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**NATIONAL, REGIONAL AND SUPRANATIONAL COORDINATION  
OF THE REGIONAL INNOVATION POLICY IN THE EU COUNTRIES**

**KRAJOWA, REGIONALNA I PONADNARODOWA KOORDYNACJA  
REGIONALNEJ POLITYKI INNOWACJI W KRAJACH UE**

**НАЦИОНАЛЬНАЯ, РЕГИОНАЛЬНАЯ И НАДНАЦИОНАЛЬНАЯ  
КООРДИНАЦИЯ РЕГИОНАЛЬНОЙ ИННОВАЦИОННОЙ  
ПОЛИТИКИ В СТРАНАХ ЕС**

**Abstract**

*The initial prerequisites for the formation of regional innovation policies and mechanisms (strategies and instruments) for its coordination at the national, regional and supranational levels, mainly in the EU countries, are systematized and justified in the article. It is shown that at all three levels of coordination, mostly joint tools for coordination of industrial and innovation policies are used. The national and regional levels of coordination of industrial and innovation policies in France and South Korea, that have successfully reformed the coordination mechanisms of these policies, has been thoroughly explored. Mechanisms for coordination of the supranational regional industrial and innovation policies of the EU have also been systematically investigated.*

**Keywords:** *national, regional and supranational levels of regional innovation policy; mechanisms (strategies and instruments) of regional innovation policy; regional innovative clusters; cluster strategies; poles of competitiveness; structural funds of the EU*

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### Streszczenie

W artykule sformalizowano i uzasadniono wstępne warunki tworzenia regionalnych polityk i mechanizmów innowacji (strategie i instrumenty) w celu koordynacji na poziomie krajowym, regionalnym i ponadnarodowym, głównie w krajach UE. Wskazano, że na wszystkich trzech poziomach koordynacji wykorzystuje się głównie wspólne narzędzia koordynacji polityk przemysłowych i innowacyjnych. Przeprowadzono gruntowną analizę krajowego i regionalnego poziomu koordynacji polityki przemysłowej i innowacyjnej we Francji i Korei Południowej, zarówno w krajach, które z powodzeniem zreformowały mechanizmy koordynacji tych polityk. Prowadzono również systematyczne badania mechanizmów koordynacji ponadnarodowych regionalnych polityk przemysłowych i innowacyjnych UE.

**Słowa kluczowe:** krajowe, regionalne i ponadnarodowe poziomy regionalnej polityki innowacji, mechanizmy (strategie i instrumenty) regionalnej polityki innowacji, regionalne innowacyjne klastry, strategie klastrowe, bieguny konkurencyjności, fundusze strukturalne UE

### Аннотация

В статье систематизированы и обоснованы исходные предпосылки формирования региональной инновационной политики и механизмов (стратегии и инструменты) ее координации на национальном, региональном и наднациональном уровнях преимущественно в странах ЕС. Показано, что на всех трех уровнях координации используются преимущественно совместные инструменты координации промышленной и инновационной политик. Подробно исследованы национальный и региональный уровень координации промышленной и инновационной политики во Франции и Южной Корее как в странах осуществивших успешное реформирование механизмов координации этих политик. Системно исследованы также механизмы координации наднациональной региональной промышленной и инновационной политик ЕС.

**Ключевые слова:** национальный, региональный и наднациональный уровни региональной инновационной политики, механизмы (стратегии и инструменты) региональной инновационной политики, региональные инновационные кластеры, кластерные стратегии, полюса конкурентоспособности, структурные фонды ЕС

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### Statement of the problem in general outlook and its connection with important scientific and practical tasks.

Coordination (strategy, regulatory instruments) of the regional innovation policy takes place at the national and regional and at the supranational levels. At the same time, this coordination is carried out in the

conditions of coordinated interaction of instruments of industrial (i.e., sectoral structural), social and innovation policies. However, coordination mechanisms at all levels become obsolete over time, and more or less successful reform of these mechanisms

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takes place. The scientific goal of the article was to systematically explore, based on the exemplary experience of reforming these coordination mechanisms in some countries and at the supranational level of the EU, modern mechanisms for coordinating regional innovation policy at the national, regional and supranational levels in the EU

countries and some other countries. Taking into account the practice of successful experience of developed countries in reforming the mechanisms of coordination of regional innovation policy at all its three levels will contribute to the formation of reliable mechanisms for such coordination in post-Soviet countries, including Georgia.

### **Analysis of the latest research in which the solution of the problem was initiated.**

In this paper, an attempt is made to consider all three levels (national, regional and supranational) of regional coordination of innovation policy in a coherent way. For the first time such attempts were made by N. V. Shelyubskaya (Шелюбская Н., 2003, Шелюбская Н., 2010) and N. I. Bogdan (Богдан Н., 2006). However, there is no holistic picture in these works, especially since these works became obsolete, after the period of writing these works in the EU, the supranational coordination mechanisms have been repeatedly reformed, and in all developed countries there has been a reform and improvement of the corresponding levels of coordination of industrial, innovation and regional policies. A number of issues of national, regional and supranational innovation policy and mechanisms for its coordination were touched upon in the works of V. V. Borisov and D. V. Sokolov (Борисов

В., Соколов Д., 2012) and the fundamental works of P. S. Seleznev (Селезнев П., 2014) and E. N. Smirnov (Смирнов Е., 2016), but without the corresponding structuring in the context of the levels of policies. Separate development that relate to private aspects of innovation policy (innovation clusters, an innovative component of industrial policy, poles of competitiveness, etc.) and which we used to write the work are presented in the works of D. Abdurasulova (Абдурасулова Д., 2009), A. R. Akoryan (Акопян А., 2016), A. B. Gomboboev (Гомбоев А., 2015), E. B. Lenchuk and G. A. Vlasik (Ленчук Е., Власик Г., 2010), I. R. Lyapina and N. P. Vetrov (Ляпина И., Ветров Н., 2011), A. S. Saharjieva (Сахариева А., 2013), E. M. Chernoutsan (Черноуцан, 2010) and others listed in the bibliography works.

### **Aims of the paper.**

The main goal of the paper is to structure and consider together in the interrelationship of the three levels (national, regional, supranational) of the regional innovation policy and mechanisms for its coordination at these levels. The main goal is realized in the form of three sub-goals: formulation and justification of the initial prerequisites for the formation of a regional innovation policy in terms of three levels of its coordi-

nation; consideration and structuring of coordination mechanisms at the national and regional levels of regional industrial and innovation policies in the two countries with successful experience in their reform, namely, in France and South Korea; consideration and structuring of mechanisms for coordination of regional innovation policy at the supranational level of the EU.

**Exposition of main material of research. The initial prerequisites for the formation of a regional innovation policy and its mechanisms.**

It is commonly known that the structural policy of the state is divided into sectoral structural (in other words, industrial) and regional policy. 15-20 years ago, in the developed countries, the closely related technological and innovation policies (Белов В., Баранова К., 2010) were separated from the sectoral structural policy in one way or another. In the same way, regional innovation policy began to be singled out in regional economic policy.

In order to develop an effective regional innovation policy for the country and to formulate effective mechanisms (elements of NIS, strategies, instruments) for implementing it, it is necessary to take into account a number of circumstances arising from the previous experience of developed countries (not only the EU countries, but also some others, where successful regional development strategies were developed).

1. In the EU countries, there are three levels of regional innovation policy and mechanisms for its implementation: the EU level (supranational level), the national (national) level and the actually regional level. So N. Shelyubskaya notes that in recent years three levels of formation of the regional innovation policy (policy implemented by the regions themselves, a regional component of the national (state) innovation policy and supranational policy of the EU) are increasingly intertwined (Шелюбская Н., 2003; Шелюбская Н., 2010, p. 60). Mechanisms of regional innovation development operate in the EU at the following levels: at the pan-European level - through Structural Funds, the Framework Programs for Scientific and Technological Development; at the national level - through the institutions of the innovation system; at the regional level, through

strengthening the influence of the authorities on the innovative development of the territories, including through the instruments of European politics (Богдан Н., 2006, p. 57). Moreover, the role of the state plays a leading role in the development of strategies and the use of instruments, the role of the EU is growing more and more (for example, in the area of financing and pan-European coordination of innovative activity in the regions), and regional governments themselves (with the exception of some federal countries, primarily the USA, Canada and Germany) there are no opportunities to contribute in any significant way (financially, tax preferences or creation of private-state partnerships) the implementation of strategies (which are being developed primarily at the national level) of regional innovation development. However, the elements of the NIS infrastructure are mainly formed at the regional level.

2. As it was noted in the regional policy 15-20 years ago, innovation policy was allocated. It happened on all three levels. It should be noted that the instruments of regional coordination at the EU level are more aimed at financing infrastructure projects with a focus on equalization of all regions development levels of European countries, but a growing attention is given to the innovative development of the regions (in particular in the European Regional Development Fund, every year a large share of funds are allocated to research and innovation). However, despite the fact that "the degree of internationalization of research and development is increasing under modern conditions, the innovative mechanism for the development of the EU economy remains essentially national" (Смирнов Е., 2016, p. 24). The main in the

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EU countries is the state (national) support (financial, fiscal preferences) of innovative development of regions in accordance with the strategies developed by the state (however, regional authorities participate in the development of innovation policy strategies). The possibilities of the regional governments themselves in developing and supporting the implementation of innovation policy are limited (with the exception of some federal states - the USA, Canada and Germany). In the EU, at all levels (the EU itself, the national state, regions), work is continuing to deepen the coordination of regional and innovation policies (see, eg (Фареев В., 2011).) This issue was successfully resolved in France on the basis of creating "poles of competitiveness". Although we certainly do not belong to the EU, we consider that it is necessary to cite its example, since it has developed a successful mechanism for coordinating regional, structural sector (industrial) and innovation policies based on the 4+ 9.

3. In recent years, the Euro-Atlantic model of NIS has been divided into four separate models (continental, Anglo-Saxon, North European and South European), which have already been explored in the economic literature. The most developed and competitive are the Nordic (Scandinavian countries) and the continental (France) NIS, the weakest is the South European (Italy). The effectiveness of NIS of the EU countries is determined not only by the indicators of their development at the level of a single country or the EU as a whole, but is also indicated by their participation in international innovative clusters (Смирнов В, 2016, p. 20).

4. Differences between the state innovation policy and the innovative policy of private business proper. So one of the last fundamental works in the field of the research of innovation policy P.S. Seleznev focuses mainly on state innovation policy

(Селезнев П., 2014). Naturally, the instruments of state innovation policy are applied to a large extent to private business, although innovative activities of medium and small enterprises are supported, "the transnational corporations of the EU countries continue to be the main participants in the innovation process and use EU funding for innovative purposes" (Смирнов В, 2016, pp. 9, 10).

In most countries, government and private business spending on research and development is approximately equal to 1/3 to 2/3. So in Finland in 2009, the state accounted for 25.4% of the cost, in Sweden - 30.0%, in France - 36.2% (Соснов Ф., 2011, p. 222). And if in most EU countries the share of private costs has increased from year to year, then in France, in which, according to the new classification, the continental model of NIS is developing, the share of state expenditures has increased to 49.9% (Национальные ..., 2015). At present TNCs are the main conductors of the innovation process at the level of the world economy, therefore, in the process of implementing the innovation policy of TNCs, the innovative filling of foreign direct investment (FDI) increases, international research is internationalized, international outsourcing of innovations and their implementation takes place in the global market (Смирнов В., 2016, p. 16). In addition, in modern conditions, private business (both TNCs and medium and small businesses), together with public sector and public-private enterprises, implements its innovation policy within clusters, technology parks and technopolises on the basis of development (with participation of representatives of state and regional administration) and the realization of so-called "Cluster strategies" (see, Смирнов В., 2016, p. 12).

5. The objectives of both regional policy in general and regional innovation policy re-

quire the systematization of territorial entities both within administrative boundaries and as clusters, technoparks and technopolises, whose geographical boundaries do not often coincide with that of the administrative regions of individual countries, while clusters can consist of even adjacent territories of two or three neighboring countries.

6. In order to manage regional policy programs and compare statistical indicators, the territory of Europe is divided into statistical units according to the classification which is known under the NUTS abbreviation (the general nomenclature of territorial units for statistics). The NUTS classification is hierarchical and divides each member state into three levels: NUTS of levels 1, 2 and 3. The NUTS of the first level must have a population of 3 to 7 million people, the second level - from 0.8 to 3 million people and the third level - from 0,15 to 0,8 million people. If the population in the territory of a particular Member State is generally below the minimum threshold for a given level of NUTS, the Member State itself is recognized as the territorial unit of the NUTS of this level.

For each EU member state, in accordance with the objectives of the regional policy, the levels of NUTS are identified that are the subject of regional policy, that is, those regions, districts and settlements that, according to the NUTS classification, fall within the scope of regional policy objectives (Структурные фонды ..., 2013).

7. In the recent period, regional innovation policy is most often implemented within the so-called regional innovation clusters, the importance of which in developed countries is increasing. So, the former US President Barack Obama in his first speech to the US Congress, noting the importance of implementing an innovative strategy for the prosperity of the nation, pointed to the need to

maintain the processes of dynamic interaction between large and small companies, universities, financial structures based on cluster strategies, implemented primarily at the regional level within the framework of regional innovative clusters. Similar steps are being taken in the countries of the European Union, where cluster strategies are also seen as an important tool for the innovative development of these countries (Ленчук Е, Власкин Г., 2010).

The relevant division of the European Commission (Directorate-General Enterprise and Industry) means a cluster of independent companies and related organizations that: first, compete and cooperate; secondly, geographically concentrated in one / several regions; thirdly, they specialize in specific areas of activity and are linked by common skills and technologies; fourth, are traditional or knowledge-based; fifth, they can be institutionalized (have a management body) or not (A Practical Guide ..., 2004; from: Акоюн А, 2016, pp. 57, 58).

Usually by the industrial cluster is meant a group of companies, research organizations and various support structures, targeting geographically limited area and have sufficient resources, including qualified staff for an effective specialized field of industrial development (Борисов В., Соколов Д., 2012, p. 105).

Unlike traditional industrial clusters, innovative clusters are a system of close interrelations not only between firms, their suppliers and customers, but also knowledge institutions, including large research centers and universities, which are generators of new knowledge and innovations, ensure a high educational level of the region (Ленчук Е, Власкин Г, 2010).

The founder of innovative clusters is the American Silicon Valley in California, on the territory of which there are about 87 thousand companies, 40 research centers and dozens of universities, the largest of



which is Stanford. About a third of US venture capital firms (180 companies), 47 investment banks and 700 commercial banks are servicing the cluster, which somehow finance the activities of companies (Ленчук Е., Власкин Г., 2010).

Recently, the term "regional innovation cluster" actually replaces the term "tech-park" or "science park". So, often the Silicon Valley was also called a science park (see, for example, Беляева Ю., Тимонин А., 2012). However, in several countries, both innovative clusters and smaller industrial parks or technoparks are still functioning simultaneously. The areas on which innovative clusters are located can cover part of the administrative region, completely the region or even the country. So, for example, in Denmark within the framework of the competitiveness program 16 clusters of national level and 13 regional are allocated. For each of them, in the course of a dialogue between firms that are part of clusters and authorities of different levels, specific support measures have been developed. Denmark as a country in itself according to the European classification of NUTS is a territorial unit of the first level. Large clusters of national level exist in Finland (which also applies to the territorial unit of the first level NUTS), for example, the telecommunications cluster. Unlike conventional horizontally organized clusters, this cluster is organized vertically. The structure of the vertically organized cluster is somewhat different. It is based on some basic production, which plays the role of the "core" of the cluster. The structure of the vertically organized cluster also includes organizations that provide the core with various factors of production, and these supporting industries in turn have the structure of technological chains (Агафонов В., 2015). Another important innovative cluster of national level in Finland is a cluster of industrial timber (Борисов В., Соколов Д.,

2012, p. 105, Ленчук Е., Власкин Г., 2010), but it is horizontally organized.

There are also interstate innovative clusters in Europe, for example, the mega cluster Oresund, which covers the territories of Zealand, Lolland-Falster, Myon and Bornholm in Denmark and Scania in Sweden. The region of Öresund is largely attractive to scientific research and business, and as a result, creates a favorable environment for innovation. In the region companies of various high-tech sectors of the economy are represented: information technologies, biotechnology technologies, logistics, construction and food industry, information technologies. The Information Technology and Telecommunications sector employs 104,000 people and 10,000 representative offices of IT companies, which represent the entire spectrum from newly emerging businesses to major international market players. The strong position of the region in the field of advanced IT-development is supported by the fact that many international information companies have located their research and development departments here, for example: Sony Ericsson, Nokia, Motorola, IBM, CSC, Siemens, GN Telecom, Teleca, TDC, Telia, Axis, Anoto, Tellabs. The main competitive specializations of the region are the development of software and semiconductor materials, telecommunications and photoelectronics (Антюшина Н., 2010; Захарова Н., 2010). The Japanese model of the regional innovation system assumes the construction of completely new cities called "technopolises", focusing research in the advanced industries and industrial production. At the same time, the construction of technopolis is mainly financed at the regional level (Беляева Ю., Тимонин А., 2012). Of course, these technopolises are in fact large regional innovation clusters.

8. Special attention should be paid to the role of the state in the formation of cluster

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strategies. If initially clusters were formed solely due to the "invisible hand of the market", primarily in the modernization of TNCs, recently governments of many countries began to provide tangible material and moral assistance to this process, for example, within the framework of public-private partnership (Ленчук Е., Власкин Г., 2010), etc. So, in the USA two types of innovative clusters were formed: 1) emerged spontaneously (on the initiative of individual organizations or individuals); 2) established by order of the government of the states of the country (there were 380 industrial parks and innovative clusters in the country in 2014 (it is 30% of their total in the world), employing 75,000 researchers and 200,000 workers) (Акопян А., 2016, pp. 57, 58). However, for the first case, i.e. formation with the help of the "invisible hand of the market" or "on the initiative of individual organizations or individuals", we have introduced in our works a term "business coordination" which is more acceptable under modern conditions (see, for example, (Бурдули В., 2017)). And the second case is solved on the basis of state coordination of the process of forming an innovative cluster (with the participation of national and regional governments). However, in both cases, regardless of who initiated the creation of the cluster, it should take into account the need for interaction between the state, science and business on the principle of a triple helix.

9. At the regional level, regional, innovation and sectoral structural (industrial) policies need to be harmonized, since the same tools are used for their implementation at all three levels of coordination under consideration. Some researchers believe that innovation policy is an integral part of industrial (more precisely, sectoral structural) policy (Калугина Е., 2010; Ляпина И., Ветров Н., 2010; Черноуцан Е., 2010; Акопян А.,

2016), and others talk about the intertwining of these policies with the ever increasing importance of innovation policy (Антюшина Н., 2010; Фатеев В., 2011). For example, N. Antiushina, examining the experience of Sweden, notes that an important condition for the transition to an innovative type of development is an increase in the status of innovation policy. In Sweden, the Council for Innovation Policy has a higher position than the sectoral Ministries of Education, Science and Culture or Industry, Employment and Communications, which are key to the implementation of industrial policy, R & D and innovation. This is an expression of recognition of the growing role of innovation, which allows us to achieve a new quality of innovation policy. It loses industry (sectoral) character and becomes an integration policy linking different spheres of the national economy: science, education and production, allowing to introduce new forms of their interaction in the service of economic growth and improving its quality, providing a transition to development. It is intertwined with all major directions of state economic policy, first of all, with industrial, regional, environmental, credit and financial, export policies, labor market policies, international cooperation, etc. (Антюшина Н., 2010). E. M. Chernoutsan, examining the experience of France, notes that in 2004, President J. Chirac declared the activation of industrial policy an important state priority. The main goal of this policy is to bring France to the forefront of the world in the new high-tech areas of the 21st century. The main tools for implementing this policy are the mobilization of the country's industrial and scientific and technological potential, stimulating the process of innovation (from creation to implementation) both at the national and regional levels. Much attention is paid to the development of various forms of partner-



ship between private and public entities, especially interaction between the spheres of science, education and business. The most important principles of the new industrial strategy of the state are: a course for the development of a large-scale innovation process that affects the entire country, and stimulation of interaction between the main participants of this process (enterprises, scientific laboratories, higher schools). The special regional clusters are being created in the country to solve this double task - the so-called poles of competitiveness, which are becoming a key instrument of the country's new industrial, innovation and regional policy (Чернуоцан Е., 2012, pp. 43, 44).


10. It is necessary to take into account that clusters, regardless of their territorial size, are formed mainly within a certain industry specialization. Even the innovative enterprises of the famous California Silicon Valley mostly specialize in the field of information technology (see, for example, (Борисов В., Соколов Д., 2012, p. 106)). Within the region of the first level NUTS, of course, there may be several clusters belonging to different industries, for example, in Finland, as noted above, there are at least two clusters of national level. However, most of the innovative clusters specialized in a certain type of activity in the EU countries (which already number more than 2 thousand) are formed within the territorial units of the lower level of NUTS. Here are a few examples of such clusters: IT technology - Sofia, Bulgaria; Financial Services - Cyprus; Food Industry - Southern Denmark; Footwear industry - Montebelluna (near Venice), Italy and Timisoara, Romania; Laser technologies - Vilnius, Lithuania, etc. At the same time, many clusters were formed and within the territories commensurate with the territorial units of the first level of NUTS and even surpassing it, for example: Food industry - Southern Denmark; Textile industry - Catalonia, Spain;

Floriculture - the Netherlands, etc. (Борисов В., Соколов Д., 2012, p. 105, 106).

11. In the construction of territorial innovation systems (regardless of what they were called - regional innovation clusters, technology parks, scientific parks, industrial parks, etc.), in some EU countries, they often focused on a formalized standard based on the full imitation of the US Silicon Valley: university with research and innovation-developing units inside and outside it, other elements of innovation infrastructure within or around the university (business incubators, organizations commercialization of innovation, technology transfer, etc.) and a number of innovative enterprises located in the given territory. In most EU countries, mainly in the first decade of the 21st century, many different scales of regional innovative clusters and technoparks have formed. For example, by 2003, Hungary had established a system of more than 150 clusters in the following areas: construction, textile production, thermal waters, optical mechanics, automotive, wood-working, food products, electronics, etc. More than 75 industrial parks, uniting 556 companies with a number of employed 60 thousand people. (Ленчук Е, Власкин Г., 2010). In our opinion, this is taken into account in the majority of countries, when creating regional innovative clusters or technology parks, in each separate regional innovative cluster or technopark all elements of the innovation infrastructure should not be present: some elements of this infrastructure can be found only in certain regions, but at the same time serving on its profile other regional innovative clusters of the country. Innovative enterprises can also be located in some regions, and organizations that develop innovations for them in others. The same applies to objects that finance innovative clusters. Thus, it was noted above that the US Silicon Valley

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serves a variety of American venture capital firms, investment and commercial banks, most of which, naturally, do not reside in the Silicon Valley.

12. The need for a prudent approach in the creation of innovative firms or divisions in companies and objects of innovation structure in clusters is also connected with the fact that monetary investments in innovations are of a risky nature. The probability of success of the implementation of a new idea in a new product reaches only 8.7%: out of every 12 original ideas, only one reaches the last stage of mass production and mass sales. In other words, the return on investment in the innovation process has very little in common with guaranteed repayment of loan interest on capital in a bank or dividend on shares. And because such a return can, with successful implementation of the innovation process, prove to be fabulously large, and because it can fail to be implemented at all, moreover, the invested capital (Государственная ...) will be lost. Successful functioning of the cluster is the result of a combination of effective interaction of participants, as well as the influence of subjective and objective institutional factors created by the project participants themselves. The opportunities for innovative development of clusters in most of their cases do not directly depend on the competitive advantages of specific companies, as well as on the possession of the newest technologies and spatial distribution of companies (Акопян А., 2016, p. 64). The actual effectiveness of cluster policy in practice is not very consistent with financial investments and expectations. So, many countries of the world could not realize their expectations and hopes, trying to repeat the success of "Silicon Valley" and copying the conditions of its functioning and development. Failures in the implementation of cluster policy significantly exceeded the number of those projects that

were successfully implemented. According to various estimates, currently in the world there are from 3 to 5 thousand different-profile clusters (including innovative ones). In this case, only single cases became widely known, and most of them, at best, ended with zero result. The result of implementation of many programs is estimated by experts as neutral, i.e. they did not give any positive effect (Акопян А., 2016, p. 64).

In this scenario, it is naturally inappropriate, following the "fashion", in each "declared" cluster to create a complete standard set of objects associated with innovation activities. A certain part of the objects should be tied only to the regions of the first level of the NUTS. And special attention should be paid to the creation of organizations that facilitate the borrowing of innovations: organizations that are exploring new promising foreign technologies; organizations that facilitate the transfer of technology (including assistance in the development of new production technologies acquired abroad by local personnel).

#### **National and regional level of coordination of regional industrial and innovation policies in France and South Korea.**

As can be seen from the above, regional innovation clusters currently play an important role in the implementation of regional innovation policies in developed countries. At the same time, it should be noted that it is impossible to separately coordinate the implementation of industrial, innovation and regional policies, since a common set of instruments is used to regulate these areas of economic policy. However, when developing and implementing a regional policy (cluster strategy), it is necessary to harmonize the instruments of state regulation and business coordination (and business coordination in any country plays a greater role in comparison with state coordination, primarily in terms of financing and organization of market entities, be it

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then a private or state enterprise). In addition, interregional and intercountry (although specialized, i.e., mono-branch) clusters are beginning to play an increasingly important role. A growing number of researchers come to an understanding of the variety of types of cluster formations and the forms of state and business coordination used in them (Акопян А., 2016, Гельвих М., 2016, Ленчук Е., Власкин Г., 2010; Ляпина И., Ветров Н., 2011; Селезнев П., 2014, etc.). For example, in a recent study, we read: "During the period of innovative transformations of the Russian economy, clustered education becomes an integral mechanism for the implementation of the new national industrial and scientific and technical policy. Clusters can be presented as an integrated mechanism for the development of the region, ensuring the growth of its competitiveness on the basis of innovations and synergies of territorial self-organization and partnership that ensure the formation of an innovative community as a territory development entity. In economic literature, several different types of clusters are distinguished: industrial, regional, innovative, transnational, and others. Also, different researchers differently define the main characteristics of clustered associations. Some consider territorial (geographical) concentration to be the main characteristic feature of clusters, others - industry affiliation, and third - an innovative component. In our opinion, the competitiveness of clusters is determined primarily by innovative orientation" (Гельвих М., 2016). Of course, in this quote, not everything is quite accurate, but it is very laconically reflected the variety of types and forms of coordinating the strategy of cluster formations.

Given this diversity, it is not surprising that in different developed countries approaches to clustering strategies and the understanding of clusters are identified in different ways. "Developed countries of the world

have different approaches to clustering strategies, which is determined, first, by different levels of socio-economic development and development of the business environment, institutional and cultural specifics and different systems of state regulation. Secondly, different countries apply different approaches to identifying clusters" (Акопян А., 2016, pp. 70, 71).

Since clusters in different countries are identified in different ways, they are formed in different ways. Where clusters are created formally, for the sake of "fashion", they do not become popular and disintegrate or continue to exist formally, for statistics. In addition, the word "cluster" or "innovation cluster" is not always used to designate such territorial entities in all countries. So in France the term "the pole of competitiveness" is used most often, and in South Korea in general - the "territorial unit". In these last two countries, when forming clusters, they do not confine themselves to the problems of implementing state and business coordination of only innovative development, but also take into account other industrial policy issues as well as issues of regional policy in general (at all levels of its formation). In these countries, when building clusters, all the above circumstances are taken into account and most of the cluster formations are not formal, but realistic and therefore beneficial. Therefore, in this subsection, we found it necessary to briefly describe the principles of the formation of such entities and the forms of coordination of economic activities in these two countries.

#### **Pole of competitiveness in France.**

In 2004, the intensification of industrial policy in France was declared the most important state priority. In this regard, the process of creating innovative and technological clusters, which have been called the poles of competitiveness, has begun in the

country and has become a key tool for carrying out industrial, innovation and regional policies. They were created on the basis of pre-existing specialized industrial clusters, local production systems and technology parks.

**The pole of competitiveness** is a large research and production complex that unites large, medium and small enterprises, research laboratories (public and private) and institutions of higher education on joint projects with a strong innovative component and a common development strategy. Other partners could be involved or participate, for example, government agencies, national and local, as well as service providers. This partnership is closely connected with the market, it is tied to a specific scientific and technological direction and is aimed at finding the critical mass that leads to competitiveness and international significance (Селезнев П., 2014, с. 166; Черноуцан Е., 2010, р. 44).

At present, 74 poles of competitiveness operate in France, 19 of them have international status, and the rest are poles of national or regional importance. Particular attention is paid to the following sectors; aeronautics, software development, medicine, biotechnology, nanotechnology. Priority also recognized complexes of enterprises of agriculture and food industry, railway transport construction and automotive industry, as well as the creation of new materials (Селезнев П., 2014, р. 166; from: Карта ...).

To obtain the status of a competitiveness pole, a development strategy (industrial, innovative), linked to the economic development plan for the Pole territory, should be presented in the application for the Pole, issues of international importance in industrial or technological terms, ways of partnership between the pole members, ability to joint action in the field research and de-

velopment, and thereby creating new benefits with high added value (Chernoutsan E., 2010, p.44). Before the poles of competitiveness, the following main tasks are set: the development of the competitiveness of the French economy on the basis of strengthening the innovation process, with special attention to breakthrough innovations; structural reorganization of the national industry with an emphasis on the development of new high-tech industries; creation in the territories of France of favorable conditions for the development of industrial activities with a strong technological component; stimulating partnership between enterprises, research centers and institutions of higher education on the basis of organization of territorial networks, an overall development strategy and joint innovation projects; the poles of competitiveness should show that not only competition, but also close cooperation between various economic agents is the most important engine of industrial and scientific and technological development; stimulating employment and economic growth, combating the process of moving industrial capacity to other countries, etc. (Черноуцан, 2010, р. 44).

The system of managing the poles of competitiveness, according to many experts, is quite effective and has not yet been bureaucratized. Its flexibility, in particular, is determined by such features as: double guardianship, i.e. coordination of activities at the national and regional levels; interministerial governance at the national level; evaluation of applications for status on the basis of independent expertise (all applications undergo a thorough tripartite examination - analysis at the regional level under the guidance of the regional prefect, technical expertise of the concerned ministries, evaluation of independent specialists); the basis of the relationship of the state with the participants of the poles - target contracts, and not

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policy decisions; principle of voluntary association of participants; relative flexibility and democracy of the internal pole control system (Черноуцан Е., 2010, p. 45).

An important requirement for the pole is the registration of its status as a legal entity. Most poles of competitiveness choose an association regime. The administrative council of the Pole includes representatives of industry, science and higher education. And representatives of one organization (scientific center, industrial enterprise, institution of higher education) can enter the administrative council of different poles (Черноуцан Е., 2010, p. 46). An important factor of the state innovation policy is also the provision of direct administrative assistance: each competitor pole is assigned an official-curator (Селезнев, 2014, p. 167).

#### **Contracts for achievement of results.**

In the light of the measures taken to strengthen the policy for the organization of poles and their strategic management, in 2009 the government established special "contracts for performance", based on "strategic road maps". The poles of competitiveness are equipped with a development strategy for three to five years, which is documented as a "strategic road map." It clarifies the priority areas of development for the Pole, its technological goals, market orientation and development prospects. In addition, in order to strengthen the responsibility of the poles, these contracts are signed between the leadership of the poles, the state and local authorities. In addition to the program of actions of the pole and the timing of its implementation, contracts reflect the financial obligations of the state (Черноуцан Е., 2010, p. 46).

**Tax preferences.** For participants in the poles of a competitiveness in certain cases, there is a reduction in both state and local taxes (that is, at the national and territorial levels).

If an enterprise is engaged in a project that in one way or another is connected with scientific research and development of technology, and at the same time is a participant in a registered pole, then it is exempted from paying income tax for 3 years from its inception, and in the next 2 year will pay this tax in half. In addition, businesses for 5 years are exempt from property tax and some local taxes. Significant tax benefits apply to personnel who are involved in the implementation of innovative projects. Thus, for the identified categories of workers in the poles (researchers, managers, engineers, other specialists), the social tax rate is reduced, so that workers of small and medium-sized businesses can save up to 50%, and employees of large companies - up to 25% of normal social contributions for 6 years (Селезнев П., 2014, pp. 166, 167). But on the whole, the role of tax incentives in the poles of competitiveness is not very high, the stimulating effect of tax levers of influence, according to experts, is currently insignificant (Черноуцан Е., 2010, p. 48). A much larger role in France is played by direct government funding and preferential lending to the subjects of the poles of competitiveness.

**Public funding** comes from the following main sources: the Single Interministerial Fund (Fonds unique interministériel - FUI); National Agency for Scientific Research (Agence Nationale de Recherche - ANR); Agency for Industrial Innovations (AII); group OSEO; Loans on preferential terms for the purchase of equipment, half of which falls on the Ministry of Industry, Economics and Finance; The State Investment Bank of France, set up on December 31, 2012 and called together with the National Bank of France to stimulate economic growth and promote the development of innovative projects in the country (Селезнев П., 2014, pp. 167-169;



Черноуцан Е. 2010, р. 46, 47; Калугина Е., 2010).

A single inter-ministerial fund (FUI) was created in 2005 specifically to finance joint projects implemented within the poles of competitiveness. Most of the financial resources of this fund go to state laboratories - 56%, while large companies receive about 20% (Черноуцан Е., 2010, р. 47).

The National Agency for Scientific Research (ANR) mainly specializes in financing research conducted by both state institutions and enterprises. An important element of the current strategy of this agency is to stimulate cooperation between science and industry at the poles of competitiveness. ANR finances mainly the sector of state-owned IR, which takes more than 80% of its assistance. Industrial enterprises account for 12%, of which only 4% go to small and medium-sized enterprises. Among the projects on R & D priority is given to fundamental research (Черноуцан Е., 2010, р. 47, 48).

OSEO was established in 2005 through the merger of the Innovation Agency and the Bank for the Development of Small and Medium-sized Enterprises to support innovation in the implementation of regional and national policies. The main objective of OSEO is to provide financial support to small and medium-sized businesses, as well as venture capital firms at key stages of development: creation, growth, entering a new stage, selling a business. OSEO takes on some of the risks of small businesses and provides them with access to bank lending and investor funds. In OSEO activities, three areas can be distinguished: support and financing of those projects that are based on innovative solutions and have real commercial prospects; attraction of banks to financing and life cycle management of the innovation project; provision of guarantees for financing by banks or investors. OSEO partners are financial institutions,

banks, investors, universities, research laboratories, engineering schools, chambers of commerce, guilds, large companies, startup support networks, as well as private organizations and government agencies (Селезнев П., 2014, р. 168).

The largest (over 10 million euros) projects are under the patronage of the Agency of Industrial Innovations.

Initially, the project is screened within the competitiveness pole. The most current application selects the leadership of the pole. At the second stage, the application is approved by the financial commission of the region, which is responsible for this pole. At the third (and last) stage it is necessary to get approval from the relevant ministries and departments, after that the project participants get access to tax breaks, state subsidies and other preferences (Селезнев П., 2014, р. 168, 169).

In addition to the main sources of funding for projects within the poles of competitiveness, a role is also played by the assistance of territorial authorities (especially for poles of national and regional importance) (Черноуцан Е., 2010, р. 49).

In addition to the main sources of funding for projects within the poles of competitiveness, a role is also played by the assistance of territorial authorities (especially for poles of national and regional importance). The share of financing of the participants of the poles by contracts through various European (ie, supranational level) programs (Eurika, IR Framework Programs, etc.), which differ in more complicated clearance procedures, varies greatly from year to year, but usually does not exceed 10 % of the total funding for all contracts concluded.

**From the experience of France, we can draw the following conclusions:**

**1.** The country has created a rational system of poles of competitiveness. Assignment to the territorial formation of the status of the



pole of competitiveness is carried out on the basis of a thoughtful selection after studying the documents submitted in the application for the pole, therefore the poles are real, not formal.

2. The system for controlling the activities of the poles, both external and internal, has a flexible and democratic character, with a rational combination of state and business coordination.

3. A successful mechanism that promotes effective activity of the participants in the poles is the conclusion of "contracts for the achievement of results," which reflect both the program of actions of the poles and the timing of its implementation, as well as the financial obligations of the state.

4. An effective system of tax preferences for the participants in the poles was created.

5. There is an effective complex system of financial support and incentives (direct financing, concessional lending) in which a number of national (national level) financial organizations are involved (FUI, ANR, AII, OSEO, the State Investment Bank of France, etc.).

6. Naturally, like in any other EU country, all three levels of coordination are involved in financing the poles, but the national (national) level plays a more important role than the supranational level (ie the EU level) and the regional levels.

#### **Regional innovation clusters in South Korea.**

In South Korea, the implementation of the program for regionalization and the creation of innovative clusters began in 1999, when a new industrial policy began to operate in the country. And it is obvious that the results of the implementation of this program were very successful. This is evidenced by the fact that the economy of this country was the fastest growing region of the 34 OECD countries: in the last decade, the real growth of the country's GDP did not fall below 4% per year (Сахариева А.,

2013, p. 181). Therefore, it seems advisable to get acquainted with the South Korean experience in creating and operating regional innovation clusters.


#### **The general nature of industrial and innovation policies in South Korea.**

In South Korea, since the early 60s of the last century, the formation and implementation of innovation policies have been carried out on the basis of a combination of public and private sector efforts. The South Korean authorities initially relied on the creation of large monopolies under their patronage, capable of making an innovative breakthrough at the expense of their privileged position (Корейское ..., 2008). The processes of concentration and centralization of capital in the country's economy led to the creation of large financial and industrial groups (chaebols) that arose on the basis of large trading companies and turned into multi-sectoral conglomerates. A little later, the active development of medium and small businesses began. About fifty chaebols (Hyundai, Samsung, Daewoo, LG, etc.) play a key role in the country's economy. Their experience shows how successful investments can be in high-tech innovative production: they have turned into diversified export-oriented holdings (at first they did not have their own banking structures and received financing from state-owned banks, but later they also included private banks) (Корейское ..., 2008; Селезнев П., 2014).

In the process of innovative modernization in the 60-80s of the last century, the foreign factor played a major role. The breakthrough program was initially built on the creative copying of foreign technologies. And there were a lot of such forms of borrowing: turnkey contracts, licensing, consulting services. The decisive role was played by the creation of joint venture innovation companies with Japanese partners.

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Later, our own innovative production technologies also began to develop (Селезнев П., 2014, pp. 289, 290; Справка ..., 2011), **but to the present time "the Korean innovation model still largely remains catching up and is based on import of technologies and their improvement"** (Сахариева А., 2013, p. 182). "The high-tech industries of the Korean economy, whose industrial giants are building up their innovation and technological base, are also no exception, according to the following scheme: 1 step. Preparation - matching knowledge, skills, business contacts and firms to new technologies; 2 step. Introduction - the acquisition of technology, its adaptation and improvement; 3 step. Distribution - financing the development of appropriate infrastructure and product development to encourage firms to adopt imported and adapted technology; 4 step. Maturity - formation of the sectoral structure, opportunities for further R & D and innovation " (Сахариева А., 2013, p. 182; from: Mathews, 2001).

#### **System of regions (territories) and sectors of specialization.**

The crisis of the late 1990s. forced the leadership of South Korea (as well as the leadership of the EU countries) to accelerate the innovation course, and, as noted, a special program aimed at accelerating development and innovative breakthroughs was developed and implemented. Within the framework of this program, a project known as the "4 + 9" scheme (4 - starting entities, 9 - territories that joined the project later) is being implemented in the context of the regions. The main idea of the "4 + 9" initiative was the formation of a number of regional economic clusters, although officially they are not called clusters, but are designated as provinces or cities. Unlike most European clusters, which are mainly

formed within a single specialization industry (however, in each region there may be several clusters in different sectors, and in the country as a whole there may also be a number of specialized clusters of national importance), South Korean regional clusters may contain several specialization. For example, the major cities and province included in the first four specialized in the following types of activities: Daegu - textile industry, mechatronics (robotics), mobile and nano-devices, bio-production; port Busan - visual computer technologies, footwear production, auto parts production, tourism, port logistics; Gwangju - optical electronics, production of auto parts, design and culture, consumer electronics; Kengsan-Namdo Province - intellectual engineering, production of biomaterials, intelligent household instrumentation, mechatronics (robotics) (Гомбоев А., 2015, pp. 264, 265). In Seoul joined three years later (in 2002) to this project - intellectual computer technologies, bio-production, digital components, financial and business services, etc .; Incheon - intelligent computer technology, automotive, engineering and metallurgy, logistics; Dejon - information technology, bio-production, production of high-tech parts and materials, mechatronics (robotics); Gangwon Province - production of medical equipment, bio-production, production of new types of materials and prevention of natural disasters, tourism ... (Гомбоев А., 2015, p. 264, 265).

#### **Council on regional innovations, strategy and program of measures.**

South Korea's new industrial strategy was finalized in 2004. It relies on the "4 + 9" project and is closely linked to its results. According to this strategy, the Council for Regional Innovations was formed, which included representatives of enterprises, research institutes, universities and non-governmental non-profit organizations from

each province. The Council has the responsibility to develop a strategy and program of activities, taking into account regional specificities (Абдурасулова Д., 2009; Селезнев П., 2014).

On the basis of the formulated tasks of reforming the economy, the leadership of the Republic of Korea defined the strategy of the new industrial development of the country (Абдурасулова Д., 2009), which primarily provides for the formation of the foundations for innovative development of the national economy on the basis of structuring the production and technical base, mechanisms and investment climate for innovative development. Within this framework, the following activities are implemented: the creation of an innovation system at the regional level, primarily on the basis of industries concentrated in a given territory, and by encouraging the interaction of enterprises and research organizations for R & D, as well as through the formation of institutional foundations and favorable environment for the development of innovations at the local level (thereby creating the necessary conditions for the emergence at the local level of "growth points" - technology parks, technological innovations and regional research centers); strengthening network contacts between industrial enterprises □ universities, research institutes as the main participants of the innovation process; development of innovative clusters in the field through the implementation of pilot projects (Абдурасулова Д., 2009; Селезнев П., 2014).

#### **State stimulation of the development of science and technology.**

The state encourages private sector research and development through the provision of discounts, financial subsidies, long-term development loans at low interest, guarantees of state supplies, by exempting imported production technologies from import duties, tax preferences, etc. (Гомбоев

А., 2015, p. 264, Seleznev P., 214). For example, in the framework of the new industrial policy, total investments in 2007 reached \$ 33.6 billion, or 3.47% of GDP (Гомбоев А., 2015, p.266), and the structure of investment for a number of years 1999-2008) is approximately as follows: the development of innovative infrastructure - up to 50%, R & D - up to 37%, technical support of corporations - up to 12% (calculated according to Gomboev A., 2015, p.266). In spite of all this, The cost of R & D is in the private sector - 75.4% of total R & D expenditure, and government spending and university expenditure amounted to 13.5 and 11.1% respectively (Гомбоев А., 2015, p. 267).

#### **Rapid growth in the number of venture companies.**

In an industrial innovation breakthrough in the 1960s and 1970s, an important role was played by the development of joint venture enterprises with Japanese partners (Селезнев П., 2014, Справка ..., 2011). Significantly, one of the results of the "4 + 9" clustering project was the emergence and rapid growth of the number of venture companies. Since 1997, the number of venture enterprises has increased more than 13 times and amounted to 27 thousand enterprises in 2012. At present, about 700 thousand employees or 5% of the total employed population work at venture enterprises, and the sales volume has approached to 164 billion US dollars, which is 15% of GDP (Сахариева А., 2013, p. 182).

#### **From the experience of South Korea, we can draw the following conclusions:**

**1.** Both the developed countries of Europe and Japan, and South Korea in the international market of manufacturing products began to crowd rapidly developing China, India, Turkey and some other countries, which forced the South Korean leadership to accelerate the innovation course: a special program was developed, even a little

earlier, than in France, aimed at accelerating development and innovative breakthroughs, which is carried out by structuring at the regional level (the "4 + 9" project) the production, technical and innovation base and the investment climate for innovation development in the conditions of prevailing state coordination tools.

2. The economy of the South Korea after the implementation of the program, unlike most other countries, developed without failures, with high rates of growth and a constant increase in the volume of export of innovative products, which indicates the correctness of the activities carried out during the clustering process.

3. There is a certain state dirigisme, which manifests itself in the development of strategies for innovative development. Regional strategies are developed on the basis of close interaction of business representatives, research institutes, universities and non-state non-profit organizations from each province under the auspices of the Council for Regional Innovations.

4. Unlike most countries, cluster entities in the South Korea are multi-sectoral, that is, each territorial unit included in the "4 + 9" project has several specialization sectors, however, in these conditions, a reliably functioning interrelated mechanism for national and regional coordination of industrial and innovative development.

5. No country, even a relatively large one, cannot do without borrowing innovations, let alone a small one, where borrowed new technologies play a dominant role, and in South Korea an excellent system of continuous improvement of borrowed both production and food technologies was created.

6. In most European countries, innovative venture enterprises with a positive impact are created with great difficulty, the availability of which is absolutely necessary for an innovative industrial breakthrough. In this sense, it is necessary to pay attention to

the long-term experience of the South Korea in which innovative joint ventures (primarily venture capital) with Japanese partners played a decisive role in the exit of the SK to the advanced industrial boundaries in the 60-70s of the last century, and modern experience when, within the framework of the project "4 + 9", the number of venture enterprises (up to 27 thousand), which now yields up to 15% of GDP, has rapidly increased (by 13 times).

### **Supranational Regional Innovation Policy of the EU**

The supranational regional innovation policy of the EU is regulated by a set of documents, most of which reflect not the actual regional component of the EU innovation policy, but the innovation policy in general. In addition, in a number of other documents of an economic or social nature, the innovative component is also more or less affected. Coordination of policies is carried out by relevant supranational bodies, including institutions and analytical centers. And constantly there is a reforming and perfection of systems of coordination reflected in documents.

However, even to this day, "regional economic policies funded from the EU budget do not fully take into account the objectives of innovation development, since it is not coordinated with the main directions of advancement of research and development."

Also at the supranational level, powers in the implementation of innovation policy are distributed among several divisions and directors which determined the specifics and variety of budget mechanisms for financing innovations and leads to the subadditivity of innovation management "(Smirnov V., 2016, p. 9). However, "the coordination and interaction of national innovation policies at the level of the EU, its countries, regions of these countries and individual clusters is increasingly pronounced (Смирнов Е., 2016, p. 10).

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From the EU documents related to innovation policy in general (i.e. at the supranational, national and regional levels), we note the document "For the revival of European industry" (For a European ..., 2014), but the most important EU document reflecting directly the regional innovation policy, is the "European cluster memorandum. Promoting innovation in Europe through clusters" (European ...). Also documents will be considered that will provide financial support for innovations from the EU, mainly at the regional level - EU Structural and Investment Funds (ESIF) (Котова Н., Павлова П., 2014, Структурные ..., 2013, Региональная политика ..., 2015 ), and in general at the national level (and, naturally, in the regions) - the 8th Framework Program of the European Union for Scientific Research and Innovation "Horizon 2020" (2014-2020) (Клавдиенко В., 2018; Рамочные ..., 2018).

In subsection 3.1. *Stimulating investment in innovation and new technologies* of Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions "For a European Industrial Renaissance", in particular, tasks and coordination mechanisms (including financial support from the EU and coordination of public and private sectors) of the innovative and technological development of the EU countries (including associate members) and their regions are outlined. Here are the excerpts from this subsection, which to some extent reflect the support of supranational (ie, from the EU) level of coordination of regional innovation policies.

"The Commission has put an increasing share of its policy, regulatory and financial levers at the disposal of Member States, regions and industry to foster investment in innovation. The **Horizon 2020 Program**,

in particular through its industrial leadership pillar, will provide close to EUR 80 billion for research and innovation. ... In addition, with the adoption of the new multiannual financial framework 2014-2020 at least EUR 100 billion of European Structural and Investment Funds (ESIF) are available to Member States to finance investment in innovation, in line with industrial policy priorities" (For a European ..., 2014).

"As Member States increasingly look to stimulate investment in strategic industrial areas, the Commission is **modernising the State Aid Framework for R&D&I** and **reforming public procurement rules** to create a critical mass on the demand side and improve efficiency in the allocation of resources in full respect of competition and internal market rules. The need to speed up investment in breakthrough technologies in fast-growing areas was the main reason the Commission decided to identify in the 2012 Industrial Policy Communication the six areas in which investment should be encouraged. These strategic, cross-cutting areas are: advanced manufacturing, key enabling technologies, clean vehicles and transport, bio-based products, construction and raw materials and smart grids" (For a European ..., 2014).

**"The Commission proposes to Member States to combine regional and industrial policy tools to create Smart Specialisation Platforms to help regions roll out smart specialization programs by facilitating contacts between firms and clusters, enabling access to the innovative technologies and market opportunities"** (For a European ..., 2014).

In 2007, 'a high-level' group on European cluster policy together with the European cluster alliance and a number of other interested national and regional agencies prepared a document entitled "European Mem-



orandum on Clusters. Support for innovation in Europe through clusters" (Европейский ...), whose recommendations were further taken into account in the preparation of documents at the regional, national and supranational levels of coordinating innovation development. The document says: "Innovation is the factor that will shape the European vision for future growth and prosperity. Clusters can be powerful catalysts for this process and should function as interconnected territorial centers. Clusters are regional concentration centers for specialized companies and organizations that are linked together through numerous channels that create an enabling environment for innovation. In the conditions of modern competition, all clusters should be oriented towards innovative development" (Европейский ...). The document clearly fixes the tasks of improving the policy of coordinating the development of innovative clusters at all three levels. In particular, it was noted that "the policy of the government at the national and regional levels is decisive for improving the existing business environment; cluster initiatives and the focus on clusters as a mechanism for ensuring innovation and economic growth can significantly improve the effectiveness of national regional innovation policies, "and policies affirmed at the European level have a major impact on the emergence of clusters and their international links." Policy at the European level also has an impact on the business environment in Europe as a whole. This applies to those regions where activities to improve the business environment require the coordination of efforts of different countries. In addition to these activities, to which all European structures directly influence, European policy also has an important indirect influence, which is expressed in providing the necessary knowledge and support for optimizing

policies at the national and regional levels" (Европейский ...).

Changes in cluster policy require action at all three levels of coordination. At the supranational level, in particular, it was suggested that "European structures, especially the European Commission, the Committee for Regional Affairs and the European Investment Bank: optimize their support for the development of clusters through various programs aimed at more effective application of existing tools; to review the impact of policy measures on clusters and structural changes with a view to a more efficient geographical distribution of economic activity in Europe; strengthen support for targeted transnational cooperation between clusters, for example, in areas such as financing and developing competencies, with the help of new policy instruments and taking into account relations between neighboring states, as well as the individual needs of the relevant clusters" (Европейский ...).

It should be noted that the recommendations in this document for the supranational level have been taken into account in all of the above and below considered documents or EU regulations.

In December 2013, the European Council approved a multi-year funding framework for the EU for the period 2014-2020. In particular, the expenses for the new (eighth) EU Framework Program for Research and Innovation for the period 2014-2020, named 'Horizon-2020', as well as structural policy, policy of rallying (leveling the levels of social and economic development of regions) and joint agrarian policy.

The budget of the 'Horizon-2020' program is set at 79 billion euros, which is 25 billion euros higher than the budget of the previous (seventh) EU Framework Program for Research and Technological Development. One of the main tasks of 'Horizon 2020' is



the elimination of the existing inconsistency between the national financial institutions of the member countries of the European Union and its previous framework scientific and technological programs and projects of the European Institute of Innovation and Technology. In this regard, 'Horizon 2020' combines three independent financial sources of the EU: a framework program for research and technological development, a framework program on competitiveness and innovation, and the European Institute of Innovation and Technology (EIIT). Another important goal of 'Horizon 2020' is to increase the participation in research and innovation of certain categories of organizations, including small and medium-sized enterprises, as well as certain groups of researchers (for example, scientists from third countries) in order to achieve coherence in funding at all stages of work - from the emergence of the idea to its commercialization, which in the long run will also promote the integration of research and innovation and the acceleration of economic growth (Клавдиенко В., 2018; Рамочные ..., 2018).

The activities of the program are aimed at achieving the objectives of the Lisbon Strategy aimed at making the European Union a knowledge-based competitive and dynamic economy in the world, as well as fulfilling the tasks of the European Development Strategy until 2020, Europe 2020 Strategy, which is a plan development and economic growth of the European Union for the long-term perspective, in which education, science and innovation will play a major role in the fulfillment of the tasks set. "(Framework ..., 2018).

Structurally, the program "Horizon-2020" consists of three main sections (blocks of subprograms), named: "Social Challenges", "Advanced Science", "Industrial Leadership". Most of the funding from the budget

"Horizon 2020" is distributed on a competitive basis for the implementation of projects within these three sections of the program (Клавдиенко В., 2018; Рамочные ..., 2018).

Social Challenges (Societal Challenges, 31.7 billion euros) - solving social problems in response to the challenges of modern times, based on the pooling of resources and knowledge in various fields, including in the social and human sciences, and including all stages of innovation - from obtaining research results prior to their commercialization - will increase the effectiveness of research and innovation in the following areas: health, demographic change and welfare; food safety, agriculture, ecosystems and bioeconomics; safe, clean and efficient energy; environmentally friendly intellectual transport; climate impact, resource efficiency, raw materials; Progressive social order in the countries of Europe, providing freedom, security and equal opportunities for all.

Advanced Science (Excellent Science 24.6 billion euros) - generating advanced knowledge to strengthen the position of the European Union among the world's leading scientific powers - provides support for: the most talented scientists in carrying out basic scientific research through the European Research Council; joint research in promising areas and development of radically new technologies of the future (Future and Emerging Technologies); improvement of human resources in the framework of the program. Maria Skłodowska-Curie (Marie Skłodowska-Curie Actions); the development of European research infrastructures, the strengthening of their innovation potential and human capital, and the promotion of the European policy in the field of improving research infrastructures and international cooperation.

Industrial Leadership (17.9 billion euros) - achieving industrial leadership and supporting business, including small and medium-sized enterprises and innovation - will help to invest in research and innovation in key emerging and industrial technologies, taking into account their interdisciplinary nature, such as: information and communication technology, micro and nanoelectronics, photonics; nanotechnology; new materials; biotechnology; efficient production processes; space.

In addition, the program budget includes funding for the Joint Research Center, the only service of the European Commission responsible for providing scientific and technical support in the development and monitoring of policies; European Institute for Innovation and Technology (EIT), as well as studies conducted under the Euratom Agreement.

Within the framework of the 'Horizon 2020' program, the regional orientation of the EU budget allocations is not specified, since the projects are of a regional, inter-regional, country and intercountry nature, but there are also so-called EU structural funds that directly finance the European Union's regional policy (Региональная ..., 2015; Структурные ..., 2013; Котова Н., Павлова П., 2014). Based on these works, we will characterize these funds.

The European Union's regional policy (often referred to as cohesion policy) is a system of measures aimed at improving the welfare of the EU regions and reducing the inter-regional economic gap. To overcome the economic and social backwardness, support for territories with problems in industry and agriculture is used from a third of the EU budget. The regional policy goal is to increase the competitiveness of the regions by favoring economic growth and employment, supporting programs in the field of environmental protection and energy security.

The number of funds from which regional policy funding is financed has been reduced from 6 to 3: the European Regional Development Fund, the European Social Fund and the Cohesion Fund.

According to the budget for 2014-2020, the cohesion policy will receive 325 billion euros in 2011 prices (366.8 billion at current prices). They will be aimed at increasing economic growth and creating new jobs, combating climate change, energy dependence and social problems. Investments will be sent to all regions of the EU, but taking into account the level of their development. Countries are divided into three groups: the least developed (GDP less than 75% of the average); Transitional (GDP between 75% and 90% of the average for the union); Developed (GDP more than 90%).

The activities of the European Regional Development Fund focus on 4 priorities: innovation and research, the development of digital technologies, support for small and medium-sized enterprises and a low-carbon economy (an economy with low greenhouse gas emissions). Resources from this fund need not be used only for these four purposes. But in the group of developed countries at least 80% of the allocated funds must be spent on at least 2 of the above priorities out of 4, in the transition regions at least 60%, and in the underdeveloped regions not less than 50%. Also, a minimum percentage of funds that must be invested in the development of a low-carbon economy is established.

The priority of the Cohesion Fund is the development of trans-European transport networks and environmental projects in the fields of energy, energy efficiency, use of renewable energy sources and transport (it is used only in states where GDP per capita is less than 90% of the Union average). In the budget of 2014-2020 the fund received about 75 billion euros.

In the period 2014-2020 the activities of the European Social Fund will focus on four thematic goals: promoting employment and supporting labor mobility; promote social integration and fight poverty; investing in education, skills acquisition and lifelong learning; increase institutional capacity and effectiveness of public administration. The ESF can be used in any EU country, depending on the needs of a particular state. For the period 2014-2020, this fund was allocated 74 billion euros.

Poland will receive the most (82.27 billion euros), followed by Italy (33.08 billion) and Spain (28.31 billion euros).

In addition, there is also the European Fund for Guarantees and Management of Agriculture (EAGGF), which operates under the Common Agricultural Policy of the European Union (EAP). The goal is to finance the modernization of agricultural structures and the development of rural regions, namely: financing the development and structural reorganization of agriculture; increase the efficiency of the structure of production, processing and marketing of agricultural and forest products.

## Conclusions.

Within the framework of the first sub-goal of the study, "formulation and substantiation of the initial prerequisites for the formation of a regional innovation policy in terms of three levels of its coordination", a number of circumstances have been identified that need to be taken into account when forming mechanisms for coordinating regional innovation policy: 1. In developing strategies and applying coordination tools for regional innovation the role of the state plays a leading role, the role of the EU is increasingly strengthened (for example, in the area of finance and European coordination of innovation activity in the regions), for regional authorities themselves (with the exception of some federal countries: USA, Germany, Canada) it is not possible to sufficiently weighty contribute (financial, tax preferences, or the creation of public-private partnerships) the implementation of appropriate strategies. 2. Distinguish the state innovation policy and the innovation policy of private business. In most countries, government and private business spending on research and development is approximately equal to 1/3 to 2/3. 3. In the

recent period, regional innovation policy is most often implemented within the so-called regional innovation clusters. Clusters arise either spontaneously in the process of business coordination, or at the direction of national or regional governments. However, in both cases, regardless of who initiated the creation of the cluster, it should take into account the need for interaction between the state, science and business on the basis of the "triple helix" principle. 4. At the regional level, it is necessary to harmonize the regional, sectoral structural (industrial) and innovation policies, since the same tools are used for their implementation at all three levels of coordination. 5. It is necessary to take into account that clusters, regardless of their territorial size, are formed mainly within a certain branch of specialization. However, there is also a successful practice of multi-industry (3-4 industry) clusters. 6. A careful and perfectly thought-out approach is needed in the organization of clusters, as experience shows that failures in the implementation of cluster policy significantly exceed the number

of projects that have been successfully implemented.

Within the framework of the second sub-goal, "consideration and structuring of coordination mechanisms at the national and regional levels of regional industrial and innovation policies in two countries with successful experience in their reform, namely in France and South Korea", it is necessary to take into account the following circumstances that will contribute to the purposeful formation of appropriate systems in the post-Soviet countries: it is necessary to pay attention to the general system (mechanism) of coordination of formation and activity of poles of competitiveness in France, and to such things as poles of competitiveness management system, contracts for the achievement of results, tax preferences, the system of public funding; from the experience of South Korea, attention should be paid to the management system in which the Council for Regional Innovation provides clear coordination of national and regional governance, as well as the state of science and business, through the joint development of a strategy and program of activities on innovation policy. An important circumstance is that no country, even a relatively large one, cannot do without borrowing innovations and new technologies, and in South Korea an excellent system of continuous improvement of borrowed pro-

duction and food technologies has been created. Strictly speaking, the South Korean technological breakthrough was based on borrowed technologies as early as the 60-70s of the last century, and the mechanisms of borrowing are described in more detail in the work: (Бурдули В, Абесадзе Р., 2017). Within the framework of the third sub-goal, "consideration and structuring of mechanisms for coordination of regional innovation policy at the supranational level of the EU" in post-communist countries, we should take into account the opportunities for financing regional innovation development that we have identified through the European programs and funds reviewed. The regional orientation of the EU budget allocations is not specified concretely in the "Horizon 2020" project, but the projects are both regional and, most often, country, interregional and intercountry, and individual scientists and developers, their groups, private firms, public and state organizations from regions, as well as regional innovation clusters can participate in these projects. And in all the documents from which the regional policy is funded (the European Regional Development Fund, the Cohesion Fund, the European Social Fund), along with other objectives of regional industrial and social policy, the objectives concerning innovation policy are clearly specified, which are the main priorities of these funds.

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