki sposób można założyć i prowadzić plantację?*, «GLOBEnergia», No 4, 2008.