

Mykola Kyzym

Research Centre of Industrial Problems of Development of NAS of Ukraine,
5 Svobody Sq., 7 entr., Derzhprom, 61022, Kharkiv, Ukraine
m.kyzym@gmail.com

Viktoriia Khaustova

Research Centre of Industrial Problems of Development of NAS of Ukraine,
5 Svobody Sq., 7 entr., Derzhprom, 61022, Kharkiv, Ukraine
v.khaust@gmail.com

CLUSTER FORMAT FOR ARRANGING AND IMPLEMENTING INDUSTRIAL POLICY

Abstract

The article investigates cluster approach to arrange economic policy in world countries. Cluster implication is discussed as a formation with its specifics and main characteristics. Cluster policy contents, essence, goals, types and differences are reviewed. Practical implementation of cluster policy in leading European countries is researched; problems and achieved results are determined. The problem of identifying and building up cluster formations is debated. Challenges and prospects for creating territorial clusters are determined together with cluster policy implementation in Ukraine as well as public and regional policy in supporting clusters' development is reviewed. The article proves that public authority bodies' activities in the sphere of cluster model implementation for Ukrainian industry development should be directed on activating the government role in cluster formation on the basis of public-private partnership as well as on creating favorable macro-economic, information and legal-regulatory environment to develop cluster-type business networks.

Key words

industrial policy, economic policy, cluster, cluster policy, cluster approach.

Introduction

In the course of its development each country forms up and implements specific economic policy. Industrial policy is its inseparable component directed either on supporting some specific industry branches or on developing potentially competitive regions.

The processes of globalization and international competitiveness strengthening that characterize world economy, are an objective precondition to change competitiveness management paradigm, which means renunciation of traditional industrial policy and transfer to the new system of production arrangement based on utilization of cooperation and profiling advantages together with supporting different cluster formations.

Implementation of cluster industrial policy has a number of advantages –potentials of separate regions and territories are utilized much more efficiently; dialog “business – public authorities” intensifies; regional economy gets diversified; the number of tax-payers together with tax base increase; budget dependence on separate monopolistic business formations decreases [1].

Therefore, in modern conditions the issue of determining directions, priorities and formation mechanisms as well as industrial cluster policy build-up and implementation is actually topical.

Review of the modern theory and practice

Wider interpretation of the “cluster” concept is in treating it as a network of enterprises and organizations with interconnected and supplementary economy branches, which are concentrated on some specific territory (country, region) and have the goal of obtaining synergy effect together with competitiveness enhancement and competition-cooperation interaction [2].

In general, there are three cluster definitions, each of which strengthens the main feature of their functioning:

- Regionally limited forms of economic activity inside affined sectors usually connected with certain scientific establishments;
- Vertical production elements, narrowly determined sectors, where adjoining production process stag-

es create cluster nucleus (a chain: supplier – producer – seller – client). Networks that are formed around parent companies also belong to that category;

- Industrial branches identified on a high aggregation level (e.g., chemical cluster) or assemblages of sectors on a still higher aggregation level (e.g., agro-industrial cluster) [3].

Among the major preconditions for cluster formation we may differentiate the following ones: possibility to involve companies into cooperation located on a regional territory; cost saving capacity at the expense of scale production; low operational costs; ability to have full access to information; accessibility to specific natural resources; provision of special workforce; proximity to consumer markets; ability of several regional companies to work for one customer (branch).

As of today experts determine 7 main characteristics of a cluster, the combination of which dictates the selection of a cluster strategy:

- Geographical: build-up of spacious clusters of economic performance to include local ones (e.g., gardening in the Netherlands) and really global ones (aerospace cluster EADS in Europe);
- Horizontal: several branches/sectors could constitute a bigger cluster;
- Vertical: clusters may have complementary production process stages; it's important nevertheless, who exactly of the network participants is an initiator and end performer of innovations in a cluster framework, being at the beginning or at the end of the chain to create and promote an innovative product;
- Lateral: different sectors unite into a cluster, and they may ensure saving at the expense of scale effect, which entails new combinations' formation;
- Technological: assemblage of branches that use the same technology (e.g., biotechnological cluster);
- Focus: companies' cluster is concentrated around a single centre – enterprise, research institute or educational establishment;
- Qualitative: the important thing is not only whether the companies cooperate, but also how they do it [3; 4].

Specific feature of cluster approach to territorial development lies in comprehensiveness and systematicity of tasks assigning and synergy effects strengthening due to utilization of different tooling. Clusters development helps ensure optimization of companies' placement in value creation production chain to guarantee enhancement of raw materials reprocessing level, import substitution and growth of its production components localization as well as increase of goods' and services' non-price competitiveness level and public-private partnership intensification [5]. In this sense cluster policy implementation in the country appears to be a promising and powerful tool to promote scientific research and innovation creating a ground to enhance competitiveness, economic growth, industrial output productivity and the population quality of living level. Government cluster policy positively impacts scientific-innovation potential, investment climate, ensures creation of favourable and dynamic business environment that provides for considerable competitiveness increase of cluster participants and the territory in general. Research of clusterization numerous processes performed in more than 25 countries has vividly testified that their increase of their competitiveness largely depends on specific clusters' strong positions, which are the moving force for competitiveness enhancement [6].

As of today, a number of European countries have selected cluster approach in arranging their economic policy. For example, Denmark has been implementing the program to form up and develop clusters on the national level. Danish scientists have developed high-tech production capacities and technologies in agricultural and industrial sectors. Regional clusters include both traditional industrial branches – textile, furniture, etc., and innovative ones – mobile and satellite communication.

Great Britain actively uses cluster strategy and implements balanced competitive policy. The most efficient clusters are located in London and South-eastern part of the country. Their differentiating feature is intensive interconnection of industrial companies, business centres and scientific laboratories. Clusters in the northern regions have been formed around processing industry. The southern region clusters are mainly focused on providing services (business-services, software production).

The level of Portugal key clusters, like foot-wear and wine production, has considerably increased due to the government strategy of production development to transform some export branches of Portuguese economy into full-scale clusters, which has stimulated cooperation between companies and provided for technological

infrastructure formation [7].

Swedish competitiveness growth in the area of pulp and paper production is connected with both scientific-intensive equipment, necessary for paper production, and associated consumers – producers of conveyor lines, production packaging, etc. German specialists use innovative technologies in automobile production business. Italy uses cluster policy elements in the sphere of metal processing, skins and footwear production, wood processing and furniture production, fashion and design. Chinese experience is rather attractive in this regard, when competitive clusters in textile industry have been formed on the basis of scaly investments, and the products of those clusters totally go for export. Similar clusters act also in the sphere of sports goods production, tableware and toys manufacturing as well as in other economy branches [8].

In general sense, the majority of authors [3; 9; 10; 11; 12; 13] interpret cluster policy as joint activities of all levels of public authorities and municipalities, directed to support economy clusterization processes targeted to enhance competitiveness of the territorial system. Cluster policy is regarded as an alternative to traditional “industrial policy” that impedes competition, or as a new form of traditional policies integration, connected with business and regional development (industrial and cluster policies are regarded as policies-substitutes and policies-complements).

In this context, enterprises’ and separate industrial branches’ competitiveness and innovation potential enhancement, SME development and support to national economy diversification through regional sectoral clusters stimulation and development are the aims of cluster policy [9].

Also many authors treat cluster policy as an element of industrial policy [14]. It unites industrial and regional policies, small business policy, investment and innovation policies, human resources and social policies. In other words, if industrial policy is targeted on creating and developing prioritized branches, cluster policy deals with prioritized economic agglomerations capable to open up the territorial potential in the conditions of already formed economic structure.

To our estimation the main differentiating feature of cluster policy lies in the fact that it is not a supplementary tool for state governance and regulation, but a new approach to using the available tooling. The novice feature of such approach is in the fact that industrial policy content is transformed: measures of government support are oriented not on the assistance to separate enterprises and branches, but on the development of mutual interactions between territorial subjects of economic performance.

Cluster approach is capable to drastically change the contents of state industrial policy. In such a case government industrial policy should be directed not on supporting separate enterprises and branches, but on the development of mutual relations between suppliers and consumers, end consumers and producers. At the initial stage cluster policy main objective is infrastructure improvement and eradication of unfavourable organizational conditions, after which it should be focused on eliminating restrictions for innovative development. It’s obvious that such approach changes the principles of state policy. It requires transforming state control system, changing the authorities’ mentality, replacing information support system with new models to analyse economy condition not on the branch-wise basis, but on the level of separate markets and enterprises [12].

Two general types of cluster policies could be differentiated: administrative one and democratic one [3]. Administrative policy follows the following rules:

- Government forms up priorities (industry-specific and regional priorities are determined as well as the clusters that have development potential);
- It also forms up goal-oriented infrastructure for prioritized clusters (management bodies, universities’ affiliates, scientific-research institutes, airports, roads, etc.);
- Government independently determines the regions for clusters formation and the financing volumes.

Democratic policy has different rules:

- Central government “grows” clusters, which firstly are formed by market;
- Central government participates in creating cluster infrastructures very rarely;
- Central government creates stimuli for regional authorities, which are fully responsible for clusters formation (it finances projects, provides special grants to separate regions to develop clusters, including also depressed regions).

Research [15] in the field of cluster policy implementation in European countries has demonstrated that interventions into developing areas are much more risky than working with the already functioning clusters. Therefore, cluster programs developers should clearly understand that programs for developing clusters should be different from the programs for already developed clusters.

Transnational Alliance of Clusters Towards Improved Co-operation Support (TACTICS) [13], which is coordinated by French national organization for SME support, unites seven leading national and regional European organizations of innovation and cluster policies, the activities of which are directed to develop more efficient cluster policy strategies as well as develop practical tooling of their implementation in Europe. The Alliance specialists researched evolution of the implemented cluster policy in 17 European countries on the basis of analysing 13 national programs and 15 regional programs (Fig. 1).

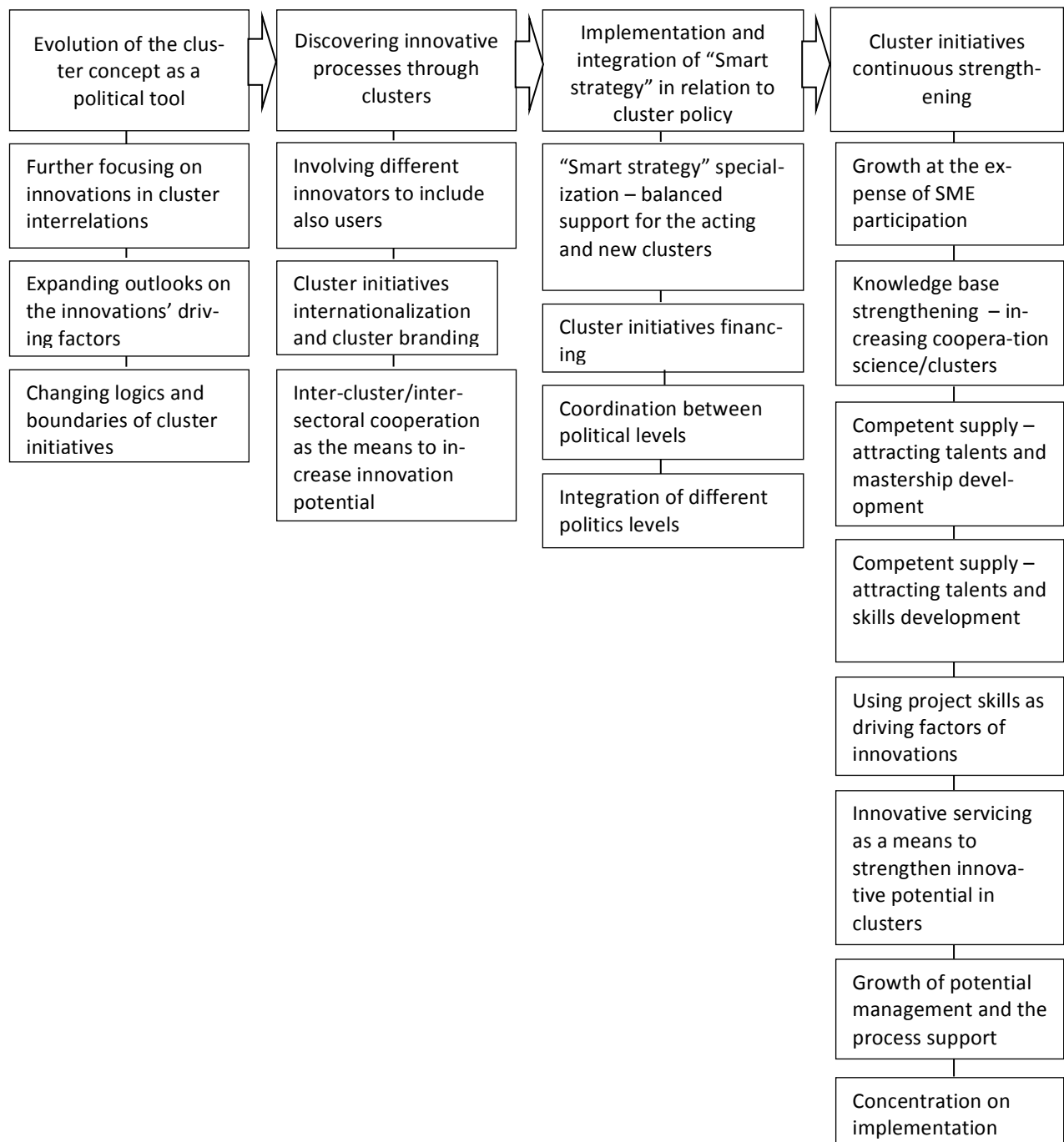


Fig. 1. Trend of the cluster concept evolution as a political tool

In 2010 the Commission of the European Communities decided to finance cluster programs for regional development within the framework of structural funds program basing on “smart strategies” of regions’ specialization [16].

One more research [17] carried out on the basis of reviewing the implemented cluster policy in 31 European countries determines some of their common characteristics. Firstly, cluster policy plays a less important role for the countries with federal form of government (Belgium and Switzerland). Secondly, the level of autonomy at the regional level also plays a very important role (Denmark, Italy). Research of the national cluster policy implementation level in those countries testified:

1. All the countries have cluster policy programs at the national and/or regional levels. At the same time, cluster policy is still at the early development stage in many countries. Nearly half of the researched countries started to implement cluster policy after 1999.
2. There are big differences between countries when dealing with the issue of how many and which exactly national ministries are responsible for cluster policy implementation.
3. Understanding of the cluster policy importance is different in world countries. 30% of the researched countries regard cluster policy to be important, 40% consider it to be of medium importance and 30% - of low importance. The last group is dominated by countries with federal form of government or with very autonomous regions.
4. With some exceptions, clusters have not yet been playing important role in national policies directed on innovations and high technologies implementation, regional economic growth and SME development. Clusters play a very important role in the sphere of science and education.
5. Two thirds of the countries published their political documents at the national level, where cluster approach is a component of the innovation policy. Cluster policy is becoming more and more important in course of time [17].

Other all-European benchmarking research [18], where 33 cluster programs from 23 countries were compared in 2011 – 2012, indicated that:

1. Different types of cluster programs serve different goals. Cluster programs in general are focused on one of three main goals: regional economic development; national industry development; commercial exploitation of a national scientific-innovative potential.

Moreover, there are programs which provide for industry development at the expense of scientific-innovative networks, which very often have national and regional scales. At the same time, networks created with the help of this type of programs in many cases are very closely connected with clusters.

2. The majority of cluster programs are still under development. The majority of such programs in Europe have high priority at the nationwide or regional levels though many of them have been under development for more than 10 years. Moreover, the majority of them have been built-in into the nation-wide strategies or implemented on the basis of their budgets.
3. Coordination of cluster programs financing with other programs indicates that they are not sufficiently adjusted. High priority of cluster programs does not mandatory mean good coordination with other financed programs. Cluster programs are much better coordinated with the national R&D programs than with the infrastructure development policy.
4. Internationalization is often a key topic for cluster policy. Clusters internationalization is an important task for many cluster policy programs, but at the same time there is often a big gap between political rhetoric and intensity of measures, actions or finances really available to support clusters and their actors entering the international level.
5. Programs’ customers started to play a more active role in developing separate clusters. A paradigm of developing and supporting within the framework of cluster programs has changed. Individual professional support for cluster organizations through specialized services has become more important and also become a key element in many cluster programs. Cluster programs management occurs in direct interconnection between customers, developers and managers, which was not noticed in the past.
6. Mastership in cluster programs management has become more important. Perfection in cluster programs management is considered to be one of the key success factors; therefore, the majority of the programs today are developed on the basis of the cutting edge experience, but not on the concept of the “number of clusters”. Cluster programs support today is not a simple cluster buildup, but creating clusters that have strong national/regional roots and are competitive on the international level.
7. Cluster programs efficiency evaluation has become considerably important. But as before, this sphere is rather problematic. Many program developers consider that development and efficiency evaluation in the

course of the program implementation are more valuable, as they provide the corresponding information, which could be used in “real time” to improve the program, in contrast to the program “post-evaluation”. However, well-balanced approaches to the evaluations that satisfy such a need are lacking, though a certain progress has been recently noticed.

8. Cluster policies have started to play a more serious role after EU expanding. EU member-countries that joined it after 2003 are more focused on implementing cluster programs than the old member-countries.

9. Creation of European Regional Development Fund (ERDF) entailed strengthening of interrelations between innovation and cluster programs. Coordination of cluster programs with national development programs is better for the programs that started to function after 2007. Those new programs often gain momentum in the context of ERDF, where cluster support is one of the main goals in promoting regional competitiveness and employment enhancement [18].

The problem of identifying such formations is one of the key issues of cluster approach. According to the available experience the present methodological approaches to identify clusters considerably differs. However, the majority of them rest on two conceptual frameworks. According to the first one, which conditionally could be named “bottom-up”, clusters are identified on the specifically selected territory on the basis of the availability of the enterprises and industrial branches-leaders, around which a network of interconnected enterprises is built up. The second approach uses the methods, which could conditionally be named “top-down”, where spacious localization of production capacities oriented on specific types of economic performance is researched [19].

“Top-down” approach traditionally could be subdivided into two types with regard to two unchangeable clusters’ characteristics - functional interconnection and geographic proximity:

1. Functional one, oriented on identifying industrial clusters.
2. Spacious one, oriented on identifying geographic clusters.

As of today it has been generally noted that the best results of cluster identification “top-down” are achieved with the help of combining industrial and spacious approaches. Such synthetic approaches include also M. Porter’s approach [20], which has become classic and is one of the most widely spread.

M. Porter’s method to identify clusters, used by the Institute for Strategy and Competitiveness to compare Canadian and US regions, is based on the following cluster characteristics:

- 1) Specialization (by employment indicators) in a specific sector, the development of which in different regions is not uniform; therefore, it could be regarded as a competitive advantage;
- 2) Joint location between other specialized (affined) types of economic performance, “the affinity” of which is determined on the basis of the relations “buyer-seller”, or on the basis of technological similarity;
- 3) Cluster scale of critical mass, which is determined as absolute employment;
- 4) Specialization (by employment indicator), calculated in relation to nation-wide employment;
- 5) Scale or cluster industrial branch width, determined as local specialization in the majority of separate branches that include the cluster.

European Cluster Observatory methodology is but an adaptation of M. Porter’s methodology [21], where three main indicators are differentiated to identify and assess potential clusters: Size, Specialization and Focus. “Size” is determined as a part of the regionally employed people within the cluster group of totally employed nation-wide. Meaningfulness by the indicator “size” has sense if the region falls within 10% of the regions - eaders by this indicator. “Specialization” is evaluated by the localization factor, which is considered to be meaningful in case it exceeds “1”. “Focus” is determined on the basis of the cluster part in totally employed in the region. It is considered meaningful if it falls within 10% of the same type of clusters which demonstrate the biggest employment rate within the given region total employment figure. Regional cluster receives a “star” if it corresponds to the criteria of “meaningfulness” by each indicator.

The methods “costs – output” are also widely used in the practice of cluster structures identification. The work [22] researches the methods that use tables “costs – output” to identify the so-called techno-economic “mega-clusters” in Belgian and Swiss economies. Specific feature of this research lies in the fact that when conducting a final stage in combining branches that are cluster components, the authors used two alternative approaches. The first one was used when analysing Swiss economy and was meant to delineate clusters boundaries on the basis of exclusively quantitative indicators obtained with the help of “costs – output” tables review. The second

approach was used to the tables “costs – output” that characterize Belgian economy, and accounted not only statistical indicators, but also subjective scientific assertions concerning “functional dependence” of branches after their unification into clusters.

The work [2] suggests identifying regional cluster structures in two stages. At the first stage, “points” of the regional economic growth are determined together with the dominating product types within them. By “points” of regional economic growth we mean the level of production capacities localization, characterized by sectoral *i*-product manufacturing localization indicators on the territory of *j*-region and to be exported *i*-product manufacturing localization indicators on the territory of *j*-region. If the values of calculated indicators are sufficiently high, the production is assessed as the “point” of economic growth in the region. The products are considered dominating if they have the highest values of calculated localization indicators of their production output in the region as well as positive growth dynamics in general, including also the exported products.

At the second stage the structural build-up and interrelations within the cluster group are determined. The composition of the “nucleus” is determined – leading regional companies (among which a focal enterprise is identified), as well as supplementary, complementary and servicing cluster enterprises and organizations. Cluster structure focal enterprise is determined by the branch dominating products manufacturing indicators. Simultaneously the level of the company market adaptability is assessed by the indicator of focal enterprise products specific weight on the external market in comparison with other producers of analogous goods.

Also scientific literature contains methods to identify clusters on the basis of experts polling, but generally they are but complementary to quantitative methods.

Recently Cambridge university specialists headed by M. Porter [23] have developed a new clusterization algorithm, which is a combination of previous world developments. The algorithm has been implemented on the basis of US industry data of 2009, and it includes determination of inter-branch relations of joint location. It also accounts input-output relations and similarity of the employment type. It is designed to determine mutually exclusive clusters, when each type of economic activity is uniquely categorized into one cluster. The method also provides for measuring bondage between any couple of (mutually exclusive) clusters and also for determining overlapping clusters. In this algorithm each cluster configuration is created with the help of clusterization function, which uses specific inter-sectoral similarity matrix and determined parameters as input data. Clusterization algorithm provides results that are determined by the quality of each configuration. It also helps refer “anomaly candidates” to the cluster, with which they have the most effective interconnections [23]. Practical implementation of the clusterization algorithm by this method has been performed when researching a group of 778 trading activities in the sphere of services and production.

Therefore, cluster approach to organizing economic policy has received a wide application in world countries. Presently, Ukraine faces the urgent need to form up and implement efficient cluster policy. Despite the fact that as of today Ukraine has no single methodology to form up cluster industrial policy, in short perspective, basing on the world developed countries experience, creation of territorial clusters in Ukraine appears to be inevitable. Therefore, the state and regional authorities face a rampant task to develop comprehensive strategy of cluster industrial policy basing on world developed countries experience with regard to the national specifics.

Review of the process of the national industrial policy implementation in the country helps differentiate inside that process three main sub-processes: review of the goals to manage development of the national economy, and opportunities of their implementation as well as resources provision; determining strategy and mechanisms of the industrial policy implementation with the aim of reaching the set goals; developing comprehensively balanced measures of industrial policy necessary to implement that strategy as well as identifying prioritized directions of targeted provision of the corresponding resources necessary for its implementation [24].

As the report [25] specifies, the task of Ukrainian industrial policy must be to implement structural-technologic upgrading of the industrial system and to transfer to higher technological paradigm. Industrial policy should become a tangible tool of economic reforms and a mechanism to ensure post-crisis renovation on the qualitative basis, increases potential of industrial production as a foundation for economic growth in long-term perspective.

Innovation policy should be the main direction of industrial policy. It should be able to form up technological nucleus for developing production cluster model together with public-private partnership and for implementing prioritized development projects. Ukraine has a very serious clusterization potential, i.e., sustainable functioning within the system of interrelated through clusters branches, including machine-engineering, instrument engineering, chemical industry, light industry, bio- and nano-technologies; creating new materials and information technologies; developing agro-industrial complex and processing industry as well as other potential [10].

As of today Ukraine has a specific feature of its clusters development which is orientation of the majority of prospective clusters on traditional industrial branches – light industry, civil engineering, agro-industrial complex, metallurgy, while European countries have their priorities in high-tech innovative clusters in the spheres of machine-engineering, bio-pharmaceutics, electronics, etc.

Following the sources research [9; 24; 25; 26; 27; 28; 29; 30], pro-active position of central authorities and local governments is a mandatory precondition for successful implementation of development cluster model in Ukraine. Regardless of the existence of different methods and directions of state and regional policy of clusters support, the main methods and directions are the following:

- adopting regulatory-legal basis of clusters functioning to provide for development of efficient cooperation to support economy competitiveness; increase confidence level between participants of business-networks; activate the government role in clusters formation and in developing public-private partnership; create and appoint organizations responsible for government cluster policy implementation;
- conducting large-scale research of markets and their development prospects; studying specific features of scientific-technical and production potential of the regions;
- creating favorable macro- and micro-economic conditions to support competitive environment, i.e., on the national and business subjects levels there should be created specific conditions when investments, innovations, upgrading and just distribution of the gained profit are guaranteed;
- the necessity of the state leading role in implementing cluster industrial policy is stipulated by the fact that in contrast to other economically developed countries Ukraine has no structures capable to replace the government in decision taking of such scale;
- internationalization of cluster initiatives, that would provide for Ukrainian positive image creation among world partners and accelerate Ukrainian economy integration into international economic community;
- providing clusters openness to external environment; supporting the increase of clusters participants' number and creating closed production chains that would ensure enterprises' deeper specialization together with the manufactured products quality increase;
- ensuring efficient support for projects that are directed to enhance competitiveness of cluster participants (by the following directions: support for SME development; for implementing specific policies in innovation and technological upgrading, in education development, in investments attracting, in export development, in transport and energy infrastructure development, etc.);
- creating efficient methodological, information-consulting and educational support for cluster industrial policy implementation on the regional and sectoral levels; ensuring coordination of executive bodies' activities on the level of state, regions, local governments and entrepreneurs' alliances to implement cluster industrial policy as well as to attract NGOs to cooperate in that direction;
- developing and adopting conceptual model of cluster industrial policy development on the government level, where motives, goals, tasks and directions for cluster policy development should be indicated;
- including cluster support program into regional programs of socio-economic and innovative development; integrating cluster approach into state policy for different economic branches and sectors development, which are implemented by the corresponding ministries and establishments;
- developing scientifically grounded criteria system to measure current & end results of cluster performance; establishing indicators for checking implementation of planned activities both on the level of separate clusters and on the level of programs in general;
- supporting development of innovation infrastructure: innovation centers that are to conduct research and which are demanded by industrial enterprises; business incubators; techno-polices and, industrial parks, that combine science and business;

- implementing a system of mechanisms directed to enhance cluster participants' competitiveness (support program designing for long-term partnership research; cooperation of enterprises when financing and implementing R&D; support attraction and streamlining of venture capital; subsidize a part of enterprises costs on producing industrial prototypes; register and provide legal support for innovations in foreign countries; establish benefits when paying regional and local taxes and duties; provide loans, including also interest-free ones; jointly implement educational programs as well as programs to search and attract foreign talented specialists);
- supporting cluster products expansion on international markets to include export support programs, products certification by the international standards, support in conducting market research, support in participating in the corresponding exhibitions and fairs (their organization).

Cluster policy formation in Ukraine occurs in specific conditions, connected with special economic features and national mentality. The most important factors that complicate cluster development model implementation in Ukraine include:

- Absence of confidence between state authorities and business, as well as between different companies; reluctance of companies to open and share their internal information due to the possibility of abuse and emergence of dependence from more powerful partners;
- Absence of state support for cluster initiatives. All the available Ukrainian clusters have been created without governmental participation whatsoever;
- Weakness of clusters due to low competitiveness level on the domestic market;
- Absence of "aggressive" suppliers and demanding customers;
- Lack of foreign investments and venture capital, which are an important source for clusters development in developed countries, assisting clusters, among other things, to reach international level through increasing their competitiveness;
- Inadequacy of legislation framework for clusters functioning; considerable bureaucratic obstacles for business development;
- Incoherence in implementing long-term strategies due to unstable political situation that provides for low confidence between business and government;
- Absence of systematized information base on the existent and potential clusters, that hampers awareness building in the society as regards the advantages of cluster alliances, and also hampers creation of the holistic picture of the available Ukrainian clusters and the achieved results. As of today Ukraine does not have single information resource that may serve as comprehensive information source about Ukrainian clusters and could have been used to increase existent clusters efficiency as well as to increase their number [23].

State authorities' performance in the sphere of cluster development model implementation for Ukrainian industry development should be oriented on activating the government role in clusters formation as well as in creating favourable macro-economic, information and regulatory-legal environment to develop business-networks of cluster type.

Summary

The conducted research has provided for making the following conclusions:

- Cluster approach to form up and implement governmental industrial policy is the most prospective strategy for the national economic growth;
- Determining benchmarks and parameters of the cluster model for economic development, forming favourable environment for broad cooperation and strategic partnership between government, business and social institutions are the preconditions for efficient implementation of cluster industrial policy;
- There is no single universal approach to implement cluster industrial policy neither for industrially developed countries nor for developing countries; each separate case requires developing a unique system of measures and mechanisms of the policy implementation on the basis of generally recognized principles and tools, but with considering specifics and conditions of the national socio-economic development;
- Cluster industrial policy is to be implemented on all government levels, for which it is necessary to develop a system of coordinated measures directed on quantitative and qualitative transformations of the national economy;
- Cluster industrial policy implementation must be based on the advanced scientific experience, on attracting highly qualified specialists and managers perfectly skilled in those issues;

- Cluster industrial policy implementation in Ukraine must be preceded by legislation improvement, the corresponding infrastructure creation, proper arranging of organization-information support, setting a financial-loan providing mechanism, human resources provision, bright investment opportunities providing, providing the territories with the status of the most favoured treatment zone.

References:

- [1] V. Optina, Clusterization as a direction in implementing anti-crisis strategy of real economic sector development, *Economic Nobel Herald*, 1(7) (2014) 337–342.
- [2] M. Kyzym, Industrial policy and Ukrainian economy clusterization, PH “INZHEK”, Kharkiv, (2011).
- [3] Innovation-technological clusters on the countries – members of International Center for Scientific and Technical Information (MCNTI) : [Informative material], International Center for Scientific and Technical Information, Moscow, (2013).
- [4] O. Tischenko, State cluster policy in the context of forming innovation model for national economy development, *Business Inform*, 8 (2014) 34–39.
- [5] Cluster policy: concentrating potential to achieve global competitiveness: Report, Publishing house “Korvus”, St. Petersburg, (2015).
- [6] E. Mantayeva, World experience of development cluster model, *Managing economic systems*, 2(38) (2012). <http://www.uecs.mcniip.ru>.
- [7] O. Savinova, Concept of cluster industrial policy for regional development, Newsletter, Penza State Pedagogic University named after Belinskiy, 28 (2012) 505–508.
- [8] D. Gallyamova, Cluster policy as a tool to increase competitiveness of regional economies, *Economic magazine XXI : scientific magazine*, 3/4 (2014) 12–15.
- [9] Methodological recommendations to implement cluster policy in Northern subjects of Russian Federation. <http://economy.gov.ru/minrec/activity/sections/innovations/politic/doc201001081642>.
- [10] A. Petrov, Theoretical-methodological grounds to form up socially-oriented cluster in a region: dissertation, Dr. Sc (Econ), Ekaterinburg, (2014).
- [11] O. Yakovenko, Theoretical grounds to form state industrial policy on the basis of developing industrial-service clusters. / O.Z.Yakovenko // *Hot topics of economics*, 10 (2012) 81–89.
- [12] G. Yasheva, Cluster policy formation as a direction in increasing national economy competitiveness. <http://innclub.info/wp-content/uploads/2011B4.doc>.
- [13] E. Wise, C. Johansson, Where the cluster winds are blowing in Europe : Better cluster policies and tools for implementation, TACTICS, (2012).
- [14] V. Khaustova, I. Yaldin, Industrial policy: its essence and purpose, *Business Inform*, 11 (2014) 36-42.
- [15] T. Christensen, T. Immer-Samp, G. Kicker, Let’s make a perfect cluster policy and cluster programme smart recommendations for policy makers, Berlin/Copenhagen, (2012).
- [16] Commission staff working document. Document accompanying the Commission Communication on Regional Policy contributing to smart growth in Europe 2020 COM (2010) 553 final. http://www.ec.europa.eu/regional_policysmart_growth/annex_comm2010_553.pdf.
- [17] Cluster policy in Europe. A brief summary of cluster policies in 31 European countries. Innova Cluster Mapping Project Oxford Research AS (2008). <http://www.clusterobservatory.eu>.
- [18] G. Lindqvist, C. Ketels, O. Solvell, The cluster initiative greenbook 2.0, Stockholm, Ivory Tower Publishers, (2013).
- [19] Cluster policies and cluster initiatives, Penza, IE Tugushev S., (2013).
- [20] M. Porter, Cluster Mapping project, Institute for Strategy and Competitiveness, Harvard Business School. <http://www.isc.hbs.edu/econ-clusters.htm>.
- [21] European Cluster Observatory. www.clusterobservatory.eu.
- [22] T. Levchenko, World experience in clusters identification in the conditions of adapting to Russian economy, *Internet-magazine Science studies*, 6 (2013) 17. <http://wwnaukovedenie.ru/PDF/91EVN613.pdf>
- [23] M. Delgado, M. Porter, S. Stern, Defining clusters of related industries, National bureau of economic research. Working Paper 20375, Cambridge, MA 02138, (2014).
- [24] V. Vorotin, Ukrainian industrial sector modification as an object of state control: theoretical issues, Theoretic and practical aspects of economy and intellectual property. 1(2) (2013) 43–48.
- [25] Industrial policy as a factor of post-crisis renovation of Ukrainian economy, Kyiv, National Institute For Strategic Research, (2012).
- [26] V. Khaustova, Regulative-legal basis for government support of Ukrainian industry development, *The Problems of Economy*, 1 (2015) 149-167.
- [27] G. Belyakova, Innovative upgrading of regional socio-economic system: improving cluster policy in the

globalization condition, Corporate finance, 3(23) (2012) 44–54.

[28] M. Vasilieva, Directions to improve cluster policy, Upgrading and innovation, 4 (2013). <http://www.economic-journal.net/2013/12/069/>.

[29] On cluster cooperation – as a main tool to stimulate industrial innovative development in EU: Analytical statement. <http://www.eurasiancommission.org>.

[30] L. Simonova, Role of clusters in regional industrial policy, 11 (2011) 100–105.