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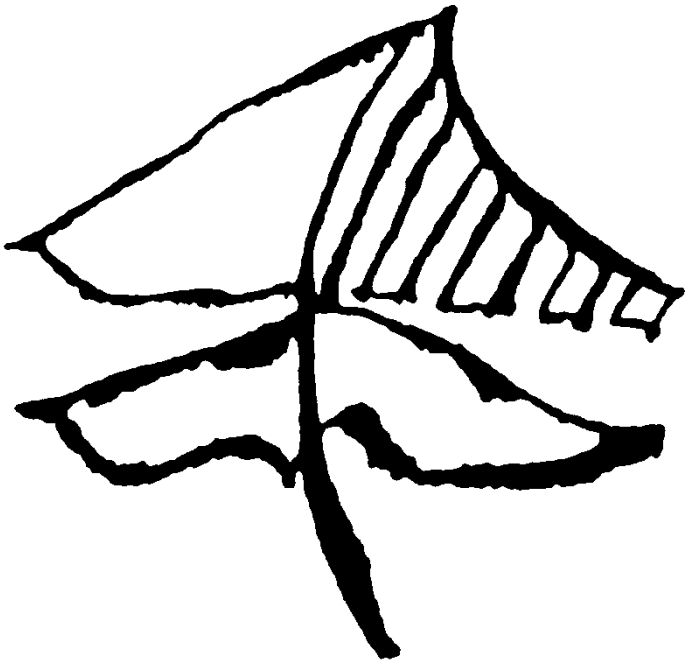

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Wojciech Lis

Iwona Bąk, Wojciech Zbaraszewski[1]

ANALYSIS OF DYNAMICS AND FLUCTUATIONS OF TOURIST TRAFFIC IN NATIONAL PARKS. A CASE STUDY: WOLIN NATIONAL PARK AND TATRA NATIONAL PARK

Abstract: The article presents results of the econometric modeling of tourist traffic based on time series models with seasonal fluctuations over the 2000-2014 period. The study's subjects were two of the most visited Polish national parks, both by Polish and foreign tourists, i.e. Wolin and Tatra National Park. The study showed that tourism in these parks was relatively stable, the maximum increase in the number of tourists was recorded in July and August, and the biggest decrease in December and January. This demonstrates the strong seasonality of tourism phenomena, conditioned more by the time of year than the location.

Key words: national park, tourism, seasonality, Wolin National Park, Tatra National Park.

INTRODUCTION

Currently, environmental circumstances are increasingly respected in managing of the tourism development. Areas with the highest natural values are developed for tourism purposes. There are approx. 209 000 protected areas, which comprise 15.4% of land surfaces and inland waters, 3.4% of ocean surface and 8.4% of marine areas [World Database on Protected Areas]. Approximately 1/3 of Poland's area has been recognized as valuable and worthy of protection [Ochrona Środowiska 2014]. Out of various forms of nature conservation functioning in that country, national park is considered to be the highest one. It covers an area of at least 1,000 ha, distinguished by special natural, scientific, social, cultural and educational values. The overall objective of national parks is to preserve biodiversity, resources, formations and elements of inanimate nature and landscape, restoring proper state of resources and elements of nature [The Act on environmental protection, 2004, art. 8]. Since 2011, that is from the date of establishment of the youngest National Park "Warta River Mouth", there are 23 national parks functioning in Poland. Their average area is 13.8 thousand ha. The area of national parks is available to tourists for educational, cultural and recreational purposes, as far as it allows to fulfill the priority of national parks, that is to protect nature. Tourist access to the park area produces a wide variety of problems, including the necessity of creating additional infrastructure, mastering excessive frequency, reducing the undue negative impact of tourism on nature.

Every year national parks in Poland are visited by about 11.4 million tourists [Ochrona Środowiska, p. 287]. However, this figure is estimated and obtained by different methods in different national parks.

Studies of the size and structure of tourist traffic, so far conducted in Polish national parks, primarily related to tourist traffic on selected hiking trails [Dzioban K. 2013; Wieniawska-Raj B. 2007; Prędki R. 2006; Partyka J. 2002], and occasionally covered the entire territory of the park. There is a lack of studies on the comparative analysis of tourist traffic, its seasonality and trends in several national parks. Although the literature points to the significant seasonality of tourist traffic in Polish national parks, this phenomenon has not been subjected to the econometric modeling. The authors of this study are trying to fill this existing gap. Therefore, the aim of this study is to identify current trends and seasonality of tourist traffic on the example of two national parks. Selected national parks – Tatra National Park (TNP) and Wolin National Park (WNP) – are among the most

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frequently visited parks in Poland, but of a completely different location (the first is a mountain park, and the other is a seaside park). The paper presents results of the econometric modeling of tourist traffic on the basis of time series models with seasonal fluctuations over the 2000-2014 period. Quantification and analytical description of seasonal fluctuations may be important for stakeholders, managers of parks, inhabitants of a park, companies operating in the tourism industry in the area of parks, local government.

DESCRIPTION OF POLISH NATIONAL PARKS

Polish national parks (NPs) had been developing for more than 80 years. The first polish national park (Białowieża National Park) was created in 1932, and the last one (Warta River Mouth National Park) in 2001. Total surface of parks was stabilized in recent years at the level of 314.6 thousand ha., which is approximately 1% of Poland's surface. Polish parks are dominated by forests, except for Biebrza, Slowinski, Poleski, Warta River Mouth and Narew, where the forested area represents less than 50% of the entire surface. The strictly protected surface represented approx. 1/5 of the total surface of all parks [Ochrona środowiska, p. 285]. The majority (15 of 23) of Polish parks was granted II category according to the *International Union for Conservation of Nature (*IUCN).

The role of a national park include: (1) conducting conservation activities in the national park's ecosystems, (2) making the surface of the national park available, under the terms specified in the plan of protection or conservation tasks, (3) conducting activities related to environmental education. Thereby, it can be stated that parks are open to the public. The openness involves making the park surface available to tourism, science and education. However, it should be subordinated to the protection of the resources contained within.

DESCRIPTION OF A TOURIST TRAFFIC IN POLISH NATIONAL PARKS

National parks include the most attractive polish natural areas, and therefore are very popular among visitors and are a place of significant touristic concentration. It is evidenced by the increase in the number of visitors in national parks. The number of visitors over the 1990 – 1999 period was at the level of approx. 9 million visitors a year. A noticeable increase in the number of NPs' tourists, to approx. 11 million visitors a year, can be seen from 2000 onwards and afterwards, what is shown in Chart 1.

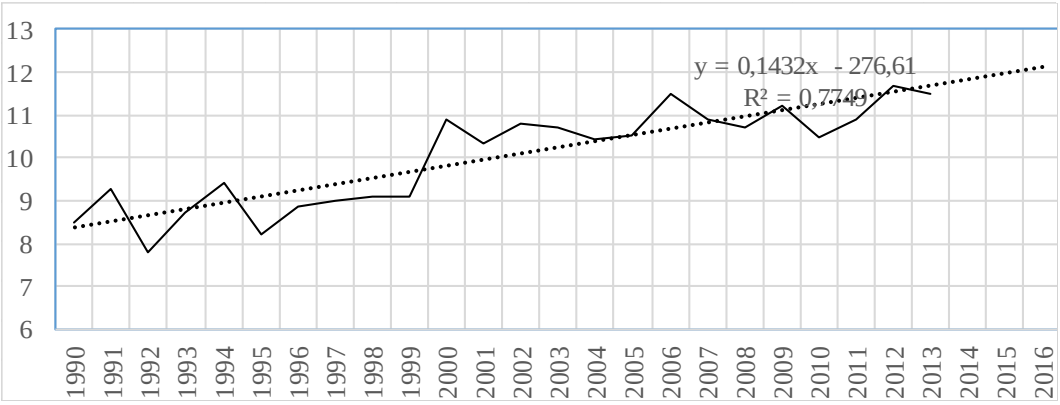

Chart 1. The number of tourists [mln] in polish national parks in the 1990-2013 period.
Source: own study based on Ochrona środowiska, GUS, Warszawa za lata 1991 – 2014.

The significance of the study of tourist traffic in NPs is demonstrated not only by the noticeable increase in the number of tourists in the analyzed period, especially since 2000, but also the function of the trend line, in the form: $\hat{y} = 0{,}1432x - 276{,}61$ with a good model fit (R2=0.7749).

The intensity of tourist traffic in Polish NPs is showed by the number of 11.4 million tourists, who in 2013 have visited these attractive natural areas. That is approx. 36 people per 1 hectare of NPs in the country. The attendance in individual national parks was varied and in 2013 amounted from 15-19 thousand people a year, as seen in table 3, in Narew and Drawa National Park, to more than 2.7 million people in TNP. A large number of tourists (more than 1 million tourists a year), except for TNP, is also recorded in: Karkonoski (approx. 2 million), WNP 1.5 million people and two suburban parks – Kampinoski and Wielkopolski – respectively 1.0 and 1.2 million tourists.

The number of hiking trails in NPs has increased by 23% in the period of 8 years (from 2005 to 2013), and in 2013 they have reached a total length of 3,629.8 km. The longest total length of hiking trails in 2013 occurred in the largest NPs. In Kampinoski NP the total length of hiking trails amounted to 550 km in 2013, in Biebrza NP 498 km, and in Bieszczady NP 465 km. The largest growth rate in the length of hiking trails in the 2005 – 2013 period has occurred in Poleski NP (a threefold increase in the length of hiking trails). A significant, double increase in the length of hiking trails has also occurred in the Gorce NP, and 70% in Bieszczady NP.

The tourist infrastructure in Polish NPs in 2013 was composed of: 27 chalets, 6 holiday homes, 28 campgrounds and bivouacs, 336 rain shelters, 44 km of pistes, 4 stadiums, 5 chair lifts, 18 ski lifts, 3 performance routes and 3,629.8 km of hiking trails. Except for the latter, these objects are not present in Bory Tucholskie NP, Narew NP and in Warta River Mouth NP.

Tourism in NPs forces creation and development of the necessary infrastructure, increased traffic and noise. Excessive tourist traffic is often the cause of many problems, especially conflicts between the implementation of conversation tasks and strictly tourism objectives. One of the visible effects of using national parks for tourism objectives is an excessive number of visitors, which causes exceeding of the permitted capacity of hiking trails and consequently unfavorable changes in nature, leading even to devastation of the natural environment. The intensity of the phenomenon of tourist traffic is affected by the seasonal fluctuation of the movement. It creates a number of significant difficulties for parks and tourist service companies, and especially affects human resources management, which affects the quality of service and the company's image. Therefore, the analysis of seasonality of tourism is an important issue.

THE ANALYSIS OF TOURIST TRAFFIC SEASONALITY IN THE WOLIN NATIONAL PARK AND IN THE TATRA NATIONAL PARK

WNP and TNP undoubtedly belong to the group of Polish NPs with the largest number of visitors. Despite the different location (the seaside park and the mountain park), they are characterized by the similar number of visitors per 1 hectare (130 tourists in WPN to 137 tourists in TNP). Furthermore, both parks are located in the outer Polish borders, with Germany (WNP) and with the Czech Republic (TNP). Tourist attractions in WNP include, among others, the enclosure of European bison and the museum of nature. Tourist traffic in paid facilities of WNP, in the 2000-2014 period, was characterized by a decreasing trend. In the case of the enclosure of European bison, the number of visitors has decreased by approx. 30% in 2013-2014 compared to 2000. A significantly bigger number of tourists than in 2000, recognized as the base year, was recorder in 2004-2005. A decrease of the number of tourists in the museum of nature was even bigger and it reached only 44% of the base year in the last analyzed year[2]. Thus, the tourist movement in paid

[2] Obliczenia własne na podstawie danych WPN.

facilities of WNP was characterized by the opposite trend rather than a noticeably increasing trend observed in the case of the summary of tourist movement in all Polish NPs.

Tourist traffic in TNP was characterized by different dynamics compared to the tourist traffic in WNP. Although, TNP charges a fee for entrance to the park, not only to facilities as in the case of WNP, we can see a slight increase of visitors in 2013 compared to 2000. Tourist traffic in the mountain park in the last years has been established at approx. 2.1 million tourists per year, and only in the 2001-2005 period (except for 2013) the number of tourists in TNP was lower than 2 millions. In addition, there is a noticeably decreasing diversity of tourist traffic in TNP in the analyzed period. It is evidenced by the value of the coefficient of variation, which for tourist traffic in 2000-2014 amounted to 23.43% in the museum of nature, 11.05% for the enclosure of European bison, and in the case of TNP its value stood at 1.27%[3].

It is assumed that seasonality is one of the most visible and problematic features of tourism [BarOn 1975, Bigović 2001]. Regardless of the location and type of destination, it plays a part in the structure of tourist supply and demand [Borzyszkowski 2014, p. 167]. It often creates an imbalance of tourism – during the high season it can lead to the abuse of tourist resources, thus contributing to a number of environmental, social and cultural problems [Mathieson and Wall 1982]. Positive effects of seasonality in tourism are also emphasized in literature. For example, the period after intensive exploitation of tourist resources during the peak of tourist season can be suitable to "refresh" the given destination [Butler 1994]. In addition, continuous intensive use of tourist resources could pose a threat to tourist attractiveness of visited places. This situation applies to environmentally valuable areas, which include national parks. Therefore, it is reasonable to analyze the temporal diversity of tourist traffic in that area. Seasonality of tourist traffic in NPs is primarily associated with seasons, weather conditions and periods without school and university classes. Seasonality of the tourism demand cannot be eliminated, but it can be significantly reduced. Due to the huge significance of this issue, it is very important to accurately measure seasonal fluctuations based on, among others, econometric models with seasonal fluctuations.

Polynomial and exponential models are used most commonly to describe the development of economic variables with seasonal fluctuations. The general form of the time series model with changing parameters is as follows:

$$Y_t = \sum_{j=0}^{r}\sum_{k=1}^{m}\alpha_{jk}t^{j}Q_{kt} + U \quad , \qquad (1)$$

where:

Y_t – endogenous variable,

α_{jk} – seasonally changing trend parameters,

t_j – j-th power of the time variable,

Q_{kt} – zero-one variable, which takes the value 1 in the k sub-period and zero in the remaining sub-periods,

r – the maximum degree of the polynomial,

m – the amount of periods.

The seasonal component is not directly visible in the above model. The model that demonstrates this component is as follows::

$$Y_t = \sum_{j=0}^{r}\alpha_j t^{j} + \sum_{j=0}^{r}\sum_{k=1}^{m} d_{jk}t^{j}Q_{kt} + U \quad , \qquad (2)$$

[3] Own calculations based on data from TNP.

under the condition:

$$\sum_{k=1}^{m} d_{jk} = 0 \quad , \qquad j = 0, 1, \ldots \tag{3}$$

Relationships between parameters of model 1 and 2 are as follows:

$$\alpha_j = \frac{1}{m}\sum_{k=1}^{m}\alpha_{jk} \quad , \qquad d_{jk} = \alpha_{jk} + \alpha_j \tag{4}$$

If at least one d_{1k} parameter significantly differs from zero, we are dealing with a model with a variable component of seasonality (Zawadzki 1995, p. 63).

To describe the development of ticket sales in WNP and TNP on a monthly basis, the following methods were used:

1. the trend line with a constant seasonality:

$$Y_t = \alpha_0 t + \alpha_1 t + \sum_{k=1}^{m} d_{ok} Q_{kt} + U_t \tag{1}$$

2. quadratic linear trend with a constant seasonality:

$$Y_t = \alpha_0 t + \alpha_1 t + \alpha_2 t^2 + \sum_{k=1}^{m} d_{ok} Q_{kt} + U_t \tag{2}$$

3. third degree linear polynomial with a constant seasonality:

$$Y_t = \alpha_0 t + \alpha_1 t + \alpha_2 t^2 + \alpha_3 t^3 + \sum_{k=1}^{m} d_{ok} Q_{kt} + U_t \tag{3}$$

4. exponential trend at a constant growth rate with a constant seasonality:

$$lnY_t = \alpha_0 t + \alpha_1 t + \sum_{k=1}^{m} d_{ok} Q_{kt} + U_t \tag{4}$$

5. exponential trend at variable growth rate with a constant seasonality:

$$lnY_t = \alpha_0 t + \alpha_1 t + \alpha_2 t^2 + \sum_{k=1}^{m} d_{ok} Q_{kt} + U_t \tag{5}$$

6. exponential third degree polynomial with a constant seasonality:

$$lnY_t = \alpha_0 t + \alpha_1 t + \alpha_2 t^2 + \alpha_3 t^3 + \sum_{k=1}^{m} d_{ok} Q_{kt} + U_t \tag{6}$$

Time series on sales of tickets in WNP and TNP were created based on the monthly data from the 2000-2014 period, then econometric models were estimated, according to the above equations. The study involved three variables:

Y_1 – tickets sold to the enclosure of European bison in WNP,

Y_2 – tickets sold to the museum in WNP,

Y_3 – tickets sold to TPN.

The degree of model fit to the empirical data was assessed for each model, i.e. it was examined whether the models adequately explain the formation of the dependent variable. Only the best models were selected to describe the variables, i.e. with statistically significant assessments of parameters and a high degree of fit.

The study showed that the Y_1 variable, i.e. the number of tickets sold to the enclosure of European bison, was best described by the trend line with a constant seasonality (R^2=95,74%):

$$\hat{Y}_1 = 12719{,}0 - 16{,}4t - 10712{,}5Q_{1t} - 10113{,}5Q_{2t} - 10171{,}0Q_{3t} - 8659{,}3Q_{4t} + 4061{,}4Q_{5t} +$$
$$+ 10283{,}4Q_{6t} + 29447{,}7Q_{7t} + 26803{,}1Q_{8t} - 2727{,}4Q_{9t} - 8195{,}5Q_{10t} - 9856{,}0Q_{11t} - 10160{,}5Q_{12t}$$

The estimated model shows that the maximum increase in the number of tickets sold was in July and August, and the largest decrease in December, January and February.
The best fit of Y_2 variable, i.e. the number of tickets sold to the museum in WPN, was obtained by the model at a constant growth rate with a constant seasonality (R^2=95,88%):

$$\ln \hat{Y}_2 = 7{,}572 - 0{,}005t - 1{,}794Q_{1t} - 1{,}194Q_{2t} - 1{,}195Q_{3t} - 0{,}329Q_{4t} + 1{,}590Q_{5t} + 1{,}940Q_{6t} +$$
$$+ 1{,}980Q_{7t} + 1{,}806Q_{8t} + 0{,}770Q_{9t} - 0{,}185Q_{10t} - 1{,}380Q_{11t} - 2{,}008Q_{12t}$$

In this model the maximum increase in the number of tickets sold to the museum in WNP occurred in July and August, while the largest decrease occurred in December.
In the case of the Y_3 variable, i.e. the number of tickets sold to TNP, the best fit was obtained by the line trend with a constant seasonality (R^2=97,19%):

$$\hat{Y}_3 = 163836t - 108{,}3t - 131180{,}4Q_{1t} - 111710{,}2Q_{2t} - 139518{,}0Q_{3t} - 114798{,}0Q_{4t} +$$
$$+ 33859{,}3Q_{5t} + 44580{,}5Q_{6t} + +277897{,}3Q_{7t} + 422047{,}3Q_{8t} - 78391{,}3Q_{9t} - 75309{,}8Q_{10t} +$$
$$- 143354{,}3Q_{11t} - 140905{,}1Q_{12t}$$

Based on the study it can be stated that the maximum increase in the number of tickets sold to TNP, as in the case of WNP, occurred in July and August, while the largest decrease occurred in December and January.

Month	Y1	Y2	Y3
January	5,47	6,75	24,81
February	10,17	12,34	34,70
March	9,88	12,40	19,26
April	24,56	28,45	30,82
May	143,58	197,17	118,95
June	190,73	278,44	125,60
July	363,77	288,89	262,58
August	338,07	241,47	346,87
September	75,80	84,91	144,86
October	24,05	32,49	55,30
November	8,49	10,94	16,98
December	5,41	5,75	19,29
Max	363,77	288,89	346,87
Min	5,41	5,75	16,98
Amplitude	358,36	283,14	329,88

Table 4. The assessment of seasonality (in %) of the variables relating to tickets sold in WNP and TNP in the 2000 – 2014 period.

Source: own calculations based on data from WNP and TNP.

In order to perform a detailed comparison of amplitudes of ticket sales seasonality in the analyzed facilities, the values of seasonality were estimated. Table 1 demonstrates values of their assessments and amplitudes (the difference between the highest and lowest value). The results clearly indicate the presence of strong seasonal fluctuations during the summer months, i.e. from May to August for Y1, Y2 variables, and from May to September for the Y3 variable. The highest values of the seasonality, in the case of tickets sold in WNP, can be seen in July. In the case of tickets sold to TNP, the seasonality peak occurs in August, and maximum assessment rates exceed up to 300 percentage points.

The highest value of the seasonality among all variables occurs in the month of July and amounts to 363.77% for the Y1 variable. The seasonal minimum is visible in the winter months. For Y1 and Y2 variables it occurs in December and January. However, for the Y3 variable it occurs in November, March and December. Of all variables the lowest value of seasonality occurred in December and amounted to 5.41% for the number of tickets sold to the enclosure of European bison.

The largest difference between the maximum and minimum value of the analyzed variable amounts to 358.36 percentage points for the Y1 variable. The Y2 variable was characterized by the lowest amplitude, where the values of the span amounted to 283.14 percentage points.

CONLUSIONS

A large seasonality of tourist traffic occurred in both analyzed national parks, with the maximum intensity during the summer months. In the case of WNP, the maximum of the tourist traffic occurred in July, and in the case of TNP in August. The minimum of the tourist traffic in both NPs occurred in the winter months (WNP in December and January, and TNP in November). A temporary increase in tourist traffic in traditional holiday and public holiday periods is related to the occurrence of many negative phenomena, such as: cumulative air pollution caused by increased motor traffic, increase in the amount of municipal waste, garbage pollution of hiking trails, camping sites, standing and flowing waters. Deglomeration of tourist traffic, or even its restriction, especially in the summer months would be beneficial to minimize the negative impact of tourism on the natural environment. This is particularly applicable to TNP, in which the tourist traffic often exceeds the capacity of hiking trails, and the degree of human pressure on certain hiking trails is so strong that the natural character of ecosystems has been heavily disturbed or even lost.

Considering the recorded increase of the tourist activity growth in Polish NPs and the tendency of intensification of the growth in the future, one should approach on protected areas provision for present and future generations, while maintaining the natural heritage present in these areas. It is important to be aware of the damage which can be caused by the excessive tourist pressure and harmful actions. Tourists residing at the environmentally valuable area should comply with applicable standards and rules, so as not to violate the natural balance and properties of ecosystems. In order to maintain the proper state of NPs it is important to promote educational tourism and to create ecological habits of tourists visiting environmentally valuable areas. It is favored by global trends in tourism. Currently, the overriding challenge for the tourism sector is to maintain its competitiveness while respecting the sustainable development [*Communication from the commission*…, p. 2].

To pursue the objective of opening the protected areas to meet the needs of the society, one should have the knowledge suitable to handle different types of tourists, taking into consideration their diverse motivation and expectations, which may intensify on the cross-border areas [Bąk, Oesterreich M, Zbaraszewski 2014, p. 123]. Border areas, where the analyzed national parks are located, are specific grounds that create favorable conditions for tourism development and creation of local tourism policy. Note, however, that the tourism product of the cross-border area should be

addressed to recipients on both sides of the border, and their specific futures must be adapted to the needs and expectations of tourists from different nationalities.

In the light of considerations mentioned in the article, it seems that the presented method of using econometric models of seasonality may prove very useful in the diagnosis and prognosis of tourism in NPs.

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Zbigniew Gołaś[4]

THE ECONOMIC AND FINANCIAL SITUATION OF THE FURNITURE INDUSTRY IN POLAND IN THE YEARS 2006-2013

Abstract: The primary aim of the study was to assess changes in the economic and financial status of the furniture industry in Poland in the period 2006-2013. The assessment included changes in revenue, costs, financial results, sale prices, export activity, exchange rates, liquidity, debt, cost efficiency and resource productivity as well as profitability. The analyses showed that after a deep financial crisis of the furniture sector in 2008, the situation improved in the next years. The advantageous direction of these changes resulted mainly from the increase in revenue and reduction of operating costs, leading to an increased profitability of sales, profitability index of assets and return on equity. Generally no marked changes were observed in the other areas or assessed criteria of the financial standing of the furniture sector, i.e. liquidity, debt or efficiency. The furniture sector in Poland, in which revenue comes mainly from exports, faces an urgent need to implement systematic costs reductions, as well as a rational financial policy including financial tools reducing foreign exchange risk.

Key words: the furniture industry, economic and financial situation, Poland

INTRODUCTION

The furniture industry is one of the most dynamically developing industrial sectors in Polish economy, which is a consequence of the following premises [Roczniki, Poland…, GUS]:

- in the years 2005-2013 the actual value of global production increased in this sector by 37.3%, while in 2013 it accounted for 2.98% global total industrial production and 2.48% global production of the processing industry,
- in the years 2005-2013 the actual value of sold production in the furniture industry increased by 40.4% and in 2013 accounted for 3.18% total sold industrial production and 2.67% sold production of the processing industry,
- value added in the furniture industry increased in real terms in the years 2005-2013 by as much as 91.5% and in 2013 it accounted for 3.82% value added of all the industrial sector and 2.78% value added of the processing industry,
- furniture manufacture is an important employment sector; the furniture sector is the workplace for 137.2 thousand people (2013), which accounts for 5.22% employed in the entire industrial sector and 6.27% employed in the processing industry,
- the furniture sector to a significant degree provides dynamics and determines the condition of the national exports; in the years 2005-2013 nominal value of exports in the furniture industry increased from approx. 15 billion zlotys to over 18 billion zlotys, while in 2013 its share in total exports of the industrial sector and total exports of the processing industry was 4.17% and 4.39%, respectively,
- the furniture industry successfully competes on foreign markets; for years it has been generating a considerable surplus of exports over imports.

The economic indexes given above obviously do not present all the areas, in which changes have been observed in the Polish furniture industry in recent years, as they do not cover changes in the economic and financial status, i.e. the capacity to settle current liabilities, the capacity to service

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debt and manage costs, activity in the utilisation of financial resources and human capital, the capacity to generate profits.

The primary aim of the presented study is to assess the economic and financial status of the furniture industry in Poland in the period 2006-2013. The structure of the paper is composed of the introduction, followed by the methodological aspects and characterisation of source materials. Next it comprises results of empirical studies, i.e. the sector variation in the economic and financial status in 2006-2013. The last section presents conclusions summing up results of the analyses.

SOURCE MATERIALS AND RESEARCH METHODS

The analysis of financial standing of the furniture industry was based on statistical data of the Central Statistical Office [GUS] for the years 2006-2013 concerning the sector of furniture production, section 31 of the processing industry [Bilansowe…. 2015]. These data concern entities keeping account books or revenue and costs registers for tax purposes, with the number of employees of min. 10 at the end of a given calendar year.

The starting point for the analysis comprised the presentation of basic characteristics of the furniture sector, concerning changes in the number of enterprises, changes in revenue, costs and financial results, the number of bankruptcies, changes in the level of production concentration, changes in prices of sold production as well as changes in the level and structure of exports. The next part of the paper presents the level and changes in classical measures of assessment of the financial status of the furniture sector in the years 2006-2013 in the form of indexes of liquidity, debt, management efficiency as well as profitability indexes [Sierpińska and Jachna 2004, Sierpińska and Wędzki 2001, Waśniewski and Skoczylas 1998]. Moreover, in order to illustrate trends in changes within the investigated criteria to assess the financial situation in the furniture sector the analysed criteria are presented in form of tables and graphs.

BASIC ECONOMIC AND FINANCIAL CHARACTERISTICS OF THE FURNITURE SECTOR IN THE YEARS 2006-2013

In the years 2006-2013 the furniture manufacture sector on average comprised 748 enterprises employing min. 10 workers. However, it results from the data presented in Table 1 that the manufacturing potential of the furniture sector, measured by the number of economic entities, was considerably reduced in the analysed period. In 2006 a total of 851 enterprises were involved in furniture production, while in 2013 it was 671 enterprises, i.e. by over 21% lower. Reduction of the number of enterprises in the furniture sector is relatively strongly related with bankruptcy processes. Over the entire analysed period as many as 122 enterprises were declared bankrupt.

Changes in the number of entities did not affect the capacity of this sector to generate revenue, for which the level of variation was generally very low in the analysed period and it did not exceeded 7%. This means that in the years 2006-2013 the manufacturing capacity of an average furniture manufacturing enterprise, measured by revenue, increased from 31 million zlotys (2006) to 41 million zlotys (2013), i.e. by as much as 31%. It needs to be stated that these changes are a reaction to increasing difficulties with launching of furniture products, particularly if we consider changes in prices of sold production in relation to nominal changes in the value of revenue. In the years 2006-2013 prices of sold production on average increased by 0.17% annually, while nominal revenue grew on average by 0.54% annually. Such a poor dynamic of changes clearly indicates that in the furniture sector the potential to increase revenue through an increase in prices of sold products has been considerably limited, while from the point of view of profit generation they impose the need to reduce costs. In this respect we may observe advantageous – although slight – changes in the dynamics. In the years 2006-2013 the average annual changes in revenue by 0.54% corresponded to a lower average annual increase in costs, which amounted to 0.34%. The resultant of a greater dynamics of the increase in revenue rather than costs is the generally advantageous direction of

changes in financial results of the sector, as well as an increase in the percentage of enterprises with positive financial results.

Table 1. Revenues, costs and financial results in Polish furniture industry in 2006-2013

(mln PLN)

Years	Number of entities	Revenues from total activity	Cost of obtaining revenues from total activity	Gross financial result	Net financial result	Percent of entities with net profit	Number of bankruptcies	Price index of sold production
		mln PLZ				%		%
2006	851	26520,6	25195,6	1320,6	1125,6	76,5	12	98,2
2007	854	29073,7	27606,7	1469,9	1273,9	79,0	25	100,2
2008	892	28936,2	28073,5	859,8	685,0	73,1	12	98,9
2009	704	25072,6	23593,2	1478,6	1279,8	78,4	10	105,2
2010	693	23270,4	21879,3	1391,7	1166,7	74,2	15	98,5
2011	666	27109,3	25845,6	1258,0	1089,7	78,4	12	101,6
2012	655	25852,4	24629,2	1215,5	1062,7	77,6	17	102,0
2013	671	27555,2	25811,1	1735,5	1532,1	81,1	19	99,4
$\bar{x}$	748	26673,8	25329,3	1341,2	1151,9	77,3	15	100,5
V (%)	12,4	6,8	7,5	17,7	19,6	3,2	30,4	2,2

Source: own calculations based on CSO

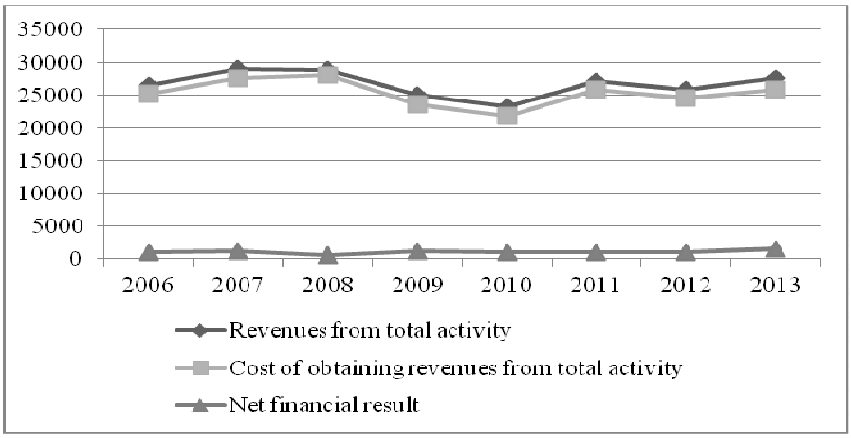

Figure 1. Revenues, costs and net financial results in Polish furniture industry in 2006-2013 (thous. PLN)

Source: own calculations based on CSO

In the investigated period the average annual increment in net and gross financial results amounted to 3.9% and 4.5%, respectively, while the percentage of enterprises generating profits from their operations increased on average annually by 0.8%. However, when analysing data contained in Table 1 it may be observed that a generally advantageous trend for changes in financial results in the furniture sector corresponds to their relatively high variability in time (17.7% and 19.6%), resulting to a considerable degree from their level in 2008 and 2013. In 2008, i.e. during the crisis and recession, net financial results decreased in relation to 2007 by as much as 46%, whereas in 2013 in relation to 2012 they increased by as much as 44%.

Table 2. Level and structure of export sale in Polish furniture industry in 2006-2013

Year	revenues from export sale of products, goods and materials			revenues from export sale of products			average exchange rate
	number of entities	in mln zl	% share in revenues from total sale	number of entities	in mln zl	% share in revenues from total sale	PLZ/€
2006	629	15025,9	58,1	611	14396,4	55,7	3,89
2007	631	15466,6	54,7	617	14701,6	52,0	3,78
2008	586	14629,4	52,2	573	13901,5	49,6	3,51
2009	492	13307,9	54,7	482	12799,1	52,6	4,33
2010	489	13179,7	58,2	482	12680,9	56,0	3,99
2011	489	16913,9	63,8	482	16370,8	61,7	4,12
2012	499	15953,6	63,3	489	15226,6	60,4	4,18
2013	496	17400,0	64,3	483	16607,2	61,4	4,20
$\bar{x}$	539	15234,6	58,7	527	14585,5	56,2	4,00
V (%)	11,3	9,4	7,5	11,0	9,4	7,7	6,2

Foreign trade and exchange rates are very important determinants for the capacity to generate revenue and positive financial results in the furniture manufacture sector. In the furniture sector export sales play a particularly important role, which results both from the number of exporting enterprises and the share of revenue from exports in total revenue. Data presented in Table 2 show that from 489 (2010-2011) to 631 enterprises (2006) in that sector were involved in export of products, goods and materials, i.e. 70-74% all enterprises, while the average revenue from exports in the years 2006-2013 accounted for almost 60% total revenue. It needs to be stressed that at a certain variability in time (mainly in the years 2008-2010) the value of revenue from exports increased in the investigated period from approx. 15.0 billion zlotys in 2006 to 17.4 billion zlotys in 2013, i.e. by over 15%, while this increase was promoted by a weakening of the national currency. It needs to be stressed here that the nominal dynamics of the increase in revenue from exports (annual average 2.1%) diverged slightly from the dynamics of the increase in the exchange rate for Euro (annual average by 1.1%) [Archiwum…. 2015]. This means that the increase in revenue from exports resulted in the investigated period from an advantageous weakening of the national currency advantageous for exporters, rather than from the increase of the volume of sales on foreign markets.

THE LEVEL AND TRENDS IN CHANGES OF BASIC INDEXES OF FINANCIAL STANDING IN THE FURNITURE SECTOR

The analysis of changes in the financial standing of the furniture sector involved basic measures assessing liquidity informing on the capacity to settle current liabilities and efficiency of working capital management, indebtedness indexes informing on the level of debt and debt security on assets, efficiency indexes presenting the capacity to manage costs and efficiency of asset management, as well as profitability indexes informing on the capacity to generate profits [Bednarski 1997, Sierpińska and Jachna 2004; Sierpińska and Wędzki 2001].

The level and directions of changes in the basic measure of liquidity, i.e. the current liquidity index, indicate a high, relatively stable capacity to settle current liabilities with liquid assets, consistently with the recommendations of the theory of finances [Bieniasz and Gołaś 2014]. In the analysed period the current liquidity index ranged from 1.16 to 1.61, which means that on average in the sector current liabilities were secured in 116-161% by the value of current assets. In turn, the levels of the quick ratio, which in most years were below 1 and at the same time markedly lower than the levels of the current index, were relatively less advantageous in the analysed period. In terms of the normative values liquidity of the wood sector measured by the quick ratio is low [Sierpińska and Jachna 2004], whereas due to its stable level (V=10.9%) it may be stated to be a level characteristic of this sector. However, the level of the quick ratio in relation to the levels of the current index indicates that in the modification of liquidity in enterprises of the furniture sector an important role is played by inventory and efficiency of its management. In terms of the length of the inventory cycle the management efficiency of these components of current assets is generally high and stable. It results from data given in Table 3 that in the furniture manufacture sector inventory was recreated in a relatively short production cycle of approx. 40 days and the length of this cycle in the investigated period changed slightly (V=4.53%).

Liquidity of enterprises is determined by many factors, including e.g. the policy of book credit, which is reflected in the time of receivables recovery [Bednarski 1997, Sierpińska and Jachna 2004]. In the years 2006-2013 the average time to settle liabilities in the furniture sector was 52.16 days, which indicates that liabilities were recovered in a long cycle of almost 2 months. However, in this area of the liquidity policy we may observe marked changes. The length of the liabilities cycle decreased on average by approx. 3% annually, while in 2013 (60 days) – in relation to 2006 (48 days) – this cycle was shorter by 19%, i.e. 11 days. From the point of view of liquidity assessment it is advantageous, particularly if we consider the time of settlement of trade creditors, i.e. trade payables. As it results from data presented in Table 3, the mean length of the liabilities cycle in the furniture sector in the period 2006-2013 was approx. 39 days. Thus the liabilities cycle was by approx. 25% shorter than the receivables cycle, which has a negative effect on the risk to liquidity. From the point of view of liquidity the liabilities cycle should be extended, since it provides a longer period of cash available for other purposes, mainly operations. In the case of the furniture sector it is of particular importance due to the liberal policy of book credit.

The policy of inventory, receivables and liabilities management is reflected in one of the most important and most objective measures of liquidity, i.e. the cash conversion cycle. This measure is considered to be one of the best criteria for the assessment of liquidity, informing on the period of time which passes from the moment of withdrawal of cash for the settlement of liabilities to the moment of inflow of cash from collected receivables [Sierpińska and Jachna 2004]. From the point of view of assessment of liquidity the cash conversion cycle should be the shortest possible, since the rapid return of cash involved in operations means that it may be used again for operations. In the furniture sector the cash conversion cycle over the entire analysed period was long and varied little (V=3.53%). In the years 2006-2013 the length of this cycle fell within a narrow range of 50-56 days, which means that on average in the furniture sector invested funds returned in the form of

cash in a cycle of approx. 2 months. Moreover, as it was mentioned before, the length of the cash conversion cycle varied slightly, as a result of which it did not show any definite trend of changes. On the one hand this means that liquidity measured by the cash conversion cycle in the investigated years was highly stable, while on the other hand the level of management efficiency of working capital in the furniture sector did not improve in the investigated period.

Table 3. Liquidity ratios in Polish furniture industry in 2006-2013

	Current ratio	Quick ratio	Working capital cycle (days)	Inventory cycle (days)	Receivables cycle (days)	Trade payables cycle (days)	Cash conversion cycle (days)
2006	1,44	0,95	35,57	39,23	60,07	46,27	53,03
2007	1,24	0,78	20,75	39,41	51,99	40,97	50,43
2008	1,16	0,73	14,73	39,89	51,43	38,06	53,25
2009	1,36	0,91	29,05	36,18	50,78	36,00	50,96
2010	1,51	0,95	38,92	43,07	52,02	38,53	56,56
2011	1,58	1,00	40,39	40,11	53,46	38,51	55,07
2012	1,41	0,88	31,62	40,69	48,80	36,35	53,14
2013	1,61	1,05	42,03	38,90	48,68	35,19	52,40
$\bar{x}$	1,41	0,91	31,63	39,69	52,16	38,74	53,11
V (%)	10,47	10,92	28,81	4,53	6,44	8,57	3,53

Source: own calculations based on CSO

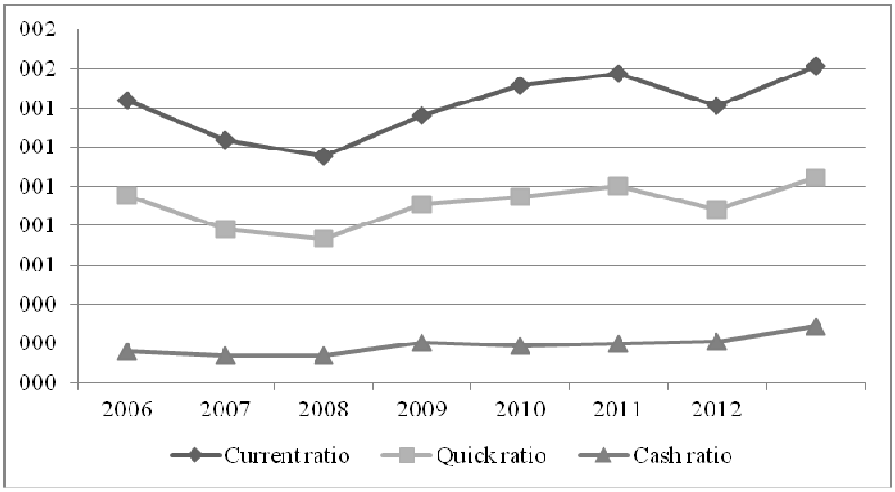

Figure 2. Current, quick and cash liquidity ratios in Polish furniture industry in 2006-2013

Source: own calculations based on CSO

Another area in the assessment of the financial situation in the furniture sector is connected with the level of indebtedness (tab. 4), which facilitates the evaluation of enterprises from the point of view of overall debt as well as long-term debt connected with investment and modernisation processes [Bednarski 1997, Sierpińska and Jachna 2004]. The primary criterion of assessment used in this case is connected with the overall debt ratio, defining the share of total liabilities in financing of assets in enterprises. According to standards this index should fall within the range of 57-67%, since this range indicates a balance between borrowed capital and equity capital. When analyzing data contained in Table 4 it may be clearly stated that the problem of imbalance between borrowed and equity capitals does not exist in the furniture industry. In all the investigated years the overall debt ratio was below 67% and did not go below 57.1% (2008). Generally a marked downward trend was observed for the ratio of debt to assets. In the years 2006-2009 it was approx. 54-57%, while in 2013 it decreased to approx. 45%. Similar conclusions may be drawn from the analysis of the equity debt ratio measured by the ratio of total liabilities to equity capital. From the point of view of financial security this ratio should be approx. 1:1, since it also defines balance between capitals; moreover, it is frequently adopted by banks as a criterion of creditworthiness when granting investment loans. In the furniture sector the level of equity debt in the analysed years varied, being both relatively high in the period of 2006-2009 (1.19-1.33) and relatively low in the period 2010-2013 (0.81-0.97). In view of this trend we may thus talk of a definite evolution of the indebtedness policy, aiming at capital equilibrium and high creditworthiness of the furniture industry.

Table 4. Debt ratios in Polish furniture industry in 2006-2013

Years	Total labilities/ total assets (%)	Total labilities/ equity (%)	Long-term labilities/ equity (%)	Tangible fixed assets/ long-term liabilities (%)
2006	55,1	1,23	30,9	276,9
2007	54,2	1,19	22,5	398,9
2008	57,1	1,33	28,3	357,9
2009	53,0	1,13	33,2	286,6
2010	46,6	0,87	25,6	330,0
2011	49,3	0,97	30,9	277,6
2012	46,4	0,87	20,0	417,5
2013	44,6	0,81	21,6	364,8
$\bar{x}$	50,8	1,05	26,6	338,8
V (%)	8,6	17,4	17,2	15,2

Source: own calculations based on CSO

The very good financial situation of the furniture manufacture sector is also evidenced by the level of long-term debt ratio, which in the analysed years fell within the range of 22-33%. In view of this range the furniture sector is a sector of low indebtedness rates, since only these enterprises, in which this index exceeds 100%, are considered to be seriously in debt. Moreover, as it results from data in Table 4, the long-term debt ratio decreased in the years 2012-2013 to 20-22%, while in the previous years it fluctuated around approx. 30%. Such a considerable reduction of the long-term debt ratio to equity clearly indicates an increasingly conservative character of the development

strategy in this sector and over a longer perspective it may have both negative and positive consequences. While on the one hand a reduction of equity debt will have an advantageous effect on liquidity, it may nevertheless limit the increase in profitability of equity as a consequence of the decreasing effect of capital leverage.

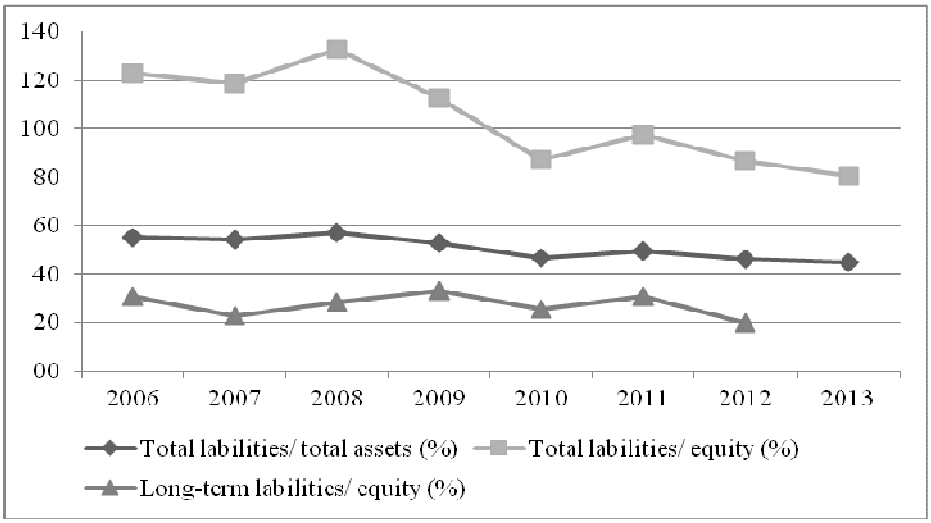

Figure 3. Debt ratios in Polish furniture industry in 2006-2013

Source: own calculations based on CSO

When assessing effectiveness of furniture sector enterprises (tab. 5) the used indexes were based on manufacturing costs, asset turnover ratios and workforce productivity index [Bednarski 1997, Sierpińska and Jachna 2004]. The former, i.e. the cost index, over the entire analyzed period was high exceeding 90%, which clearly indicates low profitability of sales. However, it may be observed that the cost to revenue ratio shows a slight, but observable positive direction of changes. In 2013 the cost index decreased in the furniture sector to 93.7%, i.e. to the lowest level in the period 2006-2013, which was obviously manifested in the considerable improvement of profitability rates, particularly profitability of sales.

In turn, changes in the efficiency of the furniture sector in terms of the use of assets are generally negative (tab. 5). In view of rotation indexes for total assets, fixed assets and working assets we may observe that in this area of assessment we may observe negative changes or a lack of progress. In the investigated years rotation of total assets as well as fixed assets systematically decreased, while the rotation of working assets was found within a practically unchanged level. This means that the efficiency of use of assets in the furniture sector is increasingly lower, which thus has a direct negative effect on the level of asset profitability. It results from data given in Table 5 that the primary cause for the decreasing asset productivity is first of all related with the increasingly slower rotation of fixed assets. This means that on average in the furniture sector the rate of utilisation of manufacturing capacity, its productivity, is increasingly weaker. In view of these trends more advantageous changes are observed in workforce productivity, which nominally increased from approx. 200 thousand in the years 2006-2007 to 250 thousand in 2013, i.e. by 25%. Nominal changes in workforce productivity resulted to a limited degree from changes in sale prices, which generally increased at a very low rate

Table 5. Costs and activity ratios in Polish furniture industry in 2006-2013

Years	Cost level indicator from total activity (%)	The share of liabilities in cost of goods sold (%)	Total assets turnover	Fixed assets turnover	Current assets turnover	Labour productivity (thous. PLN zl/employess)
2006	95,0	35,4	1,7	3,6	3,1	191,2
2007	95,0	34,8	1,7	3,4	3,4	199,7
2008	97,0	39,2	1,6	3,0	3,4	213,4
2009	94,1	38,3	1,5	2,8	3,4	218,6
2010	94,0	35,5	1,4	2,6	3,2	205,1
2011	95,3	33,9	1,6	3,0	3,3	244,3
2012	95,3	32,7	1,5	2,8	3,4	242,4
2013	93,7	31,7	1,5	2,9	3,3	250,6
$\bar{x}$	94,9	35,2	1,6	3,0	3,3	220,7
V (%)	1,0	6,8	5,0	10,3	2,6	9,5

Source: own calculations based on CSO

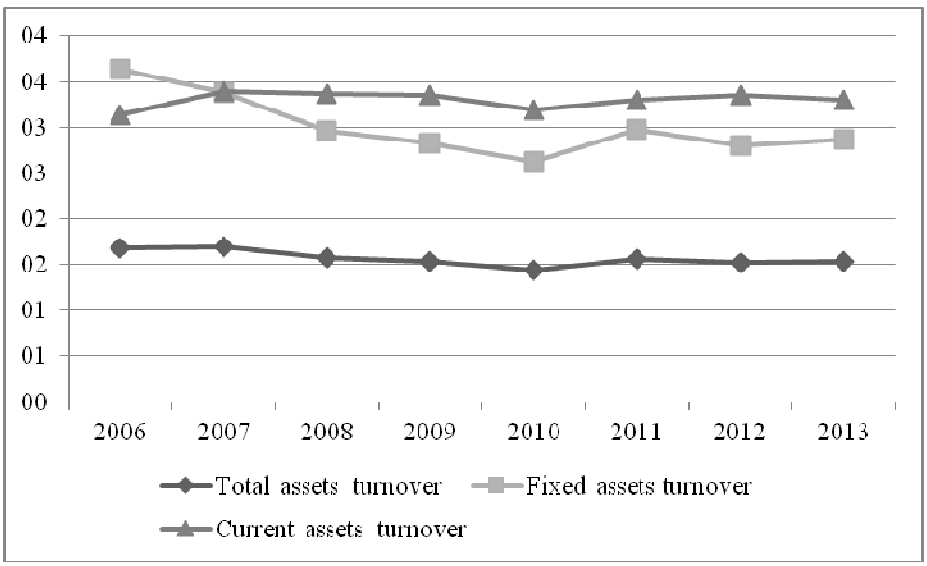

Figure 4. Turnover ratios in Polish furniture industry in 2006-2013

Source: own calculations based on CSO

Assuming the index of changes in sales prices as a workforce productivity deflator (tab. 1) it may be estimated that in reality workforce productivity increased in the furniture sector by approx. 20%. In terms of the length of the analysed period (8 years) progress in workforce productivity was not dynamic, as on average annually workforce productivity increased in real terms by as little as approx. 2.5%.

The last adopted criterion in the assessment of financial standing in the furniture sector is profitability, informing on the capacity to generate profits in relation to generated revenue and allocated assets and equity capital [Bednarski 1997, Sierpińska and Jachna 2004]. It results from data presented in Table 6 that in the furniture sector a considerable number of enterprises in the years 2006-2013 did not yield positive financial results. In individual years the scale of this phenomenon varied (16.5-23.5%), on average in the investigated period as many as 20% enterprises were not capable to generate profits. The negative implications of these statistics are additionally undermined by the positive direction of changes in the percentage of unprofitable enterprises. In the years 2006-2013 the percentage of these unprofitable entities systematically decreased, as a result of which the share of enterprises with positive financial results increased from approx. 77% in the years 2006-2007 to approx. 83% towards the end of the analysed period. However, these changes were not manifested in a considerable increase of net sales profitability, profitability of assets and equity, which were characterised by a high variability in time (V=18.7-20.8%).

Table 6. Profitability ratios in Polish furniture industry in 2006-2013

Years	Percent of entities with net profit (%)	Gross turnover profitability ratio (%)	Net turnover profitability ratio (%)	Return on assets (%)	Return on equity (%)
2006	76,5	5,0	4,2	7,1	15,9
2007	77,5	5,1	4,4	7,4	16,2
2008	78,5	3,0	2,4	3,7	8,7
2009	79,5	5,9	5,1	7,8	16,7
2010	80,5	6,0	5,0	7,2	13,5
2011	81,5	4,6	4,0	6,3	12,4
2012	82,6	4,7	4,1	6,3	11,7
2013	83,5	6,3	5,6	8,5	15,4
$\bar{x}$	80,0	5,1	4,4	6,8	13,8
V (%)	2,9	19,4	20,8	19,9	18,7

Source: own calculations based on CSO

Particularly low profitability indexes of the furniture sector were recorded in 2008, i.e. the year, in which the global financial crisis started and economies of most countries entered the phase of recession. In the investigated year mean levels of profitability for sales and assets as well as return on equity were approx. 50% lower than in the preceding years (2006-2007). After 2008 in the furniture sector financial efficiency increased considerably, while at the end of the analysed period (2013) the measured levels of basic profitability were comparable with the levels recorded in the

years 2006-2007. Generally the advantageous direction of changes in profitability indexes was not absolutely definite. In the years 2009-2013 all measures of profitability, particularly profitability of equity, showed rather high fluctuations. It may be assumed that further potential increase in the most important criterion of profitability, i.e. the rate of return on equity, will be dependent first of all on the increase in sales profitability through reduction of costs, while to a lesser degree it will depend on the increase in the rotation of assets and capital leverage [Gołaś 2014]. Symptoms of such changes could also be observed in the first half of 2014 [Resultsi … 2015]. In the first half of 2014 the rate of increase in revenue was markedly greater than the rate of cost increase, resulting in the level of costs decreasing to 93.1%, while net sales profitability in the furniture sector increased to 6.1%. Changes in these parameters at a stable level of rotation of assets and capital leverage justify the forecast of the rate of return on equity in the furniture sector for the entire 2014 at a high level amounting to approx. 17%. However, it needs to be remembered that a further positive direction of changes in profitability in the furniture sector will to a considerable degree be dependent on exchange rates. In 2014 the exchange rate of the Polish złoty to Euro grew from 4.17 (January) to 4.22 (December) promoting intensive exports of this sector, which does not mean that the level of generally overpriced Euro will be maintained over a longer period. For this reason the furniture sector in Poland faces the urgent need to systematically reduce costs, while – as a result of a strong focus on exports – it is necessary to conduct a financial policy including financial tools reducing foreign exchange risk.

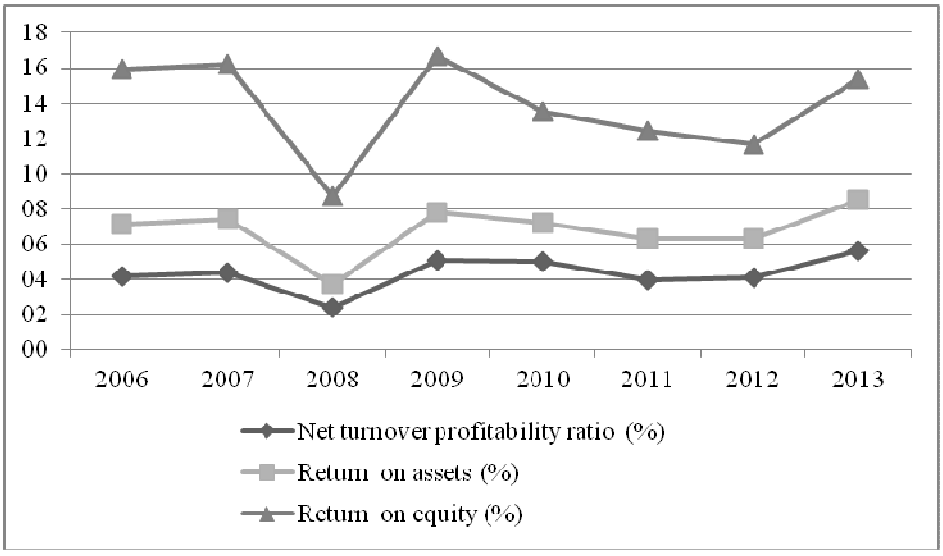

Figure 5. Profitability ratios in Polish furniture industry in 2006-2013

Source: own calculations based on CSO

CONCLUSIONS

It results from this analysis that after a slump in the furniture sector in 2008 it improved markedly in the next years. The advantageous direction of changes was first of all a consequence of an increase in revenue and reduction of costs of operations, leading to a markedly increased

profitability of sales as well as the return on assets and equity. Generally no major changes were observed in the other areas and assessed criteria of financial standing for the furniture sector. In the investigated period the furniture sector showed a safe level of liquidity, a low level of indebtedness as well as a stable productivity of assets. However, the further positive direction of economic and financial development in the furniture sector requires a systematic reduction of costs, while – as a consequence of a strong focus on exports – a rational financial policy needs to be implemented, including financial tools, which reduce foreign exchange risk.

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Eugeniusz Kośmicki[5]

PROBLEM OF RESTORATION AND ITS IMPLICATIONS FOR AN ECONOMIC PROCESS

Abstract: Today we can call a new era – Anthropocene, where there are also huge environmental burdens. The problem of restoration is a serious challenge for contemporary natural conservation and economic processes. The restoration is commonly understood as the renewing natural areas similar to the natural areas of life has now become inadequate. The most important is now the protection of natural processes – somewhat a new natural conservation maxim and the essence of restoration. For this concept, it is necessary to take into account as follows: the benefits of ecosystems, ecological footprint, and the discontinuing of the short-term economic process evaluation.

This study includes mainly a local and regional level, as well as a global one. Today natural landscapes and ecosystems are the subject of profound changes; but so are the historic anthropogenic landscapes. There is developing restoration ecology, which is bridging between science and nature conservation with large implications for economic processes. The need of restoration RESULTS from the limits of economic activities in the biosphere. The functioning of biosphere is closely connected with the existence of anthropogenically unchanged ecosystems and the preservation of important natural processes.

Key words: restoration, nature conservation, economic process

INTRODUCTION

The problem of restoration is an important challenge for the two contemporary processes: nature conservation and economic activity. The reason why the degradation of nature has become a fundamental, structural global problem~~,~~ and the economy and society alienated themselves – largely – from nature. Today, there is pending vigorous dispute whether the restoration of the economy and society is possible. Nowadays a common understanding of restoration as renewing natural areas of life, seems to be oversimplified. Nature conservation mainly served to maintain historical forms of human space use so far. Protection of natural processes becomes somewhat a new maxim of conservation nature, which is the essence of restoration. The continued existence of human civilization, however, requires a broad framework which would take into account the ecological conditions of its operation.

MODERN ECONOMY AND ITS IMPACT ON THE ENVIRONMENT

Today quantitative and qualitative differences between pre-industrial and modern nature burdens can be found. Meanwhile, we live in a radically changed world shaped by man himself. The modern era in the history of the Earth is defined even as the "Anthropocene" [Crutzen 2002]. There are also huge differences between the modern and the pre-industrial environmental burdens:

- universal instead of point problems - in the pre-industrial period environmental damage was local in nature and nowadays, the environment damage has got a large spatial range, even global;
- complex instead of simple interactions, for example, contemporary agricultural and forestry damage has got very different causes;

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many modern natural hazards can be established only on the basis of scientific analysis methods (e.g. many gases, heavy metals, radioactive radiation);
• irreparable damage to the environment instead of short-term problems - in the past, a quick recovery occured; however, nowadays the changes are often irreversible (e.g. a rapid extinction of species or changes in the chemical structure of the atmosphere).

The economic and nature conservation issues can be considered at several levels. The activities towards the economic and nature conservation restoration can be divided into the following levels:

- a regional and local level - it is essential for the use of ecosystem services as well as the basic economic, socio-cultural and environmental protection activities;
- a national level in relation to the competence of the EU - the creation of an economic and social framework in each country;
- the European Union level – a large-scale threat to the environment - environmental issues important for the European Union such as selected problems of economic policy, especially the Common Agricultural Policy, Economic and Monetary Union;
- a global level - the global nature conservation issues (climate, the ozone layer, as well as biodiversity and forests, soils and waters protection, dangerous substances), selected economic, financial and social problems undertaken in the framework of global regulation (global governance).

This paper focuses attention on the local and regional level; and also draws attention to the global dimension. However, for the European and national levels of great importance for restoration problems are following issues: forests and habitats' interconnections, agriculture and rural areas, renewable energy resources and energy growth, eco-city issues and bioenergy villages, as well as the coastal marine and ocean threats.

Landscapes and ecosystems are currently subject to rapid historical change. This also applies to historical landscapes such as heath landscapes. It may be concluded that: "The old cultural landscapes are hiding, in many parts of Europe, not only high biological diversity, but they are also evidence of often ever lasting forms of land use by the people at the same" [Härdtle, von Oheimb 2014: 56]. Remains of heath landscapes are increasingly at risk. The most important factors are the following risks factors:

• loss of large areas of heathland through afforestation;
• intensification of agricultural use of soils on existing areas of heathlands;
• an unsuitable environment or deficiencies in the management of existing heathlands;
• excessive fertilization of landscapes by atmospheric supply of chemicals, especially nitrogen.

Since the abandonment of peasant farming heath landscapes in North-West Europe have dramatically been decreased. It should be noted, however, that "the oldest cultural landscapes of Europe and other today's relics are evidence of the ongoing means of land use for hundreds and even thousands years" [Härdtle, von Oheimb 2014: 58]. Restoration of the remaining heathlands is associated with the implementation of the following basic objectives: the conservation of the characteristic plant species, hamper afforestation processes, decreases the level of nutrients from the outer areas. For this purpose, the burning of trees, grazing sheep (old races) as well as mowing and mechanical treatments are provided. Maintenance or restoration are associated - in the case of heathlands - with huge labour and financial costs [Diemont 2013].

Therefore, it is needed to point out the basic concepts of human behaviour and the functioning of the modern economic system responsible, inter alia, for the degradation of nature [Schmuck 2015: 15]:

• people are primarily egoistically oriented and competitive beings;
• people are highly evolved beings and have more rights than other living beings;

- consumption makes people happy: a lot of money allows high-consumption and makes us particularly happy;
- interest rate monetary system is necessary for the economy;
- constantly sustained economic growth is essential;
- resources at the disposal of human beings are in principle infinite;
- private ownership of public resources and institutions is useful to their maintenance;
- it is not easy to have your own accurate and expedient views;
- it is not necessary, or only trivial, to find the meaning of his own life.

These reasons are not accurate and they are responsible for a huge environmental degradation. Their change is also the success of restoration. First the assumptions about human nature, with visions of neoliberal economic system must be abandoned, and the possibilities of changing the present economy and society should be used. One can agree with the opinion that: "The growing demand for ever-growing humanity on the one hand, and the need to secure long-term functioning of the economy and the environment, on the other hand, are the basic modern challenges. For the continuation of human civilization ecological framework conditions are needed, to be however, to some extent changeable" [Succow, Lebrecht 2014: 21]. The problem of restoration in this context is essential.

RESTORATION AS A SOCIAL CHALLENGE

The problem of restoration is definitely not modern invention. In general, it may even be found that the restoration is a story that is as old as agriculture itself. More than 5,000 years ago, people used the agricultural area, which was regularly subject to set-aside. Such a seasonal change: the use phase and aside phase was probably the earliest version of the restoration. Another example is the ongoing centuries excessive use of forests in Europe, which led to the formation of large heathlands. This meant that the increasing demand for wood was not covered with reforestation. This resulted in the early eighteenth century the rise of the concept of sustainable development in forestry (Carl von Carlowitz), which led to the reforestation. They are among the most historically significant land reclamation projects in Central Europe. However, this means that coniferous afforestation was taken, which, nevertheless, did not lead to the development of more natural forest landscapes; and even sometimes to the directly opposite situation. Moreover, it can be concluded that: "The nature conservation in Central Europe for more than 100 years was primarily the protection of the cultural landscape, which trying to protect existing landscapes by imitation of historical forms of their use" [Piechocki et al: 2014: 42].

Commonly known term "restoration" means the renewal of "proximity to nature". In practice, however, nature conservation was beyond the reproduction of natural conditions such as flowing water ecosystems, lakes' restoration or moor revitalization as possible; the restoration of certain highly anthropogenic areas has increasingly been important [Zerbe, Wiegleb 2009]. An important role plays the restoration of the mountainous construction areas, industrial fallowness, and former places of military troops' exercise. Next to the famous motto "Save what you can still save!", which was related to secure the remaining similar to natural ecosystems with endangered species, gradually increased the importance of active, further development of certain states of nature. The emergence of restoration ecology as a scientific discipline led to the professionalization of discussions in this regard.

As far as the restoration is concerned, which literally means "restore of nature", there is basically a need, to answer two elementary questions: 1) What state of nature it should be taken to and 2) what are the reasons? Indeed, there are spotted varieties of related concepts as follows: reclamation, revitalization, regeneration, renovation, or rehabilitation. The restoration ecology is

also a very different approach than the approaches related to "ecological engineering" or "eco-technology", which stress mainly technical activity.

The rise and professionalization of the restoration ecology manifested in the textbooks' publication and the foundation of scientific associations. There already was founded in 1988 in the United States, the Society for Ecological Restoration; and in 2001 the Society for Ecological Restoration Europe. The first international conference on the problem of Restoration Ecology in Germany was held in 1997; there has also been founded the Working Group of Restoration Ecology by the Society for Ecology. Today, restoration ecology has already become a fixed component of teaching and research programmes at many universities. Restoration ecology is not simply applied ecology, because it must take into account its normative aspects. Restoration ecology compared to other scientific disciplines is determined by a transdisciplinary approach, which is characterized by the inclusion of various social actors (landowners, government, the public, and industry). Restoration ecology plays, ipso facto, a bridging function between science (ecology) and nature conservation with great implications for economic processes. Restoration not only has the natural dimension, but also the socio-economic, legal, ethical as well as aesthetic ones. Following the dimensions restoration procedures refer to a pattern of sustainable development, ecological capacity, conservation and preservation of ecosystems services, or ecological footprint [Piechocki, et al., 2012: 105].

The adopted by S. Zerbe and G. Wiegleba definition of ecosystems' restoration is typical for the term [Zerbe, Wiegleb, 2009: 5]. According to them, the restoration of ecosystems is based on development or restored by people more or less degraded or even completely destroyed ecosystems toward a more natural state. In addition, the mentioned authors described three objectives of restoration: Restore of the original, natural or possibly similar to one state, restore man-made areas, the creation in the natural and cultural landscape history of non-existent so far ecosystems [Zerbe, Wiegleb, 2009: 7]. It seems, however, that it should be avoid the term "restore", because it is too technical and implies the same state of nature, which is not consistent with the development of a dynamic ecosystem. In line with the restoration ecology the concept of "restoration" consists of both: 1) active biotope management measures, but also 2) admission largely open natural processes. An important example is forest restoration, which is especially important in the basic "centres" of national parks or nature reserves.

The restoration increasingly moves away from adopting "natural state" for the protection of natural processes. It can be concluded that: "Protecting the process discontinuities [...] the state of nature defining. It is a sense only in relation to the protected cultural landscapes" [Trommer 2014: 17]. Protection of natural processes is thus a new maxim in nature conservation, including the development of activities for restoration.

"National Strategy for Biological Diversity" [BMU 2007] assumed coverage by 2020, at least 2% of German spaces focused on the development of wilderness areas. According to this 5% of Germany forests should develop in the future "in the wild". Self-optimization is here the basic characteristic of all terrestrial and marine ecosystems. A further specific goal states so that by 2020, 5% of the German forest area (or 10% of the public forest) is to be developed in a natural way [R. Piechocki et al. 2014: 42-43].

In terms of local and regional strategies can be point out the following restoration schemes:

- restoration through targeted development, among others, objectives such as the conservation of certain succession stages, habitats, and species;
- restoration by the initiated development - the acceleration of some processes in relation to the others;
- protection-oriented restoration process by initiating spontaneous development - the result can be a new form of "wilderness areas", which in the past didn't occur here.

An important issue to understand the restoration concept is the idea of ecosystem services. It is defined as direct and indirect contributions of ecosystems to human life; i.e. the services and goods that benefit mankind directly or indirectly in terms of economic, material, or health (physical and mental) benefits [Naturkapital Deutschland - TEEB DE 2012]. TEEB initiative was launched by Germany and the Commission of the European Union in 2007. It distinguished basic types of ecosystem services as follows: basic, supplying, regulatory, and cultural services:

• *basic services* – it consists of such important benefits of ecosystems as: e. g. the formation of soil, photosynthesis, nitrogen fixation, and biogeochemical cycles; they are prerequisites for all other benefits;

• *supplying services* - the most market-oriented goods that are produced by ecosystems (e. g. food, drinking water, firewood and building); but here is partly required significant contribution of human capital and labour to produce these goods;

• *regulatory services* - ecosystem services that act on other ecosystem components and processes - they have direct benefits for humans; these include, among others, the filtering of the upper layers of the soil on the quality of groundwater or contribution of trees to reduction of soil erosion;

• *cultural services* – ecosystem services related to their impact and importance for recreation, aesthetic feelings, mental experiences, ethical requirements, social functions, cultural identities, patriotic feelings, or knowledge and cognition.

The concept of ecosystem services can help to understand a variety of services, which provides nature to human beings [TEEB 2010]. From an economic perspective, ecosystem services can be defined as a flow of “dividend”, natural capital. This capital consists of material, financial and human (labour and knowledge) capital. Nature conservation and sustainable handling of the natural life foundations as well as restoration are the same order of economic efficiency and accountability. Similarly, the very notion of "natural capital" indicates the limited natural resources and ecosystem services’ capabilities.

For the 21. century economy the ability of environment regeneration - or "biocapacity" – is a limiting factor; biocapacity is also for gas emissions so - in this case the natural absorption capacity is particularly limiting as if it had been used already discovered all fossil fuels, it would increase the concentration of greenhouse gases in the atmosphere to 1700 ppm. Nevertheless, climate researchers indicate the level of 450 ppm as an absolute limit that the temperature doesn’t rise globally by more than 2°C [Wackernagel 2014: 197]. However, Germany needs almost three times more than its present biocapacity; this means that almost two-thirds of nature used net by Germany comes from abroad. In an era of increasing scarcity of resources is undoubtedly a risky strategy. [Wackernagel 2010].

An "ecological footprint" is important for the implementation od restoration. This concept includes a surface that absorbs carbon dioxide, among others, supplying the population with potatoes, tomatoes, milk, fish, cotton, wood, and the areas with cities; it is referred to as "ecological footprint", which is converted into the surface of the earth [Wackernagel 2014: 198]. For this purpose, is used a standard unit of measurement – the global hectare. It is a biologically productive hectare with world average productivity. Consequently, the questions arise: What nature usage would be best for it; and what would be optimal? The strongest point of this concept lies in the fact that each human activity can be shown as to the need of the production area for it to be possible at all.

For the restoration must be terminated "dictatorship of the short term"; and ecology needs to be done an "anchor" of economic and political decisions. The basic steps include the following activities: economy of avoiding of high resource consumption, the absolute separation of economic growth and nature consumption, environmental management in the form of European environmental

audit and top-runner programs, the ecological model for public sector purchases and innovation, a policy that enables and supports wider civil society participation in the political process.

ECONOMIC LIMITS IN THE BIOSPHERE

There is an increasing risk of irreversible damage that will reduce the chance of living on the Earth. In the context of these harms an international group of researchers led by Johan Rockström undertaken these problems [2009]. They conclude planetary boundary in 9 ecological dimensions, 7 of them have been specifically examined; and 3 of them have already been exceeded planetary boundaries as follows: climate change, loss of biodiversity, and the change in the nitrogen cycle. So far, no country operates within the boundaries of the ecological capacity of the Earth. The contemporary situation must be considered against the background of global population growth, large social inequalities and imitative industrialization in newly industrialized countries.

Table 1. Planetary boundaries and their exceeding

dimension	**planetary volume limitation**	**exceeding of the limits of load**
climate change	CO_2 – concentration in the troposphere or a range of radiation (W/m^2)	yes
biodiversity	extinction ratio	yes
biochemical cycles	nitrogen form the atmosphere	yes
	deposition of phosphorus in the oceans	no
ocean acidification	average global aragonite saturation in the upper layer of water (omega units)	no
fresh water use	global water use	no
use of land	the size of land transformed into farmland	no
reduction of the ozone layer	stratospheric ozone layer concentration	improvement
aerosols		not estimated yet
load of chemicals		not estimated yet

Source: J. Rockström et al. [2009:461]

In 2008, all mankind consumed about 60 billions tons of biomass, minerals, metals and fossil fuels. This was 50% more than in 1975 and most of the consumption was in North America, Western Europe, China and Japan; there is expected by 2030 increase to 100 billions tons, despite the technical progress [Müller, Niebert 2014: 140].

Globally, restoration process requires consideration of the following assumptions as the basis of human activity in the biosphere:

• Earth as a thermodynamically open, but non-increasing physical system. In this an economy represents only a subsystem of the biosphere. The result is that there are definite limits to the biophysical flow of natural resources from the global ecosystem (the biosphere) to the subsystem of the economy, which later in the form of waste and pollution coming back to it again;

• Pattern balanced system with a high quality of life for all inhabitants of the Earth (not just human beings and other species) within the limits of the global ecosystem;

• Analysis of complex systems such as the Earth combined with the high degree of uncertainty, which can no longer be prevented;

• Flexible and adaptable practical action strategies that require a deeper understanding of the global system and local systems (ecosystems) as well as the functioning of the economy and society. This provides the basis for comprehensive actions towards sustainability [Binswanger 2010];

• Functioning of the biosphere is – largely – secured, so far, by anthropogenically unexploited ecosystems.

Summing, the society (and the economy) cannot be expanded indefinitely (at least in the physical sense), which is associated with a wide range of a restoration program. Restoration and sustainable development are the processes leading ultimately to the formation of a balanced state of the economy and society that respects the fundamental economic and socio-cultural requirements, while maintaining the natural basis of the economy and society.

CONCLUSION

Today the degradation of nature is not only a fundamental, structural, environmental problem, but also the problem of potential economic opportunities. Hence, there is a fundamental problem, whether economic and social restoration is achievable. The following conclusions can be specified:

• nature degradation and environmental burdens reached a level that has never been known in the history of society; hence the modern stage of society-environment relationship is defined as the Anthropocene;

• most of the discussion about restoration concerns the local and regional level, as well as reflections on the level of the global ecological system; restoration is important for both: national and European levels;

• an example of a historical anthropogenic ecosystem are heathland ecosystems; maintenance of such natural systems requires a variety of activities and economic investments;

• nowadays the restoration ecology is being formed, which is a trans-disciplinary science combining nature conservation with implications for economic processes;

• present conception of restoration is moving away from the idea of "ideal" state of nature to preserve natural processes, ecosystem services, a sustainable development pattern, or taking into account the ecological footprint;

• in the functioning of the biosphere the economic boundaries at the global level are becoming visible - this applies, inter alia, to climate change, biodiversity, biogeochemical cycles; and the economy is only a subsystem of the biosphere;

• the possibilities of further functioning of the biosphere and the economy are also determined by the anthropogenically unchanged ecosystems – i. e. maintaining the basic natural processes and efforts for restoration at various levels.

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Paulina Malinowska[6]

THE IMPACT OF SELECTED ELEMENTS AND FEATURES OF UNIT PACKAGES OF DERMOCOSMETIC PRODUCTS ON PRODUCT PERCEPTION AND PURCHASE DECISIONS TAKEN BY CONSUMERS

Abstract: The aim of this study was to identify the role of unit packages as the factors determining the purchase of certain dermocosmetic products for face care, and to assess the impact of various elements and features of dermocosmetic product packages on product perception and purchase decisions taken by consumers. A direct personal interview survey, conducted at the turn of March and April 2015 in the Wielkopolskie Province, covered a group of 150 female consumers making regular purchases of dermocosmetic products. The survey has revealed that the features and properties of dermocosmetic products, as well as their perceived quality, habits (product use experience), recommendations by a dermatologist/beautician, brand and price are the most important factors mentioned by the respondents. The packaging, therefore, is not seen as one of the major purchase determinants. While shopping, consumers tend to focus on and take into consideration the following major constituents and features of unit packages of dermocosmetic products: the possibility to effectively protect the product in use, functionality, label information, safety in relation to the product and quality of workmanship/aesthetic aspects. The kind of direct packaging is also of essence as consumers tend to opt for glass jars, as well as glass and plastic bottles with pump dispensers. The quality-related problems encountered by the respondents while using dermocosmetic products included the inability to remove the whole package content, misleading package size, use difficulties, inconvenient package shape/form and unsuitable capacity.

Key words: dermocosmetic product packages, purchase decisions, consumers

INTRODUCTION

1. The characteristics and functions of dermocosmetic product packages

Unit packages, including those of dermocosmetic products, must satisfy certain functionality criteria which comprise product protection, production process functionality, storage and transport chain functionality, product and producer presentation, provision of the necessary information, usefulness, consumer acceptance, compliance with the environmental protection requirements and conformance to the applicable standards [Lisińska-Kuśnierz and Ucherek 2006].

Unit packages of dermocosmetic products are divided into direct packages which contact the packed products and indirect packages. Depending on the function served with respect to the content, direct packages of dermocosmetic products may have various forms, such as tubes, boxes, jars, bottles, bottles with dispensers and aerosol containers. Indirect packages, in turn, are usually made of cardboard or paper. The most common packaging materials include plastic, glass and aluminium.

Visual design is an extremely important element of a unit package as it bears a number of hidden market messages. These are conveyed by the kind of materials, size, shape, colour, graphic features (such as the position of text, images, symbols, drawings, etc.) and functional solutions (such as easy product dispensing), and the like. [Lisińska-Kuśnierz and Ucherek 2006].

Each package element must satisfy an array of requirements. Spatial forms of packages are similar throughout the world. Also the materials used in their manufacture have been subject to

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standardisation and the packaging requirements are laid down in the applicable regulations. Colours, graphic design, manufacturing and finishing techniques of the package details, and the solutions introduced with a view to facilitating the product use (i.e. opening, closing and dispensing) are, therefore, the only differences to be found. The package form, structure and material should guarantee tightness, durability, functionality, adequate shape and size of the package, along with its barrier capacity, consumer acceptance and a positive impression of the product, producer and brand [Walden-Kozłowska 2005].

The package colour should attract the consumer's attention, as well as make it easy to recognise and recall the package, to create a positive image of the product, brand and producer, and to give the accurate impression of the product capacity. Moreover, well-matched colours may help the product be distinguished from other similar-purpose products and inspire the consumer's trust. Graphic design, i.e. all kinds of text, colourful elements, symbols, photographs and drawings, should not only provide information, but also appeal to consumers, encouraging them to buy the product [Walden-Kozłowska 2005].

2. The role and place of a unit package in the product purchase process

Given the wide variety of marketed products, diversified unit packages and sales forms, coupled with psychologically-conditioned behaviour patterns of individual consumers, it is impossible to definitely state that the product package is one of the major factors determining the buying decision. However, as the unit package is closely connected with the product itself, it plays a significant role in the buying patterns displayed by consumers [Ankiel-Homa 2012].

Purchase decisions are not tantamount to one-off choices of products or services, but they involve a multi-stage process. According to Kotler [1999], the decision-making process consists of several stages, such as identifying the problem (or need), coming up with alternative solutions (or searching for information), assessing various options, deciding upon a specific product, and reflecting on the purchase. The actual market behaviour of a consumer depends on his/her perception of the world. This is the actual perception that makes the consumer pay attention to the product package and its constituents, such as shape, size, colours or label information, process it and assign specific meaning, whereas his/her mind develops a certain image of the packed product. The unit package may, in fact, be significant at each stage of the buying process, which depends, to some extent, on the co-occurrence of several different factors influencing the consumer's buying process and behaviour patterns [Ankiel-Homa 2012].

The underlying factors that affect the actual role played by the unit package include the type of consumption goods, the stage of the buying process, the actual consumer's behaviour and features (including somatic, psychosomatic and psychological), and other social and cultural factors. The significance of unit packages in the buying process is conditioned, to a large extent, on the type of buying decision [Ankiel-Homa 2012]:

- in habit-based decisions, the package reminds the consumer of the product and brand, and strengthens his/her habitual behaviour. In such cases, neither the packed product features nor the label information are closely analysed. These are structural and visual elements that are more important than information;
- in impulse-based decisions, the package identifies both the brand and product, invoking certain impressions regarding the product value. It also serves as a means of advertising the product. In such cases, the structural and visual elements of unit packages are considered the most significant;
- in prudent decisions, the package carries specific product information, influences the marketed product assessment and reduces the information asymmetry. In such cases, the informative aspects are of great essence.

The unit package, along with all structural, visual and informative elements, determines the consumer's perception of functionality, easy opening and closing, and environmental-friendly aspects. The features and attributes of the packed product, along with its quality and benefits derived from its use, including the economic benefits (i.e. good value for money), health-related benefits, natural character or environmental friendliness of the product are viewed by the consumer through the prism of its package [Ankiel-Homa 2012].

THE SURVEY CHARACTERISTICS – THE OBJECTIVE, OBJECT AND METHODS, AND THE CHOICE OF SURVEY UNITS

The aim of this study was to identify the role of unit packages as the factors determining the purchase of dermocosmetic products for face care, and to assess the impact of various elements and features of dermocosmetic product packages on the product perception and purchase decisions taken by consumers.

The objects were the unit packages of dermocosmetic products (creams) intended for face care. The choice of this specific category was dictated by the fact that this is the largest category of dermocosmetic products available in the pharmaceutical market.

With a view to solving the research query and meeting the set objective, direct personal interview surveys were conducted at the turn of March and April 2015 in the Wielkopolskie Province on a group of 150 female consumers aged more than 18. The respondents were inquired about the factors that encourage them to buy dermocosmetic products. They were also asked to assess the significance of specific elements and features of dermocosmetic product packages taken into account in the buying process, to indicate their preferences regarding package types, and to report the quality-related package problems which they had experienced.

Table 1. The survey sample structure

Specification		Sample size	Percentage [%]
Sex	Women	150	100.0
Age (in years)	18-20	6	4.0
	21-30	72	48.0
	31-40	29	19.3
	41-50	25	16.7
	more than 51	18	12.0
Education	primary	3	2.0
	vocational secondary	8	5.3
	secondary	41	27.3
	higher	98	65.3
Place of residence	rural area	21	14.0
	town up to 20,000 residents	15	10.0
	town of 21,000-50,000 residents	16	10.7
	city of 51,000-100,000 residents	23	15.3
	city of more than 101,000 residents	75	50.0

Source: own compilation based on the surveys conducted (N=150)

A non-probability sampling method was employed to select the respondents, as a result of which only women declaring regular purchases of dermocosmetic products were surveyed. The sample selection process also took into account such demographic features as age, education and place of residence. Those criteria were considered significant as they differentiate the buying styles of individual consumers. The structure of respondents included in the survey is presented in Table 1.

Women aged 21-30 accounted for 48% of all respondents while women aged 18-20 constituted only 4% of the surveyed group. Most respondents had attained the higher (65.3%) or secondary educational level (27.3%) and resided in cities of more than 101,000 residents (50%) or 51,000-100,000 residents (15.3%).

RESULTS AND DISCUSSION

In the survey conducted, the impact of unit packages of dermocosmetic products on the consumer purchase decisions was analysed. It was assessed in terms of the following aspects:

- properties of the dermocosmetic product,
- perceived quality of the product,
- price,
- brand,
- pharmacist's suggestions,
- product availability in the pharmacy,
- recommendations by a dermatologist/beautician,
- recommendations by a dermo-consultant in the pharmacy,
- recommendations by a friend,
- sales promotion,
- advertising in the media,
- product use experience/habit.

The survey results are shown in Table 2.

Table 2. The dermocosmetic product package in the hierarchy of purchase determinants

Dermocosmetic product purchase determinant	**Assessment**
Properties of the dermocosmetic product	4.56
Perceived quality of the dermocosmetic product	4.12
Package of the dermocosmetic product	2.87
Price	3.58
Brand	3.65
Pharmacist's suggestions	3.41
Product availability in the pharmacy	3.24
Recommendations by a dermatologist/beautician	3.66
Recommendations by a dermo-consultant in the pharmacy	3.19
Recommendations by a friend	3.43
Sales promotion	3.27
Advertising in the media	2.59
Product use experience/habit	4.06

Source: own study

The respondents stated that the most important factors taken into consideration in the buying process of a dermocosmetic product included its features and properties, perceived quality, habits (product use experience), recommendations by a dermatologist/beautician, brand and price. These were followed by recommendations by a friend, pharmacist's suggestions, sales promotion, product availability in the pharmacy and recommendations by a dermo-consultant.

The respondents further stated that the packaging was not an important purchase determinant (an average of 2.87). However, it should be noted that the package of a dermocosmetic product is closely connected to its brand. In consequence, while searching for a given product, the consumer looks for a characteristic package. The survey also revealed that the product advertising in the media was rated last in the hierarchy of dermocosmetic product determinants. It is, nevertheless, worth noting that the quantity survey included statements made by purchasers who were either unaware of the impact made by advertising on their buying choices or seemed reluctant to admit it.

On the other hand, the results of the surveys conducted by the Centre for Public Opinion Research TNS OBOP in 2007 for the cosmetic market [The TNS OBOP research report of 2007] indicate that the price, quality and brand were the principal factors determining the choice of cosmetic products. Only 7% of the survey respondents admitted to paying attention to the visual aspects and packaging.

Table 3. The constituents and features of packaging taken into account in the buying process of dermocosmetic products for face care

The dermocosmetic product package features	**Assessment**
Type of packaging material	2.64
Structural form of the package	2.92
Package shape	2.81
Package colour	2.59
Graphic design	2.69
Environmental-friendly aspects	2.96
Functionality	3.97
Quality of workmanship/aesthetic aspects	3.47
Safety in relation to the product	3.95
Effective protection of the product in use	4.19
Label information	3.96

Source: own study

As part of the personal interview, the respondents were also asked to assess the significance of specific constituents and features of unit packages of dermocosmetic products, which they take into account and assess in the buying process. These included:

- type of packaging material,
- structural form of the package,
- package shape,
- package colour,
- graphic design (i.e. the placement of text, drawings, symbols, etc.),
- environmental-friendly aspects,

– package functionality (i.e. easy opening, closing and dispensing, as well as durability),
– quality of workmanship/aesthetic aspects,
– safety in relation to the product (i.e. the lack of negative interactions),
– effective protection of the product in use,
– label information.

The results obtained are shown in Table 3.

Based on the survey results, it can be inferred that the effective protection of the product in use is the most important package element taken into consideration while purchasing a dermocosmetic product. The package functionality is another significant feature. These two are followed by label information, safety in relation to the product and quality of workmanship/aesthetic aspects. Less attention is paid to the environmental-friendly aspects, form and shape of the package. Graphic design, colour and type of the packaging material are considered the least important.

Finally, the survey respondents were requested to specify their preferable types of dermocosmetic product packages. These included:

– a metal tube,
– a plastic tube,
– a metal jar,
– a glass jar,
– a plastic jar,
– a glass bottle with a pump (dispenser),
– a plastic bottle with a pump (dispenser).

The results obtained are shown in Figure 1.

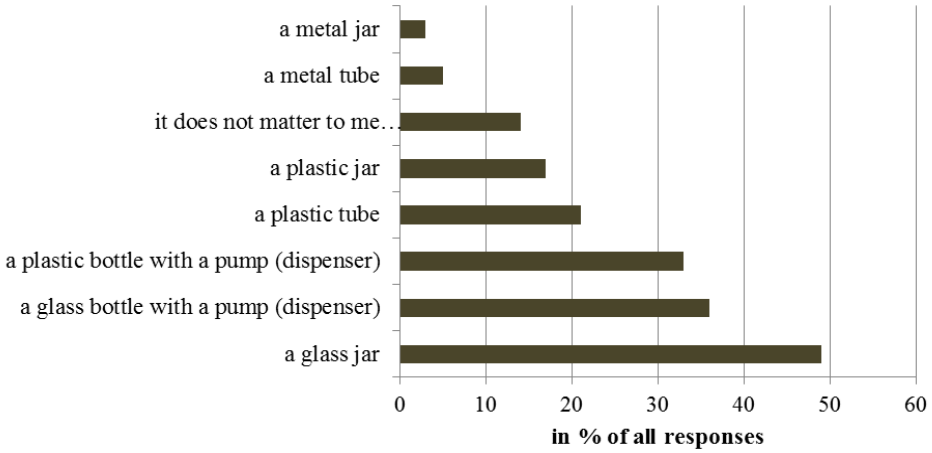

Figure 1. Respondents' preferences regarding the types of packages of dermocosmetic products intended for face care (in % of all responses)

* % of responses do not add up to 100 (a multiple choice question)

Source: own study

Nearly every second respondent (49%) chose a glass jar as her preferred type of packaging. Many respondents also opted for glass bottles with pumps (36%), plastic bottles with pumps (33%) and plastic tubes (21%). These were followed by plastic jars (17%), metal tubes (5%) and metal boxes (3%). 14% of all respondents stated that the type of packaging of a dermocosmetic product did not matter to them.

The respondents' preferences regarding the types of packages may be related not only to functionality but also to consumer's previous experience, either positive or negative, regarding the package quality. In consequence, the respondents were requested to specify the quality-related problems that they had encountered while using the dermocosmetic product packages. They could choose from the following options:

- damaged/faulty/leaking package,
- use difficulties (related to opening/closing/dispensing),
- misleading package size (e.g. making the product capacity look bigger),
- ill-matched packaging material,
- inconvenient package shape/form,
- unsuitable capacity (too big/too small),
- inability to remove the whole package content.

The results obtained are shown in Figure 2.

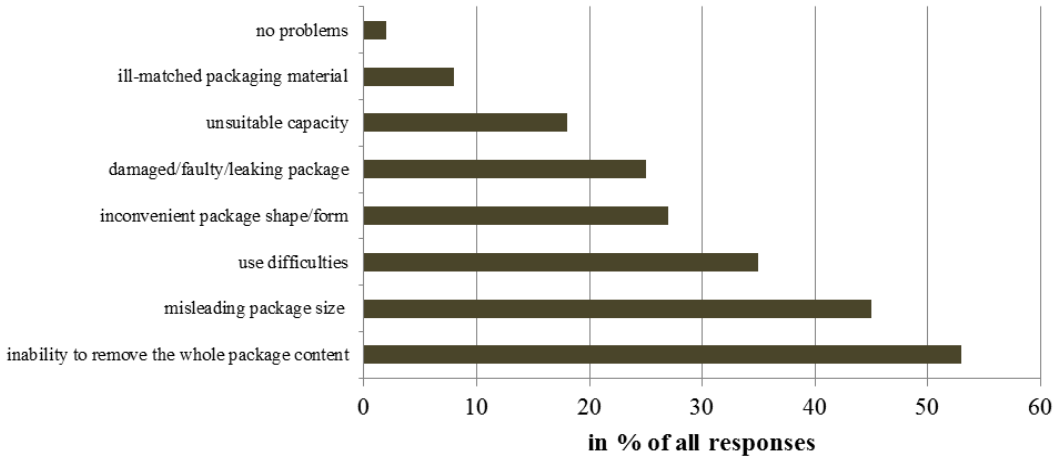

Figure 2. Quality-related problems encountered by the respondents while using the dermocosmetic product packages (in % of all responses)

* % of responses do not add up to 100 (a multiple choice question)

Source: own study

The analysis revealed that the inability to remove the whole package content posed the major problem for 53% of the survey respondents. Other problems reported included misleading package size (45%), use difficulties (35%), inconvenient package shape/form (27%), damaged/faulty/leaking package (25%) and unsuitable capacity (18%). Only 8% of the respondents perceived the ill-matched packaging material as a quality-related problem.

CONCLUSION

The personal survey interviews conducted among female respondents allowed for identifying the role of unit packages as the factors determining the purchase of dermocosmetic products for face care, and assessing the impact of various elements and features of dermocosmetic product packages on the product perception and purchase decisions taken by consumers. Although the survey revealed that the package was not one of the major purchase determinants, its close connection to the brand can hardly be neglected. While searching for a specific product, the consumer looks for a characteristic package which, in the case of dermocosmetic products, carries a number of significant messages. The survey showed that the properties of dermocosmetic products were the principal factors behind the choices made by the respondents. This kind of information is included in the dermocosmetic product package, influencing its perception and the attitude taken by consumers with respect to the packed product, and hence their purchase decisions. An accurate selection of the visual elements by the producer is crucial to an effective use of the package as an information carrier in the marketing communication.

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SOCIAL ENTERPRISES VERSUS GLOBALISATION

Abstract: Growing connections in world economy, which date from 1980s, are reflected, among other things, in increasing technology diffusion, trade exchange, direct investments or capital flow. Deepening interdependencies between individual countries - provoked by globalisation - generate fear, especially with respect to their influence on the direction and dynamics of economic and social structural changes in each country. Since globalisation can be treated as a complicated set of processes which frequently oppose one another. On one hand in its economic part it causes the increase of quality of goods and services, a fall in production costs, it stimulates export, creates better conditions for foreign investments, gives rise to a bigger access to modern technologies and information as well as to the conditions of research and technology development. At the same time its negative reflection in the social domain can and in world economy reality more and more frequently is being reflected in disappearance of cultural differences and national distinctions. The sign of negative effects of globalisation in less-developed countries is visible in expansion of poverty and famine areas and the sense of less control over people's own lives (so-called Californiazation of life). Another effect of a described process which encourages the terrorism development must be stressed – the growth of religious fundamentalism and ethnical separatism.

Restrictions on indicated negative social effects of globalisation should be linked with the development of social enterprises in which the obtained financial surplus is not the overriding principle but serves the execution of social aims. They create workplaces for people in difficult situation, they are a real alternative for alienated people particularly by means of globalisation processes, in a group of some people they can also neutralise the tendency to take radical actions threatening the safety of others.

In the context of the above remarks the aim of the paper can be formulated which is an evaluation of abilities of analysed enterprises in limiting social effects of globalisation; the length of the paper resulted in limitations to a few of their kinds. A formulated thesis is as follows: in countries with extend various forms of analysed enterprises the negative social effects caused by globalisation are diminished. An effort has been made to convince the readers that in the future social enterprises will play a major role in employing people alienated from labour market, complementing an inefficient state in helping the elderly whose offspring live abroad and are not able to provide sufficient help for their parents. The essence of such reasoning can be linked, among other things, to a progressing process of increasing emigration of young Poles to the member states of the European Union. It was indicated that the negative effects of globalisation manifesting themselves in disappearance of cultural differences and national distinctions, expanding areas of misery and famine leading often to religious fundamentalism and ethnic separatism can significantly be neutralised by developing social enterprises. Since they make it possible to satisfy an immanent human characteristic – the need of belonging to a group or community that they can identify with. It was also reasoned that social enterprises play a major role in stimulation of local and global development using determined competitive advantages in particular local resources, the potential of place and people which are the natural, cultural and landscape values.

Key words: aging society, emigration, enterprises, globalisation, social, terrorism,

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INTRODUCTION

In economic and social realities of individual countries a progressing globalisation can be treated as a complicated set of processes often opposing one another. In its economic part, especially in highly-developed countries, globalisation is reflected, among other things, in the drop of production costs, the improvement of goods and services quality, the growth of profitable export, an increased access to modern technologies and technology mainstream. The reflection of globalisation is represented in increasing diffusion of technology and trade exchange, a deepening flow of direct investments and capital. At the other extreme, especially in low-developed countries, the negative social effects of globalisation processes are located. Their reflections are, among other things, the expansion of poverty progressing marginalisation of some social groups, the sense of less control over people's own lives (so-called Californiazation of life), the disappearance of cultural differences or national distinctions, the growth of religious fundamentalism and ethnic separatism.

Restrictions on indicated negative social effects of globalisation should be linked to the development of social enterprises in which the obtained financial surplus is not the overriding principle but serves the execution of social aims. They create workplaces for people in difficult situation, they are a real alternative for alienated people particularly by means of globalisation processes, in a group of some people they can also neutralise the tendency to take radical actions threatening the safety of others.

Going by the above observations the aim of the paper was set on evaluation of the abilities of social enterprises to restrict chosen negative effects of globalisation processes of a social character, especially in less-developed countries. Thereby an effort was made to verify a hypothesis that in countries which extend various forms of analysed enterprises, the negative social effects caused by globalisation are diminished.

The realisation of an assumed aim was preceded by deliberations on globalisation and its diverse multidirectional effects, as well as qualifying the idea of social enterprises, their form and mode of action.

1. GLOBALISATION AND ITS ECONOMIC AND SOCIAL CONSEQUENCES

Since 1980s world economy becomes more and more interdependent. Decreasing transport costs, information and communication technology diffusion devalued the concept of distance. A significant growth in trade exchange, level of direct investments, capital flow and technology transfer was noticed. However, in most of the countries, a current wave of "globalisation" was accompanied by a fear of its influence with respect to employment and income distribution. Regardless of definitions and indexes which are being analysed, current debate pose a heated discussion between the adherents and contesters of globalisation [Lee 2006]. Since its consequences in respect of economic growth and social phenomena lead to sweeping changes worldwide. Direct foreign investments, global trade, migration and new technologies available worldwide determine the acceleration of social and economic structural changes. At the same time we can witness a great social disorder. While the level of global poverty decreases, social inequalities and tension grow. A specific kind of dichotomous explanation of globalisation character is provided, among other things, by the definition of this phenomenon formulated by one of the most well-known British sociologists. A. Giddens describes globalisation as a complicated set of processes "which often oppose each other, causing a creation of conflicts, partitions and new forms of social stratification. Therefore the revitalisation of local nationalisms and emphasising local identities is directly linked to global interactions which they oppose" [Giddens 2010]. While, on the other hand, A. Giddens emphasises that globalisation determines the intensification of worldwide social relations which link distant localities relieving them from time and space [Ślusarczyk 2010].

At the end of 20th century previously omitted social aspect of globalisation was noticed. A direct reason of such a state of affairs were adverse phenomena manifesting themselves in an increasing distance between poor and rich societies. The exclusion of the poor from economic advantages resulting from globalisation processes led to a growing frustration and increased opposition to neoliberal economic policy of some societies. Negative consequences of globalisation, in the economic, as well as social, domain became a reason of debate on the changes of its character in which free market actions of the "invisible hand" should be revised by paying more attention to a man and their welfare.

The report of United Nations Development Programme (UNDP) stresses the necessity of implementing a global management being carried out on the basis of a common perspective of such values as freedom, justice, equality, tolerance and respecting common standards [UNDP 1999].

Undergone worldwide economic, social and political changes in the past years were amongst major manifestations of a re-realisation of globalisation and integration. Some experts indicate that the big "financial crisis" initiated in 2008, which has adversely influenced the economic and social lives, was a significant effect of globalisation process. While, on the other hand, for instance "Arabic spring" – political movement is another significant and positive result of globalisation.

Table 1. Advantages and disadvantages of globalisation

Advantages	Disadvantages
Economic	
• growth of quality of goods and services • drop of communication and production costs • growth of efficiency • better conditions for foreign investments which determine economic growth and creation of new working places • stimulation of export • wider access to modern technologies and information • capital transfer to less-developed economies • more convenient conditions for science and technology development and a chance of a better use and distribution within this domain	• a rapid spread of economic crises • growth of global income inequalities • expansion of the significance of transnational corporations • weakening of local enterprise development • excessive use of non-renewable resources and a stronger degradation of natural environment
Social	
• easier access to diverse goods • services, new technologies, cultural achievements, • management methods • openness to cultural diversity and wide access to a rich and varied cultural offer • growth of communicating possibilities via modern technologies	• diminishing of cultural differences and national distinction • a spread of misery and famine areas • people's perception of having less control over their own lives so-called Californiazation of life • increase of religious fundamentalism and ethnic separatism (a factor encouraging development of terrorism)

Source: own study.

Certainly globalisation and integration directly or indirectly influence a number of economic, political and social phenomena, however before proceeding to the analysis of consequences and possible regulation implementation and supervision of globalisation in the state and world, the

multidimensional and dichotomous character of globalisation should be considered [Abutalibov 2015]. Table 1 presents some benefits and costs connected to a globalisation process in economic and social domain.

The above indicated positive and negative consequences of globalisation point out only some of its effects. Economy internationalisation created great conditions within goods, services and people flow, providing remarkable opportunities to improve the quality of life. Competitiveness increase was reflected, among other things, in establishing and development of new companies which through the market mechanisms led to the growth of quality and fall in prices of goods and services. Unfortunately the advantages resulting from globalisation do not spread in a balanced way and accompanying processes lead to numerous distortion which are a threat also of a global character. Table 2 presents the beneficiaries of globalisation as well as those entities which are excluded or threatened by exclusion.

Table 2. Beneficiaries of and entities threatened by globalisation process

Beneficiaries of globalisation	Entities threatened by globalisation
• highly-developed countries • people of a strong economic and social position • modern sectors of economy • people of high professional qualifications • big enterprises and multinational groups	• backward and less-developed countries • people of low professional qualifications • people weaker economically and less mobile • traditional sectors • small enterprises and local communities • people dependent on social protection

Source: own study.

2. THE ESSENCE OF SOCIAL ENTERPRISES AND FORMS OF THEIR MANIFESTATION

A lack of a legal definition of social enterprises (SE) results in continuous discussions on its peculiarity while looking at it, on one hand, considering its particular features which distinguish it from other entities and, on the other hand, taking into account the functions this enterprise serves. The most significant peculiarity of such an entity seems to be an issue of the profit and the aim of running such business. Since the financial surplus earned is not an overriding principle and is used to fulfil social goals. Therefore it does not mean that the profit is not important since earning it determines opportunities to deliver a social mission which is the highest priority for social enterprises. Therefore this entity permanently binds social and economic activity which generates not only the profit of SE but also creates workplaces, especially for people in difficult situations.

The latter forms a basic group of SE beneficiaries. Therefore they serve a special role in preventing social and profession exclusion. The activating and integrating mission of SE seems to be fundamental in their definition, in its functional meaning. With respect to people alienated from labour market, for instance, physically and intellectually disabled, prisoners, homeless, representatives of ethnic minorities or people of the lowest professional qualifications, social enterprises are a real alternative, especially in the face of ineffectiveness of traditional forms of direct support. Past methods of various kinds of supported employment are not successful. In the face of increasing problems connected with economic efficiency of public finances in Poland, e.g. linked to demographic changes, current level of support provided to the above mentioned people is not only too little but we can expect even bigger constrains. Meanwhile social enterprises equip excluded people into new skills, they teach the responsibility for themselves and others giving them

their self-esteem, a feeling of belonging to a certain group and hope to improve their lives. Social enterprises also create a pro-business attitude, motivating to active efforts and quite often, as the examples of such entities around the world show, they are a specific kind of a bridge to an open labour market. Not without any significance is their local character. It is not the rule determining the territorial scope of enterprise functioning, however in Poland the dominating number of SE is focused mainly on solving problems in the neighbourhood. Offering goods and services which are socially useful, not only they support but also stimulate the development of local communities motivating to more active solutions.

Contemporary enterprises operate in a global environment. Nowadays this fact determines that regardless of the localisation, the entities' decisions must be based on the analysis of international competitiveness. The economic activity of social enterprises does not preclude their functioning in a global environment. This decision, as well as the range and scope of activity depends only on the decision of the founders. They take a risk of starting a business in the open market with the only difference that the analysis which is the basis of decreasing the risk does not only concern the economic issues but mostly the social needs and possibilities. The latter usually result in the fact that social enterprises provide services to solve problems and support local community within which they operate. In practise a situation may occur that they realise a social task in which a financial loss is accepted. It is related to a paid activity (carried on not for a profit) which results in major social benefits which justify that it is reasonable and advisable to provide such enterprise. The range and opportunities of a SEs services that are charged for is mostly determined by a legal form of their activity. However, the business activity and economic and social goals which SE aims at, as it is in traditional enterprises, must be preceded by a careful analysis of costs and incomes and possible profits. The purpose of the latter, depending on the functioning model of SE and investment plans, must in turn be aimed at realisation of social mission. Table 3 presents most commonly adapted models of creating and running social enterprises.

Table 3. Models of creating and running social enterprises

Social cooperative	
Basic formal requirements	**Social / economic goals**
- it is a legal person - it must be created by at least 80% of people threatened by social exclusion - members/workers must take an active part in management - it must be created by minimum 5 and maximum 50 people-members/founders (minimum 4 people threatened by social marginalisation) - employment in the form of cooperative labour contract	- it is founded in favour of social and professional re-integration and on the basis of own work on the founders. The range of business covers common engagement of the group in an economic activity realising social aims within education, culture in favour of its members and their local environment as well as an activity socially useful in the public domain. Members/founders: - disabled people - homeless people - drug-addicts or people addicted to intoxicants, alcohol after completing a therapy - mentally-ill people - people released from prisons or penitentiaries

Limited company	
- it is a legal person - an economic activity has no restrictions - a company statutes requires to put a record of social aims as of overriding importance and there must be a record of allocating a profit for social goals - the possibility to take up shares by other legal persons (most frequently non-governmental organisations, i.e. partnership) - significant opportunities of business development and to raise funds from commercial sources - employees do not have to be from a socially excluded groups - no need of the workers to take active part in management-division of managerial and worker's functions	A limited company with statutory social goals is mainly founded to socially and professionally re-integrate its workers. In that respect the workers of the company are usually people originating from a group of the socially excluded (mostly the disabled) and its shareholder is a non-governmental organisation. There are three main goals of the enterprise's activity: - profit - target of non-paid character, undertaken by realisation of economic activity, however, not oriented towards profit. If there is a profit, it is not shared among the shareholders but allocated for social purposes - non-economic goal-undertaken beyond the economic process and its realisation does not generate profit (purposes: culture, science, charity, research, protection of natural environment)
An economic activity of non-governmental organisation (NGO)	
- it has a legal personality of a non-governmental organisation - it is necessary to put a record of an economic activity (its kind, range and scope) in the statutes of the organisation: it is an organised, continuous, paid activity run in its own name - an economic activity of NGO can be run by a stand-alone entity - workers do not influence the management of the company - an economic activity must support the statutory activity of the organisation - it requires the division of economic and statutory activity - the necessity of clear partition of resources (financial, tangible, labour) used for economic and statutory activity - all public and private donations can exclusively be allocated in statutory activity - resources earmarked for statutory activity cannot be transferred to economic activity and are not taxed - incomes from a business activity transferred to statutory activity are not taxed - no limits in employing workers - the minimum level of foundation assets is 1000 zł - the assets of organisation is earmarked to fulfil statutory assets and cannot be divided amongst members, founders or management bard	Non-governmental organisation running an economic activity fulfils various goals depending on the SE profile of activity, e.g. welfare, self-support, representative, ethnic minority or traditional purposes. Non-governmental organisation running an economic activity can fulfil statutory goals by running an economic activity There are three variants of linking an economic activity to a non-paid statutory one: 1. the scope of an economic activity does not tie in with the statutory activity. An economic activity serves as a tool to gain profits to run the statutory activity. 2. the scope of an economic activity partly ties in with the statutory activity. An economic activity apart from profit goal at the same time realises statutory aims. 3. the scope of an economic activity fully ties in with the statutory activity. Economic and statutory goals are achieved at the same time.

Paid statutory activity of a non-governmental organisation	
- within the paid statutory activity the organisation can sell goods or services produced or provided by people directly benefiting from public benefit activity - the possibility of using all the organisation assets (tangible, non-tangible, personal, financial) for paid activity - the possibility of earning profits to cover costs which are not covered from grants, donations etc. - all income from paid activity must be transferred to statutory activity	- providing paid services mostly in scope of rehabilitation and adapting disabled people to professional work - sale of donated goods to run a public benefit activity - paid activities which classify as public domain

Source: own study.

A vital determinant of an accepted form of SE activity in Poland is the possibility to contribute capital to its activity. A conviction that non-governmental organisation must function basing on the "non for profit" formula (being at mercy of public or private donators) seems to be unjustified, even anachronistic. The need to create and develop SE not only refers to deepening inefficiency of the state in the scope of growing demographic problems but also to particular challenges of a modern world which are the effects of globalisation processes. Those problems will be discussed in the following part of the paper.

3. THE IMPACT OF SOCIAL ENTERPRISES ON NEUTRALISING NEGATIVE EFFECTS OF GLOBALISATION

A progressive process of an aging society in highly-developed and emerging countries means there is a necessity to implement changes in functioning of the whole state, first and foremost in individual units and families. The problem of state's social inefficiency, described in the preceding part of the paper, showing that in the face of growing needs restricts the expenditures on social or human goals indicates how extremely important issue, in times of globalisation, is the diminishing role of the family as a basic institution supporting and providing care. Dynamic, mobile people of a young generation are not able to provide sufficient care for their parents. In the face of a growing number of old people, a bigger and bigger role will be played by informal relations with unrelated people and the main burden of care will be taken over by public institutions. However, their number is insufficient and their functioning standards, despite many positive changes in the past years, in practice are at least questionable. Do the Polish legal regulations in force enabling organising care satisfactory for every person, in practice mean every day in a social care home, consuming the principle of help and respecting on a daily basis the principles such as dignity, intimacy, independence or the right to make choices are properly abided? This issue remains doubtful especially that efficient control tools to monitor the activity of social care homes were not yet fully formulated [Grabusińska 2013]. Invaluable importance to complete the state role in the face of above indicated problems is attached to social enterprises, including entities run by foundations and associations and social cooperatives which provide care services.

The above presented remarks present an obvious conclusion that in a long perspective the labour resources will decrease. This forecast is amplified by an increased process of emigration of young Poles to the countries of Western Europe resulting not only from a growing unemployment rate among the young generation but also from mentality changes of young people, who in times of globalisation feel the citizens of the world, have no educational, language or technical barriers and

they use the benefits of economies and societies being international. Amongst the people leaving Poland we can distinguish two fundamental groups. The first one includes people of low-skills and low income (as well as the unemployed). They find employment in those economy sectors which are unpopular with local entrepreneurs. The other group includes people of high skills, often specialists in their domain. Deficiency of such specialists on the emigrants' domestic labour market determines a considerable demand for such workers [Maniak, Nowak-Lewandowska 2006]. Past research on economic emigrants in Poland indicates that a main reason of emigration is the dissatisfaction with the incomes obtained in the domestic country or lack of employment, in case of the unemployed, and a low level of satisfaction of social and economic needs. Despite the fact that in times of globalisation the labour migration is a natural phenomenon and it is unavoidable, the main task of the state should be establishing such a shape of economic and social policy that positive effects of migration are bigger than its negative consequences [Maniak, Nowak-Lewandowska 2006]. With respect to the latter they are of economic and social dimension. Amongst the most significant effects of social migration we can classify:

- drop of population growth;
- breaking up families, changes in the concept of a family and its meaning, so-called "Euro-orphans"
- drop in number of highly-skilled people of an intellectual potential;
- aging society process acceleration;
- dilemmas concerning the future of aging people;
- reduction of the unemployment in the state;
- presentation / promotion of the origin country through migration factors;
- changes of social-economic structures [Cymanow 2010].

Social enterprises presented above more and more intensively developing in the European Union member states are focused, among others things, on realisation of needs of people who are threatened by exclusion and those with little chances to find a job. On one hand, they focus on enabling to get professional skills and training, to requalify or raise the existing skills (e.g. clubs and social integration centres), on the other though they represent an offer of running a common enterprise as a member of labour or social cooperative. The latter form of cooperation seems to be a good solution in times in which a problem of social exclusion and marginalisation also among people returning to their homeland gains in strength. Since economic considerations represent a significant, albeit not the only, premise to seek employment abroad. Cultural clash of immigrants with a new social reality during their time abroad and periodical returns to evolving local community determines new attitude to their personal identity. On one hand they still have contact with a local environment, while on the other at the same time they assimilate with their surrounding in a foreign country. This phenomenon leads to a creation of a new type of trans-international identities as a result of remaining in close relations, both with the local community of the place of origin and the foreign community in the country of emigration. A contemporary vision of migration contributed also to a creation of a new phenomenon – so-called people on the move which means periodical migrants living in two cultures who despite the polyvalence can be marginalised along with accompanying along indications of social pathology. Since assimilation processes are subject to the influence of ethnic antagonisms and divisions according to nationality which appear on the labour market [Leśniak-Moczuk 2008].

Social effects of globalisation, indicated formerly in the paper, which manifest themselves, for instance, in vanishing cultural differences and national distinctions and spreading of poverty and famine areas, so-called Californiazation of life, can lead to a growth of religious fundamentalism and ethnic separatism and as a result to terrorism. The answer to a question of a neutralising role of

social enterprises in the face of main factors evoking at a certain group of people tendencies to take radical actions which are a threat to other people's safety – can be found in economic-social rules of SE activities mentioned above.

M. Crenshaw indicates, in his opinion three most significant reasons of terrorists' activities. They are as follows: hope to change the current situation, the need of group belonging and a will to improve their own social status [Crenshaw 1985]. J. Horgan in turn distinguished three key motives of terrorist activity. The first one is the injustice and suffering addressed to a person, group, particular situation, idea, state, etc. which lie at the root of an economic, legal or social character. Another one is the sense of identity which must be considered as an important element of human existence. Searching for their own identity or as a result of a low self-esteem some people start to identify with groups of radical views and representing their potential recruits. The last group is connected to an immanent human characteristic – the need of belonging to a group or community that they can identify with [Horgan 2003].

Goals and mission of social enterprises seem to play a major function in fulfilling social needs which lack of realisation in certain circumstances can contribute to forming terrorist attitudes. A wide spectrum of various determinants influencing the occurrence of terrorism was resented by B. Bolechów. Among these we should pay attention to consequences of globalisation process, as a result of which there appears a visible tightening and an increase of worldwide interdependences. It is accompanied by disappearance of borders, life unification in many places of the world and mass migration [Bolechów 2010].

Social enterprises play a major role in stimulation of a balanced local and global development using determined competitive advantages in particular local resources, the potential of place and people. Among the other values we can classify also natural environment, culture or landscape. Realisation of values and ideas of social economy in stimulating sustainable development in a global view can manifest itself, among other things, in compering problems of natural environment protection, or widely comprehended educational and cultural actions; however in a local and regional scope it can focus on promoting local products of own brands and territorial marketing that follows. Building a local brand plays an extremely major role in determining the identity of a local community or region – natural and cultural values, peculiarity and features which the inhabitants of the region identify with. Information on local community is the foundation to create the media brand. It carries the values which fundamentally distinguish the brand from among many other goods available on the global market dominated by international groups. They are as follows: basing on cultural, natural an landscape value, environmental friendliness, creating workplaces locally and promotion of local community [www.malopolskie.pl].

CONCLUSIONS

The discussion on globalisation concerns its positive and negative manifestations. The latter are concerned to create threats and to be leading to a bigger income and development stratification in particular countries and worldwide. As it was indicated, the progressing globalisation seems to be the groundwork for creation and functioning of social enterprises, especially of social cooperatives which activity is aimed at the protection of the rights of the most impoverished and at prevention of poverty polarisation and negative phenomena in specific regions or social groups.

Globalisation, right along neo-colonialism, neo-liberal capitalism and consumerism represents a set of conditions influencing, as it has been already stressed, the proliferation of terrorism threat. These processes on one hand weaken the cultural heterogeneity an at the same time deepen the economic disproportions. However, keeping in mind the positives of globalisation or economic achievements of neoliberal capitalism, we must emphasise indicated in the paper, complementary function of SE in easing social and economic dissymmetry. The ideas of common forms of

management are for many people the model of moral conduct. These are ideological values as democracy, equality and self-help, ethical values like justice, honesty, caring and faith in cooperative ideas and values connected with the rues of social enterprise which include voluntary character, participation in management autonomy, education and personal development as well as cooperation.

Keeping the above solutions in mind we cannot forget that social enterprises are not and should not be the panacea for all social an economic problems, even though they can significantly help to ease social tensions and limit the poverty and backward area. At the same time aiming of SE at solidary potential of ethnic groups is a specific kind of protection, respect and understanding for their ethnic distinction and culture.

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FOREIGN DIRECT INVESTMENT IN DEVELOPING COUNTRIES

Abstract: Foreign Direct Investment (FDI)is one of the crucial factors of economic growth, in particular in the developing countries. Relatively low savings rate in those countries increase the need for FDI. Due to the lack of own capital, FDI becomes an important accelerator of initiating economic growth. In the conditions of the world economy, development differentiation creates the possibility to use foreign production capital and constitutes a significant factor allowing the decrease of development disproportions.

Changes proceeding in the world economy contributed to pace acceleration of FDI inflows on the global scale. What is more, also participation of the developing countries in the world foreign investments increased. However, statistical data confirms that participation of the developing countries in FDI is set out uneven. The considerable part falls on Asia and Latin America. Particularly difficult seems to be the situation of African countries where recently an increase of foreign investments may be observed, however, still remains at relatively low level.

It shall be remembered that the influence of FDI on economy relates not only to the benefits. It may also be accompanied by negative consequences. In order to avoid them, the country shall abide some rules concerning non-discriminating of domestic investors. The investments shall also constitute only a supplement of narrow internal accumulation.

The aim of the present discourse is the analysis of the sizes and directions of FDI as well as causes of their low level in the developing countries. The article also pays attention to the recommendations that shall be introduced and which may lead to the improvement of the situation.

Key words: Foreign Direct Investment; developing countries; developed countries; economic growth.

INTRODUCTION

One of the effects of globalization processes in the world economy is international foreign investments inflow. Those investments take the shape of portfolio investments and Foreign Direct Investment (FDI). FD is defined as „investment transactions outside the country, made in order to undertake by the investor of the business activity from the basics or acquiring possession rights in the existing enterprise in a scale allowing direct participation in management". [Karaszewski 2004, p.19]

FDI is one of the important economic growth factors, especially in the developing countries. The low savings rate increases the need for FDI. By the lack of own capitals it becomes an important accelerator of initiating economic growth in those countries. In the conditions in the world economy, development differentiation creates the possibility to use foreign production capital and constitutes a significant factor allowing decrease of existing development disproportions.

Unfortunately, in the geographical system FDI is located predominantly in the developed countries which are capable to create adequate conditions for running a business. However, in the recent years an increase of FDI inflows also to the developing countries may be observed, but still remains on the remote destination places.

Taking into consideration benefits of FDI it may be presumed that they could become an important developing source for many developing countries, especially for those less developed. Therefore, the analysis of sizes and directions of FDI seems to be justified from the point of view of those countries. The aim of the article is also a presentation of the causes of low FDI level in the

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developing countries as well as recommendations which introduced shall contribute to the improvement of this situation. Implementation of assumed aims required the analysis of the subject literature as well as statistical data concerning FDI.

SIGNIFICANCE OF FDI

FDI may positively influence the economy of a particular country. Capital inflows, new technologies, access to knowledge, increase of flows to the budget, increase of employment rate and work efficiency are only some of the benefits related to their inflow. They are also accompanied by the positive effects in terms of turnovers with the abroad. By stimulating the development of national export they lead to improvement of current account balance and improvement of the trade balance. They also cause positive effects in the educational-technical filed because of the development of the scientific research sphere and technologies transfer. Simultaneously they cause the domestic production becomes more competitive on the international market.[Księżopolski 2004, p. 97]

One of the significant criteria of FDI classification are motives of undertaking economic activity abroad, according to which it is possible to distinguish foreign investments oriented to:

- resources – their aim is to use resources of the host country, in general cheaper than in the investor's country,
- market – aims at the sale of goods and services on the market of host country, effectiveness – investors gain profits from the cooperation with local entrepreneurs in a form of e.g. tax differences,
- strategic assets – investor seeks for a localization that will facilitate competitive edge in the conditions of global economy e.g. through fusion with other company. [Jaworek 2006, p. 52]

Decisions concerning FDI focus on the effects anticipated by the host country. Important here seems to be conditions which encourage or discourage for investing abroad. For the investor important is also internal situation of a particular country and market situation. [Wiśniewska 2008] Despite of the motives of investing abroad, those activities are accompanied by both positive and negative effects. Entrepreneurs investing abroad want to increase their profits, gain new position on the market, use tax relief or conducting activity prohibited in their home country. On the other hand, host country hopes for new work places, access to modern technologies, export increase or easier access to foreign sales markets. [Organiściak-Krzykowska 2012, p. 174]

Modern machines and equipment, acquired by those means, lead to the increase of efficiency and improvement of quality of the products offered. Accompanied by those changes, knowledge transfer allows effective use of generating capacities. Bringing modern technologies and abilities, FDI increases the demand for work and make it more effective. They also increase the ability of knowledge absorption of modern science and technology. They are also the source of general knowledge that is: technical, economic and specialized knowledge related to the importance of modern machines and equipment. Thanks to the knowledge transfer more effective seems to be use of generating capacities. Acquired by those means improvement of innovativeness of a particular economy and simultaneously increase of competitiveness of their production and export shall depend on meeting some conditions. We can say about positive influence of foreign investors on innovativeness when the investments are connected with building new enterprise from the basics. Therefore, it seems to be possible to create such an organization which shall allow combating all existing barriers in a form of fixed habits.

If the host country, by means of FDI tries to lead to the change of branches exchanging import for export branches, it can accelerate processes of trade liberalization. The presence of trans-national corporations, with which BIZ is strongly related to, it facilitates creation of free trade

spheres and duty unions which allow for the development of export activity. The presence of foreign investors may also positively influence domestic enterprises, and on behalf of which on increase of domestic export. Willing to remain in a particular branch they will be forced to modernize production methods and quality improvement of offered products. Acquired by those means production competitive edge shall positively influence the size of national export. [Olszewski 2001, pp. 300-301]

Trans-national enterprises may facilitate access to foreign sales markets if the local companies will have a chance to use the trade barriers reduction, negotiated by those enterprises. The localization of domestic companies in the close neighbourhood of companies with participation of foreign capital increases the possibility of conducting export activity by those companies. Implementation of the new market, on behalf of export, demands high production effectiveness. Diffusion effects in terms of effectiveness, also possible because of FDI, increase the export abilities of local companies. It is closely linked to the improvement of effectiveness through technologies imitations used by corporations and effective use of existing technologies or searching the new in the result of competition growth caused by the appearance of foreign investor. [Golejewska 2004, p. 4]

Inflow of FDI to a particular country causes positive effects also on the import side if it is related to the import of capital goods. Modern technology, included there, improves innovativeness of a particular economy. Therefore, the most beneficial seems to be the import of investments goods which shall effect in the increase of the export. Size of FDI also depends on the absorption by the receiving side. The effectiveness of its use may be predominantly proved by the qualification level of the labour forces. The significant difference between the developed countries and the developing countries in this respect, concerns not only abilities of capturing foreign capital and abilities to absorb FDI of a higher quality, which shall ensure higher international competitiveness of exported goods. [Rynarzewski 2004, p. 125]

Liberalization, similar to privatization and stable economy, facilitates investments, also the foreign ones, which are related to the modern technique and access to foreign markets. By creating new work places and ensuring access financial sources, the investments become the accelerator of economic growth. However, it shall be remembered that foreign investments also bring some threats. By eliminating competition they may hinder the development of domestic industry. [Stiglitz 2011, pp. 74-77] Beside, if the foreign investors manage to avoid loss and knowledge diffusion in the host country, it shall be difficult to indicate positive effects of FDI influence on domestic companies' activities. About the efficiency diffusion under the influence of FDI may be reflected in the remuneration of the employees in the host country. The increase of their efficiency shall be reflected in the higher salaries. Higher payments in the branches of great engagement of FDI mean transfer of factors increasing productivity of employees, e.g. knowledge. [Golejewska 2004, p. 5]

It also happens that inflow of FDI to a particular country is accompanied not only by modern but also called „dirty" technologies, that is, old fashioned, capital-intensive and depredating natural environment. [Siemiątkowski 2005, p. 61] Inflows of FDI may also mean decrease of employment in the domestic enterprises. Enterprises with the participation of foreign capital may try to avoid taxpaying in order to compensate high investment costs, which may unfavourably influence the budget of the host country. The problem in this situation may be the transfer of those non-taxable profits abroad. [Górniewicz 2013, pp. 68-73]

In order to avoid negative consequences accompanied by the inflow of foreign capital, the country must abide some rules. It leads to the situation when politics towards foreign investors does not discriminate domestic investors. Those investments shall constitute only a supplement of narrow internal accumulation. [Polak 2004, p. 336] What is more, indispensable seems to be the law which

shall regulate competition, otherwise those undesirable effects will not promote growth. [Stiglitz 2011, pp. 74-77]

GEOGRAPHICAL SYSTEM OF FDI

In the geographical system, FDI is predominantly located in the developed countries; however; in the recent years it is possible to observe growth of their inflow also in the developing countries. Nevertheless, they mainly flow from the rich countries to other wealthy countries, not to the developing ones. The most advanced economies are able to ensure the highest profits rates.

Proceeding changes in the global economy contributed to acceleration of the FDI inflow pace on the global scale. In the middle of eighties the pace of its growth was at the level of 1%, in the years 1985-1990 – 34%, and in 1995 it increased up to 40%. At the same time, FDI inflow to the developing countries was mainly connected with the privatization of companies and sectors in the countries of Latin America. In the first half of the nineties', the considerable part of those investments was directed only to Asia countries – approximately 70%, 25% were directed to Latin America. Simultaneously, the participation of Africa in a complete inflow of FDI to the developing countries was only 4%. [Gwiazda 2000, pp. 53-57]

Subsequent years were continuation of those positive changes. To the year 2000 FDI increased their achievements reaching the value of approximately 1,4billion USD. [Siemiątkowski 2010, pp. 38-39] In 2007 the aggregate value of FDI on the world reached the amount of over 2 billion USD. The world crisis also affected foreign investments and at the end of 2012 they were at the level of over 1,35 billion USD (table 1).

Table 1. Inflow of direct foreign investments in the world within the years 2007-2012(m. USD)

Region/Country	2007	2008	2009	2010	2011	2012
World	2002695	1816308	1216475	1408537	1651511	1350926
developed countries	1319893	1026531	613346	696418	820008	560718
Europe	906531	571797	404791	429230	472852	275580
USA	215952	306366	143604	197905	226937	167620
Developing countries	589430	668439	530289	637063	735212	702826
Africa	51274	58894	52964	43582	47598	50041
Asia	364899	396152	324688	400687	436150	406770
South America	171929	210679	150150	189855	249432	243861
Transforming economies	93371	121429	72750	75056	96290	87342

Source: *World Investment Report 2013: Global Value Chains: Investment and Trade for Development, United Nations, New York and Geneva 2013, pp. 213-216.*

The moderate increase of FDI in 2010 in comparison to2009 may be observed. They were still lower from the average before-crisis in 2005-2007. At this time anticipations of UNCTAD assumed that the global level of FDI shall return to the level before the crisis in 2011 and reach the value of 1,6 billion USD. Simultaneously, in the developing countries there was a strong inflow of FDI, but only in East and South-East Asia and Latin America (accordingly of 34% and14% in comparison to 2009). All remaining regions in 2010 noted decrease of FDI. [Zimny 2011, p. 1]

Statistical data confirms (table 1) that in 2007-2012 the participation of the developed countries in FDI inflow decreased. In 2007 it was approximately 66% and in 2012 - 41,5%. The recipients of those investments were countries such as Great Britain, Spain, France and North America. It also can be observed that in 2007-2012 the participation of the developing countries in the world FDI increased. In 2007 it was 27% and in 2012 52%. This increase concerned predominantly countries

such as China, India or Singapore. FDI still avoids Africa. In 2012 it was only 3,7% of the world FDI. [Górniewicz 2013, p. 63]

Among countries which in 2007-2012 received the highest number of FDI were USA (167,6 bn USD) and China (12 bn USD). In the lead there are also Hong Kong, Brazil and Great Britain. The biggest investors of FDI remain United States, Japan and China (table 2). [Górniewicz 2013, p. 63]

Table 2. The biggest BIZ suppliers within the years 2007-2012 (m. USD)

Country	2007	2008	2009	2010	2011	2012
USA	393518	308296	266955	304399	396656	328869
Japan	73548	128019	74699	56263	107601	122551
China	26510	56910	56530	68811	74654	84220

Source: *World Investment Report 2013: Global Value Chains: Investment and Trade for Development, United Nations, New York and Geneva 2013, pp. 213-216.*

FDI inflows fell by 16% in 2014 to 1,23 trillion USD, down from 1,47 trillion USD in 2013.The global FDI decline masks regional variations. While developed countries and economies in transition saw a significant decrease, inflows to developing economies remained at historically high levels. FDI flows to developed countries dropped by 28% to 499 billion USD. Inflows to the United States fell to 92 billion USD (40% of their 2013 level). FDI flows to Europe also fell by 11% to 289 billion USD. [*World Investment*…2015, p. 2]

FDI flows to developing economies increased by 2% to a historically high level in 2014, reaching 681 billion USD. Developing Asia drove the increase while flows to Latin America and the Caribbean declined and those to Africa remained flat. FDI flows to Asia grew by 9% to 465 billion USD in 2014 (table3). East Asia, South-East Asia and South Asia all saw increased inflows. FDI in China amounted to 129 billion USD, up 4% from 2013, mainly because of an increase in FDI in the services sector. FDI inflows also rose in Hong Kong (China) and Singapore. India experienced a significant increase of 22% to 34 billion USD. However, FDI flows to West Asia continued their downward trend in 2014 for the sixth consecutive year, decreasing by 4% to 43 billion USD, owing to the security situation in the region. [*World Investment*…2015, p. 2]

Table 3. FDI inflows, by region, 2012-2014 (bn of dollars)

	2012	2013	2014
Developing Asia	401	428	465
Europe	401	326	289
Latin America and the Caribbean	178	186	159
North America	209	301	146
Transition economies	85	100	48
Africa	56	54	54

Source: *World Investment Report 2015, Reforming International Investment Governance, New York and Geneva 2015, p. 4.*

FDI flows to Latin America and the decreased by 14% to 159 billion USD in 2014, after four years of consecutive increases (table 1). This decrease was mainly the consequence of lower commodity prices, which reduced investment in the extractive industries in South America. In Brazil, the sharp fall of FDI in the primary sector was compensated by an increase in FDI in

manufacturing and services, keeping total flows similar to 2013 levels. Inflows to Africa remained stable at 54 billion USD. North Africa saw its FDI flow decline by 15% to 12 billion USD, while flows to Sub-Saharan Africa increase by 5% to 42 billion USD. In Sub-Saharan Africa, FDI flows to West Africa declined by 10% to 13 billion USD, as Ebola, regional conflicts and falling commodity prices negatively affected several countries. Flows to Southern Africa also fell by 2% to 11 billion USD. By contrast, Central Africa and East Africa saw their FDI flows increase by 33% and 11%, to 12 billion USD and 7 billion USD, respectively. [*World Investment*…2015, p. 2]

CAUSES OF LOW FDI AND RECOMMENDATIONS FOR THE POLITICS DIRECTIONS

Statistical data confirms that the participation of developing countries in FDI is set out uneven. The considerable part of it falls on Asia and Latin America. Those investments are concentrated on few countries such as China or Singapore. Nevertheless, the attention shall be paid to the fact that for many countries these are considerable amounts. Beside, in the global embrace inflow of global investments to the developing countries frequently exceeds official support on the benefit of foreign markets development (ODA – Official Development Aid). Therefore, justified seems to be the need to consider means of use of foreign direct investments as tools of economic development in those countries. [*Przegląd Bezpośrednie*…, www.oecd.org, access date: 03.11.2015]

There is a problem, however, in many developing countries there is a range of factors making impossible to create those benefits. Among them it is possible to distinguish general education level, health condition, technological advancement of local enterprises, and insufficientopenness for trade exchange, weak competition and insufficiently regulated market. [*Przegląd Bezpośrednie*…, www.oecd.org, access date: 03.11.2015]

Particularly difficult seems to be the situation of African countries where in fact, in the recent years growth of foreign investments may be observed, however, still remain on the low level. Among most frequent causes of this situation are little absorptive markets. From the point of view of a foreign investor, particularly important seems to be purchasing abilities of the society. If they are on the low level, the decision concerning localization of the investment is usually postponed. Meanwhile, the purchasing ability of the African societies seems to be negative. Africa belongs to the poorest regions in the world, concentration of negative phenomena such as hunger, epidemics and poverty. All of these are accompanied by the lack of complete democracy. [Siemiątkowski 2010, pp. 42-47]

On the other hand this is a continent of an enormous potential. Rich mineral deposits, huge sales market would cause stabilization of the situation in the specific countries and agitation of entrepreneurship that undeniably lead to the change of this difficult situation. Therefore, foreign investors seem to be of a significant importance. [Siemiątkowski 2010, pp. 42-47]

Of great significance are also economy sectors. In fact, services sector is frequently less developed in developing countries which hinder attracting foreign investors that is natural deposits which shall facilitate development of the mining and extracting industries. Inflow of FDI to developing countries is also accompanied by problems of a microeconomic scale. It means the necessity of industrial overhaul of a given economy, accompanied by the adjustments costs which is many cases cause objections of the social groups. The presence of strong financially enterprises is also hindered by weak national law frames, laws regarding competition and environment protection. [*Przegląd Bezpośrednie*…, www.oecd.org, access date: 03.11.2015]

It turns out that even countries where the level of economic development does not favour the presence of foreign entities, they may benefit from this situation. Final, economic result of FDI mainly depends on the politics implemented by the authorities of a given country. Recipients of FDI possess at their disposal three categories of sources: improvement of general macroeconomic and

institutional frames, technology and competences of labour forces. Macroeconomic stabilization and institutional predictability requires implementation of the following recommendations:

- Implementation of rational macroeconomic politics which aims at high pace of economic growth, employment, stabilization of prices and positive trade balance,
- Maintenance of fiscal discipline, efficient tax system and reasonable debt management of the public sector,
- Creation of national financial resources which shall be treated as the supplement of FDI. [*Przegląd Bezpośrednie*…, www.oecd.org, access date: 03.11.2015]

Significantly important for FDI is domestic business environment. Openness and the lack of discrimination allow gaining benefits from the presence of foreign investments. Therefore, the authorities of a receiving country shall undertake the following steps:

- Consolidation of laws and advanced supervision, including combating corruption and strengthening of regulation frames e.g. concerning competition,
- Activities for the benefit of greater openness for international trade combined with activities on the benefit of improving competitiveness of a given sector,
- Prohibition of discrimination of domestic enterprises. [*Przegląd Bezpośrednie*…, www.oecd.org, access date: 03.11.2015]

The third category of sources necessary to deploy benefits from FDI concerns infrastructure, technologies and labour forces. In this respect necessary seem to be the following actions:

- Increase of the physical and technological infrastructure quality,
- Increase of the education level of the labour forces,
- Prevent employment of children, elimination of the discrimination at the work place as well as elimination of the barrier for conclusion of collective labour agreements,
- Consideration of the effects of forcing on foreign investors requirements concerning gained results of the business activity. [*Przegląd Bezpośrednie*…, www.oecd.org, access date: 03.11.2015]

There is no denying that the countries interested in attracting FDI shall first of all deploy all the presented above recommendations. If FDI shall serve the development of the developing countries, important here also seems to be politics of developed countries. Further liberalization of laws concerning foreign trade would significantly contribute to global economic development. Elimination of trade barriers limiting import to developed countries would increase the abilities of developing countries to attract foreign investments and simultaneously increase benefits. Of no difference seems to be the widespread of technologies. According to the recommendations of OECD international enterprises shall use practices enabling quick transfer and fast technologies spread. [*Przegląd Bezpośrednie*…, www.oecd.org, access date: 03.11.2015]

CONCLUSIONS

It seems legitimate to claim that FDI becomes an important element of the world economy. It may be proved by statistical data which states that year after year FDI operates on a greater scale and range. FDI flows to all continents; however; their size is diversified. The greatest recipients and suppliers of FDI are still the developed countries. Among them dominate United States, Great Britain or France. The considerable part also goes to China and Japan. FDI still avoid Africa.

There is a range of causes of this unbeneficial for the developing countries situation. Among them the following may be enumerated: general health condition, technological advancement state of the local enterprises, insufficient openness on trade exchange, weak competition and insufficient market regulations. What is more, also the low absorptive sale market, especially in the African countries seems to be of cardinal importance. Low purchasing abilities of the society discourage investors to locate the capital in those countries.

Bearing in mind the fact that for many developing countries these amounts are considerable and they can significantly contribute to the improvement of economic situation, it seems to be justified to seek means of using FDI as a tool for economic development in those countries.

However, it shall be remembered that the influence of FDI on the economy relates not only to benefits. They can also be accompanied with negative consequences. In order to avoid them, some rules must be followed concerning e.g. non-discriminating domestic investors. Those investments shall also constitute only a supplement of narrow internal accumulation. Maximization of FDI benefits from FDI in developing countries is facilitated by the adequate politics of developed countries. Elimination of trade barriers limiting import from those countries to developed ones would undeniably ensure better abilities to attract foreign investments and at the same time ensure greater benefits which are present by the trade liberalization.

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THE MULTIFACTORIAL MODEL OF ECONOMIC SECURITY MANAGEMENT – METHODOLOGICAL ESSENTIALS

Abstract: The project is a response to inconsiderable interest in the subject matter of regional economic security, which manifests itself in inaction regarding preventive operations against emerging threats, but only in deregulatory effects already occurred. In fact, economic security is an important part of the entire security of a country and life comes true on many levels.

B. Balcerowicz presents the great importance of this component in the entire security structure. "In the tradition of considering security, prosperity, welfare and wealth are their conditions. Success and confidence in people's endeavours in their lives (prolonging and improvement) have been conditioned on economic terms for ages. They have been the element, the mainstays and factor and condition of security. Presented as a component, they are presently called economic security" [Balcerowicz 1997].

In history of Europe, but also around the world, economic factors were of determinative importance in assuring security policy on a general level, for example assurance of peace through the creation of wealth as the main motive for creating the European Union, or the doctrine of the "New Deal". Prosperity, indeed, is nothing else but just maintenance of standards of living of citizens on a particular level.[11]

Key words: economic security, factors of the economic security, indicators of the level of economic security, indicators of life standard

1. THE AIM AND THE NECESSITY TO ENTER THE PROJECT

In previous domestic studies very few authors raise the issue of economic security, both on the strategic and operational level [Compare: Stachowiak 2012; Jaźwiński 2011; Kopania 2002; Księżopolski 2004].

In even a lesser extent, administrative authorities refer to it, often not seeing the connection of general security issues with economic security. For example in the last project of "Support policy for security in Lower Silesia until 2020" developed by the Department of Regional Development Marshal's Office of Lower Silesia, threats of an economic nature have not been indicated, and among categorized social risks in Lower Silesia, there were only crimes and social pathologies [Look at: projekt „Polityka wspierania bezpieczeństwa w województwie dolnośląskim do 2020 r.", Departament Rozwoju Regionalnego Urzędu Marszałkowskiego Województwa Dolnośląskiego, Wrocław 2015].

Meanwhile, in the research project "Analysis of social threats for Lower Silesia", the use of social survey results in various areas of life to predict social threats in the region, conducted by D. Moron, M. Makuch and J. Mizera-Pietraszko, where research area *de facto* included the indicators of the level of economic development and standard of living, the authors clearly pointed to

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[11] ***Welfare*** *– living terms guaranteeing high life standard as well as cultural sphere satisfaction. Referring to the neoliberal concepts the simpliest welfare measure is GDP per capita. Basic terms of welfare state appearance in a society are considered to secure high level income to the citizens, lack of hidden unemployment, wide available healthcare and education on every level as well as social insurance, WIEM web encyclopedia, http://portalwiedzy.onet.pl/69680,,,,dobrobyt,haslo.html, access: 23.08.2015*

increasing social threats of an economic nature, along with a proposal of their leveling and prevention.

In addition, majority of existing studies is remarkably static, with a little consideration to dynamic changes taking place in the social factors of economic security. In conclusion, a dynamic, self-updating model has not been established in the country so far. It is a tool to support decisions on economic policy taken by authorities at all levels of government.

A team of appointed scientists, consisting of specialists, has been selected. Their skills and experience will be used to focus on working together and will contribute to the creation of such a tool. The project manager has researched the level of economic development and the living conditions of the population for many years. These factors have a determinative impact on the level of economic security and, in consequence, general, too [Look more at: Kociszewski, Popławski, Struś 2003; Popławski 2001; Popławski 2002; Popławski, Struś 2005]. Other members of the research team are specialists on risk management, regional development, economic geography, geographic information systems (GIS), economic policy, prognosis, statistics and computer science.

The result of this collaboration will be to create a multifactorial model for managing economic security in the form of an interactive map, used as a tool, which will warn against risks associated with changing socio-economic situation and to support the decisions taken by the administrative authorities in the field of economic policy.

The project there will be a synthesis conducted ranging knowledge of macroeconomics, economic geography, statistics, computer science and economic policy.

2. GENERAL CONCEPT AND METHODOLOGY OF RESEARCH

The following research will be based on secondary sources, and in particular, critical Central Statistical Office's, Statistical Office in Wrocław and the Local Data Bank data will be analyzed (on-line) [http://stat.gov.pl/bdl/app/strona.html?p_name=indeks, access 12.06.2015].

Firstly, an authorial method that allows for comparison of changes in the level of economic development and standard of living will be developed (the living conditions of the population) in the studied region in dynamic and spatial terms. This method will be developed in four phases:

- In the 1st phase a selection of 8 meters of the economic development level and 22 meters standard of living will be made.
- In the 2nd phase analysis of correlations between individual meters will be made, it will allow for a final choice of meters of economic development and standard of living.
- In 3rd phase meters will be given particular importance. The importance will be given on the basis of an assessment by experts on economy and regional and local.
- In 4th phase in order to bring the data to the state of comparability for each meter of both treatment categories (level of economic development and standard of living) two tables will be constructed - the first containing absolute values (marked with the letter "a") and the second to assess the distance of the county / municipality in comparison to provincial standards (for example Lower Silesia = 100, marked with the letter "b")

Then, on the basis of the tables marked with the letter "b", a synthetic table will be created. Data from the table will be used to design an interactive map of the entire province, divided into counties and municipalities, where by means of some proper colors, the current status of individual factors in each municipality and the county with outlook for the future will be evaluated.

Basing upon the image obtained in this manner, marked on the map of the region analysis of the current state of economic security and forecasts for the future in all administrative units of the region will be made. According to the assessment, expert reports indicating specific targets and measures of economic policy will be made as well. The research team believes that a model

designed in this manner will become an effective tool for early warnings against socio-economic threats and will support decisions regarding economic policies taken by the authorities.

3. DETAILED METHODOLOGY AND RESEARCH PLAN

The Project, which will result in building a multifactorial model of economic security management. It will be made in 7 phases/stages:

Stage 1. Obtaining statistical data;

Stage 2. The selection and design of indicators of the level of economic development and standard of living;

Stage 3. Creating a model of economic security in the form of an interactive map;

Stage 4. Construction of early warning system algorithm against economic threats ;

Stage 5. Assignment of each level of economic security colors depicting their current status;

Stage 6. The creation of algorithms for converting states forecasts of economic security for the future;

Stage 7. Construction of tables containing economic policy guidelines to different states of economic security.

In the project following methods, techniques and research tools will be applied:

- An authorial method allowing for a comparison of changes taking place in the level of economic development and standard of living (the conditions living of population) in terms of dynamic and spatial, developed on the basis of comparative analysis – calculation of the distance of individual districts and municipalities in relation to provincial standards (average for the province = 100).
- Method of analysis and the development of research results based on: statistical and prognostic data processing, transformation of numerical data in a graphic form (a map), setting goals, directions and specific operations in the field of economic policy on the basis of expert analysis.
- Devices and apparatus used in the study are: spreadsheet, word processor, specialized GIS software to design an interactive map with specialized software to construct a programme downloading statistical data from the Local Data Bank.

4. INDICATORS OF ECONOMIC DEVELOPMENT AND STANDARD OF LIVING DETERMINING ECONOMIC SECURITY

For the needs of the multifactorial model of economic security management 8 indicators determining the level of economic development and 22 indicators determining standard of the living population have been distinguished. They have a great influence on the level of economic security. They have been chosen basing upon expert analysis according to statistical data necessary to construct them.

Table 1. Lower Silesia – administrative level

Number of administrative units	
Cities under the law of counties	4
Counties	26
∑	30
Boroughs	36
Boroughs and villages	55
Villages	78
∑	169
Cities	91

Source: Own elaboration based on CSO data 2015

Lower Silesia was examined as the first one, from this one the construction of the model started. According to the administrative division from 1.01.1999 in the region there are 4 cities and towns , 26 counties and 169 municipalities (table 1, map 1).

Map 1. Lower Silesia – administrative division (districts)

Source: http://albumpolski.pl/hmp/rows.php?woj=1, access: 19.08.2015

Among indicators determining the level of economic development there are:

1. Number of working people per 1000 citizens at productive age,
2. Rate of registered unemployment in %,
3. Investment expenditure in enterprises (current process) in mln zł per 1 enterprise,
4. Gross value of fixed assets in enterprises (current prices) in million zł per 1 enterprise,
5. Gross Domestic Product per capita in zł,
6. The number of business entities registered in REGON per 1000 citizens,
7. People working in non-agricultural professions in relation to the total working population, and
8. The number of business entities according to REGON in sections J-R per 1000 citizens.

In case of hindering indicators in economic development, the following results will be reduced by their distance from provincial standard.

Among the indicators of living standards determining the living conditions of the population there are:

1. Access to sewage Network in %,
2. Industrial emissions of air pollutants in tones per capita,
3. The number of crimes recorded by the police and the prosecutor's office in completed preparatory proceedings per 1000 inhabitants,
4. The number of fires and local threats in the activities of the State Fire Service per 1000 inhabitants,
5. The Number of people per 1 km^2,
6. The Number of marriages per 1000 citizens,
7. The Number of divorces and separations per 1000 citizens,
8. The number of deaths per 1000 citizens,
9. Average monthly Gross salary in zł,
10. Consumption of water in households per 1 citizen in dam^3,
11. Waste water discharge per 1 citizen in dam^3,
12. Gas consumption per 1 citizen in m^3,
13. Electricity consumption in kWh per 1 person,
14. Number of schools for children, youth and adults per 1000 citizens,
15. Beds in hospitals per 10.000 people,
16. Number of people per 1 chemist,
17. Number of people per library,
18. Number of people per one museum and museum department,
19. Number of people per one seat in the cinemas,
20. Public pavements with hard surface in km per the area of $100km^2$,
21. Number of vehicles and tractors registered per 1000,
22. Number of motorway accidents per 1000 citizens.

Similarly to the case of indicators of economic development, the indicators for the whole province were calculated as the average of all 169 municipalities (Lower Silesia = $\sum$ / 169). Also in the case of hindering indicators of living standards, the numbers obtained will be reduced by the distance to provincial standards.

Sample tables for four cities belonging to the Lower Silesian Province with their distance from provincial standards can be found below (table 2a and 2b).

Table 2b. Rate of registered unemployment in %

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Jelenia Góra	15	13	11	8	7	10	11	10	10	9
Legnica	20	18	14	8	6	9	9	10	11	10
Wałbrzych	-	-	-	-	-	-	-	-	-	17
Wrocław	12	11	8	5	3	5	6	5	6	6
Lower Silesia	22	21	17	11	10	13	13	12	14	13

Source: Own elaboration based on the Local Databank - http://stat.gov.pl/bdl/

Table 2b. Rate of registered unemployment in %

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Jelenia Góra	67	61	66	68	65	75	83	80	75	71
Legnica	91	88	81	68	63	69	70	81	78	79
Wałbrzych	-	-	-	-	-	-	-	-	-	128
Wrocław	55	53	48	39	33	40	42	40	42	42
Lower Silesia	100	100	100	100	100	100	100	100	100	100

Source: Own elaboration based on the Local Databank - http://stat.gov.pl/bdl/

CONCLUSIONS

Multifactorial model of economic security management is an attempt to build an effective management instrument in the view of ongoing changes on the level of general security in the region.

Authors of the project made their choice regarding construction design of economic security indicators basing upon the major determinants of the level of economic development and determinants of standard of living conditions of the population. It will allow for precise measurement and imaging security level in individual counties and municipalities. Reports basing upon an in-depth current analysis and forecast state of economic security will allow for indication of specific goals and directions of economic policy to the authorities.

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THE PLANNING PHASE AS A CHALLENGE IN THE INNOVATION DEVELOPMENT PROCESS

Abstract: The aim of the article is to present the specificity and role of the planning phase in development projects, to make a quantitative assessment of actions affecting the effectiveness of this phase in enterprises and to indicate potential research areas in the subject. The article distinguishes three areas of particular importance to the planning phase, i.e. building the environment favouring innovation, directing innovation and stimulating ideas and solutions as well as transferring ideas inside and from the outside of the organisation. In order to determine the degree of efficiency of enterprises in these areas we conducted detailed investigations, where company representatives assessed the extent to which their enterprises took actions which affected the success of the planning phase. The investigations let us conclude that the enterprises provided organisational conditions supporting innovativeness. However, some areas that are particularly important to innovativeness need to be improved. The results showed that the enterprises did not always provide financial support to their employees' innovative activities. This fact is very important in view of the degree of precariousness of innovative actions. Cooperation with the educational system and other external entities which could provide the necessary knowledge to the enterprise were also rated low. Formalisation of the measurement of innovative activity and its effects in the enterprise was another area that received low ratings, so it may be difficult to manage this activity. The article is summed up with a suggestion for more systematised investigations related with the selection of sources of knowledge.

Keywords: fuzzy front end, innovation process, innovation system, NPD, planning phase, R&D.

INTRODUCTION

Nowadays the ability to plan and implement innovations in different areas of the enterprise makes the basis of competitive advantage. In most scientific publications the term 'innovation' is very broadly interpreted as a change which should lead to greater competitiveness, regardless of the implementation area. Therefore, the subject classification provided in the OSLO manual [2008] distinguishes between product, process, marketing and organisational innovations, although it is hard to regard this classification as disjunctive and exhaustive [Mruk, 2011]. More and more often the interdependence and complementariness of innovation types is emphasised, e.g. product innovations usually require process innovations, whereas process innovations often lead to organisational innovations. This article emphasises product innovation, because it can be regarded as a specific long-term goal of innovative actions. When enterprises make innovative changes in their activity (e.g. a new organisational system), they usually hope that in the long run they will facilitate their basic and operational activity, offer better products and services and in consequence, these changes will generate more income from sales and increase the value of the enterprise.

Kraśnicka [2013] noted two trends in defining innovation. The first approach emphasises the process, i.e. a group of activities that transform the available input resources into the output. This trend analyses actions taken by enterprises and their influence on the final result of these actions.

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The other approach is concentrated on the effects of innovative activity. In this article the first approach is predominant, where we analyse the course of the innovation development process.

Enterprises' ability to generate information is determined by different factors [Juchniewicz, Grzybowska, 2010]. They have both internal (e.g. knowledge, workers' skills) and external (e.g. the availability of external sources of financing, degree of bureaucracy, public infrastructure) character. Their importance is diversified and depends on the sector, adopted competitive strategy, etc. This article emphasises the internal conditions and characteristic features of the new product development process, i.e. the elements which are controlled by the organisation and directly influence the method of planning and designing new products.

Generating value added from innovation is one of the main problems of contemporary organisations making research and development (R&D) investments. Technological changes, scientific progress, social and market changes as well as growing competition considerably reduced product life cycles. This situation forces companies to make greater research and development effort more often [Rutkowski, 2007]. Today innovativeness is not restricted to selected enterprises, but it is a necessity for all of them. For the best companies innovativeness is an opportunity to increase their value considerably. In spite of the complexity of actions in the new product development (NPD) process and emergence of risk during the process a successful NPD project may generate very high surplus in the company and ensure long-lasting competitive advantage. Stevens & Burley [2003] proved that only for 60% of projects the first phase of new product development, i.e. the planning phase, leads to commercialisation[14]. There is even lower percentage of projects which will survive on the market and bring a satisfactory profit margin to the enterprise. Therefore, it is not surprising to observe growing interest in the factors which increase the chance of projects under development to succeed. These factors include successful completion of the initial phase of innovation, which is also known as the planning phase, preliminary phase, phase 'zero' or fuzzy front end (FFE). The term 'fuzzy front end' to describe initial actions taken to develop a product concept or concepts was popularised by Smith & Reinertsen [Smith & Reinertsen, 1992]. It referred to the first steps taken to develop a new product or to the period when product concepts are selected until the moment when they are approved and considerable resources are allocated to their further development. It is usually indicated that the FFE includes formulation of the product strategy, its communication, identification and assessment of possibilities, generation of product concepts, definition of products, project planning and progress reporting.

In spite of many studies on the new product development process and its conditions relatively little is known why some companies develop new products more effectively than others. Recently many studies have been focused on the first phase of new product development, as this phase distinguishes between the winning and losing companies. According to Backman, Borjesson & Setterberg [Backman, Borjesson, & Setterberg, 2007], the greatest opportunities to improve the results of NPD projects are hidden in the FFE phase, because so far little effort has been made to better analyse actions taken at this stage and they have considerable influence on the success of the entire innovation process. It is both direct influence on the success of the new product and indirect influence on the improvement of quality of consecutive stages, e.g. by limiting changes in the project and specifications and, in consequence, reducing the time after which the product will be released on the market and cutting the development costs. Initially this phase of innovation was separated from the whole new product development process due to its specific character. In general, it can be described as fuzzy and highly precarious and therefore, it is difficult to analyse it. The FFE is distinguished by specificity of work, certainty of the commercialisation possibility, financing

[14] The author based her research on the sequential model of new product development for better clarity of the problem under analysis.

method, expected profit, character of actions and measures of progress [Koen P.A. et al. 2002]. At the FFE phase team work differs in the degree of structuring. It is difficult to distinguish stages in the FFE, so it is difficult to identify specific tasks to be done and methods to be used for these tasks. As a result, work has experimental, exploratory and often chaotic nature. It is in contrast to further stages in the development process, which can be divided into well-defined parts and tasks with measurable targets. In the FFE it is difficult to say whether the concept which is emerging and developing will be transformed into a best-selling product or service. The financial support for concepts is limited or inexistent at this stage, especially if the company does not see the importance of these concepts. The expected income is precarious and economic analyses point to high variation of costs and income. As the product undergoes further stages, it is easier to predict the economic results and they are more certain. The aim of this article is to investigate how companies execute key actions in this phase, to analyse the importance of sources of knowledge in NPD processes, especially at the FFE phase, and to make suggestions for further research in this area.

MATERIALS AND METHODS

The model of the NPD process in the company presented by Sznajder & Wielicka-Regulska [2011] lists the following factors facilitating the development of innovation: building the environment favouring innovation, directing and stimulating innovativeness, transferring ideas inside and from the outside of the organisation, assessment of ideas, checking and testing ideas, commercialisation and implementation. The first three stages strongly influence the FFE. By analysing the data collected from enterprises located in the Poznań agglomeration we found strong and weak points of actions taken by these companies, which are significant to the FFE. 34 companies were surveyed. The questionnaire consisted of 41 statements characterising the innovation system and influencing its effectiveness. 25 statements were particularly important to the FFE and they were analysed in this study. The respondents rated the trueness of the statements by indicating the degree of occurrence of a particular factor in their organisation. The statements were rated according to a seven-level Likert scale (1 – I totally disagree, 7 – I totally agree) to determine the degree of intensity of a particular phenomenon.

Building an innovativeness-friendly environment

Building an innovativeness-friendly environment is an important element of a good internal innovation system. It consists in creating an environment facilitating searching for new ideas and testing them. It is usually manifested by financial support offered to the personnel engaged in development actions, by organisational aid facilitating the identification of market and technological opportunities and by indicating the general direction of exploration. It is also important to regulate the innovative activity institutionally by selecting a competent person to manage the innovative activity and to specify the qualitative measures of this activity. In this area the innovation system should emphasise the importance of connections between the enterprise and its surroundings as it can be a source of inspiration and interesting ideas. It should also emphasise connections with the educational system as it enables preparation of future workers in terms of their knowledge and professional use of tools and methods applied in the NPD process. It also enables promotion of active approach and risk taking among potential workers in their innovative activity. The survey showed that companies offered their workers considerable organisational support, whereas other factors received moderate ratings (Table 1). The organisational structure in the companies under analysis enabled a fast decision-making process; communication was effective; the personnel was aware of the target and direction of development of the organisation; new ideas were assessed objectively. The respondents rated moderately the financial support for innovative actions, management of knowledge, the formation of interdisciplinary teams responsible for solving more difficult problems and the permission given by the organisation to devote time to innovative activity

rather than current duties. On the other hand, the respondents more often tended to disagree about the statement that there was a person or department in charge of coordination of innovative activity. They rated cooperation with universities and other research institutions in a similar way. Cooperation with the educational system gives a possibility to inform future workers about expectations and requirements and it can also be an important source of current knowledge. Poor relations with educational entities cause public and private costs to increase and they increase unemployment, extend the period of education and generate additional costs of trainings which need to be borne by the state and enterprises. The survey also revealed that enterprises usually had no indexes to measure the effectiveness of the innovation process. It might mean that they did not treat innovativeness as an important aim or they did not realise the fact that the innovation process required management based on quantitative indexes.

Table 1. Actions influencing the process of building an innovativeness-friendly environment

Statement	Mean score
Each employee knows why the organisation exists and its direction of development.	5.50
The organisational structure of our enterprise helps us to make decisions quickly.	5.26
New ideas are welcome regardless of the fact who suggests them.	5.24
Communication is effective in our company.	5.18
There is no chance to implement new ideas if they have not been planned in the budget.	(5.09*) 2.91
We are so busy with our current activity that we have no time to develop new solutions.	(4.94*) 3.06
We transfer and store acquired knowledge effectively so that each worker can use it.	4.74
We have teams of workers specialising in different fields to solve more complex problems.	4.65
Our company allocates considerable finances to innovations.	4.53
The boss always has the best ideas.	(4.41*) 3.59
We cooperate with universities and other research units to extend our knowledge and develop new solutions.	3.82
We have a person (or department) in charge of the innovation system in our company.	3.76
We cooperate with the educational system (specialised schools, universities) and provide information about our requirements concerning future workers' skills.	3.18
Our organisation measures innovativeness – we set specific measures of innovativeness and effectiveness of the innovation process.	2.68

* Some statements characterising phenomena in enterprises have negative connotations. In order to compare these numbers with positive phenomena we converted the results and the mean values calculated from these numbers were given in brackets.

Source: The authors' compilation

DIRECTING AND STIMULATING INNOVATIVENESS

As far as directing and stimulating workers' innovativeness is concerned, the respondents positively assessed the use of macroenvironment analysis, whose aim was to determine the possibilities, threats and trends which considerably affect the enterprise. Planning the activity of the enterprise and using creative thinking methods to stimulate workers' individual innovativeness were also rated high. The ability of the organisation to use solutions from other departments, companies and branches and the ability to focus innovative actions on the areas where new solutions are

particularly necessary were rated as satisfactory. Objective assessment of a worker's individual innovative activity was a phenomenon of the lowest intensity (Table 2).

Table 2. Actions influencing the process of directing and stimulating innovativeness

Statement	Mean score
We systematically compare our products and processes with the situation in other companies.	5.59
We identify future threats, opportunities and trends which are significant to the enterprise's activity.	5.50
The organisation has developed a strategy of actions, which is planned at least two years ahead.	5.32
We use brainstorming and other forms stimulating workers' creativity during meetings.	5.29
The enterprise directs workers and co-workers' attention to the areas where innovations are particularly necessary.	4.97
The organisation encourages workers to follow and loan models from other departments, enterprises and branches.	4.82
The organisation uses objective criteria to assess its workers' innovative activity.	4.24

Source: The authors' compilation

TRANSFERRING IDEAS INSIDE AND FROM THE OUTSIDE OF THE ORGANISATION

In order to achieve a high level of innovativeness the enterprise should have a possibility to transfer new ideas both from outside of the organisation and within the organisation. Openness to different sources of knowledge which can be found around the enterprise favours innovative efficiency. These sources may include e.g. expert opinions, comments from suppliers and clients, scientific publications, scientific and branch conferences, fairs, propositions made by specialised R&D centres, etc. [Ulrich, Eppinger 2011]. The degree of using external and internal possibilities of acquiring knowledge, experience and cooperation opportunities depends on the enterprise's policy and superiors' attitude, which may encourage workers to look for necessary resources both outside and inside the organisation. However, it may also counteract attempts to establish internal or external contacts. It is equally important for enterprises to have effective communication, the ability to present ideas to a wider group of people and the possibility to give direct answers to doubts or questions concerning e.g. the market potential or operational conditions that are necessary for development of innovations. An open discussion in a group gives a possibility to transfer and promote ideas at higher management levels, in different departments, and to enrich, modify and redefine these ideas. The investigations of the conditions of transfer of ideas in the organisation revealed that in the group of entities under analysis the highest ratings were given to openness to ideas coming from the outside and to organisation of meetings with a possibility to share attractive ideas with other workers so as to improve them and promote at higher levels. The practice of rewarding workers for their innovative activity was rated slightly above average. The use of different sources of information received the worst ratings. The results show that companies still lag behind as far as cooperation and building a know-how network are concerned. The combination of the first and last statements enables identification of the model adopted by enterprises. Enterprises are ready to accept ideas from the outside but it usually happens when this information or opportunity to acquire knowledge appears directly in the enterprise. Enterprises rarely take the initiative to construct relations with the surroundings for proactive use of external resources in the innovation process. This approach can be regarded as a passive model and this situation might be caused by the aforementioned ignorance of innovative activity as an element of management (Table 3).

Table 3. Actions influencing transfer of ideas inside and from the outside of the organisation

Statement	Mean score
We are open to ideas from the outside.	5.71
There are no opportunities (e.g. meetings) to share ideas with other members of the organisation.	(5.06*) 2.94
The people who see and promote new ideas are appreciated by the reward system.	4.21
The company uses a limited number of sources of innovation.	(3.59*) 4.41

* Some statements characterising phenomena in enterprises have negative connotations. In order to arrange them and compare these numbers with positive phenomena we converted the results and the mean values calculated from these numbers were given in brackets.

Source: The authors' compilation

SOURCES OF KNOWLEDGE AT THE PLANNING PHASE - SUGGESTION FOR FURTHER RESEARCH

Taking the current development of knowledge into consideration, we can observe the emphasis on identification of relations between the planning phase and effectiveness of the other part of the new product development process. However, we still lack publications indicating what affects the adopted FFE model and its individual elements. If we assume that the NPD process is a type of information process and its main aim is to minimise the risk of making wrong decisions and to reduce the likelihood of product failure on the market, in no other place is the significance of these actions as great as in the FFE. This phase involves the greatest precariousness. Basic assumptions concerning the construction, technology and benefits from the products are defined to provide appropriate conditions for potential success of the product. In view of this fact we can assume that the information acquired from the organisation and its surroundings are of key importance. The questions which arise in the area of transfer of ideas and knowledge at this stage can be formulated in the following way: Which factors affect the selection of individual sources of information at this stage? How do different sources of knowledge applied in the FFE influence the effectiveness of NPD?

The problem-solving process can be divided into two parts. The first part refers to the criteria of assessment of managers and workers who select sources of knowledge and to the creation of an objective profile of a particular source of knowledge. The other part refers to the verification of relations between the use of different sources of knowledge and reduction of variance in the project and to the influence of the applied sources of knowledge on the product quality and market performance.

Enterprises can gain access to different sources of external and internal knowledge. Skilful use of sources and their combination may significantly influence the course and outcome of the NPD project [Wu, Lin, & Chen, 2013]. However, it is still not known what motivates enterprises to use individual sources of knowledge. There are no detailed investigations which would enable us to determine quantitatively and qualitatively the premises which decision-makers follow when they select individual sources of knowledge as well as the advantages and disadvantages of different sources knowledge in their opinion. This coherent approach would allow us better to describe and measure the state of the company's relations with sources of knowledge. There are many factors which can be taken into consideration when assessing the attractiveness of sources of knowledge.

Managers can be guided by e.g. easy access to a source of knowledge, which usually refers to geographical or relational closeness, i.e. personal closeness, low costs of knowledge, favourable regulations concerning intellectual property rights, maturity, uniqueness of knowledge (technology), degree of adjustment to the company's specific needs , easiness of implementation or adjustment of knowledge to the company's needs, etc. The multitude of criteria that might be used by decision-makers may also suggest a certain typological model, i.e. a method of selection of sources which is characteristic of a group of business entities. As there are many possible criteria to assess attractiveness and simultaneously, there is great uncertainty about the intensity of a particular trait in a particular source of knowledge, decision-makers may tend to maximise one of the criteria. They may select the most important criterion in their opinion and then they may use the source with the greatest amount of this trait. In consequence, the number of sources used by the company will be naturally limited. We can also suppose that models of selection of sources of knowledge will be diversified depending on the branch, competitive strategy or other characteristic traits. The characteristic features of the process of assessment and selection of external sources should be better investigated to help companies to create more diversified external relations and to better use internal sources of knowledge.

CONCLUSIONS

The article presents the theoretical background of research on the FFE in enterprises and new studies concerning the implementation of important actions in the FFE. The FFE phase is a period when various information about the market and technologies is particularly important, because there is the greatest number of unknown elements at this stage and simultaneously, the most important assumptions of the product are made then. The results of investigations show that acquiring knowledge from the outside is a greater challenge for enterprises than the other significant factors in this phase. The enterprise should acquire information not only from its workers and, passively, from internal resources, such as customers' complaints and requests, but it should also use external sources of knowledge, e.g. information from suppliers, agents, research institutes, universities, independent research agencies, consumers' and trade associations, etc. Contemporary information technologies enable the use of Internet resources, social networking media and implementation of the open source approach to gain clients and other entities' interest and input in the enterprise's innovative activity. The article also points to the gap in research on the selection of sources of knowledge in the new product development process.

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THE METHODS OF MEASURING THE EFFECTIVENESS OF ACTIVE LABOUR MARKET PROGRAMMES IN THE EUROPEAN UNION

Abstract: Active labour market policy is crucial element of European Union Employment Strategy in the area of improvement the labour market situation. However, the condition of appropriate usage of public expenditures is the choice of effective instruments and their adjustment to the socio-economic conditions of the separate countries. To obtain that objective it is needed a long process of evaluation of different active measures. The first step is the choice of appropriate methods assessing the effectiveness of active labour market programmes. The paper objective is presenting the methods of measuring the effectiveness of labour market programmes, which are used in the European Union countries. Moreover there were indicated the effective instruments in different EU members - both developed countries, representing high level of expenditures on ALMPs as well as transition economies.

Key words: active labour market policy, effectiveness of ALMPs, European Union labour market, unemployment

INTRODUCTION

Over the past years, the growth of interest of active labour market policy is observed both in the European developed western countries as well as in transition economies. This is due to the low effectiveness of macroeconomic policies to reduce unemployment and difficulties in implementing essential structural reforms on the labour market [Kwiatkowski 2002]. Researchers and practitioners of labour market policy promote the analysis of programmes targeting on the labour supply which are the components of active labour market policy.

Proponents argue that the active labour market programmes are the most direct instruments for dealing with unemployment and poverty among workers. Opponents counter that ALMPs are largely a waste of public funds and that any observed benefits for participants are usually at the expense of other workers. It is important then, to rigorously evaluate the impacts of these programmes and their effectiveness.

The paper objective is presenting the methods of measuring the effectiveness of labour market programmes, which are used in the European Union countries.

The undertaken research method was the analysis of secondary data as literature overview and searching of databases.

FUNCTIONS OF ACTIVE LABOUR MARKET POLICY

In the 1980s, the labour-market performance of most European countries showed clear signs of worsening in comparison to the USA, capturing the attention of citizens and policymakers in several European countries. The rise in unemployment appeared to be related to long-run structural factors rather than being the outcome of purely cyclical forces. Attention was drawn to labour-market rigidities in Europe. These rigidities stemmed from the more pervasive public intervention in the labour market (manifested by the generous welfare state and a highly redistributive tax policy) and the greater strength of unions, which characterised the European economies [Destefanis et al. 2010]. More specifically, Krugman (1994) argued that technological change and globalisation had altered the skill distribution of labour income in favour of relatively

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skilled workers, meaning that low unemployment rates could only be maintained at the price of a rising skill gap in wages (like in the USA and the UK).

As a result many Western European countries (like Nordic countries, Germany or UK) implemented labour market reforms aimed at flexibility in the labour relations, gradual deregulation and increase of efficiency of labour market institutions. Moreover there was introduced the conditionality approach toward the unemployed to increase their motivation to work [Layard 2004]. Crucial element of those changes was strengthening activation policy oriented on labour supply. Activation policy was implemented simultaneously with the work-oriented system of benefits, so active labour market policy must have an integral role in establishing the conditionality of benefits [Layard 2004].

The narrow definition determines active labour market policy as measures directed towards the unemployed in order to improve the functioning of the labour market. Active labour market policy will then comprise three basic subcategories: 1) job broking with the purpose of making the matching process between vacancies and job seekers more efficient, 2) labour market training in order to upgrade and adapt the skills of job applicants, and 3) direct job creation, which may take the form of either public-sector employment or subsidisation of private-sector work [Calmfors et al. 2002].

Active labour market policy is aimed at activation of the unemployed and restoring them to the labour market. This policy is also capable of improving the structural match between labour supply and labour demand, protecting workers' qualifications from obsolescence and offering opportunities for their improvement, thus helping unemployed workers maintain the average level of productivity [Kwiatkowski 2002, Calmfors 1995].

A broader approach is represented by International Labour Organisation, which defines active labour market policy as policy that provides income replacement and labour market integration measures to those looking for jobs, usually the unemployed, but also the underemployed and even the employed who are looking for better jobs [ILO 2003].

Active labour market programmes (ALMPs) are used to reduce the risk of unemployment and to increase the earnings capacity of workers. Particular interventions include employment services, training, public works, wage and employment subsidies, and self-employment assistance. These programs are implemented to enhance labour supply (e.g., training); increase labour demand (e.g., public works, subsidies); and improve the functioning of the labour market (e.g., employment services) [Betcherman et al. 2004].

ALMPs, following the ILO approach, support different groups of labour supply - unemployed as well as the ones who are working. However those programmes (mainly because of scarcity of resources) are often targeted to the most vulnerable groups - long-term unemployed, workers in poor families, and particular groups with labour market disadvantages. These programmes have important social, as well as economic, objectives [Betcherman et al. 2004].

Calmfors (1995) distinguishes four basic functions of ALMP: raise output and welfare by putting unemployed to work or have them invest in human capital, maintain the size of the effective labour force by keeping up competition for available jobs, help to reallocate labour between different sub-markets, and alleviate the moral-hazard problem of unemployment insurance.

The studies on a cross-country basis prove that increase of expenditures on active labour market policies (especially for countries with a high pro-work attitude) cumulate higher rates of employment [Rovelli, Bruno 2008][16]. The condition to reach such results is to choose the ALMPs with the highest effectiveness under given social and economic conditions.

[16] This occurs simultaneously with a lower degree of rigidity in labour market institutions and in product market regulation.

HOW TO MEASURE THE EFFECTIVENESS OF ALMPS - THE LITERATURE OVERVIEW

The diversity of the effects of ALMPs determines that the success of the programme can be variously defined. The choice of efficiency measures of active labour market policy instruments depends on the perspective assumed in the evaluation process: macro and / or micro. In case of testing the aggregated effects, the measure of effectiveness of activation policies may be the unemployment rate, the employment rate, the rate of outflow from unemployment to permanent employment. At the individual level, the measure of success of the instrument is mainly the employment initiative taken by the unemployed after the programme. However, in the quantitative studies there are often omitted, qualitative aspects of the employment situation of the unemployed, as forms of employment, type of employment contract, working hours, the degree of job satisfaction [Wiśniewski, Zawadzki 2011].

The evaluation practice proves that in the EU countries there are mainly analysed the employment effects and in USA the base for the evaluation is the income situations of programmes' beneficiaries [Kluve, Schmidt 2002, Wiśniewski, Zawadzki 2011].

In the EU countries there are used the following types of evaluation to study the effectiveness of ALMPs [Purdon et al. 2001]:

- evaluation of the programmes objectives and their implementation (process evaluation), which are mainly realised by qualitative methods,
- performance monitoring including effectiveness' measures expressing the degree of realization of programmes' gross effect[17], it is concerned with timely indicators of how well programme's objectives are being achieved,
- assessment the net effects of programmes (net impact evaluation),
- analysis of the costs and benefits (cost-benefit analysis)[18].

The public authorities in the EU often use performance monitoring indicators as well as cost-benefit analysis [Wiśniewski, Zawadzki 2011] for the assessment of active labour market programmes. However, different European institutions devote attention to issues connected with the net effects of public programmes as they determine the actual impact of the public support. Net effect means comparing the influence of the programme's results with the counterfactual situation by the usage of the control group. The counterfactual situation is a hypothetical condition, which informs about what have happened if the programme was not implemented.

Techniques using control groups are of two types: experimental and quasi-experimental. Experimental evaluations require selection of treatment and control groups prior to the intervention.

[17] In Poland, there can be indicated two measures of performance monitoring: 1) employment effectiveness (re-employment indicator), calculated as a ratio of the number of people who, after participating in particular programme, received employment in the period up to 3 months, to the number of people who completed their participation in the programme, 2) cost-effectiveness (the cost of re-employment), calculated as the expenses incurred on the exact form of activation by the number of people who, after participating in the programme, received employment in the period up to 3 months [Ministerstwo Pracy...2013].

[18] Actually, quantifying the costs of a programme can be a complicated activity, involving gathering data from many sources including administrative databases. The major cost components in a typical ALMP evaluation will include the costs of administering the programme, delivering the services, and the participants' opportunity costs. Cost-benefit analysis can be carried out from different perspectives including participants, government, and society as a whole. Unfortunately, most evaluations do not include rigorous cost-benefit analysis [Heckman et al., 1999].

As it is possible to determine the expenses engaged in the programme, it is difficult to specify the exact benefits level because of substitution and crowding-out effects [Jahn, Wagner 2000] as well as to estimate social effects [Wiśniewski, Zawadzki 2011].

In quasi-experimental studies, treatment and control groups can be selected before, during, or after the intervention [Betcherman et al. 2004].

The study of causal and determining the net effect consists of two stages, which involve: 1) measuring the gross effect of the programme, as a general change defined in its objectives (using performance indicators) 2) separation of the changes that occurred independently of the undertaken programme from the changes assigned as the impact of this programme (to determine the net effect) [Górniak 2009].

The causal effect is therefore the difference of the results obtained in two completely different situations, which can be written as the following formula [Wiśniewski, Zawadzki 2011]:

$\Delta i=Y_{1i}-Y_{0i}$

where: Δi (impact/ additionality) is the real effect of the programme in relation to the i-th participating person in the programme, Y_{1i} is the result obtained by the i-th person (for example, finding employment or not) when participating in the programme, Y_{0i} means the result obtained by the i-th person (finding employment or not) when not participating in the programme.

THE EFFECTIVENESS OF ALMPS IN THE SELECTED EU COUNTRIES

The public expenditures on active labour market programmes in the EU vary in the separate member states and it is dependent on the represented labour market policy models [compare: Rollnik-Sadowska 2014]. It is the lowest in the liberally-oriented United Kingdom (2011 - 0.031% of GDP). Out of new members, the lowest level of spending on activation measures take place in Romania as in 2012 it reached only 0.034% of GDP. The rate is also very low in Slovakia (2013: 0.174% of GDP), in the Baltic countries (2013: Estonia - 0.136% of GDP, Lithuania - 0.176% of GDP, Latvia - 0.190% of GDP) as well as Southern European countries (2012: Malta - 0.057% of GDP and 2010: Greece - 0.224% of GDP). At the same time the expenditures on ALMPs are relatively high in the Nordic countries representing Scandinavian model (2013: Denmark - 1.459% of GDP, Sweden - 1.106% of GDP, Finland - 0.907% of GDP) [Eurostat data].

The level of public support as well as the experiences of labour market reforms determines different ALMPs' development all over EU.

The studies measuring costs and benefits of the Danish ALMPs - the country with the highest level of expenditure on the activation measures in the EU, prove that private job training programmes have substantial positive employment and earnings effects, but also public job training ends up with positive earnings effects. Classroom training does not significantly improve employment or earnings prospects in the long run. When the cost side is taken into account, private and public job training still come out with surpluses, while classroom training leads to a deficit programmes [Jespersen et al., 2008]. The best effects out of training tools are the ones located in the private companies. Moreover, there is strong evidence that frequent, individually-oriented consultation or job counselling helps the unemployed to come back into employment [Raisanen et al., 2012].

The research results conducted on the Swedish labour market indicate the important role of the demand side in the success of ALMPs. The studies prove that labour market policy should stimulate demand through employment creation activities and programmes such as individual recruitment incentives [Raisanen et al., 2012]. That is why public employment services in Sweden put large emphasis on the engagement in the recruitment process to encourage the cooperation with private companies (that trend is also seen in Denmark).

Different conditions of functioning of ALMPs take place in transition economies. However, the comparable programmes as in the developed countries represent the highest effectiveness. The research results made on behalf of the World Bank among developing countries show that programmes seem to work best with on the-job training for the unemployed and active employer

involvement. Results are more positive for women than men. However, participants often benefit from these programmes in terms of higher employment rates but not in terms of higher earnings [Betcherman et al. 2004].

At the same time trainings for youth are almost always unsuccessful in improving labour market outcomes, at least in developed countries. It makes much more sense to invest earlier in the education system to reduce drop-outs and other schooling problems.

In case of micro-enterprise development and self-employment assistance, there is some evidence of positive impacts for older and better-educated workers. However, take-up is low.

The employment services have generally positive impacts on the post-programme employment and earnings of participants in developing countries. Costs are relatively low so the cost-benefit ratio is often favourable. However, employment services – at least by themselves – are of limited use in situations where structural unemployment is high and there is a lack of demand for labour. There are some questions about the coverage and effectiveness of these services in developing countries where many labour market transactions are informal.

One of the examples of transition economies is Poland. The data from the Ministry of Labour and Social Policy show that the highest employment effectiveness is presented by self-employment subsidies and intervention works [Ministerstwo Pracy... 2013]. That gross effect is confirmed by the studies on net effect of Polish ALMPs as they prove that the most effective (understood as employment influence on the unemployed) are the subsidies on the setting up own company as well as intervention works[19]. The positive effects on the employment is also generated by supply-oriented labour market policy instruments, ie. vocational training and internships, although these effects are much lower than the effects of subsidies or even the intervention works [Wiśniewski, Zawadzki 2011]. Moreover, the highest cost-efficiency was achieved as a result of activation in the form of socially useful work and training. At the same time, the lowest cost-efficiency concerns the creation of new jobs in the form of a self-employment subsidies and refund of equipping workstations [Ministerstwo Pracy... 2013].

It is worth to mention that undertaken ALMPs activities in Poland are mainly focused on activities generally treated in other countries as inefficient (like subsidised youth employment). Additionally the effectiveness of employment services (like professional counselling and job broking) has not been assessed as they are not financed from the sources of Labour Fund [Kryńska 2009].

Studies based on micro data suggest that though the effects of ALMPs on job placement rates tend to be lower in the short-run in comparison with their longer run impact in terms of employability [Boone, van Ours 2004]. Recent studies [Brown, Koettl 2012] show that ALMPs can be indeed cost-effective from a longer-term perspective (3-10 years), and some of them may even be self-financing. These results call for a shift towards long-run evaluations, including following workers' employment trajectory to better ascertain the impact of individual policies.

CONCLUSIONS

In recent years, the EU member states have placed increased priority on the effective coordination of ALMPs with the administration of benefits and make-work-pay policies, so as to implement coherent activation strategies to improve the situation on the labour market and get better employability results.

The separate EU countries engage different levels of expenditures on activation policy and they obtain different range of instruments adjusted to the socio-economic conditions of certain location.

[19] The data to the research was generated from the SYRIUSZ system used by labour offices and the results of audit made on behalf of Supreme Audit Office prove the data is overestimated, which overstates significantly the above indicators [NIK 2015].

Important stage of evaluation of those instruments' effectiveness is choosing appropriate measure. The public authorities in the EU often use performance monitoring indicators as well as cost-benefit analysis for the assessment of active labour market programmes. However, it is crucial to implement net impact evaluation to the effectiveness measures. These impact evaluations, when conducted rigorously, can identify the effects of a given programme on participants, and when coupled with cost information, can reveal the net benefits of programmes to participants, to government finances, and in some cases to the broader labour market and society. Conducting of net impact evaluation is more time-consuming and it needs reliable sources of data as they influence on the credibility of indicators.

On the EU level there is lack of complex analysis of ALMPs' effectiveness in the member states. Following the World Bank's studies among OECD countries (including industrial countries and transition economies), it is worth to conduct such complex research to evaluate the efficiency of the European Employment Strategy.

It is also crucial to research the long-term effects of ALMPs as the estimates show that many programmes that seem to display small positive (or even negative) effects in the short term have significant positive effects in the long run [Raisanen et al., 2012].

Moreover the overview studies indicate that there is hardly any empirical research on the social effects of active instruments as the relationship between ALMPs and job durations [Boone, van Ours 2004]. Therefore, quantitative analysis should complement qualitative, in which these issues are assessed.

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POTENTIAL OF BIOMASS PRODUCED IN RURAL COMMUNES BASED ON THE EXAMINED COMMUNES OF THE WIELKOPOLSKA REGION

Abstract: The research study concerns the problem of estimating the quantity and potential of biomass production in selected areas of Poland and excerpts of methodology, which allows using surveys to identify the source, types, and volume of biomass in three communes of Wielkopolska province: Budzyń, Kostrzyn and Kaźmierz. Some preliminary results of the study were also presented.

Key words: biomass, farm, animal manure, renewable energy, RES

INTRODUCTION

The development of RES in Poland is an undeniable issue, and it is expected to continue its development, just due to the reason that Poland had international obligations in terms of reducing greenhouse gas emissions and increasing the share of energy production from renewable energy sources to the level of 20% till the year 2020. One of the sources for production of energy, both thermal and electrical, is biomass. Biomass is an organic substance from plants and of animal origin, and it can be derived by the so-called social metabolism. Biomass is [only 2014] in the form of timber, straw, sewage sludge, municipal waste, and energy crops. Currently, global resources of this form of renewable energy consist of about 44,000 PJ per year^{-1} as the energy source, which- at the same time- is 10% of the share of the energy being consumed worldwide. It is said that global biomass resources amount to approx. 276 EJ per year [EurObserv`er, Paris 2012]. While the Polish energy potential coming from biomass production is estimated at 407.5 PJ 195 PJ, from which 195PJ is from agriculture sources, 101 PJ from forestry, and it is estimated as well that the wood industry gives approx. 53.9 PJ [Dubas et al., 2004].

Currently, the size of the energy potential of biomass production in Polish communes and rural areas is primarily correlated with the type of agricultural holdings, and the kind of agricultural activity being carried out. Therefore, in order to determine the estimated quantity potential of biomass production, at first, such activities should be undertaken, which allow identifying the overall structure of the examined holdings. These concerns mainly those farms with intensive crop production directed on the production of biomass. Recognition of agricultural holding structure, being performed in such manner, may be carried out by utilizing for this purpose special developed questionnaires, based on which specific selected data can be determined, and they can be introduced to specific databases.

Within the implementation works performed by the Institute under the Multiannual Programme in years 2011-2015 was undertaken an attempt to classify the type and possibilities of biomass production in rural communes – based on the example of three selected communes of Wielkopolska Voivodeship. These communes (gmina) were Kostrzyn, Kaźmierz and Budzyń.

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Biomass occurs in the following states of aggregation: liquid, solid, and gas, as well. Particularly, in situations with implemented sewage treatment (including municipal sewage treatments), and also in any kind of landfills, especially in places, where organic waste is collected, there is dealt with the so-called biogas, which is a kind of a combustible mixture of methane (CH4) and carbon dioxide (CO2). This gas is very often known as "marsh gas". This gas is very often known as "marsh gas". It is mainly caused by the process of anaerobic digestion of organic matter. These properties can be utilized for energy production purposes:

- electricity in generators powered by combustion engines,
- thermal energy during combustion processes in especially adapted boilers,
- in total – for production of electricity and thermal energy - in combined (hybrid) systems, also known as cogeneration systems

The biomass in liquid form is most commonly used as alcohols produced from crops having high sugar content, but also as biodiesel fuels produced from oil plants. The result of fermentation, hydrolysis or pyrolysis processes of crops (such as: sugar cane or corn) can be ethyl and methyl alcohols- as biofuels, which can be employed as additions to traditional fuels [www.biomasa.org].

Among many very important arguments that clearly indicated on using biomass products as a valuable source of energy [Tytko 2014] are, primarily:

- the energy contained in biomass is the least capital intensive one of renewable energy sources,
- energy carrier production in the form of biomass is the cause for which the local economic upturn is revived, especially in rural areas,
- production of biomass improves the overall fuel balance in a given region,
- it provides possibilities of decentralizing the generation of electricity, thermal energy, and mechanical energy,
- village income raise,
- creation of new job opportunities, particularly in communes facing unemployment.

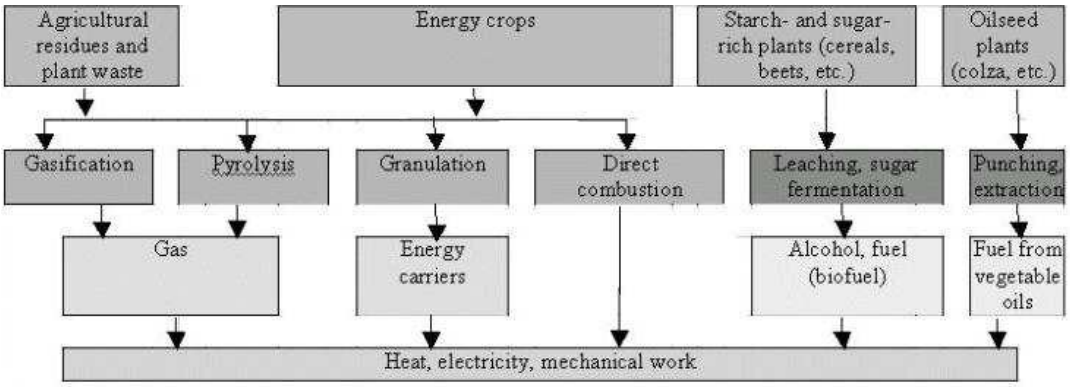

Figure 1. Diagram of possibilities for generating various plant energy forms to produce biomass

Source: Tytko, 2008

OBJECTIVE, SCOPE AND SUBJECT MATTER OF THE RESEARCH WORK

Objective of the study was to determine the size of the biomass being produced in the Wielkopolska Voivodeship and to determine the degree of its suitability in terms of its use as a renewable energy source.

The subject of the study was biomass of agricultural origin, its type, volume and its production capabilities in a specified area of Poland.

The scope of the work covered three communes within the Wielkopolska Voivodeship: Kostrzyn, Kaźmierz and Budzyń. The research works lasted for the period of 2013-2014.

METHODOLOGY

Analysis of the potential of biomass production in the Wielkopolska Voivodeship was carried out based on surveys conducted, among others, by employees of the Institute of Technology and Life Sciences with Branch in Poznań. Commune of Budzyń, located in the north-eastern part of the Wielkopolska Voivodeship and in the southern part of the Chodzieski Poviat, comprising the area of 207.85 square km, covering approx. 30% of the entire poviat (district). Within the area of the poviat are 16 villages, including 13 rural administrative units (sołectwo).

Kaźmierz commune is located in the Lowland of Wielkopolska, in the region of Poznań Upland, and is occupying the total area of 128.2 km2, representing approximately 11.45% of the Szamotulski Poviat, and thereby, it consist 0.42% of the Wielkopolska Voivodeship. Within the commune area are 22 rural towns, and entire commune consists of 18 villages – rural administrative units (sołectwo). Due to the type and nature of the soils, landform, and moreover, the high culture of farming, it is a commune mainly engaged in agricultural production, in which the farmland occupy 9 384 hectares and represents 73.37% of the total area of the commune. In the overall balance of the commune area, small acreage of lands is occupied by orchards. In turn, commune's forestation is estimated at 15.09%), it is lower than the national average, and explicitly, the village administrative units are forested very unequally. On the other hand, built-up and urbanized areas occupy in this commune more than 13.0%. The area of wasteland in all village administrative units (sołectwo) is usually less than the value of 4%, except in Sierpówka, wherein this value is 12.2% of the village (sołectwo) area.

Kostrzyn commune is situated at the Gnieźnieńska Highlands within two micro-regions: Średzka Lowlands (south-western part of the commune) and the Kostrzyńskie Hills (Pagórki Kostrzyńskie) (north-eastern part of the commune). It is located in the central part of the Wielkopolska Voivodeship, and the area of the commune is 154.2 square km, including towns of 8 km2, and communes consist of 20 village units (sołectwo).

RESEARCH METHODOLOGY AND METHODS OF ANALYSIS FOR THE PRODUCTION VOLUME OF BIOMASS

Estimating the potential of agricultural biomass production was based on the methodology allowing for step-by-step and detailed definition of biomass sources, its quantity, and the possibilities of its conversion. This methodology was presented to some extend below, and it is an essential tool for determining the volume of biomass production in a cyclical manner, at any area, and in each organizational unit - the commune, poviat, or village as a rural administrative unit. Table 1 presents the conversion indices/factors on acreage of cereal crops as an indispensable key to the final estimation on the volume/quantity of agricultural biomass.

Table 1. Conversion indices for farming area of cereal corps *K* and grain yield *L* to estimate the quantity of straw Q [t·ha^{-1}]. Own study based on: [Klugmann-Radzieska 2013; Innowacyjność... 2008].

Kind of cereals		K			L		
		Min	**Max**	**Mid**	**Min**	**Max**	**Mid**
winter corps	barley	2.30	3,90	3,00	0,70	0,94	0,82
	wheat	2.20	6,20	4,40	0,83	0,92	0,88
	triticale	3.00	6.10	4.90	0.94	1.18	1.06
	rye	2.60	6.80	5.10	1.24	1.45	1.35
spring corps	barley	2.00	5.00	3.60	0.67	0.86	0.77
	wheat	5.50	4.40	3.60	0.81	1.13	0.97
	oat	3.60	5.50	4.40	1.01	1.08	1.05
	mix*	3.70	5.00	3.90	0.80	1.00	0.90
colza rape		1.8	1.80	4.00	2.20	1.00	1.00

In order to determine the amount of biomass (in the form of straw) being produced on available area of the adopted cereal crops and based on their grain yield, the following formulas were employed:

$$Q_1 = \sum_{i=1}^{n} (A \cdot K)_i \quad (1) \qquad Q_2 = \sum_{i=1}^{n} (P \cdot L)_i \quad (2)$$

where:

Q_1 - *quantity of straw obtained from cereal crops, t*

Q_2 - *quantity of straw estimated on the basis of cereal yield, t*

A - *density of particular cereals, ha*

P - *total grain crop of particular cereals, ha*

K, L - *conversion indices (listed in Table 1), -*

The surplus of biomass (straw) being used for energy production was calculated according to the formulas:

$$E_1 = Q_1 \cdot N \quad (3) \qquad E_2 = Q_2 \cdot N \quad (4)$$

where:

E_1 - *surplus of straw from cereal corps, t*

E_2 - *surplus of straw based on cereal corps, t*

N - *index of straw surplus that can be utilized for energy purposes, 0.20*

[Innowacyjność... 2008].

DETERMINING THE QUANTITY OF BIOMASS IN RURAL AREAS ACCORDING TO THE TYPE, NUMBER, LSU AND LIVESTOCK MAINTENANCE SYSTEM

Biomass abundance according to the type, quantity, livestock maintenance system and LSU (livestock units) of selected livestock (dairy cattle, beef cattle, pigs, poultry) was determined on the basis of the guidelines for estimating annual production of organic fertilizers (manure) in animal production [Poland's Journal of Laws 2005, No. 17, Item 142]. Computations were performed by taking into account the stocking of selected species of animals and the livestock maintenance method with deep litter system, shallow litter system, and either non-litter system. The quantity of produced organic fertilizers (slurry, manure and liquid manure) was determined by the relationship:

$$\mathbf{R = L_z \cdot P_N \cdot DJP} \quad (5)$$

where:

R - *total natural fertilizer production in animal husbandry, $t \cdot year^{-1}$, $m^3 \cdot year^{-1}$*

L_Z - *number of animals according to the species, -*

P_N - *annual production of natural fertilizers (manure, liquid manure and slurry) in animal husbandry according to livestock stocking density and their maintaining system*

DJP - *conversion index for the number of livestock animals*

Rural area biomass richness was designated by taking into account forest areas and/or based on the volume of wood [Innovation ... 2008] by employing conversion indices (Table 2), and this was carried out according to the formulas:

$$\mathbf{B_D = L \cdot \sum C_D} \quad (7) \qquad \mathbf{B_D = V \cdot \sum C_V} \quad (8)$$

where:

B_D - *biomass obtained per forest density, t*

L - *forest area, ha*

$\sum C_D$ - *total wood specific gravity of (bark, brushwood, large firewood, sawdust, sawn timber) per the area of 1 ha of forests, $t \cdot m^{-3}$*

V - volume of timber, in m^3

$\sum C_V$ - total specific gravity of 1 m^3 of wood products (bark, brushwood, large firewood, sawdust, sawn timber), $t \cdot m^{-3}$

Table 2. Conversion indices for forest density (C_D) and wood volume (C_V) to estimate biomass resources. Own study based on: [Innowacyjność... 2008].

Wood	Share [%]	C_D [$t \cdot m^{-3}$]	C_V [$t \cdot m^{-3}$]
bark	10	0.9008	0.050
brushwood	15	1.3511	0.075
large firewood	20	1.8015	0.100
sawdust (wood shavings)	19	1.7114	0.095
sawn timber	36	3.2427	0.180

DETERMINING THE BIOMASS POTENTIAL IN RURAL AREAS FROM ENERGY CROPS

Data on the yield of energy willow dry matter (Table 3) grown on the land called "heavy alluvial soil" were used as the main determinant for possibilities of determining the quantity of biomass from energy crops. The soil in its texture and structure is basically formed from clay layers, especially from heavy and silty clays, soils strongly suitable for cereals and fodder corps, and at valuation class III b [Innowacyjność ... 2008]. It was adopted here that the basic plant material for energy purposes will be harvested not earlier than the growing season ends (October-November, March-April) in repeated cycles of 1, 2 or 3 years.

Table 3. Yield of dry matter of energy willow per 1 ha in 1-2 and 3-year harvest cycle. Own study based on:

Harvest cycle	Harvest season	Dry mass at harvest S [t $ha^{1} \cdot year^{-1}$]
Every year	October-November March-April	15.79
Every 2nd year	October-November March-April	17.72
Every 3rd year	October-November March-April	18.74

Source: Innowacyjność... 2008

In order to determine the amount of available biomass from energy crops, regarding particular implementation of harvesting periods of the plants (Table 3), the equalities were used:

$$M_1 = \sum A \cdot S_1 \quad (9) \qquad M_2 = \frac{\sum A \cdot S_2}{2} \quad (10) \qquad M_3 = \frac{\sum A \cdot S_3}{3} \quad (11)$$

where:
M_1, M_2, M_3- dry mass of plants for energy purposes in a harvest cycle lasting 1-2, and 3 years, t·year^{-1}
A- total area of energy plants, ha
S_1, S_2, S_3- dry matter yield of energy plants in a 1-2- and 3-year harvest cycle, t·ha^{-1}·year^{-1} (Table 4)

RESEARCH RESULTS

When comparing the energy value of biomass with other traditional energy resources it should be noted that biomass has a lot more oxygen in the structure of its chemical bonds, which in turn results in lower concentration of energy per unit of mass (this is the so-called energy density). Further disadvantages are also large fluctuations in chemical composition (nitrogen, chlorine, alkalis) and water content, as well as the tendency to form tars, and low melting temperature of ashes [Grzybek 2010, Frączek 2010, Roszkowski 2013].

Generally accepted corps that may be employed by the tested communes as a source of biomass for energy purposes are:

- cereals- rye, wheat, triticale,
- corn – silage, grain,
- reed canary grass,
- grass (silage, herbage),
- miscanthus,
- sugar and fodder beets,
- straw,
- rape seed expellers.

Despite the above mentioned corps, which could play a significant role in biomass energy production, the resources of wood, sawmill waste, and charcoal should also be considered [Roszkowski 2013]. Therefore, careful observation and analysis of available resources and potential in individual communes in Poland in terms of the main supplier of biomass is also an essential issue. As it is commonly known- according to Roszkowski [2013], in Poland biomass is utilized for energy purposes in the form of solid biomass for many years now (in 2008 it was approximately 80%). In particular, it is meant as timber mass intended for energy production, which is equivalent to approximately 60-70% of the annual growth of forests. This leads to an indication that knowledge on the structure of individual communes may be useful to pre-estimate the quantity of timber products harvested for biomass purposes.

Other crop that can play a crucial role for gaining energy is the energy willow. Assessments being performed by using the LCA method indicated that theoretical energy efficiency of cultivation of the crop ranged between 400 and 058; however, in practice, this ratio was obtaining the value of 10-11 as average [Roszkowski 2013].

The structure of land use in Kaźmierz commune was as follows:

- Utilised agricultural area: 9 384 ha (73.37 % of total area),
- Forests and woodlands: 1 930 ha (15.09 % of total area),
- Tree covered lands: 43 ha (0.34 % of total area),
- Standing waters: 5 ha (0.04 % of total area),
- Running waters: 341 ha (2.67 % of total area),
- Ditches: 65 ha (0.51 % of total area),
- Mining sites: 2 ha (0.02 % of total area),
- Roads: 313 ha (2.45 % of total area),
- Private areas owed by PKP Company: 28 ha (0.22 % of total area),
- Residential areas: 110 ha (0.86 % of total area)

In terms of the size structure of agricultural holdings prevail large farms with the acreage of more than 10 hectares (which represents approximately 42.5%). Subsequent group of holdings are small farms, representing approximately 39%.

A very important criterion for estimation of biomass suitability and production is to determine the structure of sown areas. Thus, the crop structure was as follows (data for the year 2009):

- winter wheat covered: 1 990 hectares,
- spring wheat: 136 hectares,
- winter triticale: 990 hectares,
- spring triticale: 25 hectares,
- winter rye: 290 hectares,
- winter barley: 455 hectares,
- spring barley: 942 hectares,
- oats: 36 hectares,
- spring cereal mixture: 372 hectares,
- corn-grain: 1493 hectares,
- green corn: 155 hectares,
- winter rape: 1135 hectares,
- sugar beets: 240 hectares,
- fodder beets: 12 hectares,
- potatoes: 55 hectares,
- leguminous crops for seeds: 28 hectares,
- leguminous fodder corps: 289 hectares.
- roll-out grass: 100 hectares,
- remaining crops: (kitchen gardens, vegetables, strawberries) 10 hectares
- others: 2 hectares.

Whereas, table 4 indicates the density of farm animals per 100 hectares of farmland.

Table 4. The density of livestock per 100 hectares of farmland (Kostrzyn Commune).

	Cows per 100ha of farmland	**Pigs per 100ha of farmland**
Total in the Commune	44.4	268.0
of the Wielkopolska Voivodeship	36.2	294.5

Table 5. Results derived based on the surveyed rural communes.

Commune	Number of farms	Straw biomass			Heat energy [E]		
		Min.	Max.	Average	Min.	Max.	Average
		t-year -1	t-year -1	t-year -1	GJ year-1	GJ year-1	GJ year-1
Budzyń	36	895.05	1869.37	1352.28	15394.91	32153.11	23259.16
Koźmin Wlkp.	26	1245.22	2882.06	2028.24	21417.83	49571.43	34885.74
Kaźmierz	10	291.16	701.70	518.04	5007.95	12069.24	8910.29

Commune	Energy from biomass [E_G]			manure	liquid manure	slurry	Energy from biogas	Wood biomass	Energy from biomass
	Min.	Max.	Average						
	GJ year-1	GJ year-1	GJ year-1	t-year -1	t-year -1	t-year -1	GJ year-1	GJ year-1	GJ year-1
Budzyń	4117.25	8599.09	6220.47	2166.68	720.84	0.00	2491.68	86.55	1666.09
Koźmin Wlkp	5728.02	13257.48	9329.91	4719.42	628.14	1604.00	634.63	278.10	5353.43
Kaźmierz	1339.34	3227.82	2382.98	2563.35	917.10	0.00	2947.85	0.00	0.00

CONCLUSION

Energy production from biomass is gradually increased in Poland. According to the literature [Celińska 2009], total, the so far declared by agricultural producers and farmers cultivated area used for energy plants amounted to 180k of hectares (in 2007), including targeted cultivations of 6816 hectares. The author assumes that the remaining 173,000 hectares were designated to cultivation of traditional crops such as rape corps. Based on the performed analysis regarding the above-mentioned data, it is estimated [Pawlak 2014] that in 2010 the area of oilseed rape crop for energy use amounted to approximately 309,000 hectares. In addition, by considering other remaining crops cultivated for energy purposes, the author of the analysis estimates that the surface of these crops is at about 670,000 hectares – and this represents about 4.3% of arable land in the country.

However, it is difficult to search for precise data presenting the cultivation concept of specific crops for energy purposes on the national scale with administrational division into voivodeships, poviats and communes. Therefore, it was justify to plan, undertake and perform detailed research studies and analysis on eliminating this gap in the current knowledge on this problem. However, this required development of precise elaboration– the so-called methodology, which treated the issue in terms of quantity and type of energy crops grown in individual communes. Based on this a survey was carried out in three chosen communes in the However, this required development of precise elaboration– the so-called methodology, which treated the issue in terms of quantity and type of energy crops grown in individual communes. Based on this a survey was carried out in three chosen communes in the Wielkopolska Voivodeship (Greater Poland Voivodeship).

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FACTORS IN BUILDING THE SINGLE DIGITAL MARKET IN THE EUROPEAN UNION

Abstract: The paper aims at analyzing the EU official documents laid down to create the Information Society of the 21st century, and in particular at identifying respective barriers and methods used to overcome them. In the second part, we detail the procedure applicable for the monitoring of the implementation timetable of the European e-commerce market.

Key words: Information Society, the Europe 2020 Strategy, timetable for the implementation of the EU e-commerce market

INTRODUCTION

The weaknesses of the European market, as revealed during 2007-2008 crisis, have been further compounded by the growing global competition across all areas of the European life: economic, social, demographic and environmental. These weaknesses can now undermine Europe's ability to build its sustainable future. The vision based on high employment, low-carbon economy, enhanced cohesion and a high level of citizens' health is to be achieved thanks *to the Information and Communication Technologies (ICT) sector*. The ICT sector is directly responsible for 5% of the European GDP, and there are more than 250 million daily internet users in Europe.

The following figures testify to the "under-development" of the digital market in Europe as compared to America and Asia: in 2009, 30% of Europeans had never used the internet, and only 1 % of the digital infrastructure was made of rapid fiber optic networks. The same year its R&D spending on the ICT sector amounted to 40% of the corresponding American effort. Only 15% of consumers were buying on-line products and services from other EU countries, and only 7% of small businesses were selling their products and services abroad, via the internet.

RESEARCH OBJECTIVE AND METHODOLOGY

The aim of this paper is to present the limitations to the development of the digital market, and measures which can possibly mitigate, if not remove, such obstacles. The final part outlines the procedure applicable to monitor the building of a Single European Digital Market, with the participating EU institutions. The analysis has been based on the EU documents pertaining to the creation of the information society.

THE ORIGINS OF A SINGLE DIGITAL MARKET PROCESS IN THE EUROPEAN UNION

The term *Single Digital Market* refers to a market which creates new needs and new ways in which such needs can be satisfied by consumers and by public administrations, thanks to access to information and contents provided at any time, in any place and via any device. The debate on the building of the information society in the EU seems to have been initiated by Bangemann Report: *Europe and the Global Information Society. Recommendations for the European Council*, which sparked lots of controversy. As a result, at the Helsinki Summit of December 1999, a new initiative was announced: "*eEurope - an information society for all*"; the priority was to improve access to the internet in order to build and implement the concept of the knowledge-based society. In the renewed Lisbon strategy of 2010, the new mission was adopted to build for 28 Member States a single

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strategy based on knowledge and technical innovations in order to promote a sustainable growth in the European Union. Such growth could be achieved thanks to new jobs and investments in the economy based on processing and distribution of information.

In order to establish a single market of services and to introduce its products on-line a single digital market needed to be put in place. The Digital Agenda for Europe is a fruit of wide public consultations, a document drawn up during the Spanish Presidency of the EU to cover 7 areas which make for "*the EUROPE 2020 Strategy*". The building of a single digital market through legislative measures which facilitate a secure purchase of services, and the inclusion therein of those groups of EU citizens which have never used the internet will help reduce the operational costs of the said market, boost its innovativeness and its competitiveness. This is made possible thanks to removing barriers to the growth of the digital market, by means of relevant tools detailed in subsequent communications of the European Commission.

BARRIERS TO THE CREATION OF A COHERENT DIGITAL MARKET IN THE EUROPEAN UNION

The identified impediments to the creation of a coherent single market, as detailed in Figure 1 below, include: fragmented digital markets, lack of interoperability, rising cybercrime, risk of low trust in networks, lack of investment in networks, insufficient research and innovation effort, lack of digital literacy and skills, and new application areas of digital technologies.

Creation of contents - reducing limited access to services/ Boosting the demand for services/ Launch of services on-line

Lack of investment in networks/ Lack of interoperability/ Missed opportunities of using digital technologies/ Fragmented digital markets/ New application opportunities to address societal changes/ Insufficient research and innovation efforts/ Cybercrime and lack of trust

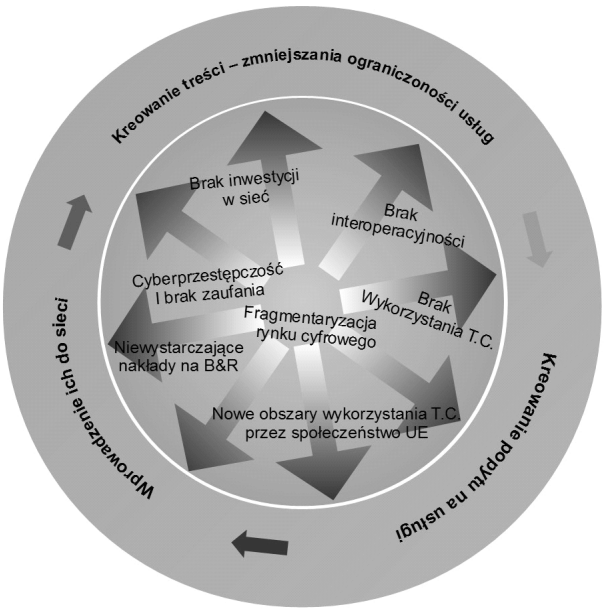


Figure 1. Factors generating the demand for digital services in the EU

Source: Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions, Digital Agenda for Europe, COM (2010), 26.8.2013, p. 5.

ACTIONS TO BE TAKEN TO ACHIEVE THE SINGLE DIGITAL MARKET

The vision of the *single digital market* whose foundations need to be laid down until 2015, is described in terms of the following tasks:

- Promote the development of the *electronic commerce*, in order to reach, by 2015, the 50% level of the EU residents who shop on-line, as compared to only 37% in 2009;
- Advance the development of *cross-border commercial transactions*, in order to reach, by 2015, 20% level of the EU residents who shop on-line, as compared to only 8% of individuals aged 16-74 who made their purchases abroad in 2009;
- Develop the *electronic commerce in the SMEs segment* up to the level of 33% in 2015; in 2009 its share was 24% and 12% for purchase and sale transactions respectively;
- Promote the regular use of the Internet among all the EU residence, from 60% in 2009 to 75% in 2015;
- Halve the number of those who has never used the internet, from 30% in 2009 to 15% in 2015;
- Create the *single market for telecom services* where price gaps between the roaming services and national tariffs should be bridged to zero.

Among key measures to be taken to facilitate the creation of the digital market, one should note the simplification of copyright clearances, of their management systems and their cross-border licensing with a view to making use of the full potential of the EU internal market.

Nevertheless, due to transaction complexity, attractive prices and wider choices still serve consumers but *to a limited extent*. Cross-border transactions account for less than 10 % of all commercial transactions. Up to 92% of those who order goods and services on-line use solely domestic suppliers.

EFFICIENT AND SECURE PAYMENT METHODS

The creation of an integrated market is facilitated, among all, by *electronic payments and invoicing* as well as secure and efficient payment methods. This is supposed to become a reality thanks to the *Single European Payment Area* (*SEPA*), established as a framework for invoicing electronic payments. In 2011, the e-signatures directive was adopted, setting up the legal framework for cross-border secure e-authentication systems. Moreover, the VAT directive was amended to ensure the equal treatment for eInvoicing with paper invoices. In order for the aforesaid actions to become truly effective, the Commission set as its priority to implement swiftly and coherently these amended legal provisions.

LACK OF INTEROPERABILITY OF GOODS AND SERVICES

In order for the digital society to become reality interoperability needs to be ensured without delay. Measures in this area have been included in the White Paper on *Modernizing ICT standardization in the EU*. Key players in the digital market were encouraged to license information on *technical interoperability*. The normalization and standardization of information lead to the unification of service-related data, which in turn brings cost and time savings and improves the competitiveness of services and their sales. The standardization can be secured, among all, by *licensing information*, and remains one of the key requirements of *information security*.

ONLINE TRUST AND SECURITY

The full reliability of new technologies is the pre-requirement for the emergence of state-of-the art, advanced on-line services such as Internet banking or eHealth. At present, the internet is relatively secure, resilient and stable, while networks and PCs of final users are still vulnerable to a number of more and more diversified threats. It is estimated that spam contents account for 80% to 90% of all information being sent.

That's how viruses and malicious software are spread and used to commit identity thefts and other Internet fraud, which compounds information security threats. Counter-measures should be then taken by individuals and local and global institutions. In order to address the computer-based crime, the missions of *the European Network and Information Security Agency (ENISA)* have been modified and measures have been put in place, among all at the legislative level, to prevent cyberattacks on IT systems. The establishment of *the European Cybercrime Center* will help strengthen the cooperation with a view to creating the global risk management in the digital sphere. The new network of reporting points for illegal contents should be deployed both at the national level and within the framework of pan-European cooperation.

LACK OF INVESTMENT IN NETWORKS

Fast internet is vital to:

- Ensure the economic growth and new jobs, to give EU citizens access to the services they want, and to provide all EU inhabitants with access to much higher internet speeds of above 30 Mb/s;
- Provide half the European households or more with access to internet connections above 100 Mb/s.

Such ambitious targets could only be reached with the involvement of European and national institutions. The broadband internet access policy will help cut down on its implementation costs and reduce administrative burdens. In order for these aims to become reality structural funds and funds dedicated to the development of rural areas should be capitalized on.

INSUFFICIENT R&D EFFORT

Funds dedicated to the implementation of the aforesaid measures have been in fact insufficient:

- In 2007, the EU R&D spending in the ICT sector amounted to 17%, while the US spent 29% in the same year;
- Public R&D spending in the EU was scattered and amounted in 2007 to EUR 5.5 billion per year. In order to improve the competitiveness of the European economy, the "Europe 2020 Strategy" aims at doubling this spending up to EUR 11 billion;
- Due to the fragmentation of the digital market, financing becomes dispersed, and notably funds available for the SME innovators. This can be resolved by investing in the private sector under the public-private partnership formula, which should help double the private sector spending on the ICT projects from EUR 35 billion in 2007 to EUR 70 billion in 2020. Other options include: investing in young researchers, setting up platforms for new products, committing funds to the creation and development of new solutions in the public sector, to be financed with the competitiveness and innovation envelope.

ENHANCING DIGITAL LITERACY, SKILLS AND INCLUSION

In 2009, some 30% of Europeans had no digital literacy - a major shortcoming which substantially increases the costs of ICT use. The psychological barrier which hampers the use of modern digital technologies persists mainly among the EU older generations, people with disabilities and young women who return to work. Bridging the digital divide could promote employment opportunities through eLearning, eGovernment and eHealth. Digital competence is thus one of the key competences which are fundamental for individuals in a knowledge-based society. Moreover, the ICT sector cannot efficiently leverage the competitiveness of the EU economy as a whole without qualified practitioners. This clearly calls for more ICT and e-business training, especially in the area of production and design of technologies for SMEs. Moreover, this requires the establishment of cross-discipline and intensive training schemes, in formal education and in informal settings. In the 2014-2020 programming period such measures can be financed

under the European Social Fund, and should be coupled with the recognition of the European qualification framework and of the Europass. Such skills can also be boosted by aligning the EU Member States' policies with the eLearning framework, as defined at the EU level.

ICT-ENABLED BENEFITS FOR EU SOCIETY: E-HEALTH AND E-ADMINISTRATION

Smart use of ICT should help address the challenges which the EU societies are now facing: management of aging populations, reducing energy consumption, counteracting climate change, inclusion of people with disabilities and the sick into the information society, to name but a few.

New information technologies could help reduce the energy consumption for buildings and the construction industry as a whole, for means of transport and logistics, for energy production and distribution.

In case of *eHealth*, apart from the standardization of electronic medical and equipment records, *the Ambient Assisted Living (AAL) technologies* will also be developed, to be widely used thanks to ICT deployment. In consequence, access to such e-services as patients' health monitoring system, will become widespread. Moreover, until 2020 the access to telemetric data and to the minimum common set of patient data will have been generalized in order to ensure electronic access to patient registers and to enable the exchange of such data among the EU Member States.

Fragmentation and complexity in the current licensing system *hinders the digitization of a large part of Europe's cultural heritage*. Rights clearance must be improved, which will help strengthen *Europeana* - the EU public digital library.

eGovernment services offer a cost-effective route to better service for every citizen and business through participatory *open and transparent government*. eGovernment services can reduce costs and save time for public administrations, citizens and businesses. They can also help *mitigate the man-made risks of* climate change and natural resources depletion, by sharing of environmental data and environment-related information. European governments have committed to making *user-centric, personalized, multi-platform eGovernment services* a widespread reality by 2015.

Better administrative cooperation in the EU will help public procurement market participants handle formalities on-line, at the cross-border level, within a single digital market. This may include the establishment, in the single market, of the Competitiveness and Innovation Program (CIP) and the implementation of the Community-wise access to environmental data.

In order to ensure *EU-wide mutual e-identification and e-authentication*, the White Paper defines actions on pooling eProcurement capabilities within the single market. The creation of open and transparent eGovernment is to be covered by the eCommission project scheduled for 2011-2015 and aiming at establishing full electronic procurement.

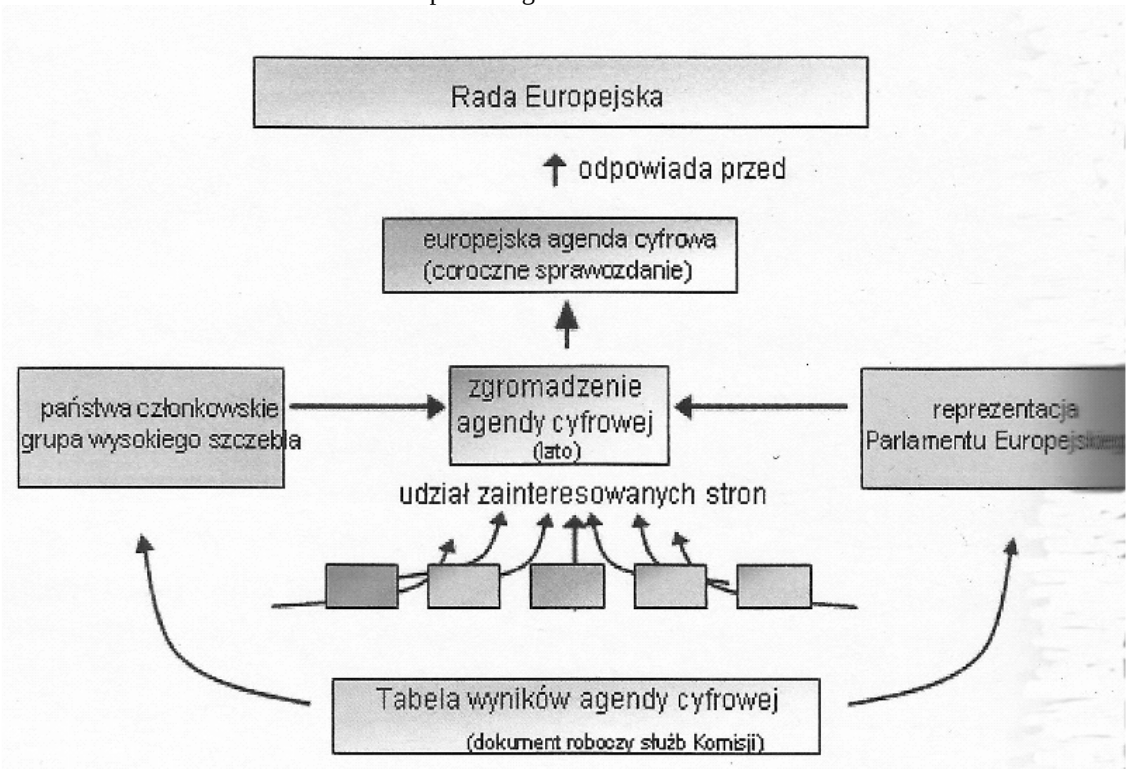
MONITORING PROCEDURE FOR THE IMPLEMENTATION OF THE SINGLE DIGITAL MARKET IN THE EUROPEAN UNION

The success of the Digital Agenda requires meticulous execution of its comprehensive set of actions in accordance with the Europe 2020 Strategy. The procedure has been detailed in Figure 2.

The procedure detailed below is implemented as follows:

- Setting up of an internal coordination mechanism ensured by the Commissioner's Group to ensure policy coordination across the different areas of the Digital Agenda;
- Defining rules of regular cooperation with Member States and the European Parliament by setting up action-oriented platforms on aforesaid seven action areas;
- Updates of progress on the full set of policy actions identified in the Digital Agenda;
- Organizing debates on the progress as tracked in the annual reports in the form of digital scoreboards, involving: Member States, EU institutions, representatives of businesses and consumers. Debates have been organized since 2011;

- The Commission reports to the European Council on the results of activities and on progresses made in accordance with the Europe 2020 governance structure.



European Council		
Reports to		
Digital Agenda for Europe (annual reporting)		
Member States High Level Group	Digital Assembly (summer)	European Parliament representatives
Participation of interested stakeholders		
Digital Scoreboard (working document of the Commission services)		

Figure 2. Digital Agenda for Europe management procedure

Source: Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions, Digital Agenda for Europe, COM (2010), 26.8.2013, p. 41.

CONCLUSION

Thanks to progress in the building of the single digital market the conditions of the international trade of electronic goods and services will improve through the development of partnerships for access to investments, the reduction of custom tariffs and removal of non-tariff barriers at the global level, better protection of intellectual property rights and through bringing to the next level the trading in goods and services both inside and outside the European Union.

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MANUFACTURING CYCLE AND ITS STRUCTURE IN WOOD INDUSTRY ENTERPRISES

Abstract: The manufacturing cycle is a primary problem investigated in the scope of production organization engineering. The paper presents a proposal for a more accurate definition of the manufacturing cycle, as well as presents a characteristic and classification of types of manufacturing cycles applicable in wood industry enterprises. Moreover, the structure of the duration of the manufacturing cycle was discussed and its components are characterized. Hierarchical classification systems connected with the manufacturing cycle and the structure of its duration have been developed.

Key words: production organization engineering, wood industry, classification, manufacturing cycle, structure of cycle time

INTRODUCTION

In all enterprises of the wood industry wood is the basic raw material in the manufacturing process. Individual sectors of the industry differ in their specific technological processes and required technical equipment (see sawmill, pulp mill). End products are products varying greatly in terms of wood conversion degrees, wood-based materials and design complexity (see a table, a sheet of paper, a wood house).

The aim of this paper is to characterize the manufacturing cycle and classify the types of cycles based on common characteristics of manufacturing processes applied in wood industry enterprises. The conducted analysis of terminology concerning the manufacturing cycle made it possible to identify their interdependencies. On this basis classification criteria were selected for the types of manufacturing cycles and components of cycle time structure. These data constitute a network of concepts, which may be used to provide a more precise presentation of research results in the field of production engineering and production organization design in wood sector enterprises.

In wood industry enterprises the course of the manufacturing process[25] (production process), in relation to products of the same type, is a repeatable phenomenon. For a single run it takes the form referred to as the manufacturing cycle (the production cycle) [Muhlemann 2001, Gryffin 2013]. In literature on the subject the manufacturing cycle is frequently defined as the period of the manufacturing process, i.e. the time interval, which starts with the moment materials for production are collected from input warehouses and finishes with the receipt of a product[26] to the finished

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[25] The manufacturing process for products in the wood industry is a set of actions organized in the form of manufacturing operations and natural processes. Moreover, it includes breaks between these components, during the time when the products are warehoused. The objective of a manufacturing process is to transform wood materials (raw materials), elements, subassemblies and assemblies into final products. The operations and processes constituting manufacturing processes are carried out in the order resulting from technological, design and performance properties of the manufactured objects. Initiation of successive manufacturing operations is coordinated in terms of the time and location of their execution, as well as technological and organizational requirements of the process [Tabert, Lis 2014].

[26] The term "product" used in the paper when free from any additional adjective complements has a general meaning, i.e. it may pertain to an element, subassembly, assembly or final product and it is equivalent to the term "workpiece".

product warehouse [see: Wróblewski 1993, Pasternak 2005, Durlik 2007]. It is an imprecise term, since in this way it is not the manufacturing cycle, but rather it is the cycle duration that is defined.

According to the scope of the term "cycle"[27] – the **manufacturing cycle** is a set of components of the manufacturing process of an enterprise, repeated in time and located in a specific manufacturing space of this enterprise: manufacturing operations (technological and auxiliary), natural processes and warehousing of work-in-process waiting for the successive process operations. Warehousing of products is equivalent to idle time (down time) during the manufacturing process. Components of the process organized into a cycle constitute a loop, which primary feature is movement (flow) of workpieces.

The course of the manufacturing process may also be presented in a broader sense, i.e. include not only the flow of workpieces, but also information connected with preparatory work, performed prior to material manufacturing processes. In such a case we additionally distinguish the **pre-manufacturing cycle** (production preparation cycle). It covers the following groups of operations [Pasternak 2005]:

- preparation of orders – includes the bidding procedure (preparation and sending a bid or receipt of an order) and preparation of an agreement between contractors for the manufacture and sale of products;
- design preparation – comprises: market studies, conceptual studies, R&D, development of product design, testing of the prototype and test run;
- technological preparation – includes: development of product manufacturing technology (e.g. technological itinerary, job instructions), selection of machines and equipment, development of technical and economic standards (e.g. work time standards and material consumption standards) as well as selection of instruments and tools;
- material preparation – consists in: selection of suppliers, preparation of contracts for the supply of materials required for production, together with the arrangement of dates and quantitative and qualitative conditions for the acceptance of deliveries and establishment of delivery locations (to warehouses of the enterprise or directly to the workstation);
- organizational preparation – includes: planning of the layout of workstations, development of schedules of manufacturing tasks (determination of the dates of activation and supply of products), issue of workshop documentation for the entire manufacturing process and staff training.

The manufacturing cycle is defined by other authors (e.g. Pająk [2011] and Grandys [2013]) in a broader sense, including also operations classified by Pasternak [2005] to the pre-manufacturing cycle. In turn, in a narrower sense the manufacturing cycle is called the production cycle (the product manufacturing cycle). Such nomenclature is ambiguous, since the Polish terms referring to manufacturing and production[28] (from Latin productio – generation, production) are equivalent in meaning, whereas in English there are two terms, i.e. production and manufacturing. The former covers the activity, as a result of which both material and non-material products (e.g. IT products), as well as services are supplied on the market, thus this term is used in the broader sense. The latter terms is narrower in meaning, limited to material processing. It is applied to the activity consisting in the processing of raw materials (materials) into marketable products. It seems unjustified to use

[27] Cycle – (Greek *kýklos* – a circle) – operations, processes or phenomena, repeated periodically and occurring within a certain period of time and constituting a complete development entity; also sets of phenomena, operations related to one another and constituting a single entity. Based on: portalwiedzy.onet.pl/polszczyzna.html?qs=cykl&tr=pol-all&ch=1&x=0&y=0 (Availabe 10.09.2015).

[28] Słownik wyrazów obcych PWN. Jan Tokarski (ed.). 7th editio, Państwowe Wydawnictwo Naukowe, Warszawa, 1984.

literal translations of English terms in Polish. In this paper the terms - the pre-manufacturing cycle – for IT processing, and the manufacturing cycle in a narrower sense – for material processing, are applied, as it is proposed by Pasternak [2005].

TYPES OF MANUFACTURING CYCLES

In terms of the objects (e.g. product, manufacturing unit) involved in the cycle we distinguish four basic types of manufacturing cycles. Moreover, in relation to the product cycle auxiliary classification criteria are used, i.e. the number of products and the complexity of product structure. Table 1 lists classification criteria and the related names of cycle types. In turn, Figure 1 presents classification cirteria and the types of cycles in the hierarchical system, illustrating their interdependencies.

Table 1. A list of classification criteria and names for types of manufacturing cycles

Classification criterion	Type of manufacturing cycle
Object of cycle	Cycle of product, cycle of manufacturing unit, cycle of technological phase, lot operation cycle time (operation cycle)
Number of products	Cycle of a single product, cycle of a group of products
Complexity of product structure	Cycle of a simple product, cycle of a complex product

Source: Own study.

In terms of the type of object (see tab. 1 and Fig. 1) involved in the manufacturing cycle we distinguish: the cycle of a product, the cycle of a manufacturing unit, the cycle of the technological phase and the cycle of operations (the operation cycle). The **cycle of product** may refer to a **single product** (an element, subassembly, assembly or a final product) or a **group of products** (a shipping batch, a manufacturing batch of parts or a manufacturing series of final products). Depending on the degree of complexity of the design structure of a product involved in the cycle we distinguish a simple cycle and a complex cycle.

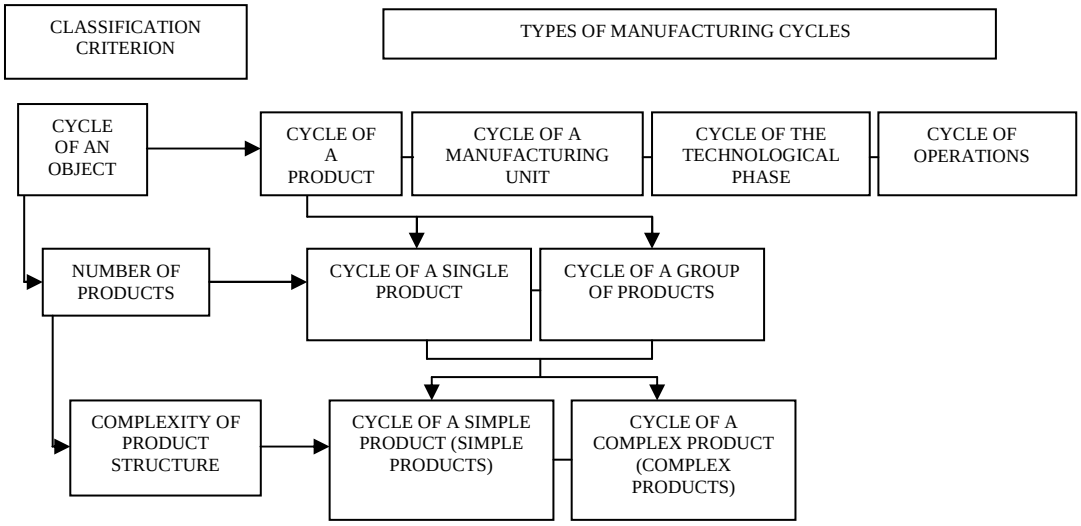

Fig. 1. Classification criteria and types of cycles in a hierarchical system, with arrows marking hierarchical dependencies

Source: Own study.

A **simple cycle** (the cycle of a simple product) refers to simple products (elements - e.g. wardrobe side panels or simple final products - e.g. wooden tool handles) and is a series of operations, which in the course of the manufacturing process (in a section of the manufacturing process) are performed successively on the same product (or a group of products of the same type).

In simple cycles next to technological operations we may also have natural processes and auxiliary operations (e.g. warehousing operations to prepare assembly sets of elements, transport operations, inspection and maintenance operations), as well as all breaks (idle time) between individual components of the process.

A **complex cycle** (a cycle of a complex product) is a set of simple cycles. It pertains to complex products, i.e. subassemblies (e.g. a frame of front doors), assemblies (e.g. a drawer) or complex final products (e.g. a chair). A complex cycle comprises simple cycles of the processing phase and the assembly phase of a complex product. In the manufacturing process simple cycles comprising a complex cycle may be parallel or executed successively.

A **cycle of the manufacturing unit** comprises components of a manufacturing process, including breaks between them, which are performed in a specific manufacturing unit. It is established mainly for primary units (machine groups and manufacturing lines), in which the manufactured product types are similar in terms of their design and they are subjected to similar technological processes.

A **cycle of the technological phase** refers to a stage of a manufacturing process distinguished based on the technological criterion (e.g. machining, timber drying). It includes all manufacturing operations and natural processes comprised in a given phase, together with breaks between them. The cycle of the technological phase is composed of operations performed in one manufacturing unit (most typically a primary unit: a machine group, a manufacturing line) or several - e.g. preliminary and main processing. A particular case of a cycle of the technological phase is the cycle of performance of one technological operation on a manufacturing batch of parts. It is referred to as the **cycle of operations** (operation cycle).

TIME STRUCTURE OF MANUFACTURING CYCLE

The basic measure of execution of a manufacturing process of a product is provided by time. Using time we may define the amount of work that is needed or has been used to perform a manufacturing task by employees (labor consumption) and a work station (work station intensity). The **duration** (time, length, time length) of a **manufacturing cycle of a product** defines the period between the moment of initiation and completion of a single run of the manufacturing cycle of a product (or groups of products of an identical type). The cycle of a final product lasts from the moment of collection of materials for production from the starting material warehouses and ends with the receipt of the finished product at the final product warehouse.

The object, in relation to which we define cycle length, may include a single element, subassembly, assembly or final product, or a group (batch) of parts or a group (series) of final products. Most frequently the length of a cycle is established for a manufacturing batch of elements – as a simple cycle or a manufacturing batch of complex parts – as a complex cycle. The duration of a cycle is measured in units of time, such as seconds, minutes, hours, shifts, calendar or working days, and less frequently in calendar units (1-, 3- or 5-day).

Time structure of the manufacturing cycle of a product (the structure of the manufacturing cycle) is composed of performance times of basic components of the manufacturing process, i.e. times of manufacturing operations, natural processes and times of breaks between these components. Figure 2 presents the time structure of the manufacturing cycle of a product divided into working time and break time.

Grouping of time structure components of the manufacturing cycle is based on the identification of time segments, in which a product is subjected or is not subjected to manufacturing operations. Former sections are classified to the working period (the active period), while the latter are included in the break period (passive period, waiting period).

The **working period** is composed of times (see Fig. 2) of:

- technological operations,
- auxiliary operations (excluding waiting time in warehouses),
- natural processes.

The length of the working time of a cycle:

a) in relation to the cycle of a simple product depends on:
   - the number and length of times of operations (technological and auxiliary, except for waiting times in warehouses) performed on manufacturing batches,
   - the system of run of a batch of parts (serial, parallel and serial-parallel production run) between successive operations, defining the degree of parallel performance of operations in a cycle,
   - the number and duration of natural processes and the degree of their coverage by manufacturing operations;

b) in relation to the cycle of a complex product from:
   - the longest series of cycles of simple products, performed successively, comprising the manufacturing process of a complex product.

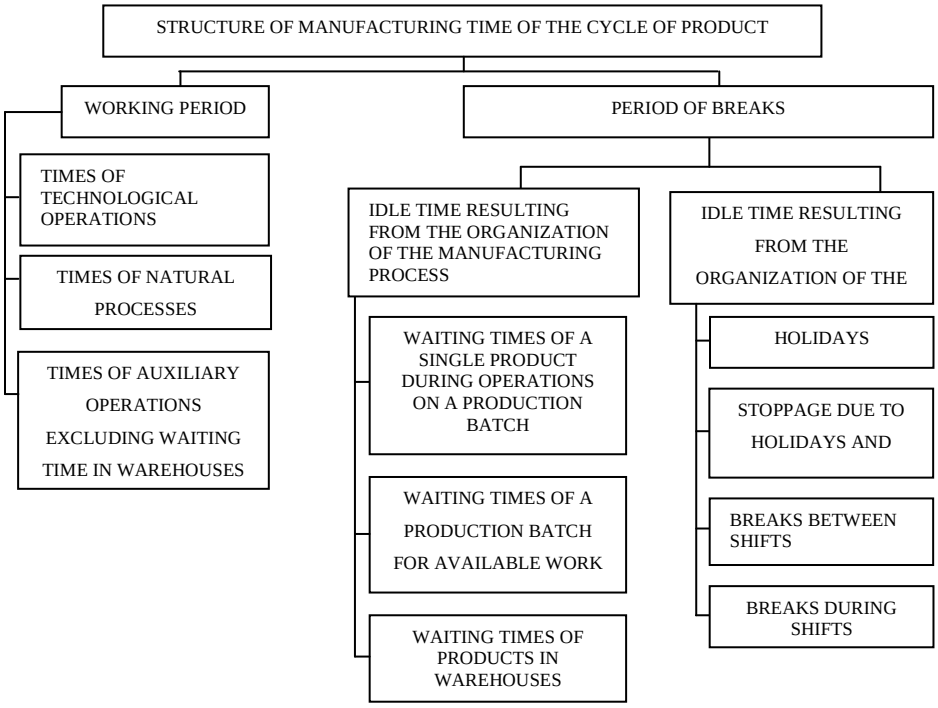

Fig. 2. Time structure of a manufacturing cycle of a product divided into working time and break time

Source: Own study.

The **break period** includes down-times in operations on work pieces, resulting from the organization of the manufacturing process, as well as breaks due to the organization of working time in a working day (see Fig. 2).

Breaks resulting from the **organization of the manufacturing process** comprises waiting times of:

- individual products in storage locations (outbound stockpoints) in front of (behind) the work station, queueing before the (after the completion) of operations on these products, during operations on the production batch; except for the first and last product in the batch, which wait only once,
- the entire production batch before the next operation in the process waiting for an available work station, when it is still occupied by the operation performed on the previous batch and
- products in warehouses.

Break times connected with the organization of the manufacturing process:

a) within a simple cycle depends on:
   - the degree of variation in times of successive operations in the cycle performed on batches of produced parts,
   - waiting times of individual batches of parts for available work stations, which are occupied by operations performed earlier on other batches started in the same manufacturing unit; these times are also influenced by the order in which batches of different types of parts are released in a specific manufacturing unit

b) within a complex cycle depends on:
   - waiting times of batches of parts in work-in-process warehouses (interphase, interdepartmental warehouses) for the performance of operations in the next phases of the cycle or for picking to complete assembly kits,
   - the degree of parallel performance of simple cycles comprising a complex cycle.

Breaks resulting from the **organization of working time in a working day** include:

- holidays: Sundays, public holidays and free Saturdays,
- working days during paid holidays or repair stoppage periods, causing down-time of work stations and a break in the manufacturing cycle of a product,
- breaks between successive shifts during 24 h, due to the number of shifts (the shift system) applied for a specific manufacturing sector in an enterprise, including breaks due to shorter shifts e.g. on Saturdays,
- breaks during shifts for a meal, rest or bodily functions of employees if they are connected with down-time of machines and equipment at work stations.

Breaks connected with the system of working time organization in a working day may cause down-time both for the production batches of parts and the manufacturing unit. During the

performance of the manufacturing cycle the duration of breaks may be extended to include down-time caused by disturbances in the course of the manufacturing process e.g. due to machine failure, power cuts, material shortages or undermanning of work stations.

The total manufacturing lead time is the time of the longest series of non-overlapping work periods and break periods included in this cycle.

Time segments of components comprising the structure of the product cycle may be also grouped in a manner differing from that presented in Fig. 2 (see Wróblewski 1993). In this case periods are grouped based on whether during product properties change as a result of performed technological operations or whether no such changes take place. In accordance with this assumption we distinguish the operation period and the interoperation period (Fig. 3).

The **operation period** (see Fig. 3) covers the times of technological operations and natural processes. During this period product properties change.

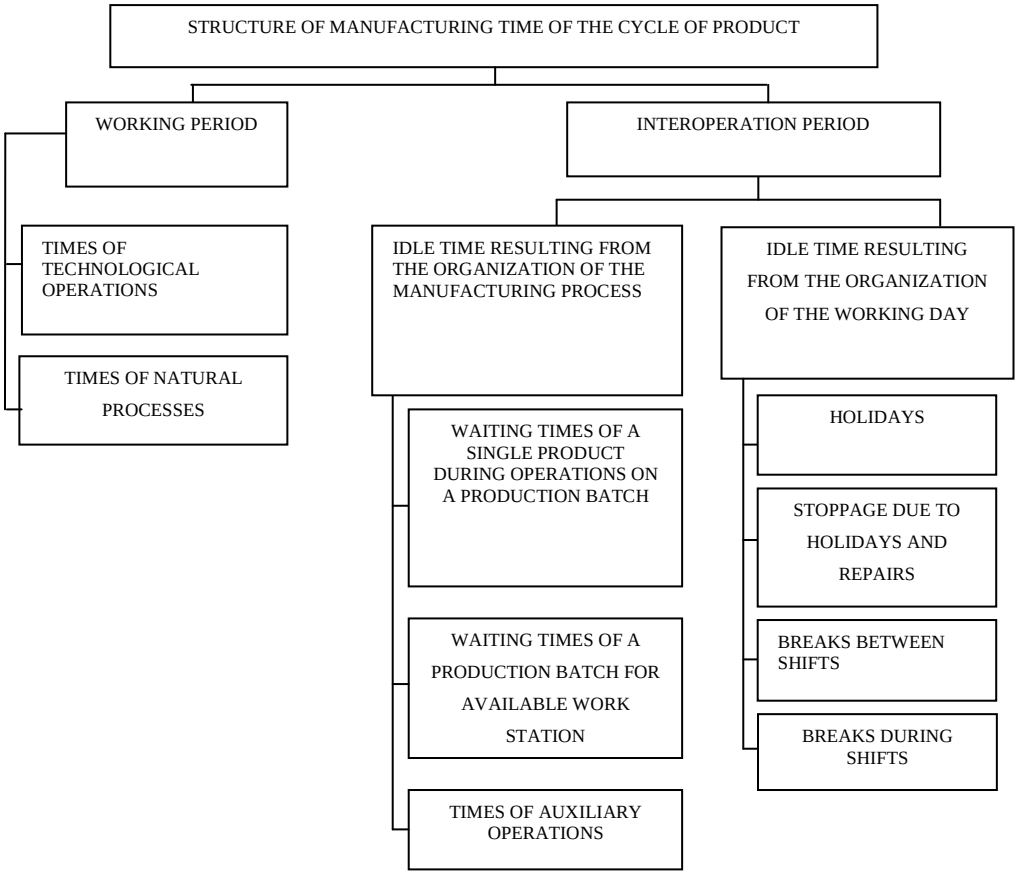

Fig. 3. Structure of manufacturing cycle of a product divided into the operation period and the interoperation period

Source: Own study.

The **interoperation period** (see Fig. 3) is composed of execution times of auxiliary operations (inspection, maintenance, transport and warehousing) and times of interoperation breaks[29] (waiting periods, passive periods) due to the organization of the manufacturing process and the organization of working time in a working day. In these segments no planned changes are introduced to product properties.

In the production organization engineering the time of the product cycle as an organizational parameter is used in:

- production planning – to define the time for issue and receipt of parts and final products,
- standardization - to determine standards for the volume of work-in-process stocks,
- financial planning - to determine the demand for operating capital.

The shorter the time of the manufacturing cycle for a product, the most advantageous economically it is for the enterprise, as it causes lower production costs. The length of the product cycle influences:

- the rate of utilization of work stations; a greater rate of work station utilization facilitates an increase in production yields and a reduction of unit depreciation costs for means of production;
- the rate of utilization of manufacturing space and warehouse space; a faster rotation of products reduces operating costs for these spaces per unit product;
- volume of work-in-process stocks; a faster rotation of stocks decreases the time operating capital is frozen and thus reduce stock carrying costs.

CONCLUSIONS

The wood industry to a considerable degree resembles the machine industry in terms of its organization, applied technologies and engineering. However, it maintains its unique character particularly in the case of pulp and paper, board and lumber sectors. The analysis of concepts connected with the manufacturing cycle, its types and the structure of lead time conducted for the wood industry indicates that these findings, despite differences observed on the organizational, technological or engineering level, may also concern other types of industries, e.g. the machine, food or electronics industries.

Definitions for concepts connected with the manufacturing cycle and classification of cycle types and components of time structure of the cycles, proposed in this paper and more specific than those used in literature on the subject, facilitate a more accurate description of phenomena, processes and procedures in production organization engineering. The presented conceptual framework is meaningful and applicable both in relation to research concerning the discussed problem and when designing organization of production for individual manufacturing enterprises. It promotes better communication between researchers, designers and the audience for their outcomes, i.e. readers and entities implementing the proposed solutions.

[29] In this case the **interoperation period** is the period between the execution of two successive technological operations or natural processes during the manufacturing cycle of a product.

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THE U.S. VALUE-ADDED WOOD PRODUCT SECTOR AND CERTIFICATION OVER TIME: 2001, 2007 & 2014

Abstract: Environmental certification of forest products and forestry practices continues to proliferate globally. In response to environmental concerns, some environmental organizations, retailers and wood products companies are developing standards to encourage consumers to purchase wood originating from certified sustainable forests. These efforts are intended to counter the perceptions that forest practices may damage the environment. In this study, we examine Chain-of-Custody certification used by value-added wood product manufacturers (e.g. furniture, flooring, doors, cabinets, flooring, and millwork) in the U.S. over time. A questionnaire was sent to companies in 2001, 2007, and 2014 that focused on company certification, awareness, perceptions and participation. Results show that participation in certification by respondents have increased over 650 percent over the past 14 years and is expected to increase in the future.

Key words: certification, chain-of-custody, United States, wood products, value-added

INTRODUCTION

Public concern for the environment has grown remarkably over the last few decades, both in developed and developing countries and, as a result, environmental issues are beginning to take more of a center stage in global economic and trade policies. The emergence of "eco-labeling"; a process that attempts to provide an indicator of how well a product is environmentally adapted, is a contemporary example of how consumer interests have driven information processes aimed at differentiating the environmental appropriateness of goods and services [3]. Eco-labels provide information on environmental characteristics of a product, giving consumers the opportunity to use their purchasing power to promote environmentally friendly products. Relying on this market driven mechanism, the world's first eco-labeling program "German Blue Eco Angel" was created in 1977 [6]

In addition to eco-labeling, certification is a process which results in a written certification being issued by an independent and neutral third-party, attesting to the location and management status of a forest which is producing timber [1]. Under the certification umbrella, these third-party organizations evaluate and monitor forest management practices that will ensure a sustainable forest. In addition to countering negative perceptions by consumers and the general public, the literature suggests that forest landowners and downstream manufacturers that are environmentally responsible may benefit from certification by differentiating their products in the marketplace and may potentially see price premiums relative to non-certified wood products. It involves assessing

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the quality of forest management in relation to a set of predetermined principals and criteria. Forest certification also gives consumers a credible guarantee that the product comes from environmentally responsible, socially beneficial and economically viable sustainably managed forest. In other words, forest certification can promote economic, environmental and social benefits.

The major global certification programs are the Forest Stewardship Council (FSC), Sustainable Forestry Initiative (SFI) and Program for the Endorsement of Forest Certification (PEFC). At the end of 2014, PEFC endorsed standards, SFI, ATFS and the Canadian Standards Association (CSA) had certified 154 million ha forest area in North America, 59% of the total certified area globally [4]. There are two types of certification: forest management certification (which applies to the forests from which forest products will be taken) and chain-of-custody certification (CoC) (which applies to the primary and secondary manufacturers, distributors, and merchants of certified products).

SFI has certified forest area of 24.4 million ha in U.S., 80.3 million ha in Canada; CSA has 40.8 million ha certified forest area in Canada while ATFS has a relatively smaller certified forest area, 8.6 million in U.S., when compared to those of other certifiers. The growth of PEFC certified area around the world is reported to be 207.9 million ha from 2004 to 2014 (PEFC 2015). FSC, one of the major independent certifiers in North America, FSC has certified 69 million ha of forest in the U.S. and Canada, and 187 million ha worldwide as of April 2015 [2,5].

Moreover, FSC also reports that number of Chain of Custody (CoC) certificates issued to various companies processing wood products in the U.S. and Canada increased to 5013 recently. It was reported to be around 4012 in the last quarter of 2014 [2]. In the global level, CoC certificates of FSC increased by 85% from 2009 to 2015. On the other hand, SFI had more than 2800 certified chain of custody locations by the end of 2013 as function of 251 CoCs in U.S. [4,5].

THE STUDIES

In 2002, 2008 and 2015, we conducted studies to identify value-added wood industry perspectives and participation in certification and to see what has changed in the industry. The data are presented for the previous years (the years that respondents were asked to report on). In 2002, we used paper-based surveys and in 2008 and 2015, we used web-based methods. The questionnaires were sent by partner associations to their members on our behalf[34]. These associations required anonymity for their members and as such, controlled the dissemination of the surveys. Hence, only one "mailing" was sent each time. The associations did include a cover letter encouraging the recipients to participate in the studies.

RESULTS-ALL RESPONDENTS

Due to the methods used, we could not determine response rates for the studies. In addition, although the same sector was surveyed, respondents were likely different for each period and response rates vary as well. However, the raw materials used by respondents over the three time periods are similar with composite panels being the most used raw material followed by North American hardwood lumber and North American plywood and veneer.

Before examining changes over time for respondents that are participating in certification, we first looked at certification perceptions and understanding for *all respondents*. As seen in Figure 1, the percent of respondents that have a high level of understanding of forest management certification and chain-of-custody certification has risen by 113 percent and 207 percent, respectively.

[34] Association for Retail Environments (A.R.E.); Architectural Woodwork Institute (AWI); Business and Institutional Furniture Manufacturer Association (BIFMA); Kitchen Cabinet Manufacturers Association (KCMA); and the National Hardwood Flooring Association (NHFA).

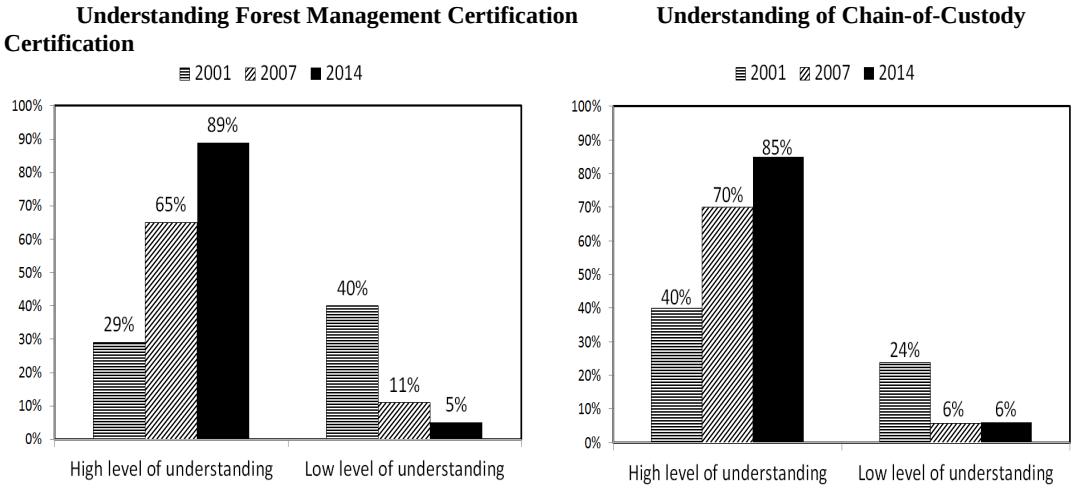

Figure 1. Level of Understanding for Forest Management and Chain-of-Custody Certification (percent of respondents)

(2001: n=270; 2007: n=416; 2014: n=263)

We also wanted to know what all respondents thought about certification business practices and perceptions in general. Using Likert Scale anchored on 1=Strongly Disagree; 3=Neither Disagree Nor Agree; 5=Strongly Agree, The level of agreement from respondents that seek out suppliers of, and have purchased certified raw materials, have increased greatly over the study period (Figure 2). In addition, the level of agreement regarding the belief that their customers would pay a premium for certified wood products also increased but at a lower level of change. However, there was a slight decline in the level of agreement that they would pay a premium for certified raw materials.

RESULTS-RESPONDENTS WITH CERTIFICATION

In addition to the level of understanding for certification and general perceptions, the percent of respondents that sell/sold certified wood products increased from 8 percent in 2001 to 42% in 2007 to 61 percent in 2014. The balance of the paper focuses on respondents that manufactured/sold certified wood products. Respondents that sell certified wood products do not necessarily have chain-of-custody certification. The percent of respondents that do have chain-of-custody certification increased from 19 percent in 2001 (n=22) to 36 percent on 2007 (n=195), to 83 percent in 2014 (n=105). Commensurately, costs attributed to purchasing certified raw materials increased from 14 percent of wood costs in 2001 to 20 percent in 2007 and again to 33 percent of costs in 2014. The percent of respondent total sales value attributed to certified products also more than doubled from 2001 (10 percent of respondents) to 2007 (21 percent) and to 22 percent in 2014. On average revenue for certified wood product sales increased from $0.72 million to 2007 ($9.4 million) but declined 59 percent to $3.9 million in 2014.

Why did respondents get involved in certification? **Figure 3** shows that responding to customer requests became the primary reason over time. All of the other possible reasons declined from 2001 to 2014 but aside from the business owner commitment to the environment, the remaining market,

sales and corporate image improvement reasons all increased in 2007. The authors suggest that this is due to the "Great Recession" that prompted respondents to try most anything to be more competitive during these turbulent economic times.

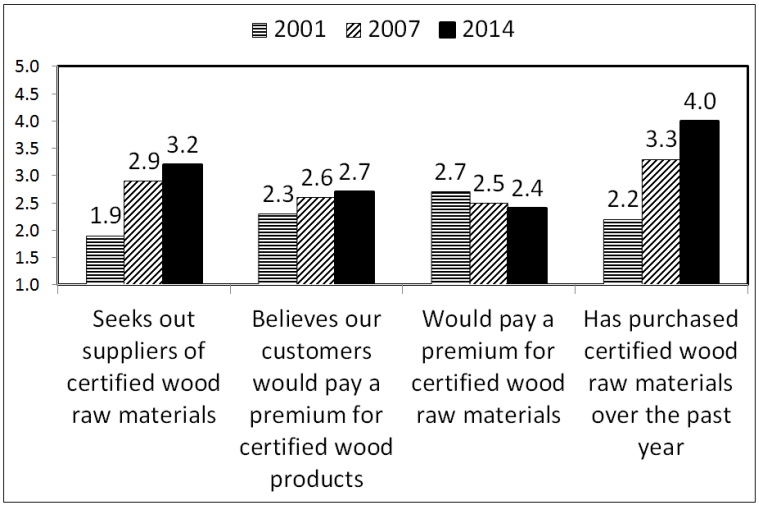

Figure 2. Respondent Perceptions and Behaviors Regarding Certification

(2001: n=270; 2007: n=416; 2014: n=263)

Scale: 1=Strongly Disagree; 3=Neither Disagree nor Agree; 5=Strongly Agree

On the wood raw material supply side, on average, the percent of wood products purchase costs attributed to certified products increased from 14 percent in 2001 to 20 percent in 2007 to 33 percent in 2014. With multiple responses possible, over the three time periods, respondent sourcing of certified raw material internationally increased at the expense of U.S. brokers/wholesalers and direct purchases from domestic suppliers. Respondents were also asked if they had requested that their raw material suppliers become certified. In 2001, 23 percent of respondents (n=22) said yes, increasing to 50 percent of respondents in 2007 (n=195) to 53 percent in 2014 (n=105). As shown earlier, customer demands for certified wood products are increasing so it is no surprise that respondents are pressuring their suppliers to provide certified raw materials. In addition, 86 percent of respondents said they paid a premium for certified wood raw materials in 2001 while this dropped to 58 percent in 2007; this rebounded to 89 percent of respondents in 2014.

Respondents were asked about the problems or challenges they face when purchasing certified wood product materials. **Table 1** shows that Overpriced Products and Inconsistent Supply have been ranked #1 or #2 for the three time periods. Supplier Service, Delivery, and Contracts as well as Product Quality do not appear to be significant issues.

On the sales side of the supply chain, the volume of certified products sold by respondents increased over the previous five years for each study period with a significant jump in 2007, again due to increased emphasis on marketing and sales during the recessionary period (**Figure 4**). In addition, the percent of total company sales, on average, attributed to certified products increased from 10 percent in 2001 to 21 percent in 2007 to 22 percent in 2014.

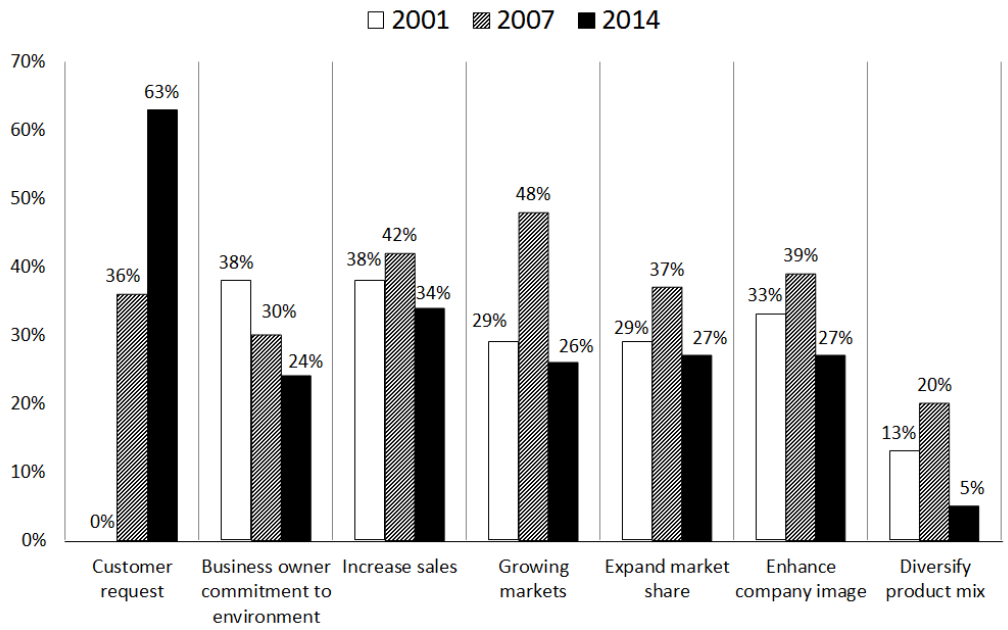

Figure 3. Reasons for Getting Involved in Certification (percent of respondents) (multiple responses possible)

(2001: n=22; 2007: n=195; 2014: n=105)

Table 1.Top 5 Problems in Purchasing Certified Wood

(#1 is Worst) (2001: n=22; 2007: n=195; 2014: n=105)

	2001-Rank	2007-Rank	2014-Rank
Overpriced Products	2	1	1
Inconsistent Supply	1	2	2
Inconsistent Quantities		3	
Inadequate Service		4	
Late Delivery	5	5	3
Product Quality	3		5
Contract Fulfillment	4		4

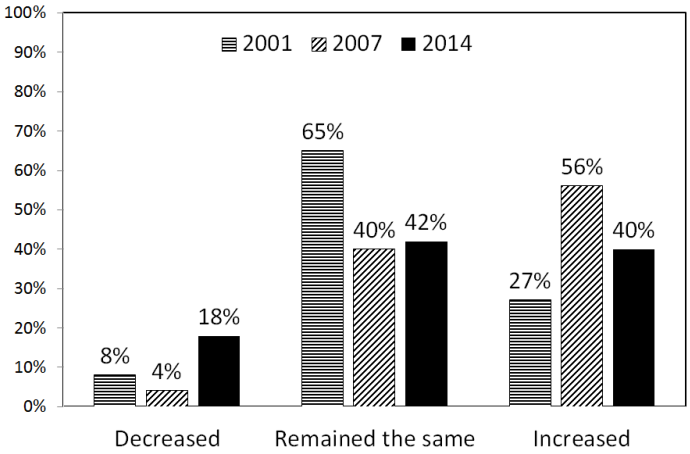

Figure 4. Change in Previous 5 Years of Certified Wood Product Sales Volume (percent of respondents)

(2001: n=22; 2007: n=195; 2014: n=105)

Key issues in becoming certified involve profitability or minimization of costs. In the studies, over time, associated with the provision of certified wood products are costs and premiums, with 89 percent of respondents incurring additional costs in 2001, 77 percent in 2007, and 90 percent in 2014. Again, due to increasing customer demands for certified wood products, 27 percent of respondents were able to capture a price premium for certified products in 2001, increasing to 61 percent of respondents in 2007, but moderating to 42 percent in 2014. The incurrence of increased costs to provide certified products is also a driver of attempts to capture price premiums.

CONCLUSIONS

Certification continues to be an important issue for the value-added wood products sector in the U.S. Certification awareness and participation have increased significantly from 2001-2014. Customer demand has grown to become the dominant reason for respondents to provide certified products, indicating that certification for this group is market driven. Premiums received from customers and costs incurred for being certified and for certified raw materials have also increased over the study period. A replication of this research will conducted in 2022. At that time, we will have the ability to conduct statistical analysis for 2007, 2014, and 2021, a limitation for this paper. On the positive side, the graphical representation of changes in certification over time is a valuable addition to the literature.

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THE SIGNIFICANCE OF TECHNICAL AND ECONOMIC ASPECTS OF WOOD FOR THE EFFECTIVENESS OF MANUFACTURING SAWMILL PRODUCTS USED IN THE BUILDING INDUSTRY

Abstrakt: The technical and economic values of sawmill material influence its popularity and possibilities to use it in different areas of life. Wood is one of few raw materials that finds its supporters and popularisers at all processing stages.

The aim of the study is to show the current situation in sawmill enterprises, including their processing capacity, to indicate the most commonly manufactured sawmill products which are used in the building industry, to emphasise the significance of technological efficiency of raw material processing to the cost-effectiveness of manufacturing sawmill products and to indicate the essential macroeconomic factors which affect the cost-effectiveness.

Key words: sawmilling, wooden constructions, roof trusses, production efficiency

INTRODUCTION

The low level of interest rates in Poland and, in consequence, low costs of financing investments may contribute to the development of many enterprises in the near future, including enterprises in the wood industry. The branch is directly and indirectly connected with the building industry and its products are used at different stages of building. Therefore, an above-average increase in the number of newly built houses may stimulate investments. About 40,000 dwellings built in the first six months of 2015 (26.50% more than in the first six months of 2014) resulted not only in a real estate market recovery but also in a recovery of building companies [www.stat.gov.pl]. This group includes wood industry enterprises manufacturing timber and constructional elements.

THE SITUATION OF THE SAWMILL BRANCH IN POLAND

Nowadays the economic reality is characterised by the establishment of a large number of enterprises manufacturing wooden products and timber. During this transformation significant qualitative changes arenoticeable. The establishment of new companies and enterprises on the market resulted in a considerable development of certain branches, such as production of pallets, timber houses or elements of garden architecture. Local communities have accepted the establishment ofwood industrycompanies in rural areas and in small towns. Also the policy of the State Forests National Forest Holding favours the development of new enterprises and sawmills, especially due to new investmentsupport schemes. The introduction of one annual procedure leading to the signing of one consolidated agreement rather than separate procedures and individual agreements will considerably help clients to purchase wood [Przemysł drzewny 2015].

The development of the branch and sawmill production mostly depends on the supply of raw materials. After the fall of communism in Poland the acquisition of thick round timberincreased from 20 million $m^3$to 27 million m^3, including sawmill timber (*large and medium-sized round*

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wood, partly stackwood)– about 10-12million m^3 [Raport o stanie lasów w Polsce 2014]. Sawmill production is characterised by considerable qualitative and dimensional differences in assortments acquired. It depends on the demand both on the local and EU market.

Polish sawmilling is very diversified in terms of raw timber purchased. It is diversified because it is predominated by enterprises sawingup to 10,000 m^3 of raw material per year – there are 3,000 such enterprises. About 100enterprises process 10,000-24,000 m^3 per year. There are also enterprises with an even greater processing capacity.These companies acquire more than 100,000 m^3 of raw material per year. There are 22 such companies, including 8 regular sawmills [Czemko et al. 2011, Hruzik et al. 2005]. Figure 1 shows the number of enterprises and the amount of raw material sawn per year.

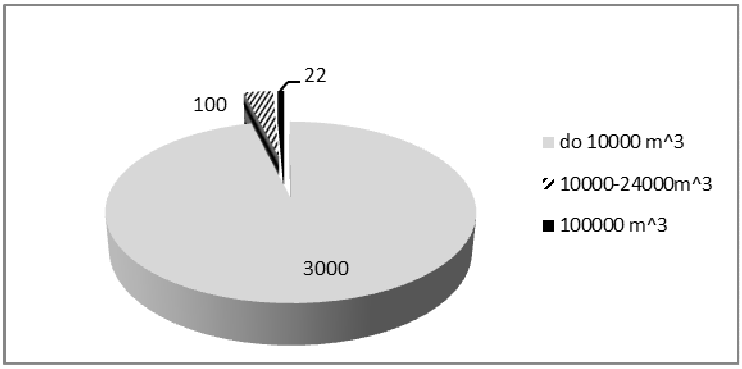

Fig. 1. The structure of sawmills in Poland

Source: The authors' compilation based on Hruzik et al. 2005, Czemko et al.2011.

Factors of production and market have enormous influence on wood processing, including sawn assortments and timber. The purchase of wood by business entities is an essential factor that is decisive to economic effects.The technological efficiency of wood processing is of fundamental significance in this respect [Hruzik et al. 2005]. The technological efficiency of raw material processing (E_p) is an index expressed in natural unitsor as percentage. It is defined as the total value of main timberand other sawmill products as well as woodchips and waste produced from the raw materialreferredto the purchase cost of the raw material which is necessary for this production.

$$E_{(p)} = \frac{\Sigma V_W * C_W + \Sigma V_z * C_z + \Sigma V_o * C_o}{\Sigma V_s * (C_s + T_r)} * 100\ [\%]$$

where:

V_W – thickness of products processed for domestic and European markets,

C_W– unit prices of products,

V_z– thickness of woodchip raw material,

C_z– contractual conversion price of woodchips,

V_o– thickness of waste and sawdust,

C_o – conversion price of waste and sawdust,

V_s – thickness of raw material,

C_s– contractual price of raw material,

T_r – cost of transport of raw material.
[Source: Hruzik et al. 2005]

The basic criteria of the index are:

- the cost of raw material used for processing,
- production assortment.

It is necessary to pay particular attention to the price of raw material. It has definitely the greatest share in the costs of production of sawn materials. The costs of transport of raw material need to be added to the outlay borne to purchase it. Depending on the distance from the enterprise, the total cost of outlay on raw material usually increases. The longer the distance over which raw material needs to be transported, the higher the cost of transport, but a lower price of raw material may compensate for the outlay borne for forwarding. As far as small and medium-sized enterprises are concerned, in theory there is a limited range of purchase of raw material. It depends on the total costs of raw material and its transport and it is related with the profitability of production.

Production efficiency is affected by the current ratio between the price of product and the price of raw material. Therefore, higher prices of the raw timber material result in lower cost-effectiveness of production. On the other hand, as far as international trade is concerned, currency exchange rates need to be taken into consideration. Due to the fact that the common currency euro is not an official monetary unit in Poland, when Polish enterprises export products to the EU, they need to allow for currency fluctuations while an order is being processed. The currency value is affected by a wide range of macroeconomic factors, which may improve or negatively influence the profitability of enterprises. However, regardless of the currency exchange rate fluctuations or variability in the prices of raw materials the efficiency of production in medium-sized domestic enterprises ranges between 55% and 54% [Hruzik et al. 2005].

Alas, recently the rising prices of domestic raw material have decreased the efficiency of manufacturing sawmill products and they have been a negative factor for the sawmilling industry.

CHARACTERISTICS OF ROOF TRUSS CONSTRUCTION

Roof trusses are one of essential products of the sawmilling industry. Solid wood or glulam are the most commonly used materials for the construction of roof trusses. Glulam is a material withanisotropic qualities, i.e. there are different qualities depending on the forces applied to the direction of fibres [Wajdzik 2000].

A roof truss is a structure supporting the whole roof. The building industry distinguishes two basic types of wooden constructions:

1. carpentry trusses – they are commonly used in urbanand rural buildings, housing developments and in farm buildings with a span up to 12 m
2. engineering trusses – they are used in hall buildings with larger spans.

Engineering trusses are used in designing and constructing halls,sheds, shelters, barracks or pavilions. Their spans can be as wide as 20 m and they are more economical than metal and reinforced concrete constructions. They are used in public buildings, such as sports facilities and entertainment arenas [Lenkiewicz, Zdziarska 1989, www.dachy.org].

Engineering trusses require limited amounts of wood and it is their advantage over carpentry constructions. However, such trusses are made in prefabrication enterprises rather than at construction sites and thus, their production is limited. Another difficulty is the transport of these constructions to the construction site, where they need to be assembled by means of specialised means of vertical transport, i.e. assembly cranes.

Carpentry trusses are used in small, scattered, urban and rural buildings. The deformability of connectors is a disadvantage of the construction. In spite of this fact, it is a practical type of

construction, which is still widely used. The pretreatment and assembly take place at the construction site, where each element of the construction is assembled, without the need to apply mechanical vertical transport [Wajdzik 2000*]*.

Apart from the physical properties of wood, economic aspects also speak in favour of constructional timber, where it has advantage over steel orreinforced concrete (Table 1).

Table 1. Variable roof truss price indexes in different constructional solutions

The design type of rafter	Basic roof	Gabled rafted	Pediment roof	Truss structure	Omni roof	Mansard	Girders roof	Strut - brace	Prefabricated	The steel structure	Reinforced concrete
Average price zł/m^2	17	30	27	34	35	43	40	200	170	140	110
The difference with respect to the rafter roof [%]	100	176	159	200	206	253	235	1176	1000	824	647

Source: The authors' compilation based on the data accessed at www.dachymitek.pl, www.kambor.pl

As results from the data in Table 1, the use of solid wood in roof truss constructions is justified. Simultaneously, it is noticeable that the use of more complicated roof systems increases the investment costs. There is also a significant difference between prefabricated and steel and reinforced concrete roof trusses, which are about 1000% more expensive than a traditional simple rafter construction. However, it is impossible to design buildings with a considerable span and complicated form with this type of construction. In this situation the unit cost of a roof truss rises considerably.

The most common species used for wooden constructions arethe Scots pine (*Pinus silvestris* L.) and Norway spruce (*Picea Abies L.*). However, depending on one's needs and financial resources the construction can also be made from oak wood.

As results from studies on pinewood, the diameter and length of the knot area are the traits that determine the usefulness of material for building. We can also observe that the density, compressive strength and resistance to static bending are significantly related with the possibility to use wood in a particular type of construction [Mańkowski et al. 2011, Mydlarz, Wieruszewski 2012, Wieruszewski et al. 2011, 2012].

The mechanical and physical properties of wood are basic parameters which classify it as usable for building. These properties can be indicated both in solid wood and in glulam.

The growing interest in using wood for constructional purposes resulted in attempts to introduce unified standards. In 2012 the certification of constructional timber was introduced. In order to receive a certificate it is necessary to test the wood to prove if a particular type of timber meets specific requirements.

The visual sorting method based on PN-D-94021:2013-10 is a basic method of evaluation and qualification of timber in Poland. It consists in a quality control inspector looking at each piece of timber and qualifying it as a particular class of resistance. Structural defects, shape defects and processing faults are basic traits taken into consideration in the qualification of timber [Dzbeński,

Kozakiewicz, Krzosek 2005]. Modernised methods are also introduced to accelerate the sorting process. The machine method is one of the methods that does not damage timber while sorting. Machine sorting does not mean relying only on sorting machinery. It is also necessary to employ humans because an initial quality inspection gives a possibility to see errors made by the machine, e.g. sorting the ends of the elements which were sorted in bending machines [www.drewno.rsi.org.pl].

The possibilities of acquiring raw material forelemental processing at fixed efficiency indexes, which directly refer to the production efficiency are an important problem, which has not been solved completely. It is decisive to the availability of constructional materials.

CONCLUSIONS

At present there is great interest inwood, which occupies a good position on the market of manufacturers and clients of wood products. This fact should not be slighted. Increased popularity and the development of the branches of economy which are interested in using this raw material results not only from its positive economic index but also from people's greater ecological awareness and the need to use natural products. This trend can be observed in Poland and in Western Europe, where it has numerous supporters.

Wood and wood products are an important group of materials used in the building industry. Wood is used as an essential building material, mostly in roof trusses due to its technological and economic aspects. Therefore, in view of the constantly increasing demand for individual building it is important to optimisethe process of qualitative selection of assortments and forms of constructional materials. As far as traditional roof trusses are concerned, prefabricated timber constructions are the only competitors of solid wood. Due to their popularity, technological development and simple assembly their share in roof structures is increasing and it is larger than the share of solid wood in traditional roof trusses.

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Agnieszka Ziomek[37]

THE IMPACT OF THE PRODUCTION OF ENERGY FROM RENEWABLE SOURCES ON THE STATE OF LOCAL ROADS IN POLAND

Abstract: Article contains a reflection on the effects that are generated for the local economy and are caused by involvement in cooperation for the production of renewable energy, and concern the deteriorating quality of road infrastructure. This question issue is examined by analysis on local government status, possibility with regard to this sphere of roads management, and barriers to overcome to meet solutions that could help limit losses in deterioration of local roads condition.

Key words: renewable energy, local roads, modernization.

INTRODUCTION

Infrastructure is an important local development determinant of each territorial unit. With the appropriate local infrastructure community can achieve better results in terms of investment by reducing delays, potential losses. Hirschhausen (2002) and Rodriguez (2006) agree with this statement and agree that infrastructure is the most valuable and highly desired asset for the local economy.

Road infrastructure deteriorates in quality as a result of various processes. At the end of 2011, according to Polish General Statistical Office the total length of public roads in Poland amounted to 412,3 thousand km, including 393,5 thousand km, (95,2%) managed by the local government, 28.5 thousand km, by vovidship, 127,7 thousand km by district, 237,2 thousand km by municipal [www.stat.gov.pl, access. 7.04.2015.]. For municipal local government it constitutes the most, because 57.9% of all of the available public roads. From 393,5 thousand km local roads 1/3 is hard way without surface of asphalt or concrete.

Next to the "natural aging", external effects affect roads and arise as a result of the economic activity performance. In Poland, one of the production areas, that affects the condition of local roads is the production of renewable energy and cooperation with co-producers of renewable energy, especially the logistics of substrates. Transport by heavy overloaded vehicles can result in damaging the surface of the basement of local roads. These materials are transported with a large daily frequency as a result of necessity to maintain the continuity of the supply process of energy production.

In the last decade, energy production from biomass and biogas is on the rise in Poland. Within a period of 6 years, the economy has achieved a 15% share of renewables in final energy consumption by 2020, 19.3% for electricity, 17% for heating and refrigeration, 10.2% for transport fuels. The good conditions for the development of the sector of renewable energy sources are: dynamic growth in recent years, a growing number of economic operators and the internal market in Poland, with over 38 million inhabitants and energy consumers and big potential for obtaining biomass, biogas. An important factor will be reduction to 35%, by 2020 the amount of biodegradable municipal wastages, and construction of a planned agricultural biogas plants by 2020 in any Polish municipality.

These considerations lead to determine the causal relationship between the increase in energy from biomass and biogas and the condition of local roads. Substrates for energy production are outweighed by road transport, as unlike transporting coal and lignite carried by rail, it calls the destruction of and damage to local roads. The transport of forest biomass, agrobiomasy, briquette,

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sawdust, straw, liquid biofuels, with a tonnage of 8 to 12 tonnes by 1 vehicle, depending on the humidity, mass is moved on up to 100 km of mainly local and national roads and local roads as part of the directions.

It is worth to put here the question of what factors are conducive to improving the quality of local roads, while the State policy specifically stimulates allocation of capital. Below in the study is placed extended characteristics of the problem of deteriorating roads quality[38].

THE ROLE OF LOCAL GOVERNMENT IN SERVING WITH ROADS MAINTENANCE

For activities contributing to destruction of local roads we can include of all the areas: energy production in biogas and biomass power plants, and co-incineration technology. In terms of size, that the energy produces 277 units, with a total 1012 MW, which represents 22% of the total power produced by all renewable energy sources installations of electricity in the country in 2013 (table 1).

Tab. 1. Renewable energy sources Units power in Poland in 2013 (electric energy)

Entity	Number	Power (MW)	Entity	Number	Power (MW)
Biogas power plants	207	136,319	Wind power plants	743	2644,898
Biomass power plants	29	876,108	Water power plants	771	966,236
Photovoltaic installations	9	1,289	Power plants with co-incineration technology	41	n.d.

Source: Energy Regulation Office (status on 31 March 2013), www.stat.gov.pl, access 31.04.2015.

In spite of the fact that renewable energy sources doesn't reflect high amount in total energy production, biogas and biomass production requires a stream of energy raw material supply from the outside. Moreover, the location of the places where the raw material is produced requires passing local roads. So, each production activity carried out, which requires heavy transports may deteriorate the quality of public services, increasing the cost of operation of the community through violations of the condition of public roads, especially the county roads and municipal.

Poorly developed road network in Poland, is characterised by low technical quality, and this is one of the distinguishing features of Poland with other Member States of the European Union. It is worth mentioning that many of the sections of roads created in the framework of the so-called "social acts of service". There are not ways that can take the load carrying capacity of current shipments of wood, or organic waste, with a tonnage exceeding 16 tonnes, or transport by vehicles exceeding the permissible leverage on a single axle to 8 t.[39] Scarcity that occur in the context of the increased traffic, are insufficient capacity of bridges and viaducts, paving and road infrastructure, road and demarcation line body width.

Insufficient road network mentioned above and its bad condition impedes access to regional and local development centres, as well as communication between these centres and their surroundings, helping not only to deepen the territorial diversification of economic activity, but also to limit the availability of public services and the efficiency of public institutions [Felzensztein, Ch.

[38] Information about the Supreme Chamber control results, includes the issue of the roads condition. "Organization of the county and community network road, taking into account the effects of the implementation of the National Programme for Rebuilding Local Roads", The Supreme Chamber of Control P/13/169,Warsaw 2013

[39] According to the Act of 21 March 1985 on public roads, OJ. 2015.0.460, www.gddkia.gov.pl, access 8.04.2015.

and others, 2013, Westlund, H., 2011]. Meanwhile, officials, after the release of the zoning decision and licence to build, they do not have the possibility of a formal impact on the economic entity, and because of this often are not able to reach an agreement with an investor and producer of energy, in terms of the security of the existing condition of their roads.

The local government is obliged to secure good condition of roads. It is the responsibility of the local government, in this regard, it should be carrying out the monitoring roads technical status in the form of road book tour journal[40], accompanied by photographing their status for the purposes of the investigation. In 2013 as part of a nationwide control of the Supreme Chamber of Control revealed that road managers not meet, with the obligation to keep the technical documentation the roads and compulsory control of their condition. Such monitoring is necessary due to the fact that the road is used frequently by overloaded vehicles and they do not have the relevant technical parameters that would allow for the adoption of the heavy movement, without detriment to their condition.

The Government spends public funds for the construction, reconstruction, repairs, maintenance and protection of municipal and county roads. In 2008-2015 was carried out the first, and continues to be the second edition of the National Programme for Rebuilding Local Roads. The program provides for the grant of local government entities targeted subsidies from the State budget to co-finance their own tasks in terms of rebuilding, construction or repair of roads. For the programme in 2008-2015 earmarked 5.5 billion PLN, while the full range of investments in roads amounted to 11.5 billion PLN Thanks to those spending was reconstructed 14 thousand. km, from 393,5 thousand km of roads that have been accepted for implementation in accordance with the selection criteria. In addition, the program provides funding for 1 project for municipality and 2 projects for the county, and the joint project of the municipality and the county, [http://mac.bip.gov.pl/narodowy-program-przebudowy-drog, access 9.04.2015, Report on State budget 1.01-31.12.2013 r., http://orka.sejm.gov.pl, access 10.04.2015].

Hence, in view of the criteria of the programme, for safety reasons, in group of donated were only selected and most important parts of local roads. From the list of eligible projects results that support is addressed mostly to the short distance road line, which are the strategic points of the local road network [http://mac.bip.gov.pl/narodowy-program-przebudowy-drog, access 9.04.2015]. For municipalities access to the programme can be complicated because of the level of own contribution, where the road investment is financed to 50% by the Government, and it happens that the own contribution of the municipality exceeds the threshold of 50%, if the limit of 50% of the amount for grants has already been exhausted. In addition, this contribution may constitute only funds of local government or from other public or private entities, but not from the State budget or the budget of the European Union [http://mac.bip.gov.pl/narodowy-program-przebudowy-drog, access 9.04.2015].

The scale of the needs of modernisation and repair local roads far exceeds the assistance by the Government in the framework of the targeted grants [http://orka.sejm.gov.pl, access 10.04.2015]. Municipalities and counties do not have sufficient financial capacity, in the framework of their own budgets, to relatively quickly adjust managed road network to the appropriate technical requirements. Financial estate expenses in 2012, dropped in to 2011 with 16.1%, compared to 2010 with 19.5% and capital expenditure decreased on 16.5% and 20.5% [www.finanse.mf.gov.pl/.../Nadwyzka_Operacyjna_VII_2013.doc, access 10.04.2015]. In terms of the planned estate expenditure the rural and urban-rural municipality estimate increase of funding

[40] Official detour roads, is an item of data records and is leaded by a competent Manager of the road separately for each category of road. On the basis of data the Supreme Chamber of Control P/13/169, Warsaw of 2013.

donations to the level of 64,7% in rural municipalities and to 64% in municipalities of the urban-rural areas.

Despite the high planned funding estimate shows imbalance of the planned expenditure of the assets (fig. 1), at a rate of 21.2 mld PLN. in rural municipalities and 13.3 mld PLN. in the communes of urban-rural areas in which expenditure on roads represent 24% of the municipalities in the urban-rural areas and 28% in the rural municipalities.

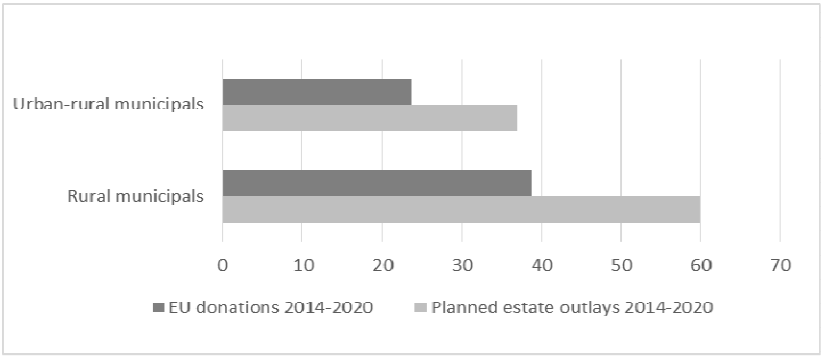

Fig. 1. Expected level of planned estate expenditures of municipalities by co-finance with external donations in 2014-2020 (in Mln PLN)

Source: Survey on Local-Government estate expenditures in 2014-2020, www.zgwrp.pl/inwestycje, access 24.04.2015.

For the local government an additional problem with access to public funding is that the road category mentioned in this paper are additional routes with low coefficient of the fatal accident, but an important functional significance. These roads are not a part of the above mentioned government NPPDL program. A network of these roads, however, is steadily eroding, due to their heavy use in order to facilitate the transfer of substrates. The current state of funding, expenditure, which the local government addresses for road investment, it must work out on their own. In accordance, in view of the large number of aims shall be limited scale of investment to the pavement, without renovation of substructure[41]. The subsequent problem for local government access to financial resources is amendment of the Act on public finances with putting indebtedness algorithm, making it difficult for running up debts on the need to repair roads. In addition, in the current financial perspectives 2014-2020 the EU funds are not allocated for grants to repair local roads.

To access to funds for roads renovation also impede legislation, according to which the Ministry of infrastructure and development is responsible for the condition of national roads, rather than public, managed by the provincial government, through the institution of the Executive Board of Local Roads. No partnership or the sovereignty of the central institution of the State over public roads, dispensed by the regulations, make a low financial allocation from the central budget and as a result abandonment of roads renovation being under the management of local government.

This result in a fact that the local governments remain the main administrator of the space in the field of spatial planning, own the responsibility for the control of the municipality roads and at

[41] The Governor of the Bialski district informed that 80 bridges had been renovated mostly when it received the contribution because of the damage that caused the flood, the cost of one of the bridge is approximately 3 million PLN. The Conference, on March 14, 2015.

the same time competes with the market units for space and management[42]. This means that in the spacial planning it is important to take into consideration both production location, and the state of the local roads. This enable the success of biogas plants in the near future.

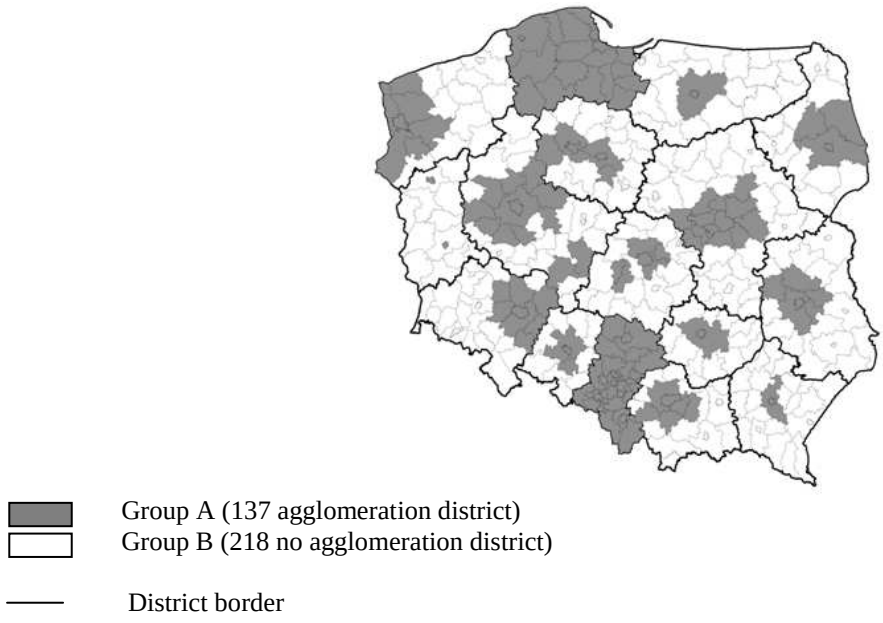

Fig. 2. Agglomeration and no agglomeration district, in accordance to metropolitan area plans, (status on 2012)

Source: A. Ziomek, Socio-economic determinants of employment in local approach, Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu, Poznań 2013.

The area which is most likely exposed to reduction of the roads quality is located in the environment of large cities (fig. 2). While the investment related to renewable energy production are also located there [paiz.gov.pl/sektory/odnawialne_zrodla_energii, access 13.04.2015]. The condition of the road infrastructure in these areas adversely affects the level of road safety. It also can restricts the fluidity of motion, increasing the time local transport [The final report… access 11.08.2014]. The overloaded road car traffic results from increase in the number of vehicles, which is a manifestation of the growing mobility of society, as well as increasing the share of road transport in the carriage of goods [Rosik, P., Stępniak, M., Komornicki, T. 2015].

[42] Similar problem exists in the field of construction of expressways and highways, and here, in a few cases (e.g. county wodzisławski) local governments managed to get compensation for the destruction on the road. It took them a few years. The Conference of the Supreme Chamber of Control, 14.03.2015, Poznan, Poland.

BARRIERS OF FINANCIAL SUPPORT TO ROAD MODERNISATION AND SOLUTIONS TO THE PROBLEM

Barriers associated with the local government support to solve the problem of the destruction of roads, are represented by a collection of technical characteristics and facts, these include as follows:

- the damage not always occurs immediately, but even after several years of intense pressure on the road or bridge,
- vehicles which carry the weight for the production of renewable energy, most often do not belong to the producer of substrates, but to separate logistic companies, and sometimes these vehicles are unmarked what makes it difficult to identify them,
-formally routes are determined each time by the Board of Local Roads and for non-standard vehicles, driver's permit is required[43]. Drivers are used to move with shortening the distance.
-to identify the phenomenon, technical control installations, such as dynamic control are installed, but there is still not enough of them in the Polish ways, and formerly applied scales are not effective because their use requires the movement of the vehicle at a distance, for example - 70 km, while there is no certainty that the vehicle is overloaded,
- the control is provided by the police and the road transport inspection, however, these solutions are not effective, drivers communicate and coordinate rides to avoid inspection, also inspection frequency is low for several reasons. The service is numerically insufficient. Police are working with rule groups 7 person per 3 shifts, it is not enough to arrange patrols on roads exposed to destruction. All the more, when departments determine the priority of the protection of sites with a large number of accidents, high speed and danger to pedestrians, and these roads are not local roads but national one. Hence arises the need to adapt activities to these episodes, which are most vulnerable to accidents.

In the context of the Joint Commission of Government and local government debate, as well as in the amendment to the Act of the road, have already started government-committees debate over the solution to the problem of destruction of roads by vehicles overloaded or normative, in high-frequency, go over the route on roads not suited to much pressure. The problem is not so much to maintain the good condition of the roads, but maintain a growing resource of these roads. Zoom of roads length under the administration of local government is performed in Poland by the administrative framework linked to the construction of express routes, in accordance with existing law. After the construction of the national road it loses its status and shall be given to the authorities. Such roads in the State was 122 km in 2014, and the year before up to 175 km.

Against the background of these changes, and to rising demand multi-tonnage transport due to an increase in the production of renewable energy, arise a number of postulates, reported by local governments. It is worth to sum up it here, on the basis of the above reflections.

On the issue of funding is necessary to continue the Government's National Programme for Rebuilding Local Roads, and opening the additional funds needed for the entire network of public roads, not only road sections which meet the criteria of a strategic importance for the municipality and the region. This need arises from the location of the production of substrates in different places. Often they are given locations, which changed the profile of the business. They are located away from the strategic routes, therefore, it seems to be necessary to adjust the quality of second-order roads to current demand.

[43] The law on public roads article. 39 says that it is prohibited to make steps that could cause damage to the roads. Article 34 requires authorization for the passage of vehicles non normative. OJ 1985 No 14 item. 60. The Act of 21 March 1985 on public roads.

In terms of preventive decisions, the cooperation of neighbouring authorities is necessary when applying for funding for the appointment of the additional services, controlling the roads, the installation of monitoring equipment on the road. Today expenditure on road infrastructure are the second largest category of rural municipalities and the urban-rural area, what is equal to 24%-28% of the total estate expenditure in the last decade.

As regards the authorisation of an economic activity, and due also to the condition of the road, it is worth to consider the inclusion of a document as the agreement with the contractor about the usage of roads, which the partner should be an institution of higher authority level. Therefore, it is vital to consider changes to the rules at the national level, to confirm the responsibility of a single entity as The Ministry of Infrastructure and Development for the national and public roads in the State [http://pkd.org.pl/pliki/adobe/publikacja_kongres_transportu.pdf, access 9.04.2015].

CONCLUSIONS

The growing involvement in the production of renewable energy and increase the demand for this energy cause the development of the market of suppliers and manufacturers. The correct course of business processes is disturbed by increasing maintenance costs of roads, and destroying roads excessive heavy traffic of motor vehicles is listed as one of the most important risks in the construction of the national road on the 2014-2020 [http://wbia.pollub.pl/, access 14.04.2015]. Before the 90 's when these roads were built, and over the subsequent decades were not upgraded, expired time of their guarantee, and low quality becomes a threat of loss of safety for users.

This problem meet most often local authority with the highest indicators of entrepreneurship. In Poland this areas are territory of agglomeration the five biggest cities, where the accumulation of any activity, including linked to the production of renewable energy produces an increase in the effects of the roads destruction. This issue is also familiar in rural-urban areas due to the rural location of the enterprises producing components of biomass and biogas. Intensive wear of the surface, the base damage induced by heavy cargo, sometimes exceeding 100% of the authorized tonnage vehicle[44] affect the structure of the hole object, and effects cumulate what can be seen after a long period of time.

The lack of data about the location and size of the tonnage of cargo, and having under disposal the only estimated data supporting arguments provided in the study this should not affect the conditions for examining the phenomenon of the destruction of roads. Considered problems are the cause of the competitiveness of the local unit decline for many of them, and they are a contribution to the discussion of this issue. Therefore, selected problem area is the special-purpose reserve, and relate to him characteristics of continuity and intensity of multi-tonnage supply of road transport and the lack of financial security. The Government positively stimulates the development of renewable energy production, and in Poland, there are good reasons for its development. This situation causes that the negative impact of road transport substrates on the roads may increase, and requirements for financing the renovation of the roads do not change.

The three levels of local governments are, therefore, to a serious problem of balancing benefits and increasing costs. One of the best solutions for the future is to read carefully the placement of productive investment.

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