

POLICY OF INNOVATION DEVELOPMENT AT THE WOOD SECTOR IN POLAND

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This article presents synthetically the situation of companies of the wood sector in Poland and describes the directions of development of their innovation, in particular for wood and furniture industry. Furthermore, it describes European Union policy to support activities of producers of the wood sector and identifies selected sources of financing their activities. The article attempts to indicate the place of the wood sector in the national and regional smart specialization, playing a key role in the EU financial perspective for the years 2014-2020.

KEYWORDS

wood sector, innovation, innovation policy, wood cluster, smart specialization

1 INTRODUCTION

According to many economists and politicians the increase in the economic development of countries, regions and businesses in 21st century is associated primarily with the innovative potential and innovation. Therefore, the European Union is taking extensive measures to stimulate innovation and competitiveness of European enterprises. Pro-innovation policy is one of the most important external factors of innovation activity of enterprises. It is being achieved at different levels of territorial competence and in relation to different areas of innovation. The country can significantly affect the business innovation through specific mechanisms and instruments of influence, such as: legal norms and administrative orders, supporting research and development and corporate innovators, creating a climate of socio-cultural awareness and the need to incentivize the development of innovative activities.

Polish wood industry as one of the most important sectors of national economy is not indifferent to the EU and national policies. It should be emphasized that the timber sector is a specific economic activity. Except forestry and logging it includes such diverse industries as sawmill, wood-based panels, wooden joinery, wood packaging, furniture, pulp and paper, paper processing, other wood products not classified elsewhere [Journal of Laws 2007]. Multi-branch makes it one of the largest collective employers. The most important sectors of the wood-based industry are sawmill, furniture, pulp and paper, wood-based panels. According to the classification of industries relying on the technology participation [Hatzichronoglou 1997] the timber sector is classified as a low technology industry and is referred to as the mature and traditional industry. This classification is related to the type of

raw material and to its relatively simple processing method. However, taking into account modern technological processes and highly mechanized and automated machinery and equipment used in the wood-based industries it can be said that in the wood sector is also at high technological level. Timber sector is therefore highly diversified both in terms of type of products, customer groups, the stage of the production process and the level of technology and innovation [Ratajczak 2009].

Polish wood industry therefore plays an important role in the development of the whole economy in Poland and therefore should have a sectoral program includes a strategy for the wood industry in relation to national and regional operational programs and the so-called smart specialization. In view of the above, the aim of this article is to assess the possibility of supporting innovative activities of entrepreneurs wood industry in relation to the political and legal conditions.

2 MATERIALS AND METHODS

Preferably use DIN A4 page format and MS Word editor, please. Data from secondary sources were used for the analysis in this article. The secondary data came from internal sources such as the following:

- data from statistical offices listed in the bibliography,
- data from government administration authorities (including information from the Internet),
- studies and publications listed in the bibliography.

After this analysis, it can be concluded that the available statistics on innovation activities are very limited and are recognized in different ways depending on the source and research time. In view of the above, there is difficulty in comparing data from different periods of time and different industries wood. In addition, there are few publications on innovative activities and development trends in the wood sector.

3 INNOVATION ACTIVITIES IN SELECTED ENTERPRISES OF THE WOOD SECTOR

As defined by the Central Statistical Office (GUS), innovative activity is „all scientific, technological, organisational, financial and commercial steps which actually or are intended to lead to implementation of innovations. Some of these activities may be innovative in their own right, while others are not novel but are necessary to implement innovations. Innovation activity also includes R&D which is not directly related to the development of a specific innovation” [GUS 2015b]. The literature distinguishes four types of innovation: the implementation of a new or significantly improved product (good or service) or process, new marketing method or new organizational method. Analyzing the statistics since 2010, it can be said that the industrial companies belonging to the wood sector are characterized by low level of innovation activity which still decreased over the years from 2010 until 2014. The least active are innovative entities from section "Manufacture of products of wood, cork, straw and wicker" while most are companies from section "Manufacture of paper and paper products". It should be noted that according to the Central Statistical Office, the company is considered innovatively active if in the analyzed period introduced at least one innovation or implemented in that period, at least one innovation project (see Tab.1).

Economic activities	Industrial innovation active enterprises [%]		
	in the years 2010-2012	in the years 2011-2013	in the years 2012-2014
Manufacture of paper and paper products	19,5	21,7	20,5
Manufacture of furniture	18,6	17,7	14,0
Manufacture of products of wood, cork, straw and wicker	7,1	10,2	11,8

Table 1. Industrial innovation active enterprises in the years 2010-2014 by selected NACE divisions

Source : [GUS 2013, GUS 2014, GUS 2015a]

Given the kind of innovation occurring in the wood sector enterprises can be observed that most often are introduced process innovations. Most new and significantly improved processes are introduced in the "Manufacture of paper and paper products" sector. Least likely are organizational and marketing innovations, in particular in the "Manufacture of products of wood, cork, straw and wicker" sector (see Tab. 2 and Tab.3).

Economic activities	Enterprises which introduced new or significantly improved (as the share of total enterprises of a given economic activity)					
	new or significantly improved products			new or significantly improved processes		
	2009-2011	2011-2013	2012-2014	2009-2011	2011-2013	2012-2014
Manufacture of paper and paper products	12,2	11,7	12,0	14,5	17,0	15,5
Manufacture of furniture	6,7	12,1	8,4	9,0	10,3	10,3
Manufacture of products of wood, cork, straw and wicker	5,6	5,6	7,1	7,1	7,7	9,7
Average	8,17	9,8	9,17	10,2	11,7	11,8

Table 2. Industrial innovative enterprises in the years 2011-2013 by innovation types (new or significantly improved product (good or service) or process) and NACE divisions

Source : [GUS 2012, GUS 2014, GUS 2015a]

The analysis of statistical data for the years 2013 and 2014 indicates that expenditures on innovative activity among companies of the wood sector are low. The lower share in incurred expenditures on innovations have only companies from sectors of "Manufacture of textiles", "Manufacture of wearing apparel" and "Manufacture of leather and leather products" (a total of 144.6 million Polish zloty in 2013 and 187,7 million Polish zloty in 2014). It should be emphasized that the expenditures on innovative activities in the wood sector enterprises are steadily increasing.

Economic activities	Enterprises which introduced new or significantly improved (as the share of total enterprises of a given economic activity)					
	organisational innovations			marketing innovations		
	2009-2011	2011-2013	2012-2014	2009-2011	2011-2013	2012-2014
Manufacture of paper and paper products	9,4	9,3	14,4	7,4	5,9	7,7
Manufacture of furniture	5,6	7,4	7,4	8,1	10,2	6,1
Manufacture of products of wood, cork, straw and wicker	5,2	4,6	5,1	7,3	4,9	5,2
Average	6,7	7,1	9,0	7,6	7,0	6,3

Table 3. Industrial innovative enterprises in the years 2011-2013 by innovation types (new marketing method or new organizational method) and NACE divisions.

Source : [GUS 2012, GUS 2014, GUS 2015a]

4 EUROPEAN FUNDS FOR THE WOOD SECTOR

In 2010, the European Union has adopted a strategy called 'Europe 2020' which proposed three interlinked priorities to enable Member States to achieve growth in employment and an increase in productivity and social cohesion. These priorities are [COM 2010]:

- smart economic development - efficient investments in education, scientific and research activities and innovation,
- sustainable economic development - efficient use of resources in a more environmentally friendly way,
- economic development and inclusive growth - job creation and poverty reduction.

The main objective of 'The Europe 2020' strategy is to bring the output of the Member States of the economic crisis, while respecting the environment and sustainable growth. This target is to be achieved through the focus on innovation. Wood sector entities by entering the innovation policy of the European Union may benefit from funding under several national operational programs. Available investment support for companies of the sector relates primarily to the Operational Programme 'Intelligent Development' and The Innovative Programme 'Eastern Poland' (see Tab. 4).

The name of the priority axis	Areas of support / types of projects
Intelligent Development Programme	
Priority Axis 1. Support for carrying out R & D work by enterprises	Implementation of researches, primarily industrial or experimental development to develop new or significantly improved solutions.
Priority Axis 2. Support the environment and the potential of businesses.	Creation and development of R & D infrastructure through investments in equipment, technology and other necessary infrastructure needed for creating innovative products and services.
Priority Axis 3. Support for innovation in enterprises	Support for the implementation of the results of R & D achieved in implementing the projects co-financed from the Priority Axis 1 of the program. In addition, support for promotion and internationalization of innovative companies.
Priority Axis 4. Increase of the scientific and research potential.	Support for industrial research and / or experimental development carried out in the framework of smart specialization on a national or regional level.
Innovative Programme 'Eastern Poland'	
Priority Axis 1. An enterprising Eastern Poland	Support activities related to the internationalization of SMEs, inter-regional cooperative relations, creating a network of products for SMEs, building a competitive advantage through the use of design.

Table 4. National operational programs in support of industrial enterprises from the wood sector.

Source: [GOV.PL 2016]

In addition to the national operational programs the entrepreneurs can use the sixteen regional operational programs of individual provinces. In some competitions to take advantage of EU funds the company should entered in the so-called intelligent specializations, namely areas of research and development and innovation. The areas of smart specialization have been defined at national and regional level. The national smart specializations (NSS) were determined in the following areas: a healthy society, bio-economy agro-food, forest-wood and the environment, sustainable energy, natural resources and waste management, innovative technologies and industrial processes [ME 2016]. It should be noted that the list of smart specialization is not a closed list and is continually being updated. Detailed analysis of national and regional expertise can identify areas directly linked to the timber sector. In the context of NSS they are:

- Bioeconomy agro-food, forest-wood and environment:
 - NSS 4. Innovative technologies, processes and agri-food products sector and the forestry-wood:
 - Machinery and equipment for agriculture;
 - Processing of agricultural and animal products;
 - Modern forestry;
 - Innovative wood products;
 - Individualized furniture production;
 - Innovative processes and products in the pulp and paper mills packaging

- NSS 6. Bio-Technological processes and specialty chemicals products and environmental engineering:
 - The development of biotechnological processes for the production of innovative bioproducts.
- Sustainable energy
 - NSS 8. Intelligent and energy efficient construction:
 - Materials and technologies.
- Natural resources and waste management mean:
 - NSS 11. Minimization of waste generation including wastes unsuitable for processing and use of material and energy waste (recycling and other recovery):
 - Minimizing generation of waste (including production of waste-free or low-waste).
 - Safe methods of disposal provided for further management or disposal.
 - Innovative technologies of recovery, including recycling.

Areas of regional smart specialization (RSS are defined by each province separately in specially designed documents, so-called regional innovation strategies. The timber sector has been recognized as a so-called smart specialization in the following provinces:

- lubuskie - "Innovative Industry" (wood industry, furniture, paper),
- warmińsko - mazurskie - "Furniture & Wood"
- wielkopolskie - "Insides of the Future (furniture industry),"
- opolskie - "Sustainable technology of construction and wood" (wood technology).

5 WOOD CLUSTERS

The European Commission gives more and more support to projects and enterprises oriented towards innovation, both technologically and in terms of structural solutions. A great number of innovation centers, both existing and under construction, are based on the idea of clusters. Clusters and their networks appear to be significant tools for regional development promotion, which is conducive to the growth of the small and medium-size enterprise sector, at the same time reducing the differences in the pace of development, both spatially and socially. Additionally, incentives like this also activate, dissipate and develop the knowledge generated locally and regionally.

Due to the specific nature of the wood sector and in particular its multi-branching as well as the dependence on raw material including its location, you can tell that it has a lot of conditions characteristic for the cluster. They are [UNIDO 2001, Porter 2001]:

- interactions and horizontal and vertical interconnections between firms that produce and sell a range of related or complementary products and, thus, face common challenges and opportunities,
- competition and cooperation,
- geographical proximity of connected enterprises operating in related sectors.

Taking cluster initiatives can significantly contribute to the development of manufacturers associated with the timber sector. Unfortunately, conducted in 2015 inventory of clusters in Poland shows that there are only two clusters belonging to

the wood sector [Buczyńska 2016]. By contrast, on the so-called "interactive map clusters" located on the website of the Polish Agency for Enterprise Development identified seven of them: Wood Technology Cluster "Lignum", Lublin Wood - Regional Cluster in Lublin, Association For Cluster "Horeca Furniture Group", Szczecinek Furniture Cluster, Furniture Design Cluster of Wielkopolska, Polish Wood Cluster and Silesian Wood Cluster [PARP 2016]. Description of clusters which are the dominant sector of the timber sector is included in the table below (see Tab.5).

Economic activities	Territorial scope	Location of the cluster members – Voivodeship (NUTS 2)	Foreign partners
Wood Technology Cluster "Lignum"	regional	małopolskie, opolskie, śląskie	Germany
Lublin Wood - Regional Cluster in Lublin	global	lubelskie	France
Association For Cluster "Horeca Furniture Group"	global	kujawsko-pomorskie,	Germany, Norway, Switzerland, Italy
Szczecinek Furniture Cluster	national	podkarpackie, pomorskie, wielkopolskie, zachodniopomorskie	Lack
Furniture Design Cluster of Wielkopolska	European	wielkopolskie	France, Spain, Lithuania, Germany
Polish Wood Cluster	European	dolnośląskie, łódzkie, małopolskie, mazowieckie, pomorskie, śląskie, wielkopolskie, zachodniopomorskie	Lack
Silesian Wood Cluster	global	opolskie, śląskie, dolnośląskie	Czech Republic, Germany

Table 5. General characteristics of Polish clusters wood sector
Source : [PARP 2016]

In both the European Union and in Poland, there are support mechanisms of cluster initiatives. The actions of the European Commission in favor of clusters revolve around four pillars and include the following initiatives:

- European Cluster Observatory – improving the quality of clusters management
- Cluster Excellence - streamlining management processes in clusters organizations, developing the competence of managers of cluster management,
- Cluster internationalization - internationalization of small and medium-sized businesses through clusters,
- Emerging Industries - promoting cooperation between clusters and companies representing different industries.

Among the new programs created in the new financial perspective (2014-2020), special attention from the point of view of the clusters deserve: 'HORIZON 2020' and 'Competitiveness of Enterprises and SMESs' (COSME). The aim of the activities of Horizon 2020 is to promote R & D projects carried out in partnership with industry, the use of research

infrastructure by enterprises and stimulating the emergence of innovative clusters. In contrast, the COSME program is to facilitate SMEs access to markets in the Community as well as easier access to financing through loan guarantees and capital.

In Poland, the cluster policy is an element of innovation policy. It is consistent with the EU's Europe 2020 strategy and the European Commission postulated the concept of smart specialization. In this perspective, cluster policy involves integrating the available public support around the selected clusters of key importance and the competitive potential for the economy of the country and individual regions, enrolling in smart specializations, national and regional. Unfortunately, today in Poland no cluster of wood sector does not have the status of National Cluster Key. While juxtaposing clusters covering the timber sector with intelligent specializations in specific regions it can be seen that the convergence occurs only in Wielkopolskie and Opolskie.

6 QUALITY STANDARDS AND ENVIRONMENTAL MANAGEMENT SYSTEMS

In recent years an increasingly important role is given to the quality of the products, their impact on the safety and health of citizens and the environment. At the EU level by the Council of the European Communities the Directive on common rules for all Member States in the field of public health and safety and environmental protection are issued. Polish companies competing on the international market are thus forced to take measures to reduce differences in standardization and certification, through the application of technical regulations contained in European standards and conformity assessment procedures. With regard to the production of wood and furniture especially important role play the standards relating to:

- European Union requirements regarding furniture, e.g.: PN-EN 527-1:2000, PN-EN 581-1:2001, PN-EN 581-3:2001; PN-EN597-2:1999, PN-EN716-1:1999;
- timber quality, e.g.: PN 79/D-01011, PN-93/D-02002, PN-93/D-95000, PN-92D-95017, BN-78/9220-02.

Apart from the quality standards an important aspect of the activities of companies of the wood sector is ecology. Reduction of negative effects on the business environment is possible through the implementation of an environmental management system. Examples of European standards used in the wood sector are:

- ISO 9001:2015 Quality management systems - Requirements.
- ISO 14001:2015 Environmental management systems - Requirements with guidance for use.
- EMAS – Eco-Management and Audit Scheme.
- FSC - Forest Stewardship Council.
- PEFC - Programme for the Endorsement of Forest Certification.

In Poland there are no legal requirements mandating the implementation and application of Polish Standards (PS) and environmental management systems. However, the need to adapt products and services to the requirements imposed under state regulations and standards as well as customer requirements compel operators of the wood sector taking actions which results often lead to innovative solutions.

7 CONCLUSIONS

Based on analysis of the situation of the wood processing sector on the Polish market and the external environment in support of their activities can be inferred that the sector of wood and forestry plays an important role in the development of the entire economy in Poland: includes diverse industries and is one of the largest collective employers. Unfortunately the industrial companies belonging to the wood sector are characterized by low level of innovation activity and expenditures on innovative activity among companies of the wood sector are low. This is surprising, that the entrepreneurs in this sector can count on significant financial support in the implementation of innovative solutions with the assumption that they will undertake research and development focusing on new ideas and solutions. The areas that can be developed are, for example: intelligent wooden construction, processing of waste wood products and wood plates, change the properties of wood products and their improvement, production technologies wood products and wood. It should be emphasized that the timber sector has been entered on the list of national smart specialization while at the regional level was taken into consideration only in four provinces. It is worth noting that the European Commission gives a number of instruments in the form of national and regional programs and initiatives aimed at developing competitive clusters in the world (world-class clusters). In Poland, the clusters associated with the timber sector are characterized by varied size and structure. The largest of them are: Lublin Wood - Regional Cluster in Lublin, Silesian Wood Cluster and Polish Wood Cluster. Others are small, since they have no more than 15 participants. Accordingly, the existing clusters of wood sector should make an effort to build a network of cooperation characterized by a significant importance for the economy of a country or region, high international competitiveness and have significant potential for scientific and technological development. The members of these clusters should cooperate with other entrepreneurs and stakeholders of the education sector, research institutions and business environment institutions in terms of:

- the development of human resources,
- researches into the characteristics of wood and technologies used in the sector,
- obtaining external sources of financing,
- developing strategies of the sector development,
- export activity,
- marketing activities to promote the products of the wood sector.

Situation of companies of the wood sector in Poland and their innovation described in this article does not exhaust the subject of the article in its entirety.

It can be stated that the conclusions drawn from the analysis or rather the lack of comprehensive data on enterprise innovation of wood sector, justify the need and purposefulness of carrying out further research work in the area of the development of Polish wood sector. The following areas should be researched further:

- Innovation activities co-operation.
- Determinants of innovation (e.g. reasons for lack of innovations and barriers to innovation).

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