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# CLUSTERING: EUROPEAN EXPERIENCE AND IT'S IMPLEMENTATION IN UKRAINE

## Abstract

The place of Ukraine in the system of world innovation processes is examined. The cluster organization of production in the system of Ukraine's transition to the new model of development and reforms in the frames of «Strategy-2020» is under our research. The general economic and regional conditions of forming of cluster systems are substantiated. The mechanism of forming of scientific parks as the the mechanism of development of innovation processes is covered.

## Key words:

Innovation economy, innovation, cluster, local production system, scientific park.

**JEL:** O14, O31.



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# 1. Ukraine in the system of global innovation economy

The national practice of usage of cluster forms of production organization and of doing business is quite small. It is mainly focused on solving current problems, which remain outside the scope of the inclusion of the economic potential of the country's powerful reserves of modernity, associated with the production, processing, storage and dissemination of information and knowledge. However, it is the resource which significant effects are manifested to the greatest extent based on the joint use of related industries and enterprises. Because this interaction can be achieved most systematically and comprehensively in the framework of the cluster organization, the lag of Ukraine in product innovation from developed countries and emerging markets is explained largely by the absence of high stars clusters and appropriate governmental policies.

In Ukraine 11 times less national applicants apply for patents and inventions based on 1 billion of GDP compared to the leader, which is South Korea. If we calculate this activity in $ 1 billion of expenditures on research and development, the lag of Ukraine expressed by the value of 2.2 times. The situation is worse in Ukraine, not only in comparison with developed countries – Japan, China, USA, but also with such countries like Belarus, Russian Federation, Armenia, and Georgia. This indicates the necessity of introducing new forms of innovative activities in the country and primarily clustering, which is quite justified itself in other countries.

In conditions of reforming the economy of Ukraine, as noted previously, three approaches in the development of industrial complexes has identified. First, work on the concept of local production formation (territorial-production complexes), secondly, to adapt the international experience of industrial clusters creation and thirdly, developing a system of regional competitiveness.

From this three directions of industrial complexes development least developed in Ukraine there are economic, legal and institutional prerequisites for the formation of local production systems. This is because in the conditions of a planned economy, the key priority was the development of large industrial complexes of the metals and mining industry, heavy engineering. This political trend was implemented on the entire territory of the former Soviet Union, but most of the negative consequences it had for the economy of Ukraine. At the enterprises of Union subordination, 95% of the products were produced. There were more than 2 thousand large enterprises subordinated to Soviet ministries and agencies. According to experts, 70–80% of industrial enterprises had no closed technological cycles on the territory of Ukraine. Due to supplies from the former So-

viet republics – Ukraine provided 25% of the needs of the national industry, including forestry and wood – half, machine building and light industry – 40% (Ukraine in national economy complex of USSR).

The economic legacy, which Ukraine inherited from the former Soviet Union, so far not brought into compliance with the new modern trends of the world economy. In Ukraine, as before, large enterprises are dominating, the competitiveness of which falls annually. If in 2007 in the structure of exports of base metals and products from them was 42.1, in 2012 this figure fell to 27.5%. The number of enterprises from 1997 to 2012 increased from 615686 to 1341781 that are 2.17 times. However, the systemic nature of small and medium enterprises network formation that compete with big business failed to achieve. In Soviet times separate forms of local territorial production complexes – industrial agglomeration, units and centres were created. However, for government agencies, they have not become the object of structural analysis and transformation in the system of innovative economy formation.

Meanwhile, in the economic development of Ukraine, as before, innovation factor still not enough used. As it can be seen from the table 1, in industrial production in 2007–2011 its dynamics are low. This applies mostly to indicators number of enterprises that are engaged in innovative activities.

*Table 1*

**The number of enterprises which are engaged in innovative activities**[1]

| | Year 2011 | Year 2012 | Year 2013 |
|---|---|---|---|
| Total | 1679 | 1758 | 1715 |
| from which | | | |
| had the costs of innovative activity | 1348 | 1362 | 1337 |
| implemented innovations | 1327 | 1371 | 1312 |
| from which | | | |
| introduced innovative products | 731 | 704 | 683 |
| implemented new processes | 605 | 598 | 665 |
| implemented innovative products, which are re-introduced or exposed technologists economic changes in the last three years | 1043 | 1037 | 1031 |

[1] The state statistics service of Ukraine. Innovative activity of industrial enterprises in 2013. [Electronic resource]. – Access Mode: http://www.ukrstat.gov.ua/

The overall industry picture of the creation and use of advanced technologies and objects of intellectual property rights (OIPR), as well as the creation and use of advanced technologies in Ukraine in 2013 compared with 2012 decreased by 2.6% and amounted 2224 enterprises, from which two – thirds are industrial enterprise. Detailed sectoral structure presented in table 2.

During 2013 – 176 enterprises created advanced technologies. Their placement by region suggests that enterprises-innovators are concentrated in a few industrial centers. The largest number, namely, more than one-third, concentrated in Kyiv.

Other companies-developers of new technologies placed in Kharkiv (13,6%), Donetsk (8,0%), Dnipropetrovsk (6,3%), Lviv (5,1%), Luhansk (4,0%) and Ivano-Frankivsk (3,4%) regions. While more than one third of enterprises are scientific organizations and othe one third represent the manufacturing industry (The state statistics service of Ukraine. The creation and use of advanced technologies and intellectual property rights in enterprises of Ukraine in 2013). Such geographical and sectoral heterogeneity indicates the presence of large reserves in the development of innovative activities.

Analysing the number and structure of created advanced technologies, we can see the indication of relatively low activity of the business sector in innovation. But, the state is not enough to affect these processes, because under the state contract is created only 78 new technologies or 16%. The main developers of new technologies are the enterprises of processing industry and sphere of professional, scientific and technical activities, as well as education. Other industries almost not connected to innovation.

The level of innovativeness of enterprises and organizations by type of innovation is characterized by the data of table 4. During 2008–2010 the share of innovation active enterprises in comparison with the previous period increased by 3.0 percentage points mainly due to the increase in the share of enterprises that were engaged in organizational and marketing innovations. From the total number of surveyed enterprises – 4.5% was engaged in technological innovation and 11.2% only by organizational and marketing innovations (non technological innovations), 5.3% by the technology and non technological innovations. However, the share of enterprises with technological innovation decreased by 1.8 points.

As follows from the figures of table 5, structure of advanced technologies are dominated by utility model, which expressed by the number of 715 or 70.7%. The inventions in relative terms (18,7%) and in absolute numbers expression, don't have a significant place in the innovative activity of Ukrainian enterprises.

*Table 2*

**The number of enterprises that were engaged in the creation and use of advanced technologies and OIPR, using innovations in 2013, by type of economic activity, in units**[2]

| | Total | Number of enterprises which created advanced technology | Number of enterprises which used advanced technology | Number of enterprises in which are used the OIPR | Nunber of enterprises that use innovation sugges-tions |
|---|---|---|---|---|---|
| Total | 2224 | 176 | 2073 | 428 | 146 |
| Industry | 1470 | 62 | 1395 | 254 | 107 |
| Mining and quarrying | 64 | 3 | 59 | 11 | 8 |
| Processing (Refinering) | 1247 | 57 | 1179 | 227 | 92 |
| Electricity, gas, steam and condi-tioned air supplying | 104 | 1 | 102 | 8 | 3 |
| Water supply, sewerage, waste management | 55 | 1 | 55 | 8 | 3 |
| Construction | 10 | – | 10 | – | – |
| Transport, warehousing, postal and courier services | 242 | 3 | 228 | 28 | 19 |
| Information and telecommunica-tions | 102 | 8 | 95 | 11 | - |
| Professional, scientific and tech-nical activities | 274 | 69 | 238 | 91 | 4 |
| from wich | | | | | |
| Scientific research and de-velopment | 159 | 64 | 128 | 85 | 4 |
| Education | 65 | 29 | 51 | 33 | 8 |
| Health and social care | 37 | 4 | 33 | 10 | 7 |
| Providing other types of services | 6 | 1 | 5 | 1 | 1 |

[2] The state statistics service of Ukraine. The creation and use of advanced technologies and intellectual property rights in enterprises of Ukraine in 2013. [Electronic resource]. – Access mode: http://www.ukrstat.gov.ua/

*Table 3*

**Number of new advanced technologies in 2013 by types of economic activity, in units**[3]

| | Number of stablished technologies | | | | Amount of security documents in the generated technologies, including: | | |
|---|---|---|---|---|---|---|---|
| | Total | from which | | Under state contract | Invention | Utility model | Industrial design |
| | | New for Ukraine | New | | | | |
| Industry | 486 | 420 | 66 | 78 | 189 | 715 | 108 |
| Mining and quarrying | 141 | 118 | 23 | 1 | 49 | 63 | 61 |
| Processing (Refinering) | 3 | 1 | 2 | | | | |
| Electricity, gas, steam and conditioned air supplying | 135 | 116 | 19 | 1 | 33 | 63 | 61 |
| Water supply, sewerage, waste management | 2 | 2 | | | | | |
| Construction | 1 | 1 | | | 16 | | |
| Transport, warehousing, postal and courier services | 3 | 3 | | | | | |
| Infromation and telecom-munications | 13 | 12 | 1 | 1 | 5 | 1 | 10 |
| Professional, scientific and technical activities | 175 | 142 | 33 | 59 | 77 | 182 | 5 |
| from wich | | | | | | | |
| Scientific research and development | 168 | 136 | 32 | 59 | 76 | 176 | 3 |
| Education | 135 | 128 | 7 | 11 | 53 | 390 | |
| Health and social care | 11 | 9 | 2 | 6 | 3 | 61 | |
| Providing other types of services | 8 | 8 | | | 2 | 18 | 32 |

[3] The state statistics service of Ukraine. The creation and use of advanced technologies and intellectual property rights in enterprises of Ukraine in 2013. [Electronic resource]. – Access mode: http://www.ukrstat.gov.ua/

*Table 4*

**Distribution of enterprises and organizations by the types of innovation (in% to total number of enterprises)** (Bilokon, 2008–2010)

| | Year 2008 | Year 2010 |
|---|---|---|
| The total number of enterprises and organizations | 100,0 | 100,0 |
| Innovative active | 18,0 | 21,0 |
| Engaged in technological innovation | 11,6 | 9,8 |
| Engaged in product innovation | 7,5 | 5,8 |
| Worked procedural innovations | 8,4 | 7,7 |
| Engaged in marketing innovation | 10,5 | 12,5 |
| Engaged in organizational innovation | 8,1 | 10,2 |
| Do not engage in any one of the innovations | 82,0 | 79,0 |

*Table 5*

**The distribution of the advanced technologies in 2013 and security documents on OIPR in established technologies by type of technology, in units**[4]

| | Total | Amount of security documents in the generated technologies, including: | | |
|---|---|---|---|---|
| | | Invention | Utility model | Industrial design |
| **Total** | 486 | 189 | 715 | 108 |
| Design and engineering | 84 | 17 | 56 | 21 |
| Manufacturing, processing and assembly | 90 | 36 | 113 | 69 |
| Automated transportation of materials and parts, implementation of automated material handling | 8 | – | 17 | – |
| Automed equipment of monitoring and/or control | 19 | 10 | 16 | 9 |
| Communication and management | 58 | 8 | 17 | 1 |
| Production information system | 13 | 1 | 7 | 1 |
| Nanotechnology | 30 | 37 | 80 | – |
| Healthcare | 107 | 18 | 234 | – |
| Other | 61 | 43 | 169 | 3 |

[4] The state statistics service of Ukraine. The creation and use of advanced technologies and intellectual property rights in enterprises of Ukraine in 2013. [Electronic resource]. – Access mode: http://www.ukrstat.gov.ua

## 2. Cluster production organization it terms of transition to radical economic reforms

Currently, Ukraine has significantly changed economic conditions. The period of formation of the young Ukrainian state coincided with the processes of global transformation. With this in mind, the delay-overdue modernization changes, crisis political processes and deep social stratification hampered the development of Ukraine, undermined its sovereignty, was thrown on the sidelines of global progress. It's time for a change. To prove their right to a dignified place among the developed countries of the world to adopt national competitiveness, to ensure sustainable socio-economic development and high living standards of citizens – such questions arise today on the development agenda of the country.

Assessment of the existing realities in the economy provides a basis for conclusions about the necessity of transition to a new model of development. This should be the systemic reform, which must simultaneously touch all political, economic and social institutions[5]. Taking this into account, the President of Ukraine P. Poroshenko presents «Strategy 2020», which provides more than 60 reforms and special programs, which should run almost simultaneously. This identified eight areas where changes or solve the most acute problems, or create prerequisites for other reforms. Priorities are related to judicial reform, law enforcement and tax systems; decentralization and public administration reform; deregulation and entrepreneurship development; reform of the security and defence.

Also important is the dependence and the promotion of Ukraine in the world. The fundamental aim of the reforms carried out in recent years is the result of continuous development. One of the forms of solving actual problems of economic development is the introduction of modern systems of territorial administration, and first and foremost clusters type of local production systems.

In this case, priority should be given to the developing of such formations, which are focused on innovation, both in the field of technological processes and production of the final product or service. For the formation and development of local production systems in Ukraine creates favorable conditions, especially given the task of reforming public administration and regional development. The most important measures in this direction will be the revision and refinement of the development priorities in the regional strategy; streamlining and harmonizing regional target programs in accordance with policy documents at national level; the modernization of the legal conditions for the activities of local authorities.

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[5] Poroshenko P. O. Speech of the President of Ukraine at the press conference «Strategy-2020» [Electronic resource]. – Access mode: http://president.gov.ua/news/31291.html

Among the conditions for the cluster development in Ukraine currently, the major emphasis must be placed on the creation of a favourable institutional environment. Rarticular importance is the implementation of the provisions of European Union legislation, concerning the protection of intellectual property rights in the legislation of Ukraine, improvement of property rights protection of copyright subjects, simplification and unification of patent procedures. The next step is the implementation of activities aimed at creating a network of scientific, scientific-research, scientific-production enterprises interaction, the organization of a process of ongoing identification and monitoring of factors and barriers that create obstacles to innovation, the introduction of developed institutional instruments.

The institutional environment of LAN operation in Ukraine are formed in the conditions of implementation of the national strategy focused on the development of local self-government, the gradual expansion of the rights of territorial communities, the transfer of authority between the center and the regions. Ukraine is the introduction of European institution-building instruments as Twinning (decree of the President of Ukraine «on ensuring the implementation of the Twinning project» dated by 06.10.2005), TAIEX (resolution of the Cabinet of Ministers of Ukraine «On approval of the procedure for the preparation and implementation of the plan of engaging external aid of the European Commission in the framework of TAIEX» dated by 09.04.2008, No. 316), and the Comprehensive program of institutional development (CIB) (decree of the Cabinet of Ministers of Ukraine «Some issues of the preparation and implementation of a Comprehensive program of institutional development under the initiative of the European Union's «Eastern partnership» dated by 10.11.2010» from 10.11.2010 No. 2078-R).

The introduction of European instruments of institutional development is comprehensive and meets the priorities of implementation of the Agreement on free trade zone between Ukraine and EU, as well as established European technical assistance programmes and budget support. In recent years, Ukraine is one of the leaders by the number of completed and implemented projects twinning among the countries of the European neighbourhood and partnership. At the same time, volumes of such projects are growing (Tolkovanov).

It should be noted that Twinning is an instrument of the institution building. In the framework of cooperation between civil servants similar authorities of the member States of the EU and partner countries in the implementation of elements of public administration needed to adapt national legislation to the EU legislation. Another element of institution building is the TAIEX. In 2006–2011, 6839 Ukrainian civil servants participated in 292 TAIEX events. They were conducted in the following areas: freedom, security and justice – 61 events, the internal market – 127, transport, environment and energy – 62, agriculture and food security – 42 events (Tolkovanov).

In the institutional structure of the Ukrainian industry, an important place is occupied by «the concept of the State target program of industry development for the period till 2020» (Kozyr, 2010). Its purpose is to strengthen innovation and investment activity in industry in order to achieve a positive impact on its structure, to provide market competitive industrial goods and to accelerate the integration of the industrial complex in the world production. The concept formulated approaches to determine the optimal achievement of its objectives. This problem is solved on the basis of the comparative analysis of the three possible options. In the first one there is practically no influence of state authorities on industrial production in the country, although it is allowed to use direct methods by funding public works contracts.

The second option comes from finding ways of industrial production modernization on the basis of the import of scientific and technical achievements (technologies, equipment, products, services), which are almost not represented on the world market. The risks of the first variant can be reduced to the chaotic development of industrial production, and the second fastening the peripheral status of the domestic industry as a market large to meet the needs of countries industrial center.

The most promising for the formation of the new Ukrainian economy, but also the most difficult to implement there is a third option of achieving the goals of the concept of industry development up to 2020. It focuses on the structural and technological transformation of the industry, which are based on medium – and high-tech production. In the same time the share of domestic developments must obtain a growing trend in the integration process of innovation and industrial policy. Before the decisive factors in the success, such a strategy includes the creation of structures, especially scientific innovation and industrial clusters in high-tech industries. It is assumed that new clusters will focus its efforts on the commercialization of production capacities of state-owned enterprises and scientific institutions. Meanwhile, use of public-private partnership foms and funds of variety sources, including budget, credit and investment is not excluded.

Globalization leads to changes in the forms of local production organization. In the world economy we can seethe development of new forms of fragmentation, which intensify the integration process. First they covered mainly the group of national economies and most clearly manifested in the creation of the European Union, in which foreign economic relations of the member countries focused mainly on the cooperation partners. However, the boundaries of these formations is also quite large and require additions by the local integration associations, because in the system of economic relations, you can not «make friends» with the world, if there are no coincidence of interests regarding the production and sale of goods and services.

## 3. Economic and regional conditions for the formations of cluster systems

The benefits of national economies openness brought up the conditions under which companies are forced to choose the location of their activities in places where there is a better business environment for their needs. The more global markets, the higher is likelihood that resources will flow to more attractive regions, encouraging the formation of local expertise and creating clusters. Last, gaining higher competitiveness, encourage the creation of new clusters through the formation of needs in additional services or in the emergence of new niches for the establishment of local production systems.

Archetypon example of a region in which strong clusters generated in many high-tech fields, is Silicon Valley in the United States. High results were also obtained by strong European clusters, based on the use of the American experience. They specialize in financial services (London), the cultivation of flowers (the Netherlands), biological pharmaceuticals (Denmark and Sweden) and other industries and services. It should be noted that in many countries cluster policy began to emerge at the regional level before the national level. So, in Germany such lands, as Baden-Württemberg, Bavaria, North Rhine-Westphalia started programs of networks growing, uniting science and business, back in the 80-ies. But, the Federal government initiated the first program in mid 90-ies (Cluster policy in Europe). This means that if there are presences of strong regions in the economic and administrative aspects, which are Germany lands, «starting engine» of development in important areas can be regions, and not the center.

The inclusion of any country in the cluster policy is significantly associated with the occurrence of the financing needs of specific joint projects. As a rule, it was limited to stimulation of processes of self-organization and formation of clusters in the regional economy. This can be illustrated by the example programs to support clusters in France, which focused on the development of local production systems («local productive system»). It provided the possibility of obtaining subsidies on average in the amount of 37.5 thousand euros per cluster. Terms of financial support were relatively mild: the formation of the cluster organization, uniting its founders (Martin, 2010). They could spend money on a fairly wide range of costs, including brand building; support for export; the self-organization of enterprises, universities and local authorities; obtaining expertise for the implementation of further larger-scale programs. In 2006–2008 taking in account the success of local production systems programs development changed their program «Competitiveness clusters», which Fund amounted to 1.5 billion euros, which expanded the range of support cluster initiatives. Using this program, spe-

cific cluster programs were funded, which have already been formed and confirmed its effectiveness.

Strong clusters with regional location, has extended its reach to the global economic space in the aspects of personnel, technologies and investments. Their characteristic is the maintenance of world markets and cooperation with other regional clusters, which provide additional contributions to global value chains. In the end, deepening of specialization in local spaces is happening. In the case of slow inclusion in this process, the risk of regions lagging in economic and social development and the emergence of depressive states is increasing.

Assessing the evolvement of cluster systems in developed countries, it should be noted that they, on one hand, promoted economic growth, given the global conditions of the last decades, and on the other, needed to adapt to the problems that arose in the 20th years of the XXI century. However, international statistical research of T. Bal-Wozniak not confirmed the significant forward movement in the context of innovation, especially in the new member States of the EU (Bal-Vozhniak, 2010, p. 152). There is a hypothesis about the greater influence of innovativeness, on the bridging level of development by reducing the benefits of intensification transient network economy based on resources, to an economy based on knowledge.

The aim of «Europe 2020» strategy was the growing economic power of the European Union, and welfare of its citizens. «Our efforts should be more focused on the development of the EU competitiveness, productivity, growth potential and economic convergence. The new strategy focuses on key areas, which need to act: knowledge and innovation, has been the economy, high employment and social inclusion» (Eurobuletinn, 2010, p. 16), – stable in the conclusions of the European Council.

To maintain high living standards and their further improve, Europe began to search for new organizational forms for clusters that will ensure progress in the field of innovation. This means the requirement, that Europe has become more productive in generating new ideas to reduce the gap with the US and Asian countries in innovation development. Therefore, the European clusters are developing in the direction of transforming into a powerful catalysts of this process, functioning as connected with the second territorial centres.

Modern views on the role of clusters, formulated in the «European Memorandum concerning clusters», says that they are «regional centers of concentration and of specialized companies, are related to each other by numerous channels, which create a favorable environment for innovation. They make «open innovation» possible, meaning the creation and improvement of new ideas in the network, consisting of companies and organizations that cooperate with each other. These groups of companies and organizations contribute to the elimination of obstacles to the transformation of new ideas into new products and get the maximum benefit from globalization» (The European Cluster Memorandum).

The analysis of publications shows that in the context of territorial entities and private industries clustering develops unevenly. The greatest distribution it received in the construction, tourism, food and clothing industry. Successfully in Ivano-Frankivsk region clusters of tourism and the production of Souvenirs «Constellation» and the cluster «Lesnichestvo and other arts and crafts in the region» for the manufacture of products from sheep's wool started to work. In Rokytnivskyi district of Rivne region registered a cluster of woodworking, in Kherson region – transport and logistics cluster «Southern gate of Ukraine», in Poltava region – cluster of environmentally friendly baby food «Poltava», in Odessa – a cluster of organic farming and of rural green tourism in Danube region, in Kharkiv – cluster of pork and meat products and in the city of Sevastopol – 7 cluster associations, including tourist-recreational «Chersonese» and «Umiaks tour» (Zaharchenko, 2012). It should be added that in the city of Sevastopol new approach to the creation of local production systems has formed, which have been developed on the basis of the seven cluster associations mega-cluster «Sevastopol», which is expected to have more synergy.

In all areas of the construction sector of Ukraine developed and successfully operate in clusters. The first of them in this area and in fact in Ukraine the cluster «skirts» created in Khmelnitsky city in 1998. It brought together more than 30 associated with the construction of enterprises and organizations located on the territory of Khmelnytskyi region, almost all of which cooperate to this day, providing jobs for about five thousand people. The cluster performs original orders both in Ukraine and abroad in the framework of Ukrainian-Polish business cooperation (Poroshenko). The foundation of the construction cluster in Khmelnytsky became possible due to the presence in the region minerals used in the construction industry, as well as relevant research, production and personnel potential. Not the last role was played by the fact that the city of Khmelnitsky passed by large financial flows due to the fact that over the last decade it has formed a large wholesale markets.

If the experience of the cluster «Podillia» can be estimated as the international market in the form of construction services export, in Kharkiv region, together with the Belgorod region of the Russian Federation has created a cross-border construction cluster of Euroregion «Slobozhanshchyna» (Construction cluster of Euroregion «Slobozhanshchyna»). Its members included representatives of local authorities, enterprises and institutions, infrastructure, social organization and construction organizations specializing in providing services for the design, production of construction materials, construction, maintenance, reconstruction and capital repair of housing objects, civil and industrial Belgorod and Kharkiv regions. The organizers of the cluster were Belgorod regional fund for small business support, Belgorod state technological university named after V.G. Shakhova, open joint stock company «Kharkiv regional entrepreneurship support fund» and Kharkiv state technical University of construction and architecture. The main tasks to be solved in the framework of the cluster lies in reducing costs and

improving the quality of construction products; the development of new types of building products, materials and technologies; implementation of international standards of quality management system ISO 9001 in the construction industry; the growth of commissioning of the projects of high quality (including housing) (Construction cluster of Euroregion «Slobozhanshchyna»).

Example of Khmelnitsky region which join efforts in the framework of business organization cluster for the purpose of enhancing its competitiveness is becoming increasingly popular in Ukraine. Regional administrations and entrepreneurs look at Khmelnitsky region as a training center for search of the most appropriate models to use competitive advantages in their regions and industries. This results in a gradual increase of the clustering processes. The most stubborn of them and dynamic over the last decades has been able to achieve some success.

When we are talking about successful initiatives that function last ten years due to the association, we should name Khmelnytsky regional association «Sewing cluster», registered in 2001. It includes enterprises of light and textile industry, Khmelnitsky national university and the «Student house of models». Companies in this cluster have moved away from mass production of uniforms and started forming their model line, rationally distributed between the markets.

Also, successfully operating in the field of consumer goods production, cluster «Kramatorsk jewelry», created in 2010. Partners in it's organization were made by the owners of the jewellery manufacturers and Chamber of Commerce and Industry of Donetsk region. In it's model the goal is the diversifying of city's economy and the use of branding the region as a national center of mechanical engineering. The Union started a great job of training and personnel development. In 2011, we conducted 14 seminars and trainings with the participation of executives, managers, representatives of the advertising departments of the enterprises in the cluster. In March 2011, was made a working visit of the representatives of the cluster in Germany. During the visit, they studied the experience of using the Germany jewelers cluster model, trends in European jewelry design. Experience of innovative and evolutionary changes in the jewelry industry of Ukraine in August 2011 presented at the thematic session «KAIDZEN-club concerning the problems of small and medium business development in Ukraine». In September jewelry cluster as a business association, was presented at the conference of the project of the Center for international private enterprise «CIRE» on «Capacity building of business associations in Ukraine», which was attended by representatives of Chambers of Commerce and business associations of Ukraine, Russia, Belarus [8].

Great interest is manifested now in the local systems of production organization in coastal regions. Ukraine – a great naval power. It owns the sea ports of the Azov-black sea basin, which are a central element of building a competitive national transport system. However, in this field, it's already the second decade,

that there was no structural reforms implemented, and state enterprises have at their disposal excess depreciation of fixed assets. In these circumstances, non-transparent privatization and develops outside the legal field of private marine terminals network is carrying out. However, there is a rapidly growing traffic and the number of investment projects that are focused on the development of port infrastructure. However, due to the lack of interaction with other transport sectors, especially with the railway, there is no sufficient match between the capacity of ports and port infrastructure.

All this aspects has created economic situation, problem solving of which requires the establishment of maritime clusters. At the present stage of research is underway on the cluster model development, which will be able to ensure the growth of the role of maritime transport in the economy of the country. One of the variants of the model is under the name of «national maritime cluster» submitted by the State administration of sea and river fleet» (Kozyr, 2010, pp. 12–13). It consists of a system of maritime clusters: Dunai (the ports of Reni, Izmail, Ust-Dunaysk); Odessa (ports: Odessa, Ilyichevsk, Uzhnui, Belgorod-Dnestrovskiy); Mukolaiv (ports: Mukolaiv, Oktyabrsk, Kherson, Skadovsk); Crimea (ports: Evpatoria, Sevastopol, Yalta, Kerch); Azov sea ports: Mariupol, Berdyansk). Organizational capacity of such project is defined components such as technological maturity in the field of strategic, project and program management, clarity of vision for the future and the first step of the project. It is believed that this structure of the national Maritime cluster provides flexibility in the management, planning and coordination of individual clusters, as well as a significant increase competitiveness and evenly loading ports (Kozyr, 2011, pp. 99–102).

Another concept of the maritime cluster creation is based on a regional approach and the initiative «from below». It provides the functioning of the two groups of clusters: emerging (emerging cluster) and pre-clusters or agglomerations. The clusters that arise, relate to the second stage of cyclic cluster development, which means that in the region there is a few companies that are merged for specialization in «key» field and broaden the overall prospects of cooperation (Kolesnyk, 2011, pp. 131–136).

Clusters of coastal areas are specializing in fisheries, maritime transport and logistics. It's corresponds to the experience of Canada on the implementation of the support program of morphospaces clusters and Norway in creation of conditions for the development of the cluster «marine farm».

The use of pre-clusters in the system of marine management focuses on informal association of small and medium business of ship repair and shipbuilding sectors. Their mission in terms of the presence of these sub-sectors in the critical condition determined in the formation of a competitive network of firms that ensure successful development of the region based on local and sectoral competitive advantage. In the economic space of the border regions, increasing the relevance of cross-border cooperation on the basis of the formation of the

common innovation infrastructure, ensuring the effective use of local scientific and technical potential, creation of conditions for the modernization of the industry and its rapid development[6]. This is especially true for the Dunai territories after the accession of Romania into the European Union and the occurrence of a result of new opportunities that can give a United Europe. Projects clustering in the lower Dunai, which were discussed above, are currently being developed only for the Ukrainian side, which somewhat limits their effectiveness, given the uniqueness of the region, through which passes one of the major traffic arteries in Europe. To develop a strategy for clustering should be taken into account the location of the Dunai region at the intersection of major international routes from Europe to Asia that includes three sea commercial ports of Reni, Izmail, Ust-Dunaysk), 2 shipyard, the state shipping company open joint stock company «Ukrainian Dunai shipping company», 4 railway stations; locomotive depot, a number of enterprises of motor transport, the airport «Ishmael». According to the conclusions of experts in the region, it is advisable to create educational and informational-analytical cluster on the basis of which it will be possible to acquire skills and experience in the analysis of the implementation of local production systems and to further the formation of clusters of different types on the territory of the Euroregion «Lower Dunai» (Ukraine, Romania, Moldova) (Kovalenko, 2009, pp. 96–97). To attract foreign investments into the economy of the lower Dunai, it requires solving recovery problems on the technological base companies in the region, modernization and conversion of existing facilities that are idle. While priority should be given to areas of development, including the improvement and expansion of transport networks, ports, expansion and diversification of business export.

## 4. Science parks in the development of innovative processes

The establishment and operation of science parks is carried out in accordance with the Law of Ukraine «On scientific parks» from 25 June 2009 No. 1563-VI. Science Park is a legal entity created on the initiative of higher education institutions and/or research institutions by combining the contributions of the founders for the organization, coordination, control, process development and project management of the science park. Its partners can be the entities that must enter into an appropriate agreement. The priority directions of the science

[6] In fact, in the border regions, especially it can be inherent in coastal areas; there are good prospects for the emergence of F. Parreto «growth poles» which formed the dominant industries, which play the role of a «motor». The effect of dominance leads to the fact that «industry-motors» stimulate pullups related industries, giving rise to the growth of production and innovation.

park should be economically and socially due to scientific, scientific-technical and innovation activities corresponding to the objectives of its creation, the sectoral profile of the founder, take into account the needs of the region and consistent with the laws «On priority directions of development of science and technology» and «On priority directions of innovation activity in Ukraine».

The study of problems of science parks development is made by many Ukrainian and foreign scientists. Among them V. Andrianov (theoretical foundations of science parks) (Andrianov, 1990, pp. 33–35); M. M. Ivanov, S. R. Kolupaev (methods of management science and innovation in the USA) (Ivanov, 1990); A. Karatayev (operation of science parks in the developed capitalist countries) (Karatayev, 1990, pp. 13–15); V. K. Vasenko (world experience in the operation and strategy of development of free economic zones in Ukraine) (Vasenko, 2004); V. I. Lyashenko, A. I. Zemlyankin, I. Y. Goricheva, T. F. Berezhna (infrastructure of science parks) (Lyashenko, 2012, pp. 89–109); O. A. Mazur (international and Ukrainian experience of the operation of technology parks) (Mazur, 2009); V. Semynozhenko (technoparks and the experience of building an innovative economy) (Mazur, 2009); D. V. Tabachnik (international and Ukrainian experience of technology parks operation) (Technology parks) and others. However, the practice of establishing of industrial parks have not yet received widespread distribution, although some experience already gained, which gives grounds for further development of their network.

The first science Park «Kyivska Polytechnika» was created on the basis of National technical university «Kyiv Polytechnic Institute» according to the law of Ukraine No. 523 – V 22.12.06 «On the Science Park «Kyivska Polytechnika» to organize the mass of innovative activities aimed at the intensification of the processes of development, production and implementation of high-tech products to the domestic and foreign markets, increase revenues to the state and local budgets, acceleration of innovative development of economy of Ukraine. This law was practically a pilot value for the formation of normative rules and the basic principles of science parks.

The establishment of the science Park «Kyivska Polytechnika» provided the attraction of 55 foreign and Ukrainian high-tech companies, nearly a hundred research groups and laboratories of the KPI, which provide a stream of competitive know-how, more than 20 engineering faculties that prepare for the companies high-quality staff, several venture capital and investment funds, which, if necessary, act as individual investors start-up projects. Scientific Park is attracting more and more students who not only work in his company, but also create in structure of the business incubator park their own small companies to market their inventions and projects (Research institutes as centers of innovation development of the country).

During 2005–2010 the participants of the industrial Park «Kyivska Polytechnika» brought to market more than 150 new products and technologies.

Among the improvements of park – complex of computer equipment that shield the user from stray electromagnetic radiation; strategic planning and system management of sustainable development of the megacities of Ukraine; energy efficient house with the comprehensive use of renewable and alternative energy sources; production technology new diet food health and preventive actions; microsatellite; technologies for low-cost titanium production (Research institutes as centers of innovation development of the country).

The organization and activities of the park is carried out according to three main elements of the model of the «triple helix», developed in 1996 by professor of Stanford and Edinburgh universities Henry Ickovic, which includes universities, business and state (Dezhyna, 2007). Science Park «Kyivska Polytechnika», actively working in it only two participants: the University and the productive sector (American company Netkracker, USPolytech, EPAMSystems; «European Institute of innovation technologies» (London), the German research center «Eurocentral»; the Ukrainian company group DF, «Datagroup», «Technology of nature», «UAvia», «Kherson enterprise «Sudmash», concern «Ukrpozhservice», Kiev company «Meridian» and others). The state is virtually not interested in the experience of the first science park in the country. Meanwhile, it could make an order for the creation of high technologies for critical areas: cost minimization of energy resource, biotechnology for food and agricultural sectors, information systems for the effective management of different parts of society. Such a policy would ensure the reduction of high-tech imports in Ukraine in these areas.

The network of science parks at the present time in Ukraine has expanded; however, their influence on the formation of an innovative economy cannot be implemented. To monitor the performance of science parks, it is advisable to select their network. In the scientific literature describes such science parks (Lyashenko, 2012, pp. 89–109):

«Innovative aerospace technologies, established in 2010 in the framework of the EU project «Support to knowledge-intensive and innovative enterprises and technology transfer in Ukraine» at the National aviation University, Kyiv);

«Kyiv University of T. Shevchenko», created in late 2010 research institutions of NAN of Ukraine (Institute of Archaeology, Institute of Bioorganic chemistry and petrochemistry, Institute of biochemistry of O. V. Palladin; Institute of Geochemistry, Mineralogy and Ore formation of M. P. Semenkova; Welding Institute named after O. Paton; Institute of history of Ukraine; Institute of physics named after G. V. Kurdyumov; Institute of Microbiology and Virology of D. K. Zabolotny; Institute of organic chemistry; Institute of applied physics; Institute of problems of materials science of I. M. Frantsevich; Institute of problems of information registration, Institute for theoretical physics of M. M. Bogolyubov) and higher educational institutions of the IV level of accreditation (Kyiv national Taras Shevchenko; National University of food technologies); «AGROECO», created on the basis of the Institute of Agroecology and environmental Economics of the

National Academy of agrarian Sciences of Ukraine (AEP NAAN of Ukraine) with the participation of the Institute of Agroecology and environmental Economics NAAN of Ukraine; Institute of sugar beet and energy crops NAAN of Ukraine; Institute of hydraulic engineering and land reclamation NAAN of Ukraine; national scientific centre «Institute of agriculture NAAN of Ukraine; national science center «Institute of mechanization and electrification of agriculture NAAN of Ukraine; Institute of agricultural Microbiology NAAN of Ukraine; national scientific centre «Institute of agrarian economy» NAAN of Ukraine; Kiev centre for investment promotion, innovation and high technologies; Kyiv regional state administration; National University of bioresources and nature management of Ukraine.

Among scientists there is an opinion that some parks legitimately can be attributed to science parks so that they could more fully enjoy the benefits that are provided to individuals such status (Niemets, 2010, p. 62). In particular, called parks like «Kyivska Polytechnika», «Textiles», which based in Kherson national technical University; «Agrotechnopark» National University of food technologies and «Yavoriv» National University «Lviv Polytechnic».

Given the presence in Ukraine of a developed network of educational institutions of the highest level of accreditation, research and design institutes, as well as a modern business environment can be considered that in the near future will be created powerful new science parks. Currently, the project of creating a network of science parks in the Donetsk region is under development. To achieve this goal, should be used the mechanism of franchise propagate around the network core, which is the Donetsk scientific center of the National Academy of Sciences of Ukraine, Ministry of education and science of Ukraine, regional offices of the Chamber of Commerce of Ukraine, in the cities of Donetsk and Lugansk (Lyashenko, 2012, pp. 89–109). Pilot design involves the use of three options: on the basis of scientific institutions; on the basis of higher educational institution of the IV level of accreditation; and in cooperation with scientific institutions and higher primary schools of the IV level of accreditation. It is recommended to apply the approach «from below», when science parks are formed by scientific institutions and Universities of the IV level of accreditation initiative in terms of political support for the government. The second phase will be carried out the duplications, that is, the formation of the hollow forged science parks in another city in the region under the condition of achieving the objectives of a pilot science parks. The third stage is planned franchise replication in the form of transfer on commercial or other contractually-established pattern of functioning of the pilot and duplicated science parks for use in other cities and regions of Donetsk and Lugansk regions.

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