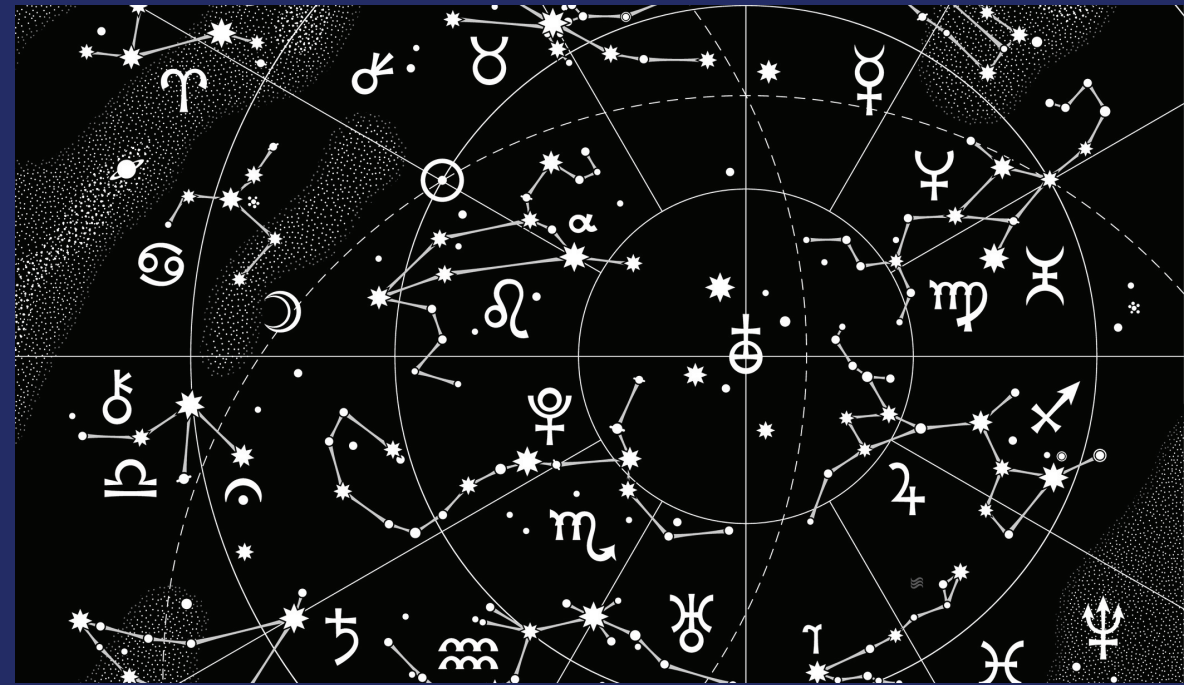


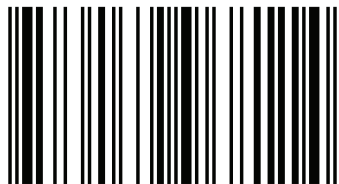
The book explores the transformation of innovation systems in the EU as a whole and some individual countries, and outlines ways to form the innovation system of Georgia, improve the system of tools for state and business coordination of innovation development. The issues of national, regional and supranational (EU level) coordination of regional innovation policy are considered mainly in the EU countries. The current state of innovation system of Georgia is investigated and the priority directions of its formation in the context of main blocks of that system are presented and justified systematically. The ways to improve financial instruments to support structural (sectoral and innovation) policies from both the state and business have been proposed and justified. The book is intended for a wide audience. It will assist anyone who is interested in the formation of national innovation system and the improvement of financial support tools for innovation development.



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Foreign experience and formation innovation system in Georgia



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RAMAZ ABESADZE VAKHTANG BURDULI

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SYSTEM IN GEORGIA**

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UDC

The book explores the transformation of the innovation systems of the EU as a whole and of some individual countries, and outlines ways to form the innovation system of Georgia and improve the system of tools for state and business coordination of innovation development. The first chapter carefully examines and structures the development of the institutions and mechanisms of the EU innovation policy over the last 50-60 years. In order to make less mistakes associated with financial losses in the formation of the components of the innovation system in Georgia, one should study the experience of building and transforming innovation systems in developed countries. Therefore, the second chapter examines the features of the transformation of innovation systems in some developed countries (mainly in France, South Korea and Finland) over the past 50-60 years, and the third chapter examines the issues of national, regional and supranational (EU level) coordination of regional innovation policy mainly in EU countries. The fourth chapter of the book examines the current state of the innovation system of Georgia and systematically presents and substantiates the priorities for its formation in the context of the main blocks of this system. The key issue in Georgia is the problem of financing (investing) innovation development. Therefore, in the fifth chapter, ways to improve the financial instruments supporting structural (sectoral and innovation) policies from both the state and business are proposed and justified.

The book is intended for a wide audience. It will assist anyone who is interested in the formation of national innovation systems and the improvement of financial support tools for innovation development.

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INTRODUCTION

As you know, in the last two decades in developed countries, a course has been taken to build an innovation economy. At present, Georgia is facing such a task. Therefore, in order to make fewer mistakes in its construction, it is necessary to study the experience of developed countries in this direction, especially in the field of experience in the formation of innovation systems. The fact is that along with the successful creation of components of innovation systems, failures happen very often, the result of which are serious financial losses, both in public financial resources and in the private sector, as many scholars have pointed out. Thus, in a completely new fundamental research, it is noted that "against the backdrop of the spread of the model of innovations associated with fashion in certain areas, the objective difficulties in evaluating new directions, the risks of" bubbles "in the spheres in relation to which the expectations of breakthrough development are formed are amplified" ([Структурная политика ..., 2018, page 11] from: [European Parliamentary ..., 2016]). However, in some countries that have been excessively carried away by fashion to build an innovative economy, many "bubbles" associated with large financial losses in both the public and private sectors have emerged not only in the field of "breakthrough", but also "improving" innovations. Therefore, it is necessary to study the experience of developed countries in the construction of innovation systems in order to make fewer errors associated with financial losses while forming the components of the innovation system in Georgia.

Another circumstance that we want to note in the introduction is the need for a rational combination of structural, industrial (structural sectoral), regional (structural regional) and innovation policies, and, in the private sector, business coordination (according to the version of the Association Agreement of Georgia with EU - "enterprise policies"), since the effectiveness of the development and functioning of both innovation

systems and, in general, the economy depends on the degree of mutual coordination of the mechanisms for their coordination. As is known, Georgia signed the Association Agreement with the EU, which clearly defines the "structural policy" in its broadest sense, followed by "industrial policy" and "innovation policy" as an integral part of industrial policy, as well as - "Enterprise policy". And in the above-mentioned fundamental research all the points are placed over "and": structural policy is viewed as an industrial policy in a broader sense, and innovation and regional politicians are its most important constituent parts. Therefore, in all chapters of this study, this circumstance is taken into account.

Among the provisions of the agreement on the association of Georgia with the EU, there are provisions providing for the integration of the Georgian economy with the EU economy. Therefore, in **the first chapter of the book "The Experience of Innovation Development of the EU"**, the development of institutions and mechanisms of innovation policy in the EU countries over the past 50-60 years has been carefully studied and structured. In this chapter, the cycles of the economic conjuncture in connection with innovation development are consistently investigated, the basic documents of the European innovation policy are described and characterized, the main documents and programs of the unified European educational policy and its system and also the single scientific policy and its system are described and structured. The elements of the innovation infrastructure of the European Union, as well as the European networks for supporting innovation, are systematized and characterized.

In **the second chapter "Peculiarities of the transformation of national innovation systems in some developed countries,"** the transformation of innovationsystems over the past 50-60 years is being investigated. First, the main existing models of national innovation systems (NIS) were described in the world. Then, the processes of transformation of NIS in three countries were investigated: France, South Korea and Finland. Due to the difficulties that have arisen in developed countries in the process of international competition since about the 90s of the last century an

intensive transformation of their innovation systems began in the last twenty years. In some countries, the transformation of models of innovation systems has been successful. Examples of successful transformation in the work are examples of France and South Korea (in the latter the transformation was the most successful). At the same time, the innovation system of Finland, which before the transformation was considered one of the most successful in the world, after intensive transformational changes ceased to support economic growth and actually ceased to work. Obviously, "bubbles" appeared in the system, which did not give the financial means invested in them. Therefore, this chapter provides the recommendations of the OECD experts on its reform, which will be useful to take into account in the process of forming the NIS of Georgia. In addition, in the last paragraph of this chapter, the interrelation of the overall structural, structural sectoral (industrial), innovation and structural regional policies is shown using the example of several countries.

In the third chapter, "**National, regional and supranational coordination of regional innovation policy in the EU countries**", it is shown that the coordination (regulation, financing) of the regional industrial and innovation policy is carried out by three levels of government: state (national), supranational (i.e., bodies of the EU) and the regional ones themselves (which, with the exception of the federal countries, participate in financing to a much lesser extent). In this connection, the prerequisites (conditions, circumstances) of the formation of a regional innovation policy and its mechanisms have been formulated and justified in the first paragraph of this chapter. In the second paragraph, on the examples of France and South Korea (which take into account all the necessary conditions for the formation of corresponding systems) are structured and characterized the modern components of the national and regional levels of national innovation systems (more precisely, the mechanisms of coordination of industrial and innovation policies in it), and in the third paragraph there are structured and characterized the components of the mechanism of coordination (financing) of the

regional industrial and in its composition innovation policy from the side of relevant EU management bodies.

In the fourth chapter, **"Current state and priorities of the formation of Georgia's national innovation system"**, the current state of the Georgian NIS is shown with the identification and characterization of its still few components, then the priorities for its formation are outlined and justified in the context of the following constituent blocks: the blocks for ensuring the state innovation policy, innovation, the scientific-research sector, technology transfer organizations and other elements of innovation infrastructure, the system of cooperation with international innovation environment, innovation financing unit, training unit, unit to support projects implemented by donors, the block to support innovation development of agriculture.

Currently, very little investment is being made in Georgia to build new production facilities (especially innovative ones) in the real sector of the economy, even though many enterprises in the real sector have been contracted after independence. In this connection, in the fifth chapter **"Improving financial support mechanisms for the implementation of sectoral structural (industrial) and enterprise policies"**, the current state of financial support for industrial policy and enterprise policy (that is, support to the public and private sectors) is first analyzed, and then the ways of restructuring the main financial development institutions (the state development fund, the private co-investment fund and the banks in the composition of the country's constituent entities financial-industrial groups) with the purpose to increase investment and innovative activity of national business in real sector of economy.

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V. Burduli: Chapters II and V

R. Abesadze and V. Burduli jointly wrote chapters III and IV

CHAPTER I.

EXPERIENCE OF INNOVATIVE DEVELOPMENT IN THE EU

Formation of innovative economics in the postcommunist countries has a vital importance. For that reason, it is useful to study the EU's innovation policies and take into consideration the current experience, since the EU has had the innovation policy it is too different from the world's leading countries. The main characteristic of the EU's innovation policy is that innovation plays the major role in all areas of society's development. In addition, innovation development has a continuously focus and, the most important is that it is not formal, but rather realistic and scientifically justified. The innovative economy can not function without a well-organized and efficient innovation system. In the world there are different models of innovation systems, but in the recent developed countries, the model that introduces the natural connection of all major participants in innovative processes - science (education), business, and state. All technical, organizational and/or other decisions are made by the wide range of stakeholders.

The studying of EU experiences has a great importance for countries that only have been building their own innovation economy. The EU innovation system is a very complicated issue. It relies on such documents as are: The Great Charter of Universities; Lisbon Convention, Sorbonne Declaration; Bologna Declaration; The Quality Assessment Standards and Recommendations in the European Higher Education Area; Lisbon Declaration; Lisbon Strategy, Ljubljana's Process; Scientific Research and Technological Development Frameworks; Program - Europe 2020; Horizon 2020; European Technological Platforms, European Institute of Innovations and Technologies, European Research Foundation, European Research Council, European Southern Observatory, European Molecular Biological Lab, European Molecular

Biological Organization; European Organization of Nuclear Research, Network of Innovative Real Centres; Network - European Innovative Regions, Technology Transfer, Innovations, European Association of Industrial Information and European Innovative Networks for Supporting Innovative Activities and many others that are united into : scientific and research institutes, universities, business incubators, techno- parks, innovative centers, innovative clusters and other.

1.1. Innovation and innovative economy

The word "innovation" comes from the Latin "novatio" which means "renewal." The prefix "in" from Latin is translated as "in direction." Therefore, literally "Innovatio" means - "towards renewal." Indeed, the main essence of innovation is to introduce more progressive issues. The term innovation was first used into economy by Austrian economist, Josef Schumpeter, although, in fact, it had been used by a different term in the earlier time. Adam Smith pointed out that not only the market economy played the main role in the organizational mechanism of capitalism but also the competition that compelled the entrepreneur to increase the efficiency of transition to new technologies that by the current terminology had been going through innovations.

N. Kondratiev substantiated in his theory for large cycles of conjuncture, existence of the large cycles upto 50-60 years. In his opinion, profound qualitative changes are occurred before the beginning of upward wave of the large cycle in economic activities of society which is expressed by technical and technological innovations, both, into production and in the sphere of exchange [Кондратьев Н. Д., 2002]. Of course, these changes mean the implementation of innovation in the economy.

The Kondratiev's cycle consists of four (4) phases - revival and ascent (the ascension stage), fall and depression (the descending stage). German researcher, Gerhard Mensch, showed that the innovation process began precisely during the depression phase of the Kondratiev's cycle [Mensch G., 1979]. That is even logical, since in the ascent phase, the new innovations are only gaining momentum, in the phase

of depression, they have already outdated and it is necessary to change them for new ones which are clearly felt by both, business and the state.

We suppose that existence of the long waves is indisputably fact, but their periodicity could be broken down by great discoveries into substantial and applied sciences. For example, nowadays is recognized that the world economics is into downturn stage [Яковец Ю.В., 2004], but if the mankind is able to study how use the thermonuclear reaction for peaceful targets, and/or become economically possible usage of superconductive characterization of metals, in that case, the downturn stage will be reduced. In the whole, nowadays the brisk cycle of innovations step by step reduced, after 25 year entrepreneurial booming of 90's. The period of diffusion is being drawn out by 25-30 years [Hiroka M.]. Herewith, the spreading of innovations (diffusion) doesn't get in the straight line, from the beginning, diffusion happens by upturning speed than it could be reduced and finally, the market is fully demanded by innovations [Мэнсфилд Э., 1970].

Besides Kondratiev's "the long-term waves" also exist 'the middle-term waves' of S.Kuznets (18-25years) [Kuznets S. 1983], as so as 'the medium-term cycle' of K. Zhugliar (7-11years) [Trade crises ..., 1862], and 'the short-term cycle' of J. Kitchin (2-3years) [Kitchin, J. 1923].

S. Kuznets connected 'the middle-term waves' with demographic changes, but that opinion is not shared by other scientists, because that cycle is considered as a technological and during that cycle happens the massive renovation of main technologies [Forrester J. W. 1977]. Resulting by that, it has the innovative mood and therefore that cycle is merging well with Kondratiev's cycle.

Zugliar's cycle is connected by fluctuations of the main manufacturing potential as so as by investments into main capital.

The short-term cycle of J.Kitchinis is not connected with innovations, it's responded by delaying of providing information and temporary delaying of time-tables for firms.

Into sociocultural field, the basis for innovative development has been created by P.Sorokin. In his opinion, predominance of the certain type of culture defines the characterizing abilities of concrete society, the peculiarity of structure, dynamics [Сорокин П. С. 2000].

As it was mentioned above, the term ‘innovation’ was firstly settled into economic literature by Joseph Schumpeter who perfected the theory of innovations by N.Kondratiev. He reviewed 5 (five) new combinations that should be implemented by enterprises. These combinations are: 1. Preparation of wealth that is still unknown for customers, and/or creating the richness that has the new streaks; 2. Inculcating the new methods of manufacturing that are unknown to enterprisers; 3. Appropriating to the new markets for selling in spite of the fact that it has existed or not yet; 4. Getting acquainted to the new resources of raw materials and semi-fabricated products, in spite of the fact that they existed or not before; 5. Implementation of the relevant reorganization [Шумпетер Й. А., 1982]. He connected the implementation of innovations with activities of entrepreneurs. After conceptualizing the content of entrepreneurship (and entrepreneurs) by Schumpeter, the capacity of entrepreneurship had been confirmed like the fourth factor of manufacturing, and profit had been admitted as a return of the entrepreneur and not the capital as it had been considered through the tri-factorial model of J.B. Say. Schumpeter called the entrepreneurs as the entrepreneurial individuals whose function is the realization of new combinations (or by other words innovations). We should also mention that after J.Schumpeter epoch, the economic theory has changed very much and to „its new combinations“ should be added the following ones: 6. Perfecting of institutions (at the micro level); 7. Mastering of the human capital; 8. Creating the high technologies (or their usage); 9. Improving of information.

English scientist, John Bernal, contributed a lot for development innovation theory. He indicated that into science the periods of prosperity are merged with the growth of

economic activities and technical progress that is the result of innovations [БерналДж. 1956].

The ideas about innovative theory proposed by J. Schumpeter and J. Bernal had been developed and perfected by the Nobel Prize winner, Simon Kuznets. He proposed the conception about epochal innovations through their assistance the concrete historical epoch going over other and the new important resource for economic development is the high-speed development of science [Kuznetz S., 1973].

B. Twiss indicated onto creative mood of innovative activities when both, the invention and scientific idea have been acquiring the economic content[ТвиссБ. 1989]. The ideas of academician A.Archishkin are also interesting who recognized that 3 (three) epochal overturns of the scientific and technical progress (three entrepreneurial revolutions)should be marked out: the first - began at the ending of XVIII-th century to the last decade of XIX-th; the second – began at the last third-th of XIX century to ending of XX-th century; the third –began from the second part of XX-th century [АнчишкинА.И. 1986].

For clarifying the content of innovation, the great role is reckoned to their classification. In 30's of the XX century A. Piguet, J.Schumpeter and K. Wickseil allocated innovations for thrift of labour, capital and neutral resources. Later, to them had been added technological, ecological, economic, epochal, market, micro, pseudo, anti-innovative and other classificators [Блауг М. 1994].

A great role in development of the innovation theory also belong to A. Yaffe, J. Lerner, S.Stern, A.Gambardella, A.Arora, K.McConnell, L.Brue,M. Giarratana, A. Pagano, M. Todaro, B. Kuzik, J. Yakovets and other [Arora A., 2005; Giarratana M., 2006; Innovation Policy ..., 2005; Макконнелл К.Р., 1997].

Innovation is not somewhat that could be called the independent action. The market mechanism and innovation policy of state, the whole innovation system of country and relevant infrastructure have been working for its realization. Innovation is the result of hard workingof scientists, inventors, entrepreneurs, innovators,andofficials.

Even though the main mover of it is competition and human will to build the better future.

The progress and development of society is fully connected with innovations which existed during all formations and promoted to a huge progress in all fields of human activities and lifestyle. Through innovations could be possible to realize the technological progress that leads the society to increasing of productivity, to real changes in understanding the role of the human being into entrepreneurial process, to enlargement the manufacturing possibilities of concrete countries and so on. It's possible to say that the process of economic development is a way for realization innovations into physical capital as so as into different other forms of organizing enterprises, human capital, technologies, institutions, knowledge, skills, traditions, the law and cultural norms and rules, etc.

Innovations during the terms of market economy are tools for attaining walkit in the competition. But nowadays they have brought the greater payload. They are the main component for global decision-making process (ecology, poverty, food safety etc.).

Innovation could be placed to any structure, but it has the special intent in the determined step when innovation gains unsuspended mood and becomes the most important factor for development. These processes began in 70's of the last century and reached the highest point between developed countries. Therefore the economics of these countries is called **innovative economy**.

Innovative economy is based onto knowledge, the flowing of innovations, inconvertible improving of technologies, information, human capital, organizing the enterprises, production etc., as so as it's focused on the realization in practice the intellectual works of scientists, innovators and not only a simple capital. Science, invention, innovation into economics of that type are completed in one natural factor for development.

1.2. The innovation policy of the European Union and its innovation system

The integration process of European states began with their participation in the implementation of **Marshall Plan** (1947-1951). In 1951, six European states (Germany, France, Italy, Belgium, Netherlands, Luxembourg) founded **The Coal and Steel European Union**. The creation of European Union was announced by 12 European countries by the Maastricht Treaty which entered into force in January 1993. Currently 28 states are in the European Union.

In the framework of the European Union (since 1974) several large research centers have been established whose task is to solve the most pressing and complex scientific-research problems. Later they were added to other centers.

The implementation of a single innovation policy started in Europe in 1983, funded by the **‘framework programs’** in the scientific field that continuous to the current time. The development of integrative connections in EU had been followed by the process of uniting European scientific, educational, technological and innovation fields.

In 1995 was published for consideration the **‘Green Paper on Innovation’** [Green..., 1995]. In that paper the problems of innovation development in Europe had been declared like one of the most important issue. Into that document had been accentuated that Europe had been behind the US and Japan in many economical indexes and for winning into the world competition it’s absolutely necessary issue the strengthening of innovation development. After that, into European structures had been setting up the practice, the creating of the new documents like ‘the green book’ that is published time to time and interested organizations and/or individuals can present own remarks. After discussions are published the new directives and instructions that are titled **‘the white book’**. That book is focused to strengthen the innovative activities.

The unified educational policy and system of the EU. From the very beginning of the European Union, the question of improving competitiveness and implementation

of innovations had been depended on the upbringing of appropriate staff, so it started to improve the educational system which preceded the development of a unified policy.

In 1993, during the founding of EU, had been agreed that educational system of member states would not be fully unified, but after enlargement of the EU in 2000, became absolutely necessary to make closer the educational system of all EU members, for creation the common labor market. That process began from primary education and nowadays it is the main priority of the whole educational system. The primary education has its own logical extension. The most common form of education is shown in the following structure:

Primary or basic education which lasts 5-6 years; 2. The low level of secondary education lasts 3-5 years; 3. The high level of secondary education lasts 2-3 years. Therefore, generally the secondary education in the EU countries lasts 12-13 years, and in the most states - 12 years. 13 years of training last in Great Britain, Germany, Italy, Czech Republic, Romania. In some countries (Denmark, Sweden, Finland) primary or basic education is not a separate step. The first level of school education is the basic education that lasts 8-9 years in countries like Austria, Belgium, Germany, Ireland, Italy, Iceland, Norway, Portugal, Romania, Czech Republic, etc. In these countries' children go to school at the age of 6. In the UK - at 5, in Northern Ireland when they are 4 years old, in Bulgaria, Latvia, Lithuania, Sweden, Estonia – at 7 [Savina A. K. 2014]. The preschool education nowadays is free from formalism and directives. The maximum number of rights have been handed over to local self-governments, schools, teachers, parents and pupils.

Playing a decisive role on the occasion of the 900-th anniversary of the **Bologna University** in Europe, in 1988, participants signed a common declaration titled '**Magna Charta Universitatum**' [Magna Charta...] in which the position and status of Universities had been expressed. In that document, first of all, the principle of autonomy of universities was recognized, and the higher educational institutions should have hoped for the full support from the public, including financial matters. It is also emphasized the importance

of elaboration of programs for cooperation between the universities, preparation of the textbooks, mobility and scientific activities of students and professors. Furthermore, the processes related to the Bologna Declaration continued in different directions: creation of equal conditions for higher education; learning periods (bachelor's, master's, doctoral degrees) and duration of training cycles of student's participation in the scientific researches; student's employment arrangement, mutual recognition of diplomas and other.

In 1997 the **Lisbon Convention** [Лиссабонская...] was signed on recognition of the qualification which was another step forward in establishing a united European educational space. According to the Convention, together with the recognition of the autonomy of universities, there should be done some unification of legal norms related to mutual recognition of diplomas and relevant qualifications.

The Lisbon Convention also recognized the following conventions adopted by the Council of Europe and UNESCO: the European Convention on the Equality of Diplomas (1953); European Convention on Equivalent of University Education Periods (1956); European Convention on Academic Recognition of Universal Qualifications (1959); European Convention on Equivalent of University Education Periods (1990); European Convention on Recognition of Training Courses; Higher Education Diplomas and Scientific Degrees in European Countries (1979).

In 1998, **Sorbonne Declaration** [Sorbonne...] was signed, the main purpose of which was to create a single open space for higher education in Europe. In the aftermath of the Sorbonne Declaration in 1999, the **Bologna Declaration** [Bologna...], commonly known as the Universal Declaration on Uniforms for the Unified European Labor Market, was adopted. The Bologna process required serious changes in the structure of universities, curriculum, teaching processes.

Initially, was two stages of studying - Bachelor's and Master's degrees, and then attached doctoral or the PhD (Ph.D).

Nowadays to the Bologna process are added the following countries: Austria(1999), Azerbaijan (2005), Albania (2003), Andorra (2003), Belgium (1999), Bosnia and Herzegovina (2003), Bulgaria (1999), Germany (1999), Denmark (1999), Great Britain (1999) Ireland (1999), Estonia (1999), Spain(1999), Turkey (2001), Iceland (1999), Italy (1999), Cyprus (2001), Latvia (1999), Lithuania (1999), Lichtenstein (1999), Luxemburg (1999), Macedonia (2003), Malta (1999), Moldova (2005), the Netherlands (1999), Norway (1999), Poland (1999), Portugal (1999) , Romania (1999), Russian Federation (2003), Greece (1999), France (1999), Georgia (2005), Serbia (2003), Slovak Republic (1999), Slovenia (1999), Armenia (2005), the Ukraine (2005), Hungary (1999), Finland (1999), Switzerland (1999), Sweden (1999), Montenegro (2007), Czech Republic (1999), Holy Land Vatican (2003), Croatia (2001), Kazakhstan (2010).

The closure to the Bologna Process and its innovation development demonstrates the document adopted by the EU in 2006 – **‘Putting knowledge into Practice’.****‘A Broad-Based Innovation Strategy for the EU’** [Putting...].which recognizes that education and science are the basis for their innovative practices or for economics (business).

The closer link to innovation development of the Bologna process is that the requirement for that process has been involved in the scientific research and absolutely necessary participation of students, while developing the European structure of the qualifications defined as the most important for innovative activity. The third stage - doctoral degree was added to the period of studying,one stage of the development in the education system can be considered by the EU Communiqué on " Towards a Europe of Knowledge" which was adopted in 1998. It states that "the lifelong learning" is the basis for the development of "Towards a Europe of Knowledge" in the XXI century [Zhivotovskaya I. G., 2013].

In 2001, the Council of Europe approved the report **‘The concrete future objectives of education and training system’**. It provides the general educational objectives. These goals are: 1. Improvement of the effectiveness and quality of education in the EU countries, namely: raising the quality of teacher education and

professional improvement; 2. Ensure access to information and communication technologies; Development of qualification and competencies required for successful formation of **"the knowledgeable society"**; 2. Increase of students' access to information and communication technologies. Increase of students' access to technical and natural sciences; 3. Increase in expenditure on education; 4. Enhancement of the possibility of education through the establishment of open educational space and improving the whole education process; 5. Creating a unified educational space that would create conditions for strengthening the labor market and research institutes; 6. Study of foreign languages; 7. Enhance mobility and exchange of students, teachers and so forth.

In accordance with the Bologna process, the document **„Standards and Guidelines for Quality Assurance in the European Higher Education Area“** has been developed.

In 2008, was created **„European Quality Assurance Register for Higher Education (EQAR)“**.

European higher education is one of the best and most demanded in the world nowadays. There is the high level of pedagogical composition, modern standards of higher education, developed scientific base, etc. The students obtain diplomas which are recognized by the majority of world companies and are demanding in the international labour market.

Development of industrial manufactures in the EU member states demanded the strengthen of professional skills of engineers and technical staff to improve scientific base etc.

For that reason, had been opened the special schools that later were transferred into colleges and finally into higher educational institutions.

Vocational education is a very popular and highly demanding in the EU, because the firms and/or companies need staff with practical skills. Vocational education is too differ in the EU member states. In some countries to have a secondary education is

absolutely necessary for obtaining vocational one, but in other states, vocational education is a part of secondary education.

He/she who are not interested to study during the years in the higher educational institutions can obtain the professional and technical skills through vocational programs that are cheaper than studying in the higher educational institutions, and where during some months it's possible to obtain the necessary skills, because the studying process there is focused onto obtaining practical knowledge [Учеба ..., 2017].

The system of vocational education plays a great role in the development of innovative process, because industry and enterprises day by day need staff with higher skills and qualification. It is one of the main factors of improving and growing of the human capital.

A great role in the educational system of the EU also play the University Associations that have been connecting the universities from different member states. These associations are focused that universities could exchange experience and knowledge between each other, for development of own scientific, pedagogical and cultural activities. Very successful is also the **European University Association (EUA)** that works like the united body of the whole European universities. [Borisov B.B., 2012].

The reforming of educational system continues day by day, because the changes into economy should be reflected in the educational system immediately and it has a profound impact for development of innovation economics.

The unified scientific policy and system in the EU. In 2002, by Commissioner Phillip Baskin, was initiated creation of the European Research Area. The main task of that step was: to enlarge investments into development of knowledge; to create the network of scientific centers; co-ordination of national and international scientific and research programs; founding the units for cooperation between scientific and technological institutions; the growing up the role of scientific expertise; to assist through the process

of career development in European level, the growing of mobility of European researchers, the increasing activities of regions into European research, promotion of companies innovation policy for risk capital activities.

In the same year, in Lisbon met the leaders of EU member states who obtained the resolution by which to 2010 the EU should become a world leader. Later, that resolution was named „Lisbon Declaration” and the aims and tasks that had been declared by Commissioner Phillip Baskin were titled „Lisbon Strategy“.

By Lisbon Strategy the expenses for researches and their implementation to 2010 would be increased up to 3% of the GDP in all member states and expenses of private sector would be 2/3 from the total one.

In 2005, seeing the problems in the process of realization of Lisbon Strategy, including troubles in research and preparation, the president of European Commission, J.Barroso prepared the new document where was given the new Lisbon strategy and where with other important tasks was declared necessity to increase investments for research and preparation, fastening the process of innovation development, the spreading ecological innovations and raising up ecological efficiency of proceedings.

Nowadays the EU has been working out and prepare many proposals, but they have only the recommendatory mood. For this was prepared ‘Open method of coordination’ (OMC), by that paper is determined the unified policy of member states. That method also had been used in the process of realizing research and preparation. For example, in 2003 European Council took the decision that by that method should be evaluated the process of financing research and preparation to reach 3% of GDP in the member states or not. The results for analysis was given to the Committee of Scientific and Technical Research (CREST) that in 2010 had been renamed to European Research Area Committee (ERAC).

In 2006 that Committee by using that method published the report about increasing the amount of investments on research and preparation. Into report had been given the recommendations for formation new tax policy that should base for using the research

and preparation toggles that could speed up the passing knowledge from scientific research centres and universities to practical economics. ERAC is also actively involved into process of preparation the unified strategy of the European research and innovation issues. During the last years ERAC prepared some papers about that strategy for using until 2020, also was worked out the review about national policy in the concrete European countries etc.

Hereafter many other documents for the strategy development and about unified policy for research policy in the member states also were worked out.

In the way of development research in the EU, **Ljubljana Process** (2008) is a very important issue that implies to strengthen the partnership between EU states and its associated members, in that process the European Commission and other structures of the EU are actively involved.

The EU scientific research and technological development frameworks [Klavdienko V. R., 2007]. The stimulation of innovative activities in the EU is increasingly coming out of national boundaries and becoming a common character. The common European organizations arise. The turning point in that direction was 'the EU scientific research and technological development frameworks'. These programs define the goals and objectives of European scientific and technical policy, the means of execution, financing sources and the volume.

Their realization is based on the co-operation of enterprises, research centers and universities.

The first such program was developed in 1980 and adopted in 1984. It was designed for 1984-1987 years (financing € 3.75). Until 2013, (7) seven framework programs were distinguished from the amount of funding and their structure. For example, funding of the 7th framework program was 16 times higher than the first one. (1990-1994; € 6.6) - In the program, research was in the field of energy, another (1987-1991; € 5.4) – information and communication technologies and introduction of new technologies in traditional economics, the third (1990-1994, € 6.6) - surveys that

strengthened internal markets, communication technologies, industrial technologies, new materials), the fourth (1994-1998; € 13.2) and the fifth (1998-2002; € 14.9) - research on environment, life and biotechnology, the sixth (2002-2006, € 17.9) - the creation of a common European research space for sustainable development and for the 2010 EU could become the most competitive economy in the world (information and communication technologies, biotechnologies, research in multifunctional materials, ecology, aviation and space), the seventh framework program (2007-2013, € 54.6) - Information and communication technologies and their usage in healthcare, medicine, environment, education and industry (for optimization of manufacturing processes). Special emphasis was on deepening the integration of innovation processes, strengthening ties between the creation of new knowledge and creation of new technologies.

In 2006, the framework program for competitiveness and innovation was aimed for 2007-2013 years and included 3 programs: Entrepreneurship and Innovation Program (EIP); ICT Policy Support Programme (ICTPSP); Intelligent Energy-Europe Programme (IEEP).

The first one is provided to support innovations in: industry, services, the SME, regional economics, development of ecotechnologies, the mastering of staff' skills, development of innovation network etc.

The second is provided the founding of unified information network in the EU, increasing of information and communication technologies, development of more informative society etc.

The third program is focused on the energy efficiency, development of new and alternative energy sector, reducing of negative impact onto ecology and environmental protection, etc.

The European Parliament and the Council of Europe adopted in 2006 'The 7th Framework Program on Research, Technology Development and Demonstrative Activities (2007-2013)'.

Its budget amounted to 50.5 billion euros, 15% of which were focused to the innovation projects. Within the framework of that program, the European Research Council was chosen 22 (twenty two) the highly-qualified European scientists. It consists of (4) four blocks: Cooperation; Ideas; People; Capacities. All these points are strengthened with the support of scientific research and innovation in all spheres of science, economics and human activities.

It includes a wide range of activities and areas: hydrogen, bio, nano, information and communication and other high-tech development; sustainable environment; fundamental research in the field of space exploration; quantitative growth and qualitative development of human capital, full support of scientific staff; research infrastructure: development of research potential in regions; SME's innovative resources and many other areas.

'The Regions of Knowledge' is very interesting direction that stimulates the development of regional clusters, including the research organizations and scientific enterprises.

In general, the goal of EU policy is to strengthen economic activities in the regions with weak economic development. For this purpose structural funds have been created. If less than 75 percent of population in any region is less than the EU average, then the aid is given to that region.

The European Strategic Forum in Research Infrastructure (ESFRI) was created in 2004. In the same year the Forum launched 'The roadmap' for the next 10-20 years. The first project of the 'roadmap' included 35 new infrastructure facilities. In 2008, 44 objects were marked on the abovementioned project.

The main objective of innovation development in the EU is the introduction of research results in economy. One of the forms of the achievement of that strategic goal is the public private partnership (PPP) for which has been created so-called European technological platforms. Its main purpose is to perform large-scale projects in the field of economy. The role of the project's initiator is usually a group of large industrial

enterprises. As the project envisages innovation development of any sector, the partnership includes the scientific-research organizations funded from the EU budget. The most important platforms such as for example are: hydrogen and heat elements; aerospace and air transport; innovative medicine; nanoelectronics; built-in computer systems; to monitor global environment and security of the European Commission considers its appropriation. This new form of publicprivate partnership has been adopted by the name of 'Joint Technology Initiatives'.

In 2007, the European Commission for better development of their own activities worked out a new program – 'Lead Market Initiative' that is included in the markets for innovation development which are of great demand on the electronic services in the health sector; innovations in the construction industry;the protective clothing; the production that is made from biomaterials; the waste disposal; renewableenergy resources.From beginning of the sixth frameworkprogram, they are allowed to participate in the implementation of small and medium business representatives as wellastheforeignpartners.The framework programs are managed byEuropean CommissionandarefullyfinancedfromEUfunds.

Program 'Europe 2020' [Europe...]. In 2010, the program 'Europe 2020' was one of the main demands of progress in education, science and development, innovation and achieved high levels ofemployment, climate change and energy solving problems, poverty reduction. That program includes (7) seven sub-programs: Innovaton Union; Youth on the move;A digital agenda for Europe; Resource efficient Europe; Industrial policy for the globalisation era; Agenda for new skills and jobs; European platform against poverty. Horizon 2020 is the framework program for scientific research and innovation.In 2011, the European Commission adopted a new program - Horizon 2020 - The FrameworkProgramme forResearch and Innovation which began operation in 2014. The program budget is 80 billion dollars. In contrast to the 7th Framework Program that program focuses on the risky studies and innovations in order to break the European economy. Its main goal is to transform the economy into a competitive and dynamic

level that will be based onto knowledge of the world. The program consists of (3) three priorities and each is based on the innovative development of the economy and society as a whole. These priorities are:

Excellent Science which includes the catch of the party: for the most talented young scientists to conduct fundamental scientific research in the European Research Council (ERC); In the prospecting fields of modern research and development of radically new technologies of the Future and Emerging Technologies (FET), to improve personnel potential for Maria Curie framework program; improving European research infrastructures.

Leadership in enabling and industrial technologies – investing in the new and industrial technologies such as information and communication technologies, micro and nanoelectronics, photonics, nanotechnologies; new materials; biotechnologies; effective processes of production; space;

Social challenges – increasing the results of research and innovation in the following areas: health care, demographic changes and well-being; food products, agriculture, ecosystems and bioeconomics; safe, clear and efficient energy; ecologically clean, smart transport; climate impact, efficiency of use of resources, raw materials; progressive public arrangement in European countries, providing freedom, security and equal opportunities for all.

The program is financed by the Joint Research Center (JRC), the European Commission's department that is responsible for policy elaboration and monitoring support; European Institute of Innovations and Technologies; studies have been conducting through the framework of the EuroAutom Agreement. Associate members of the program are: Albania, Israel, Macedonia, Montenegro, Norway, Serbia, Turkey, Bosnia and Herzegovina, Far Islands, Moldova, Switzerland (partial Associations), Georgia, Armenia, Tunisia.

According to that program, the EU should become an innovative union and create and develop a single chain from fundamental research before commercialization innovations, also ought to build the basis for all European policy and actions.

It also envisages creation of the „Knowledgeable Alliance“ as a form of education and business cooperation. In the process of studying, the art of innovative and entrepreneurial activities should be utilized too.

1.3. The innovative infrastructure of EU

The innovative ideas in the EU are the most common issues at universities, research institutes and laboratories. But in addition, there is a need for a lot of other structures which work with different high qualifications.

In 2005 was created the idea of founding **European Institute of Innovation and Technology** [Европейский... 2011]. The students there should have experience in scientific and practical work as so as they should obtain the theoretical knowledge from the higher education. Therefore, in 2008, with the final decision of the European Parliament and European Commission that Institute was founded and called European Institute of Innovation and Technology (EIT).

According to the institute's charter, activities should be based onto partnership. Partners should be from the higher educational institutions as so as from science and business fields. This partnership was called 'Knowledge and Innovation Communities (KIC's). It should be noted that the partnership should have a transnational nature. The sources of financing are the EU budget and other revenues. The uniqueness of the Institute is that it is an integrated organization of education, science and business that accelerates innovative processes from ideas to outcomes, from laboratory to market, from entrepreneurship and to promote innovative potential of the EU countries and thus increase the competitiveness.

In 2011, the Institute developed the Strategic Innovative Development Program for 2014-2020 that was approved by the Council of Europe and European Commission

in which the main focus is made onto entrepreneurship. Students should acquire the qualities and habits of the entrepreneurs as well as scientists should be oriented towards entrepreneurship.

Educational institutions (universities) In the higher educational institutions (universities) are made the both: applied and fundamental researches. Hannover University in Germany has shown that the main course of research is determined by the orders and proposals from the industry which occasionally changes; German and other EU programs as well have their own research policy and tasks. A large part of innovative activities are based on the process of commercialization of their technical achievements. The main center of technology transfer is the division - **Unitransfer**, its main activity, in addition to scientific research and industry links, is focused on the development of new business ideas, creation of university business book-builders. The term for staying in business booking is (1) one year.

The university founded the Industrial Technical Center (**PZH**) main concept of which is 'Science and Industry under the same roof. The university institutions and local enterprises are united there. There are many universities operating in the EU countries where analogical innovative activities have operated [Amelina K. E., 2011].

European Science Foundation (ESF) [Европейский..., 2014] is association that carries out scientific-organizational activities in 24 (twenty four) European countries. It coordinates the European scientific initiatives to support high-level scientific research. It's united 68 (sixty eight) member organizations. The project supported by ESF at least should have 6 (six) European countries representatives. It also provides expertise through its expert networking.

European Scientific Foundation supports the following main activities: organizing the research seminars and European scientific conferences (EURESCO); development of high-level scientific programs aimed at implementing the large projects by multinational, average (10) ten countries- collectors; research, planning, implementing, analyzing and coordinating research through scientific networks (EUROCORES) where

participate the national funds; program 'Vision to the Future' that helps European scientific network to develop views on short and long term development.

The scientific fields of the Fund are: physics and engineering sciences; medical sciences; biological and ecological sciences and the landscape sciences; humanitarian sciences; social sciences. The fund's budget is formed from members': the membership fees and contributions.

European innovative laboratory '**Europe INNOVA**' was created in 2006, the main purpose of that is to create new instruments and to support innovative activities in the territory of Europe, and practical assistance to companies in developing and implementing innovations.

European Southern Observatory (ESO) [Европейская южная..., 2018] is a research organization with 15 European member states and Brazil. Convention on its creation was signed in 1961 by Belgium, Germany, France, Netherlands and Sweden and the first telescope was put on in 1966. It conducted many fundamental research and published several astronomical catalogues. From the last investigations it is worth mentioning: the most distant gamma-volps, the black hole's confirmation in the center of our galaxy. The members of that observatory are: Belgium, Germany, France, the Netherlands, Sweden, Denmark, Switzerland, Italy, Portugal, Great Britain, Finland, Spain, Czech Republic, Austria, Poland, Brazil.

European Molecular Biology Laboratory (EMBL) [Европейская..., 2018] is a fundamental scientific research institute funded by 20 members and one partner country. The areas of its activities are: fundamental research in the field of molecular biology; preparation of highly trained personnel; researching biological materials for scientific part of the countries; developing the new tools and methods for biological research, active participation in the spread of new technologies, promotion of research and development outcomes.

The members of that laboratory are: Austria, Great Britain, Denmark, Germany, Italy, the Netherlands, Sweden, Switzerland, France, Belgium, Greece, Ireland, Iceland,

Spain, Luxemburg, Norway, Portugal, Finland, Croatia, Czech Republic, Australia (is like a partner country).

European Molecular Biology Organization (EMBO) [Европейская..., 2018] is a leading organization in the life molecular science field, and its activities are directed towards searching and encouraging talented scientists.

European Organization of Nuclear Research (French title is: '**Conseil Europeen pour leRecherche Nucleaire – CERN**') [The European..., 2015] is the world's largest high energy physics laboratory. There are obtained the fundamental scientificdiscoveries of many great significances. For example, the bosons Wand Z, neutral electric currents and many more other discoveries.

The laboratory has also discovered and created theworld-class Internet technologies.

The members of that organizations are: Austria,GreatBritain,Denmark,Germany, Italy, the Netherlands, Sweden, Switzerland, France, Belgium, Greece, Ireland, Iceland, Spain, Luxembourg, Norway, Portugal, Finland, Croatia, Czech Republic, Poland, Hungary, Slovenia, Bulgaria.The Ukraine, Turkey areobserver countries and organizations, the associated members are the European Commission, India, Russia, US, Canada, the UNESCO, China, The Institute of Nuclear Research (they have the mutual status)

European Research Council (ERC) [European Research...] is the first pan-European organization that promotes scientific research activities in all the EU member states. It is managed by the scientific council that consists from twenty two European scientists. The Council determines the organization's strategy.

European Networks for Support Innovative Activities [Luksha O., 2007]. The innovative networks is the process of integration different infrastructural innovative units for development technology to commercialization and transmission, innovative startup companies . The EU has a large number of such networks. Let's consider some of them:

Innovation Relay Centres Network is an innovative and transnational technological support in Europe. The main area of its services is small and medium

businesses, but they can also serve the large enterprises, research institutes, universities, technological centers, innovative agencies.

Innovative Regions in Europe Network – prepares the regional innovation strategic projects that are financed by the EU. Its task is developing and implementing innovative strategies in the member states and assist them in the development of new innovative tools and mechanisms. In that network are actively involved more than two hundred thirty five European regions and associated countries.

European Association for Transfer of Technologies, Innovation and Industrial Information (TH) is an independent professionals association that supports technology transfer and innovation development in firms. It includes: highly qualified consultants and technological brokers; technology transfer offices of universities and scientific centers; regional development agencies, the chambers of industry and trade; scientific parks and their innovative centers and incubators; contract research organizations; the ministries, sectoral professional organizations.

Association of European Science & Technology Transfer Professionals (ASTP) is composed of multinational highly specialized professionals engaged into technology transfers. Their services are: technology transfer practice in different European countries; management of technology transfer offices; patent; licensing of business-incubators of startup companies and universities; other aspects of scientific knowledge.

The European Business and Innovation Centre Network (EBN) The European Business... – is a leading innovative network that incorporates one hundred sixty business innovation centers, incubators, entrepreneurs and so on. The network was created by the European Commission and the industrial leaders. The network works according to the following directions: lobbying and supporting its members; developing links between its members and support for small and medium enterprises created by the European Commission; creating new business centers and supporting their promotion and so on.

European Innovative Clusters [Borisov V. V., Sokolov D. V., 2012]. Cluster is a complex or combination of the firms, research organizations and other different supporting structures that are located in a geographically restricted territory that have the

sufficient material and labor resources for innovation development in a particular industry. There is formed the creative connections between business and positive environment clusters.

European innovative tabloids. It is worth to give attention to the innovation development monitoring system in the European Union which is part of the innovative Europe tabloids. They are the basic statistical data and special studies as a result of the data collected for the first time, calculated on the basis of a set of indicators which are put in the aggregate and in certain sub-indicators, and aims to ensure EU member and non-member countries for the production of comparable characteristics and their monitoring. It is also interesting that 'European Regional Innovative Tabloids' are aimed at demonstrating the innovative potential of European regions and its monitoring [Gogodze I, 2013].

Conclusion

Introducing with the EU's innovation policy allows us to outline the following peculiarities of EU innovation policy:

1. The EU takes, from the very beginning, direction to the innovative development of the economy which is the subject of constant real care, not formal statements. The enormous resources of the European Union are spent on the innovation development from the central budget. The expenditure on research and development should be more than 3% of GDP;
2. From the early stages, the recognition is that education and science are the basic issues for innovations so the implementation of initiatives should begun with the modernization of educational system and science;
3. Innovation policy is oriented on demands and it is based on the implementation of programs and plans;

4. Science is actively involved into all programs and plans. The scholars participate in all stages of the innovative process from the policy, prior to development of the plans and its implementation. Science is filled up fully in any innovative activities;
5. Into innovative processes are involved companies, their initiatives are implemented to the major large programs;
6. All topics are diligently prepared, after obtaining the result of remarks and their consideration;
7. Studying and research at universities are focused on entrepreneurship and innovation. Students use the skills of innovator and researcher;
8. It is a special requirement for fully and actively implementation of young people in all steps of realization programs;
9. In the EU is naturally established the link between education, science, state and economics (business). That is approaching clearly in the working process of the European Innovation and Technology Institute, implementation of the European Technological Platforms and in more other activities;
10. The innovation policy of the EU has evolved and its perfection has been focused on the background of success and shortcomings for decades, so its direct release is unacceptable for any country. Of course, European experience should be taken into consideration, but only with the peculiarities of the concrete country;
11. The formation of the EU innovation system starts with the completeness and modernization of educational and scientific systems;
12. Education and science remain in the competence of individual countries, but in order to utilize the united labor market and better integrity in the EU as well as the unified potential of the Union is going to unify them as well as the whole innovation system. There are emerging organizations that promote the development of innovation systems in the member states by conditions of maintaining the peculiarities of each country;
13. Between the stages of the development of educational system can be considered the EU Communiqué on 'The road to knowledge in Europe which is essential to lifelong

learning'; For the improvement of the development of the education system can be considered by the EU Communiqué on "Road to Europe", which is essential to "learning all life";

14. For improvement the educational system, the focus should be made not only onto higher education but also for preschool and secondary school education. Therefore, the primary concern is to increase the quality of teacher's education and personal perfection, development of relevant qualifications and competence, creation of a single matrix space, etc.;

15. European higher education is one of the best and most demanded in the world.

Its development has led to the development of highly qualified personnel for the economy, the need for development of science and entrepreneurship;

16. From the point of view for perfecting higher education are very important the implementation of such documents as: The Great Charter of Universities, Lisbon Convention, Sorbonne Declaration; Bologna Declaration (Bologna Process); Quality Assessment Standards and Recommendations in the European Higher Education Area that are based on: strengthening cooperation between universities in the development of programs, preparation of textbooks, mobility of students and professors; creation of equal conditions for higher education; learning periods (bachelor's, master's, doctoral degree) and duration of training cycles; students participation in scientific researches; a certain unification of legal norms related to mutual recognition of diplomas and relevant qualifications; recognition of the autonomy of universities, it had to be: defining the competences in the development of the European structure of qualifications that is considered like the most important for innovative activity and for these reasons has been created 'European Registrar of Higher Education Control';

17. Vocational education is very popular in the European Union, because the firms and other private organizations need practical skills and knowledge. It is one of the major factors in the development and growth of human capital of the country;

18. It was very important to build the unified scientific network and therefore were prepared : Lisbon Declaration, Lisbon Strategy Ljubljana's Process which helped to increase investments in the sphere of knowledge in the way of creating a common European scientific space; creating a network of leading scientific centers; coordination of national and European scientific research programs; formation of co-operative associations in science and technology; increase the role of scientific and technical expertise; promote scientific career at European level; increase mobility of European researchers; increasing activation of regions in European studies promotion of innovative development of companies; increase investments in research and development by risky capital investments; acceleration of innovation in the industry, the overall distribution of ecological innovations; improving ecological effectiveness of production; strengthening partnership with EU member states and associated members of the European Commission and other EU Structures;

19. The innovative ideas in EU are most common created at universities, research institutes and laboratories. But in addition, there is a need for a lot of other structures to work with different high qualified workers;

20. The EU's scientific research and technology development framework programs which are realized on the basis of the enterprises, research centers, universities and business cooperatives have a significant turning point for the establishment and stimulation of the unified innovation system in the EU. Until 2013, there were 7 Framework Programs that differ according to their financing volume and their structure. The overall tendency is the growth of financing and the compliance of its structure with the requirements of innovation development of the economy. Special emphasis was on strengthening the integration of innovation processes, strengthening ties between the creation of new knowledge and new technologies on its basis;

21. Since 2014 the new EU program 'Horizon2020' has been launched, with a budget of \$ 80 billion and fully financed from EU funds. Its main goal is to transform the economy into a competitive and dynamic economy based on knowledge of the world. The

program includes 3 priority directions: Modern scientific, industrial leadership, social challenges and each one is based on the innovative development of the economy and the entire society;

22. In 2010, the program 'Europe 2020' was one of the main demands of progress in education, science and innovation, and achieved a high level of employment, climate change and energy solutions, poverty reduction. It includes 7 programs of action;

23. In 2008, the European Parliament and the European Commission decided to establish the European Institute of Innovation and Technology. The uniqueness of the institute is that there is a well-organized education, science and business that accelerates innovation processes from ideas to outcomes, from labour market, from entrepreneurs to entrepreneurship and thus promoting the innovative potential of EU countries, and therefore competitiveness;

24. The innovation system in EU also includes a number of common European organizations whose activities are directed towards supporting research, educational and innovative processes. For example: European Scientific Foundation; European Research Council; Southern Observatory of Europe; European Molecular and Biology Laboratory; European Molecular Biological Organization; European Organization of Nuclear Research; European Networks for Supporting Innovative Activities which includes: Network of Business Innovative Centers; Innovative Reel Centers Network; Network of Innovative European Areas; European Association of Technology Transfer; Innovations and Industrial Information and many others in which are represented the research institutes, universities, business incubators, techno-parks, innovation centers, the concrete countries and so on;

25. The clusters constitute a combination of firms, research organizations and various support structures in a geographically bounded area that owns sufficient resources, including and introducing an intensive relationship between the participants of the process, before their realization. European clusters are characterized by high level of co-operation for which they are united in the network of business innovative centers or

themselves to create unions such as European Cluster Observatory; European Cluster Alliance, etc.

26. European Strategic Forum for Research Infrastructure has been created to expand innovative infrastructure. In 2004, the Forum launched to create 'The road map' for the next 10-20 years. The first project of the 'The roadmap' project included 35 new infrastructure facilities. In 2008, 44 objects were marked on the above mentioned map.

27. The main aim of innovation development in the EU is the introduction of research results in economy. One of the forms of achieving that strategic goal is the public private partnership for which has created so-called 'European Technological Platforms.' Its main purpose is to perform the large-scale projects in the field of economy;

28. In 2007, European Commission adopted another program - Lead Market Initiative that provided for innovation development of the markets on which was a great demand;

29. It should be noted especially, that scholars are involved in all programs and plans.

The scholars participate in all stages of the innovative process from the policy, prior to the development of the plans and their implementation. Science is filled fully in any innovative activities.

CHAPTER II.

PECULIARITIES OF THE TRANSFORMATION OF NATIONAL INNOVATION SYSTEMS IN SOME DEVELOPED COUNTRIES

In modern conditions, sustainable economic development in the country can not be achieved without the existence of an effective national innovation system (NIS) in it. Therefore, the task of forming a full-fledged NIS is now facing Georgia. In this regard, it is very important to study the experience of building and developing NIS in developed countries in order to adopt acceptable elements and mechanisms in Georgia, including those small countries that at some stage of development made an economic breakthrough that enabled them join the ranks of industrialized countries (for example, South Korea, Finland).

In the process of transformation (development) of NIS, two stages can be distinguished. The first stage - 50-80th years of the last century, when there was no clear allocation of NIS and innovation policy from the general mechanisms of coordination of economic development and regulation took place within the framework of the overall state structural (industrial and regional) policy and private business coordination (i.e. of enterprise policies). The second stage of the transformation, when in the developed countries the course on the formation of an innovative economy was taken, began in the last years of the last century and continues to this day. During this period, intensive formation and development of NIS components took place at all levels in these countries. In some countries, the transformation turned out to be successful, and in some- there were excesses, so to speak, following the fashion for NIS construction, they overdid it in the process of transformation, which led not only to financial losses, but also to disruptions in the rates of economic growth and export reduction. Therefore, in this chapter, we look at examples from France and South Korea, where the modern transformation of NIS under the auspices of the structural (industrial and innovation and

regional) policies has proved successful, and Finland, where, at the first stage and in the initial period of the second stage of transformation, the economy steadily evolved, and then there was a failure of economic growth, largely predetermined by the mistakes made during the transformation of the structure and individual components of the NIS.

In general, this chapter gives a brief description of the main NIS models used in the world, investigated the nature of the development of NIS in France, South Korea and Finland, and in the last paragraph of this chapter, the relationship of the overall structural, structural industry (industrial), innovation and structural regional policy. All this enabled the authors to formulate several recommendations in the context of certain directions of the Georgian NIS development.

2.1. Basic NIS models

In the economic literature, four main NIS models are distinguished: the "Euro-Atlantic", "East Asian", "alternative" and the "triple helix model" currently being implemented.

Before characterizing these models, we will make two digressions.

First, we note that in the structure of NIS, the regional components of NIS are of great importance: technopolis, centers of competitiveness, innovative clusters, etc.

Secondly, we note that no country can develop without borrowing (i.e., import) in a different form of innovation (acquiring know-how, licenses, importing production technologies, organizing joint innovative enterprises with foreign partners, which should be reflected in the structure of the NIS being formed.

Now let us briefly characterize the main models of NIS.

In the Euro-Atlantic model, which was implemented in different versions in the USA, Canada, the developed countries of Europe (including small ones), there are all components of the NIS structure: fundamental and applied science, research and development, development of prototypes and their introduction into mass production . That is, it is a model of a complete innovation cycle from the emergence of an

innovative idea to the mass production of a finished product [Модели ..., 2013]. In developed European countries NIS concentrates around the largest universities (however in a number of countries - France, Denmark, Sweden and others, other research institutes and academies of science play an important role). A major role is played by regional projects in the field of innovation, following the example of the US Silicon Valley, but the principles of their construction and financing vary from country to country. Small and medium-sized businesses are taking an active part in financing research and development along with big business. It is noteworthy that in small European countries (Sweden, the Netherlands) applied research is financed primarily through grants and joint projects with large TNCs. "At the present time in Western Europe, the processes of combining NIS into a unified scientific, technical and innovative space are developing. To this end, special mechanisms have been developed (various programs, technological platforms). "The coordinating tools of the pan-European programs are innovative networks, technology platforms, joint technology initiatives, ESFRI road maps, and new types of partnerships. However, national innovation systems continue to be the nucleus [Глобальная ..., 2010; Модели ..., 2013].

The East Asian model differs from the Euro-Atlantic model in that, firstly, universities as centers of innovation development play a much smaller role than research laboratories for corporations, and the NIS of these countries are almost completely deprived of the components of fundamental science, and secondly, these countries orienting at exporting high-tech products, mostly borrowed technologies from countries with Euro-Atlantic type of NIS, thirdly, the overwhelming share of R & D spending was in the frequent sector (Japan, South Korea, C ngapur, Hong Kong, Taiwan) [Авдокушин Е., 2010; Модели ..., 2013]. However, by the mid-1980s, such a system had exhausted itself to a certain extent and since then a gradual transformation of the NIS of these countries began [Авдокушин Е., 2010; Глобальная ..., 2010; Модели ..., 2013].

An **alternative** model of innovation development was formed mainly in agricultural countries that do not possess significant scientific potential, as a result of which there is no block of fundamental and applied science in their NIS. When developing NIS in these countries, emphasis is placed on the development of innovative management of individual industries (for example, agriculture, food industry, light industry, tourism) and on the adoption of technologies, rather than on their development (Chile, Thailand, Portugal). However, gradually, in these countries, the development of some high-tech industries and the formation of the necessary innovative infrastructure began to take place, including in the field of basic and applied science. Since this model is based almost entirely on borrowing new technologies - it is less expensive and attractive for countries unable to withstand high financial costs [Модели ..., 2013].

The **model of the triple helix** is a product of the development of the Euro-Atlantic model and, in its final form, it does not exist in any country. The greatest development was in the USA, and its individual elements - in some developed countries of Western Europe, Brazil and Japan [Модели ..., 2013]. As applied to innovation development, the triple helix model describes the interaction of three institutes (science, state, business) at each stage of creation and introduction of an innovative product into production. In this model, each of the three institutions (universities (science and education), state, business) partially assumes the functions of other institutional spheres, and the ability to perform unconventional functions by each of these institutions is a source of innovation. "In practice, this is reflected in the fact that universities, by engaging in education and research, also contribute to the development of the economy through the creation of new companies in university incubators, business partly provides educational services, and the state acts as a public entrepreneur in addition to its traditional legislative and regulatory role" [Ицковиц Г., 2011; Катуков Д., ..., 2012; Модели ..., 2013]. In fact, the triple helix model relies on the interaction of its three participants (the state, science and business) at all levels: regional (or sectoral), national, integral. This approach contributes to the effective development of regional innovation systems, sectoral and

intersectoral interaction between different regions. Consequently, the objectives of regional and national development are directly interrelated and are achieved with the participation of three key players [Соловьева Ю., 2015, p. 133].

Now consider the experience of developing NIS in three countries (France, South Korea and Finland), from which you can borrow a lot of useful for the process of forming NIS Georgia.

2.2. Transformation of the NIS of France

In the late 90's the twentieth century **France** faced serious structural problems of the national economy: insufficient level of innovation development of industry and innovation infrastructure (relatively low level of allocations of industrial enterprises in the IR, lagging behind the main competitors in the field of patenting, mastering the results of R & D, venture capital development, and production and use of new technologies, an insufficiently favorable business climate for the creation of new enterprises, a weak level of development with cooperation between enterprises and research laboratories), the weak competitive positions of a number of key high technology industries in the world market, the threat of transferring productive capacities to other countries, significant regional imbalances in industrial and scientific and technological development, a sharp decline in the interest of young people in engineering professions and a deficit highly qualified engineering staff, the weakness of the institution of public-private partnership, which was one of the main reasons for the substantial lagging behind of the country from its main competitors in the field of industrial development of R & D results [Черноуцан Е., 2010, p. 43-44].

This and other circumstances (challenges) caused the intensification of efforts by the French authorities in developing strategies (programs) for industrial (and innovation) policy and strengthening instruments for its implementation. In 2004, President Chirac announced the intensification of industrial policy as the most important state priority. 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 partnership 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: the course for the development of a large-scale innovation process affecting the entire territory of the country and stimulating the interaction of the main participants in this process (enterprises, scientific laboratories, higher education) [Черноуцан Е., 2010, p. 43].

To solve this double task, special regional clusters are being created in the country, the so-called poles of competitiveness, which become a key instrument of the new industrial, innovative and regional policy of the country. The definition of these poles is the following (financial act of 2004): grouping in a certain territory of enterprises (from large to small), research laboratories (public and private) and institutions of higher education, which are called upon to work together for the implementation of economic projects development and innovation. For example, for four years (2007-2010), these centers allowed the implementation of projects of more than 4 billion euros, financed by 30% by the state and local governments and by 70% by the enterprises themselves [Калугина Е., 2010.]. In France today there are 71 Pole of Competitiveness. The provision of financial assistance to **the best innovative projects** occurs most often through *Fond unique interministériel (FUI) – a single inter-ministerial fund*. In addition to a single inter-ministerial fund, the state attracts other institutions to participate in financing interesting projects created in the Poles. For example, the Agence Nationale de la Recherche (ANR) is the National Research Agency, Caisse de dépôt et consignation (CDC), a depository or an organization called OSEO. OSEO is a state organization that performs three missions: assistance in the development of **innovations**, guaranteeing bank financing and investments, and, finally, partner financing. This organization most often finances small and medium-sized enterprises [Калугина Е., 2010.].

The government of France in the recent period actively follows **the dirigist principles of regulation and coordination**. So, in March 2010, the government announced new measures in favor of the development of French industry, in which four main directions were outlined: 1. Industrial innovation; 2. Improving the competitiveness of French enterprises; 3. Improve competencies, especially for the development of knowledge and skills in the prospective sectors; 4. Strengthening the structuring of production chains [Калугина Е., 2010.].

In the framework of industrial policy, government intervention is designed **to encourage private actors to innovate, develop and coordinate**. Great importance is attached to improving the coordination of private and public actors, eliminating the lack of coordination between basic research, public and private research, industrialists and subcontractors, it is also expected that the state should participate more actively in the strategic planning of enterprises in which it has a stake [Калугина Е., 2010].

The relevant documents focus on the financing of French industry, fiscal and financial incentive measures, the creation of appropriate coordinating structures (for example, strategic committees on production chains), etc. In particular, in 2008, the Strategic Investment Fund (FSI) was established with a capital of 35 billion euros, whose official goal was to help promising French enterprises to increase their own funds. The fund is part of the capital of various enterprises or it can act as one of the investors [Калугина Е., 2010; Кондратьев В., 2014].

Let us dwell on one more question on France, which underpins our further proposals (in the fifth chapter) on the mobilization of funds for investing in the development of production in Georgia: it is constant that French enterprises must have different sources of financing, both bank loans and own capital. Enterprises need financing, and hence in shareholders. France is characterized as a country with a high saving rate. However, less than 25% of these savings are invested in shares of enterprises. Within the framework of the corresponding program on industrial policy (Measure 21. The orientation of French savings and bank lending to finance industry), it

is proposed to develop tax measures in order to reorient French savings to long-term investments in shares of French industrial enterprise [Калугина Е., 2010].

Thus, **from the experience of France, the following main conclusions can be drawn:** **1.** The role of the state in regulating economic, in particular innovation development, has been revitalized, the dirigist traditions characteristic of the Keynesian model of development regulation have revived on a qualitatively new level: the state develops strategies for nationwide and regional development, implements tax incentives for innovation development, creates and uses the funds of the strategic investment fund (FSI) to participate in private statehood partnership (including the creation of venture capital companies), establishes foundations and other organizations to provide financial assistance to the best innovation projects (FUI, ANR, CDC, OSEO). **2.** In the process of coordinating industrial development, an integrated approach is used: not only directly innovative processes are supported, but also other activities that contribute to the progressive development of the economy: sharing participation in enterprises (not always associated with innovative restructuring), strengthening the structuring of production chains (for which are created strategic committees on production chains). **3.** Successfully, non-trivially solves regional problem in the form of creating poles of competitiveness, where the goals and instruments for the implementation of regional and national development are directly interrelated and the achievement of goals is carried out on the basis of well-coordinated interaction of three key players (science and education, the state, business).

2.3. Korean miracle: innovative modernization in South Korea

The first stage of **South Korea's** industrial modernization began in the 1960s, when it embarked on the implementation of an innovative project in extremely unfavorable starting conditions (shortage of resource potential, tough competitive environment, technological backwardness). In this situation, reliance on purely market mechanisms to promote modernization would be fatal. And only purposeful state policy

helped to accomplish an "innovative miracle". The South Korean authorities initially relied on the creation under their patronage of large monopolies capable of making an innovative leap at the expense of their privileged position [Корейское ..., 2008]. The processes of concentration and capitalization of capital in the country's economy led to the creation of large financial and industrial groups (FIG-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 become diversified export-oriented holdings (at first they did not have their own banking structures and received funding from state-owned banks, but later they also included private banks). The state constantly encouraged structural reforms in industry, in particular, by exempting from import duties the importation of production technologies, an active tax policy to stimulate R & D, and so on [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. Later, our own innovative production technologies also began to develop, but by now there is still a strong dependence of the state on imported foreign equipment and technologies due to underdevelopment of the basic technologies inside the country [Селезнев П., 2014: с.289-290; Справка ..., 2011].

The beginning of **the second stage** of NIS transformation was predetermined by the crisis of the late 1990s, which forced **the South Korean** leadership to accelerate the innovation course, and a special program was developed and implemented aimed at accelerating development and innovative breakthroughs. 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 to form a series of economic clusters, each of which would have a certain specialization. For example, Mr. Dejon was and is responsible for information technology, bio-production, production of high-tech parts and materials, robotics, and the port city of Busan became the center of logistics and tourism [Абдурасулова Д., 2009; Селезнев П., 2014].

In the process of transformation, the leadership of the Republic of South Korea formulated the tasks of economic reform, which primarily provided for the development of NIS components. The strategy of the "new industrial development" of the country was developed in which the ways of forming the basic components of innovative development of the national economy were determined on the basis of structuring the production and technical base, mechanisms and investment climate for innovative development. Within the framework of this strategy, the components of the innovation system (technology parks, centers of technological innovation, regional research centers, etc.) were created in regions based on industries concentrated on this territory, and on this basis, through the implementation of "pilot projects" - regional innovative clusters. Much attention was paid to the organization of stimulation of interaction between enterprises and research organizations for the purpose of R & D, the formation of an institutional framework and an enabling environment for the development of innovations at the local level, strengthening networking contacts between industrial enterprises □ universities, research institutes as the main participants in the innovation process [Абдурасулова Д., 2009; Селезнев П., 2014].

From the experience of South Korea, we can draw the following main conclusions: 1. In South Korea, an innovative industrial breakthrough and the country's withdrawal into the ranks of developed countries made it possible to carry out a purposeful state economic policy, that is, the successes of this breakthrough in the 1960s-1980s were achieved thanks to well-organized intensive state dirigism. 2. The

main role in the innovation breakthrough was played by FIGs (chaebols), in which the banking component in the 1960s-1980s was mainly of state character [Селезнев П., 2014; Справка ..., 2011]. **3.** The new industrial innovative economy was built on the principle of borrowing in new forms of new technologies (from countries with the Euro-Atlantic model of NIS and from Japan). **4.** An important role in the industrial innovation leap was played by the creation of joint, primarily venture, innovative enterprises in conjunction with Japanese partners [Селезнев П., 2014; Справка ..., 2011]. **5.** 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 leadership of South Korea to accelerate the innovation course: a special program was developed to accelerate development and Innovative breakthroughs, which are carried out by structuring at the regional level (the "4 + 9" project) the production, technical and innovation base, tools and investment climate for innovative development.

2.4. The process of formation of NIS in Finland and the problems of its reforming

The industry of **Finland** was able to switch to the production of goods with a large volume of added value in the period from the mid-1960s to the 1980s. Due to intensive partnership between the state and the private sector [Справка ..., 2011]. Despite the fact that the innovative activity was characteristic of the Finnish economy for many years of its development, it can be argued that it was precisely from the end of the 1980s. innovations became the main driving force of the country's economic growth and the basis for entering foreign markets: if earlier the innovation process could not be separated from the production one, by that time an independent, export-oriented, science-intensive, innovative sector of the economy appeared in the country [Инновационная ..., 2014]. The NIS of Finland has been clearly and distinctively structured over the years. It is formed by the following organizations: the

Council for Science and Technology Policy of Finland under the leadership of the Prime Minister, the Ministry of Employment and Economy, the Ministry of Education, the Finnish Agency for Financing the Development of Technologies and Innovations "Tekes", the Technical Research Center of Finland "VTT", Export Support Association "Finpro", the State Fund "Finnvera", the National Innovation Fund "Sitra", other ministries and departments, industrial companies, technological and polytechnic higher education institutions [Радченко А., 2011; Мальцева А., ..., 2012; Инновационная ..., 2014]. The key elements of the innovative infrastructure of Finland, directly implementing the state innovation policy and innovation activity, are the technoparks of Finland [Мальцева А., ..., 2012: 114; Инновационная ..., 2014].

The Finnish Agency for the Financing of Technologies and Innovations "**Tekes**" (established in 1983 under the Ministry of Trade and Industry, today - the Ministry of Employment and Economy) annually allocates funds for more than 60% of innovation projects offered in Finland (most for projects in private sector, the smaller - in the state sector). Most projects are invested on the terms of their co-financing by private capital [Инновационная ..., 2014, p. 5; Мальцева А., Кархунен П., 2012, p. 111] (here, for reference, we note that in Finland, much of R & D spending is made by private capital, for example, in 2010, total R & D expenditures amounted to 3.70% of GDP, of which the share of private capital expenditures was 74.6% , while public expenditures - 25.4% [Соснов Ф., 2011, p. 222]). The Agency implements a number of programs, within the framework of which it provides the following services to small innovative enterprises: financing (reimbursement of expenses for the implementation of the project within the framework of approved standards); expertise; development of strategic centers of science, technology and innovation; international cooperation; information support. For growing enterprises, „Tekes“ offers services of business accelerators, private companies providing access to investment resources and a network of business partners. The peculiarity of Finnish business accelerators is that they are not competitors but investors

of start-up companies, and therefore are commercially interested in their effective functioning [Мальцева А., Кархунен П., 2012, p. 112].

The Finnish Innovation Fund “**Sitra**” (an independent public foundation under the Finnish Parliament) was established in 1967. In particular, on the basis of the Fund's recommendations, the activities of the Finnish Agency for Financing Technologies and Innovations “**Tekes**” were built, a start-up financing system for the commercialization of promising technological development, a system of venture financing of R & D and attraction of private funds to innovative activities. In addition, a system has been created to support developing enterprises based on business incubators [Инновационная ..., 2014, p. 7, 8]. “**Sitra**” Foundation creates effective financial and consulting support for innovative companies at the initial stage and stage of growth in a number of areas: bioeconomics, energy, electronic and electrical engineering, machine building and metalworking, timber industry, food and other sectors. [Мальцева А., Кархунен П., 2012, p. 112, 113; Радченко А., 2011]. “**Sitra**” Fund is an integrator of venture partner networks in Finland and Europe, providing access of innovative companies to venture financial resources [Мальцева А., Кархунен П., 2012, p. 112, 113].

The State Technical Research Center of Finland “VTT” is the leading research center in the country, representing a non-profit organization that is part of the Finnish innovation system and operates under the auspices of the Ministry of Employment and Economy of Finland. “**VTT**” was founded in January 1942 and currently unites about 2700 scientists and specialists in 10 cities of the country. The budget of “**VTT**” was stable in 2009-2014 at about 280 million euros. The share of public funding is about 90 million euros [Инновационная ..., 2014, p. 6; Мальцева А., Кархунен П., 2012, p. 111].

The Finnish Academy (AF) is located in the administrative structure of the Ministry of Education and, just like “**Tekes**”, does not have research subdivisions in its structure. Financing of research work on the AF line in 2013 amounted to 324 million euros and was distributed as follows: universities - over 80%; NII - about 10%; foreign

organizations - more than 8%. This amount of funding provides work for about 8000 specialists in universities and research centers [Инновационная ..., 2014: 7; Мальцева А., Кархунен П., 2012, p. 111, 112].

Other leading participants in the innovation system of Finland are: the state venture capital fund "**Finnvera**", created to provide risk financing (mainly loans and guarantees), first of all for small and medium-sized enterprises, development of their international and export activities, covering risks from losses in export operations and investment activity abroad; Finnish Export Promotion Association "**Finpro**", whose mission is to promote Finnish products and assist the entry of Finnish companies into international markets [Инновационная ..., 2014: 8; Мальцева А., Кархунен П., 2012, p. 113, 114].

Technological parks play an important role in the system of commercialization of technological developments in Finland, which are one of the main elements of the country's innovation infrastructure, which contribute to deepening the cooperation of state research centers and universities with industry, including small and medium-sized enterprises. A feature of the majority of Finnish technoparks is their predominantly large size in terms of the territory and the number of serviced companies, as well as the network structure. The network structure presupposes the presence of a system of elements of an innovation structure of smaller scales operating in the territory of parks that are leaseholders of the park and working with the involvement of even smaller companies providing services on outsourcing terms. Currently, 22 technoparks are operating in Finland, created by municipal authorities on the basis of 20 universities and polytechnic institutions of higher learning. At the institutional level, the development of industrial parks, technoparks and clusters in Finland is carried out by the „**TEKEL**“ **Association** (full name: Finnish Science Park Association). This association oversees the activities of more than 1,700 innovative companies, employing more than 37,000 professionals and scientists [Справка ..., 2011; Мальцева А., Кархунен П., 2012, p. 114; Инновационная ..., 2014].

The innovation system of Finland worked very well for the time being. However, approximately since 2008, the country's innovation system began to experience great difficulties due to the crisis and actually ceased to support economic growth. The country's GDP is still below the pre-crisis level of 2008, and "the share of goods with high added value in Finnish exports has dropped significantly in recent years - from 23% in 2000 to 10% in 2010 and 7% in 2015. The structural changes in exports turned out to be so fast and sharp that there are no international parallels to it "[Бурнаева Е., 2017]. As early as 2015, Finland's top officials stated the fact that the innovation system was not working well, and in 2016 the Finnish government ordered the OECD experts to assess the state of the country's innovation system and develop recommendations for its further development [Бурнаева Е., 2017].

According to an interim report of OECD experts (the final report will be published in June 2017) Finland still belongs to the group of leading world "research nations", despite the loss of leadership positions. In 2000-2010, (with the exception of 2006-2007) in terms of the share of expenditure on R & D in GDP, Finland was the second largest in the OECD after Israel (the maximum was reached in 2009 and left 3.749%), but by 2015 dropped to seventh place (2 , 9%), losing to South Korea, Japan, Sweden, Austria and Denmark [Бурнаева Е., 2017; from: Gross ..., 2015].

At the same time, the OECD experts in the interim report focused on the shortcomings of the current model of Finland's innovation system and made recommendations on how to effectively reform it.

According to the OECD conclusion, the main problem is the weak innovative activity of companies and its inadequate support from the state in comparison with other countries, where, in order to accelerate economic growth, emphasis is placed on enterprise R & D. If in 2000-2010 on the industry accounted for more than 70% of R & D financing in Finland (as much as 74.3% in 2008), then by 2015 it decreased to 54.8%. Meanwhile, in order to restore international competitiveness and increase labor productivity, Finland needs high-tech exports and innovative entrepreneurship. This also

applies to companies in traditional industries (such as forestry), which should be able to compete globally. A high level of expertise and new technologies should be used more efficiently than previously, in order to produce innovations that could increase market growth [Бурнаева Е., 2017].

The report emphasizes that Finland's national innovation system should develop as a whole in the interaction of all its participants. Attention should be paid to strengthening the overall management of the system and enhancing the interaction between the scientific and business communities [Бурнаева Е., 2017].

The OECD believes that it is necessary to focus public funding for R & D more on the innovation activity of enterprises. It is recommended to develop new models of public-private partnership. It is also necessary to continue the reform of universities and the consolidation of research units. Such mechanisms as centers of excellence should be used to encourage academically initiated and industry-oriented research, as well as joint science and business plans [Бурнаева Е., 2017].

From the experience of Finland, we can draw the following main conclusions:

1. The Finnish NIS began to form quite a long time and until 2008 it worked well. The decline in GDP and a sharp decline in the share of goods with high added value in Finnish exports were largely due to the massive transfer of production (both core and developing innovation) to other countries. Unlike, for example, France, where the transfer of the main production abroad was due to high taxes and high wages costs, in Finland the transfer of the main production occurred mainly to countries where the high sales of products were guaranteed, and the transfer of innovation systems, for example, to Russia, was justified by profit from the sale of innovations. As a result, corresponding products were produced in these countries and exports of similar products from Finland were discontinued. 2. The failure of the innovation system working in Finland was largely due to its excessive cumbersome and sputteriness, too, and at the same time, due to insufficient the coordination of innovation development systems and the companies producing the final product. At the same time, it is impossible to create many

"breakthrough" innovations in a small country (there is no possibility to gather enough high-quality specialists for this purpose, to obtain free of charge information necessary for development). Therefore, as noted by OECD experts, a profound transformation of the Finnish NIS is needed. 3. At the same time, from the previous experience of the Finnish NIS, we should pay attention to some well-proven mechanisms of interaction between the participants in the innovation process, for example, the mechanism of interaction between business accelerators, which are private companies, with start-up companies, in which business accelerators are not competitors, but investors of start-up companies and therefore are commercially interested in their effective functioning.

2.5. "Intertwining" of policies and state dirigisme

In order to ensure that the overall state regulation of development in a particular country does not take place within the narrowly understood "industrial policy", but within the framework of a general structural policy containing industrial (structural branch), innovation and structural regional policies, we will cite a few more excerpts related to the experience of Germany, the Netherlands and Sweden.

In the 1960s and 1980s, measures aimed at preserving existing structures (in agriculture and forestry, railway transport, shipbuilding, aerospace industry) dominated in the framework of **structural policy** in Germany. However, subsidies (with the exception of aircraft construction) have not been able to make their products competitive in international markets. Gradually, this kind of policy began to be abandoned. More effective is **structural policy**, which is adaptive (shaping) in nature and "is aimed at facilitating **structural** transformation. In this case, the state uses its funds to help economic entities in the process of adapting to new production and technological challenges, contributes to **progressive shifts**, actively forms promising directions for development " [БеловВ., БарановаК., 2010]. The Federal Ministry of Economics and Technology in 2008 briefly defined industrial policy as "*shtandort policy pursued in the*

interests of industry". Its main goal is to create favorable **framework conditions** for industrial **innovation, investment and production**. In fact, it is a policy to create **favorable framework conditions** for the development of a specific economic and territorial space with the aim of attracting (and retaining) capital, services and labor in it. An integral part of this policy is the support of specific projects in industry, including in **high-tech and innovative spheres**. Standort policy (Standardrichtlinie) is carried out at the federal, land and municipal levels and **combines all types of structural policy**. This policy is most effective at the regional level, and probably, therefore, the German state decided to use it to support modern industrial policy" [Белов В., Баранова К., 2010].

In the Netherlands, the Ministry of Economy, Agriculture and Innovation, formed in 2011, has developed a new entrepreneurial and innovative policy based on a sectoral approach, to stimulate the development of nine "leading sectors". They include water supply, food industry, gardening, high technologies, biological sciences, chemistry, energy, logistics and "creative" industries. In these sectors the Netherlands has competitive advantages, and the state regards them as priorities [Кондратьев В., 2014].

It is difficult to single out Sweden's industrial policy from its economic policy. In many respects its industry is developing under the influence of measures designed for the entire national economy of the country. Its characteristic feature is interlacing with innovative, environmental and regional policies. The state's partnership with private business is also actively used, which is implemented not only in the implementation of individual projects, but also at the macroeconomic level (Antyushina N., 2010). The main direction of action in innovation policy is the achievement of the integrity of the innovation chain, adequate financing, as well as coordination of actions of numerous participants of the multi-tier innovation chain. Therefore, the formation and maintenance of the national innovation system (NIS) in the functional state, coordination and cooperation between the three spheres of the national economy: education - science - production [Антюшина Н., 2010].

From the citations quoted it is obvious: in all countries there is (in the sphere of state regulation) an interlacing of sectoral structural (industrial) and innovation policies; the state implements both direct regulation of business (financial interventions) and indirect (creates appropriate "framework" conditions); in the state strategies, in accordance with the specifics of a particular country, the sectoral priorities are singled out, for which state coordination is directed.

“The interlacing” of policies poses the question of the need to carry out a general structural sectoral policy, in which direct financial interventions of the state (including the creation of enterprises with state participation and state venture for the creation of innovative enterprises) and indirect regulation of business (creation for it has such framework conditions that business at the expense of its own resources would strive to create the financial, industrial and innovation necessary for innovation development). The majority of investments in production and innovation are made by the company's own resources, that is, the private business independently solves most of the issues related to restructuring, innovation, and the introduction of technologies. The state within the framework of indirect "framework" coordination of business development should help it in creating modern financial and other institutional and organizational mechanisms necessary for innovation and in general number of industrial production for the necessary restructuring of the economy. This is especially important in the context of Georgia, as currently there are no effective mechanisms for mobilizing financial resources for investing in real production as for a large business in the private sector, as well as accumulating for this purpose population savings in general, as well as small and medium-sized businesses.

Therefore, in Georgia, it is necessary to create effective state mechanisms to promote industrial and innovation development in both the fiscal system and the financial sector, and in the latter, in addition to financial mechanisms for state coordination (primarily direct methods of financial intervention in the form of investments in production), it is necessary to develop (and this is the most important

thing) the relevant financial mechanisms directly in the business environment (which is set out in the fifth chapter).

From the analysis of sectoral structural (industrial) and innovation policies, it can be concluded that each country has its own approach to their organization (strategies, institutions, tools), depending on the problems facing the country.

Conclusions.

In conclusion, we will briefly summarize what can be learned from the experience of the countries examined for the successful formation of the Georgian NIS.

Conducting a successful innovation policy in a country that begins practically from scratch is impossible without the strengthening of state dirigism. In particular, this should happen not only with the help of regulatory instruments, but also with the help of agreements with capable business representatives. For example, President of the South Korean Reforms, President Pak Jong-hee, in the early 1960s, tasked individual businessmen (mainly engaged in trade) to engage in completely different business (automotive, shipbuilding, tape recorders and televisions, household chemicals, light industry) , while promising financial and other support from the state [Коре́йское ..., 2008]. "Cheboli" (FIG) were created and in a relatively short time there were many large mainly export-oriented industries. Such a mechanism of interaction between the state and business should be adopted at the present stage in Georgia.

We also add that the priority task of developing an innovation policy strategy in Georgia should be the issue of designing regional centers for industrial and innovation activities, structuring of which, in our opinion, is worthwhile to be modeled on the French poles of competitiveness.

It is possible to adopt a lot of other things from the experience of the countries surveyed: it is necessary, guided by the experience of South Korea, to create FIGs with the aim of organizing multi-sectoral conglomerates and developing innovative activities in their constituent enterprises, as well as creating new (including venture) innovative

enterprises; adopt the ways of borrowing innovations - the acquisition of licenses, know-how, the construction of foreign firms equipped with new technologies of enterprises and the delivery of the object "turnkey"; in the sphere of state financing of innovation activity and innovative renovation of enterprises, the creation of national state funds and other institutions such as FSI, FUI, ANR, CDS, OSEO with the appropriate regulation of their activities is necessary, following the example of France; in the field of external financing of innovation, it is necessary, as in the case of small European countries, to establish appropriate links with certain major TNCs in order to interest them in granting grants to finance innovative developments in universities and research institutes, and to establish joint innovative projects with these TNCs; In addition, the organization of high technology innovative enterprises (enterprises) in conjunction with foreign partners in itself implies their share in financing the construction of these industries. From the experience of Finland, you can take on the mechanism of financial and consulting support from investors of new companies (start-ups) at the initial stage and the stage of growth.

CHAPTER III

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

Coordination (strategy, regulatory instruments) of the regional innovation policy takes place both 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 takes place. The scientific aim 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. The main goal of this chapter 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 coordination; 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.

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.

Thus, in this chapter, 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 have become obsolete, after the period of writing these works in the EU, the supranational coordination mechanisms were repeatedly reformed, and in all developed countries there was 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 developments that relate to private aspects of innovation policy (innovation clusters, an innovative component of industrial policypoles of competitiveness, etc.) and which we used to write the work are presented in the works of D. Abdurasulova [Абдурасулова Д., 2009], A. R. Akopyan [Акопян А., 2016], A. B. Gomboev [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. Saharueva [Сахариева А., 2013], E. M. Chernoutsan [Черноуцан, 2010] and others listed in the bibliography works.

3.1. The initial prerequisites for the formation of a regional innovation policy and its mechanisms

As is known, 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 leveling the level of development of the regions of European countries, but an increasing attention is paid to the innovative development of the regions (in particular in the European Regional Development Fund, from year to 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 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, 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 Б., 2011].) This issue was successfully resolved in France on the basis of creating "poles of competitiveness", which will be considered below. Although, of course, South Korea does not belong to the EU, we consider it necessary to give its example, since it has developed a successful mechanism for coordinating regional, structural sector (industrial) and innovation policies based on the 4 + 9 project.

3. "Urbanization, the development of large cities leads to a high density of heterogeneous economic agents and intensifies interaction, and the development of digital technologies enhances these processes. This expands the opportunities for the

development of new sectors of the economy, primarily services, and actualizes measures to develop innovative ecosystems at the level not only of regions but also of cities " ([Структурная политика ..., 2018, p. 11] from: [OECD, IEA, 2017; European Commission ..., 2017]).

4. 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 Е., 2016, p. 20].

5. Distinguish between the state innovation policy and the innovative policy of private business proper. So one of the last fundamental works in the field of 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 more" [Смирнов Е., 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 Е., 2016, p. 16]. In addition, in modern conditions, private business (both TNCs and medium and small businesses), together with public sector enterprises 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, for example, [Смирнов Е., 2016, p. 12]).

6. The objectives of both regional policy in general and regional innovation policy require the systematization of territorial entities both within administrative boundaries and as clusters, technoparks and technopolises, whose geographical boundaries often do not coincide with that of the administrative regions of individual countries, while clusters can consist of even adjacent territories of two or three neighboring countries.

7. To manage regional policy programs and compare statistical indicators, the territory of Europe is divided into statistical units according to the classification 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. 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, NUTS levels 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].

8. 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 more and more. So, 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, which: 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 be such [A Practical Guide ..., 2004; from: Акопян А, 2016, pp. 57, 58].

An industrial cluster is usually understood to mean a group of firms, research organizations and a variety of auxiliary structures focused on a geographically limited area and having sufficient resources, including qualified personnel for the effective development of a specialized field of industry [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. The cluster is serviced by about a third of US venture capital firms (180 companies), 47 investment banks and 700 commercial banks that somehow finance the activities of companies [Ленчук Е., Власкин Г., 2010].

Recently, the term "regional innovation cluster" actually replaces the term "technopark" 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 Ziland, Loland-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 - "technopolises", focusing research in the advanced industries and industrial production. At the same time, the construction of technopolis is largely financed at the regional level [Беляева Ю., Тимонин А., 2012]. Of course, these technopolises are in fact large regional innovation clusters.

9. Special attention should be paid to the role of the state in the formation of cluster 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. (in the country in 2014 there were 380 industrial parks and innovative clusters (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", 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.

10. 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 put 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 partnership 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). To solve this double task, special **regional clusters** are being created in the country, the so-called poles of competitiveness, which are becoming a key instrument of the country's new **industrial, innovation** and **regional policy** [Черноуцан Е., 2012, pp. 43, 44].

11. As is known, the Association Agreement of Georgia with the EU [Association ...] also pays much attention to structural issues, including the field of industrial (sectoral structural) and innovation policies. In particular, the Agreement states that "Georgia should strive for the establishment of an efficient market economy and gradually bring its own economic and financial regulations into line with EU regulations while ensuring proper macroeconomic policies (section V, chapter 1, article 277.2). "To this end, the parties agree to conduct a regular economic dialogue aimed at: (a) exchange of information on macroeconomic trends and policies, as well as structural reforms, including on economic development strategies ... (Article 288)". The fifth chapter of the next Section VI of the Agreement is fully devoted to "Industrial Policy, Enterprise Policies and Mining". In particular, it is noted that "the parties will develop and strengthen cooperation in the field of industrial policy and enterprise policies, which will

help improve the business environment for all operators with a special emphasis on small and medium-sized enterprises, which is appropriately defined in the legislation of the EU and Georgia ..." (article 313). It is very important to take into account the following provisions of this chapter in order to conduct an effective sectoral structural policy in Georgia: "To this end, the parties will cooperate in the following areas: ... (c) simplification and rationalization of regulation and regulatory practices, with particular emphasis on exchange issues good practice on regulatory mechanisms, taking into account the principles of the EU; (d) promoting the development of innovation policies through the exchange of information and best practices on the commercialization of research and development (including technology-based start-ups, the development of clusters and support mechanisms for access to financial resources; ... (g) promoting modernization and restructuring in relevant sectors of industry of the EU and Georgia "(art. 314). The structural-sectoral approach is also manifested in the provisions of Chapter 12 of Section VI of the Agreement (" Cooperation in Research, Development and Democracy"): "The Parties will promote civilian scientific research, technology development and demonstration (RTD) in all areas, based on bilateral benefits and in accordance with the provision of property rights at appropriate levels" (Article 342). In terms of research, technology development and demonstration (RTD) cooperation includes: (a) sectoral dialogue and exchange of scientific and technological information; (b) appropriate assistance to each party for admission to the relevant program; (c) increased participation of research facilities and Georgian research institutions in the EU's research programs; (d) promote joint research programs in all areas of research, technology development and demonstration ... "(art. 243).

It is important to note that in the Agreement of Georgia with the EU, together with the industrial policy, the "business policy" (that is, the policy of private business in the field of industry, in other words, business coordination) is also considered in the above chapter, and in the document of the European Commission "To the European industrial renaissance" directly emphasizes the crucial role of

private business in the field of R & D (ie, industrial innovation). Therefore, in the last chapter of our work, along with the issues of state support for industrial development, self-organization of private business is also considered in order to improve the financing of industrial development (i.e., according to the Agreement, "enterprise policies").

In addition, as is evident from the above paragraph (d) of Article 314 of the Agreement on the Association of Georgia with the EU, innovation policy is considered in the agreement as an integral part of the industrial (ie, sectoral structural) policy and enterprise policy.

12. 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].

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

14. 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).

3.2. 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 are currently primarily instrumental in implementing regional innovation policy 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. At the same time, 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 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 latter 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 felt 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 may participate or be involved, for example, government agencies, national as well as local, as well as service providers. This partnership is closely connected with the market, 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, p. 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, p. 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 development, and thereby creating new benefits with high added value [Черноуцан Е., 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 Е., 2010, p. 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 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 П., 2014, с. 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 interministriel - 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, p. 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, p. 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, p. 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, p. 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, p. 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, p. 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 [Коре́йское ..., 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) [Коре́йское ..., 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. 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"** [Сахарни́ева 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, pp. 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 [Абдурашулова 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 [Абдурашулова 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 [Абдурашулова 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, Селезнев П., 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 [Гомбоев А., 2015, p.266]). In spite of all this, The cost of R & D 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 dirigism, 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, can not 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 consumer 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).

3.3. 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 centres. 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 " [Смирнов Е., 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].

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 Programme**, 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 specialisation programmes 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 Memorandum 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 (EIT). 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, interregional, 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 weightily 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, can not do without borrowing innovations and new technologies, and in South Korea an excellent system of continuous improvement of borrowed production and consumer 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 П., 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.

CHAPTER IV

MODERN STATE AND PRIORITIES FOR FORMING THE NATIONAL INNOVATION SYSTEM OF GEORGIA

Without the existence of an effective innovation system in the country, it is impossible to ensure sustainable economic growth and develop the necessary industries in order to achieve self-sufficiency of the economy in the future (at present, imports exceed export volumes by almost 4 times, due to the collapse of many industries after the collapse of the Soviet Union, whose enterprises produced both products for domestic consumption and for export) [Абесадзе Р., Бурдули В., 2014; Burduli V., 2015]. Under the government of M. Saakashvili, although several enterprises equipped with imported technologies were built, some of the surviving components of the innovation system also collapsed. Therefore, the task of creating a full-fledged innovation system is now acute before the country. However, for its formation, a sufficiently long time is required, large investments are needed. All this predetermines the gradualness of its formation. Therefore, in this chapter we have tried to highlight and justify the priority directions of the country's NIS development in the context of each key block.

4.1. Current state of NIS in Georgia

To date, the country's innovation system is very undeveloped and ineffective (although with the coming to power of the new government in 2012, some measures have been taken to improve it, but the reorganization is very slow, for example, only in June 2016, the Georgian Law on Innovations was adopted "), in particular:

1. The scientific potential of the country was in a deplorable state, before the arrival of the new government there was a strong reduction in the number of scientists, a number of scientific research institutes were closed, the salaries of the remaining

scientists were purely symbolic; although under the new government salaries increased by 2 times, but this was not enough to attract young scientists into the research institutes. The material and technical base of science is undermined, the share of GDP in financing of science, in particular, and in general, innovation activity is almost the lowest in the world.

2. A system of higher, secondary, professional and continuing education requires a serious transformation, which is not yet adequately oriented to the requirements of the economy, the system of retraining of personnel is poorly developed and ineffective, and so on.

3. Until recently, the system of transferring the results of innovative activities to production (services and mechanisms for technology transfer, technology parks, business incubators, consulting services, engineering and consulting firms) has been virtually absent and to date is insignificant.

4. The level of development of medium and small businesses was low, there was no infrastructure to support small businesses and small innovative enterprises.

5. There is no clearly defined innovation policy - an appropriate strategy, mechanisms of state regulation and business coordination.

6. At both the national and regional levels, there are almost no mechanisms for state financial and fiscal support for innovative activities, and financial support for innovative activities on the part of the firms.

7. There is no follow-up support for projects implemented by foreign donors, which in many cases practically nullifies the results of their activities.

8. The grant system is not developed and its management is low: the state does not give orders to scientists for innovation developments; although there is a special fund for the support of scientific research, which annually allocates grants for scientific research in the context of different scientific disciplines, but these scientific developments are not related to innovation.

9. The relationship between science, business and the state is weak, in fact, absent.

10. Innovations based on their own research are almost not implemented, and innovations are imported mainly in IT technologies, which is due to the fact that there are many factors inhibiting the import of new production technologies - lack of necessary knowledge, political will and institutional support, fear of financial risk in the case of real investments in the industry from the side of big business, and so on.

It can be said that until recently the Georgian economy did not develop along an innovative path. The previous government attributed this to the advantage of a liberal market economy as if only a market mechanism should regulate all areas of the economy. First, there was no liberal market economy in our country, as the state interfered in it, and, secondly, the liberal market economy does not exclude active, effective government intervention in the economy. On the contrary, it is the state that must create the conditions for the development of the economy in the right direction. At present, the state recognizes the need for innovation development of the country.

No previous government until 2012 considered innovative activity as a priority area of state interests. Therefore, the innovation system was not developed. **The formation of the legal and organizational base of innovative activity mainly began only in the last three to four years.** However, you can name documents that directly or indirectly meet the requirements of innovation development (these are the following documents: "The Law of Georgia on Science, Technology and Development" (1994), "The Law of Georgia on Higher Education" (2004), "The Law of Georgia on General Education" (2005), the Law of Georgia on Vocational Education (2007), the Law of Georgian on Entrepreneurship, the Innovation Concept of Georgia (2012), the Georgian Social and Economic Development Strategy" Georgia 2020 "), but they were absolutely inadequate for creation and strengthening of the innovation system. In recent years, certain steps have been taken in the field of innovation policy, the introduction of information and telecommunication technologies and the development of innovative infrastructure.

Currently, as it was noted, the "Law of Georgia on Innovations" [Law ..., 2016] was adopted, the provisions of which apply to the subjects of innovative activity, the

infrastructure for the promotion of innovative activity, the financing of innovative activities and the commercialization of innovations, the state strategy in the sphere of innovations, which is approved by the Government of Georgia on the proposal of the Council of Research and Innovation. The tasks and functions in the sphere of innovations of the advisory body of the Government of Georgia of the Council for Research and Innovation and the legal person of public law of the Agency of Innovations and Technologies are also defined. Naturally, the adoption of this law has a positive effect on strengthening innovative activity in Georgia [Law ..., 2016].

It should be noted that this law was developed at a very high level, it provides for many provisions necessary to ensure such legislation, which is necessary to guide the formation of a modern model of the national innovation system in the country. In particular, the provisions of the law take into account some of the regulations that are necessary to regulate the interaction between the three leading institutional sectors (state, business and science) characteristic of the national innovation system built on the principle of the "triple helix model", which is currently replacing the so-called "Euro-Atlantic model," which has been in force in the United States, Canada and the EU countries so far.

In 2014, the government decree created the legal entity of public law - the Agency for Innovation and Technology of Georgia, the Agency's goal is to create an innovation ecosystem in the country, stimulate the use of innovations and technologies in various sectors, promote the commercialization of innovative entrepreneurship, inventions and research. The Agency will implement special programs and projects to promote the introduction of innovations and technologies in the country's industry. It will also promote the commercialization of research results, the creation and implementation of IT business, distance employment, the development of Georgian software. In the process of the Agency's work, attention will be paid to the formation of the IT industry, focused on exports, as well as to promote the emergence of innovative Start-ups and technology companies and to increase the efficiency of the use of innovations and technologies. The

Agency will have both financial and non-financial instruments to achieve its objectives. The agency will form the infrastructure necessary for the commercialization of innovations and technologies, including creating technological parks, innovation centers, accelerators, innovation laboratories [АҒЕНТСТВО ..., 2014].

In 2015, an advisory body of the government was created in the innovation sphere - **the Council for Research and Innovation**. It has the following functions: coordination of the development of documents on the innovation strategy and their provision to the government; coordination of the development of national and regional innovation ecosystems both in government departments and between the public, private, educational and scientific sectors; coordination of the preparation of reporting on innovative activities and provision of it to the Government of Georgia [Resolution ..., 2015].

Georgia is the first country in the South Caucasus where Fablabs appeared (FabLab). Fablab is a laboratory that is equipped with modern computer-controlled machines and equipment, through which materialization of ideas and creation of physically tangible products is possible. The Agency for Innovations and Technologies has started active work on their foundation and operation since 2015, both in Tbilisi and in the regions. The first fablab with the assistance of the Agency for Innovations and Technologies of the Ministry of Economy and Sustainable Development was established in Tbilisi on the basis of the University of Ilya. To date, facsimile faculties of the Academy of Arts, the State University and the Technical University function in Tbilisi on the basis of universities, and in the regions there are active fablabs on the basis of the Batumi State University and the Kutaisi University named after Akaki Tsereteli. In several regions, there are also fablabs on the basis of vocational schools [FabLabs ...].

In early 2016, the first Technology Park was opened. It was organized by the Agency of Innovations and Technologies of the Ministry of Economy and Sustainable Development of Georgia.

The technological park combines both small incubators, training centers and laboratories, as well as offices for large companies, places for joint work and recreational space. The technology park offers resources to start-ups and small companies that were previously inaccessible, and should play a special role in creating new businesses and new companies, in developing the existing business, in commercializing innovations and creating high-paying jobs [Вгрузии открылся ..., 2016].

At the end of 2016, the second technology park was opened in Georgian Zugdidi, where both the universal laboratory for industrial innovation (FabLab), the training center, the co-working center, the conference hall, joint workplaces for companies, recreational space and other services, which create a unified ecosystem in the field of innovation and technology and contribute to the development of innovative ideas in the region. The purpose of the opening of the technopark is to help both start-up businesses (start-ups) and long-standing businesses to use hard-to-reach technologies to develop their own activities and gain new knowledge both in the sphere of innovations and technologies, and in the sphere of entrepreneurship [A technological ..., 2016].

In September 2016, Tbilisi opened the first private high-tech center "Silicon Valley Tbilisi". The high-tech center includes the IT Academy, the University of Business and Technology, the School, the Research and Laboratory Center and the Technology Incubator. There will also be offices of leading companies and brands ["Silicon Valley" ..., 2016].

In May 2016, a presentation of a new technology institute project was held in Tbilisi. In size it will be the fifth, after the analogical institutes of Italy, Switzerland, Japan and Austria. At the institute, a particle accelerator, the so-called "collider," will be built. The cost of the project is several hundred million euros and it will be fully financed by the international charity fund "Cartu", founded by Bidzina Ivanishvili. Training of students of the institute and their trips to partner organizations will also fully fund the Cartu Foundation. The purpose of the foundation of the Georgian Institute of

Technology is the creation of a research complex for fundamental and applied research and the implementation of master's and doctoral programs in physics, chemistry, biology, mathematics, computer technology and engineering. With the establishment of the Technological Institute, a base will be created for modern scientific and experimental research, which is necessary for the development of the country's research potential. In addition to the scientific purpose, the institute will have an applied load, including in the field of hadron therapy of tumors. The creation of this scientific and educational center will contribute to the development of a new generation of scientists, their cooperation with leading professors and researchers of world-class universities. Students of the Technological Institute themselves will take part in the construction of the particle accelerator and put it into operation. To exchange experience, the Georgian government issued memorandums with CERN (the European Center for Nuclear Research), with the Italian CNAO (National Hadron Therapy Center) and with the INFN (National Institute of Nuclear Physics of Italy). The chairman of the Council of International Advisers Professor Gia Dvali was invited and the executive director of the Technological Institute is Professor Teimuraz Lomtadze [Machavariani K., 2016].

In 2017, within the framework of the European Union for Business initiative, the first cluster was established in Georgia, namely the Georgian Furniture Cluster, which unites 25 local furniture manufacturers. Vincent Rey, the head of the project department of the European Union, said that the project, within which the first cluster was created in Georgia, aims to promote small and medium-sized businesses, „Business Georgia“ reports. According to him, along with the furniture cluster, it is planned to contribute to the formation of a textile cluster, as well as clusters of film production and information technologies. "At first, the furniture sector was chosen because there were already enterprises in Avchala and they needed help to strengthen cooperation, we helped them in this, connected them with foreign professionals, and acquainted them with the experience of Germany and Bulgaria," said Vincent Rey [EC поможет ..., 2017].

At present, a technological cluster is being created in Georgia to promote the introduction of innovation technologies. It will unite technology companies, start-ups, public and private universities, the private sector and international companies, as a result of joint activities of which the country's economic development will become more stable and faster. This project, which will become a platform for the development of high-tech and innovative business in Georgia, will be implemented on the basis of cooperation between one of Europe's leading Limerick University (Ireland) and the Georgian University of Business and Technology [What will bring Georgia ..., 2017].

Georgia in 2016 became a full member of the research and innovation program "Horizon 2020". In Brussels, the Minister of Education and Science of Georgia Tamar Sanikidze and the European Commissioner for Research and Innovation Carlos Moydash signed an agreement on the association of Georgia in the 8th Framework Program of the European Union for Research and Innovation "Horizon 2020". The agreement allows Georgian researchers and innovators to participate in the program on the same terms as the EU member states. As a result, both individual and university researchers will be able to use all the opportunities that "Horizon 2020" gives. Georgia has so far participated in it as a third country [Грузия стала ..., 2016].

In 2016 the "Startup-Georgia" program was founded, coordinated by the Georgia Partnership Fund and the Agency for Innovation and Technology of the Ministry of Economy and Sustainable Development. The purpose of this program is to promote the development of a beginner, mostly innovative, business (start-ups). At the end of 2016, the Partnership Fund started financing the winners of Startup-Georgia by providing 586.7 thousand lari (239.5 thousand dollars) to eight of the 36 projects-winners of the state program to promote innovative business. Among the financed projects: "Parking of cars in vertical space", "Production and sale of decorative plates and ceramic, spatial bricks", "Production of innovative decorative brick", "Clinic online", Trippanner, Wingo, Georgian Toys Factory, CARGOHUB, etc. Each the winning project receives funding in the amount of 100 thousand lari (more than 40.8 thousand dollars). The

project is financed after agreeing all the terms and signing the contract between "Startup-Georgia" and private project owners. The first winners of the "Startup-Georgia" program were announced in August 26, 2016. In the first competition, 56 projects were won, 36 of them in the innovation part, and 20 - in the high-tech part. At the first stage, GEL 11 million was allocated for the implementation of the program (about \$ 4.5 million), and later the budget was to grow to 35 million lari (about \$ 14.3 million) [Партнерский фонд начал ..., 2016].

Rapidly in Georgia, information and telecommunication technologies are developing: the number of fixed-line subscribers, mobile subscribers and Internet users is growing quite rapidly; WiFi in Georgia is the fastest growing technology (it should be noted that it is very intensive in those regions where wired Internet is less available); the income received from television and radio broadcasting has been growing for many years; the business sector of information telecommunications technologies has been formed and is developing; in a number of state institutions, local information networks have been formed and are successfully functioning - LAN; Within the framework of the international project, the creation and use of individual ICT components was realized; in Kutaisi, the second state interdepartmental information network was created - MAN; in Imereti created a regional interagency information network-WAN; wide layers of all social strata of society and ages receive computer education, etc. [Абесадзе Рамаз, 2016].

4.2. Priorities for the formation of NIS in Georgia

First of all, in order to outline priority directions for the formation of Georgia's national innovation system, it is necessary to clearly structure its constituent blocks. Based on a number of works, where the systematization of the blocks was carried out on the basis of a study of the NIS of the EU countries and some other countries [Зверева., 2009; Модели ..., 2013; Национальные ..., 2006], and own developments [АбесадзеР., 2016], we can suggest the following system of blocks:

1. Block of ensuring the innovation policy of the state: a) government organizations that determine the state innovation policy, ministries, departments, agencies, funds and other regulatory and funding agencies; b) strategy and priorities of innovation policy; c) regulatory framework for the development and stimulation of innovation, including provisions regulating the relationship between science, business and the state.

2. Block of innovation production: a) business sector (companies producing innovative products - developing units in large corporations, small and medium-sized enterprises creating an innovative product); b) companies developing innovative products, the creation of which was partially or fully funded by the state (for example, on the basis of the state venture).

3. Research sector (universities and research institutes).

4. Organizations for the transfer of technology and other elements of innovation infrastructure (technology parks, business incubators, centers for commercialization and transfer of technology, etc.). All these structures should help to identify and introduce into production both domestic (in a small country a little) and, in particular, import new production technologies.

5. The system of interaction with the international innovation environment, ie, the relationship with foreign partners for innovation, both in the field of supplying (transfer) new technologies, and in the field of joint innovation development.

6. The block of financing of innovative activity: a) state (central and regional) financing of innovative activity; b) financing of innovative activities by the business sector; c) public-private partnership in financing innovative activities.

7. Block training.

8. Block of support for projects implemented by donors.

9. The block of support of innovative development of agriculture.

Now, in the context of the above blocks, we will discuss the priority directions for the formation of the national innovation system.

1. Block ensuring the innovation policy of the state. The Law of Georgia on Innovations defines the functions of the advisory body of the government of the Council for Research and Innovation, the most important of which is coordinating the development of a state innovation strategy and the development of an ecosystem of national and regional innovations both between government agencies and between public, private, scientific and educational sectors. The law also outlines the tasks of the legal entity of public law of the Georgian Agency for Innovation and Technology, which should promote the commercialization of innovations and stimulate the use of innovations. But nothing is said about the innovation fund, some varieties of which exist in many countries with a successfully developing innovation system. Of course, the law outlines the rules for state funding of innovative activities by the agency, but it seems that in addition to this there must be an innovation fund for financing (in full or on a public-private partnership basis) the most relevant innovative operations or developments in modern conditions.

The innovation policy strategy should set priorities for the development of the country and outline the key industries with the prospect of industrial innovation, to which the main state resources should be allocated, and priority should be given to the innovative development of traditional industries, the work of most enterprises in the early 90s ceased for the non-competitiveness of products manufactured on obsolete technologies and the lack of knowledge (the termination of the work of these enterprises caused a huge imbalance between the volume of exported and imported products). In addition, the strategy should outline the priority tasks of the formation and development of national and regional innovation systems and select priority areas for the development of national innovations in the public sector. Part of the strategy should be the development of special programs of innovation development, which is practiced in many countries.

Despite the fact that the "Law of Georgia on Innovations" was adopted, further development of the legislative base of innovative activity is necessary. For example, the

third chapter of this law (Articles 16 and 17) regulates the financing of the agency's innovative activities. But nothing is said about how the agency's financial resources are being formed. Meanwhile, only budgetary financing, with a very weak current tax base for replenishment of the budget, will clearly not be enough. Therefore, it is obvious that the financial fund of the agency will have to be replenished at the expense of government borrowed funds, which should be reflected in legislation or other normative documents. It is also advisable to introduce into the legislation the provision that universities and other research institutions should own intellectual property rights for those developments that were carried out with the financial support of the state. This situation is one of the characteristics of national innovation systems built on the principle of a "triple helix" [Models ..., 2013].

2. Block production innovation. In all developed countries, most of the innovations are produced in the business sector. In Georgia, at present, the production of innovations in the business sector is at an insignificant level. There are few large corporations in the industrial sector in the country, although there are a lot of them in the trade sector (which mainly grow due to the excessive import and sale of consumer products in the country), but in the trade sector there is no need to produce a large number of new technologies. Therefore, before talking about the organization of innovative units in large corporations, it is necessary to rebuild the hypertrophied sectoral structure of Georgia in the direction that there are more enterprises in the relevant branches of industry and agriculture (on the ways of such restructuring and providing economic mechanisms in Georgia, see our works [Абесадзе Р., Бурдули В., 2014; Burduli V., 2015; Бурдули В., 2016]). Now it is more important to create small innovative private enterprises (which mainly need to explore new foreign technologies for their subsequent transfer to production) and a technology transfer network to ensure the accelerated growth of these import-substituting and export-oriented industries. Although in some industries, for example, in the rapidly growing construction materials industry, it is now possible to create innovative divisions in large companies, which, in

particular, will help ensure the mastery of production in the country of many modern building materials that are now imported).

Priority is also the creation of state-owned (or public-private partnerships) small innovative enterprises, taking into account the imperatives of the state's innovation strategy (however, the latter has not yet been developed).

3. Research sector. Universities and research institutes need to pay more attention to scientific developments focused on innovation research.

In most developed countries (with the Euro-Atlantic model of NIS, now being transformed into NIS, built on the principle of the "triple-helix model"), the universities of NIS, as well as some other research centers, are actually the nucleus of NIS [Национальные ..., 2015]. Today, the base of the NIS of the USA is about 150 universities, in which the basic research in the field of fundamental science and a significant part of applied research are concentrated. In addition to universities, in the United States, the institutions of higher research are engaged in fundamental research. The next structure of the NIS of the USA is the national laboratories (the largest institutes developing some field of applied science [Модели ..., 2013]). The leading role is played by universities in such large European countries as Germany, Great Britain and Italy, but in France the vast majority of fundamental research is carried out within the National Center for Scientific Research (CNRS), an analogue of the Academy of Sciences. In the country there are two more categories of research institutions associated with the state: state research institutes, state-owned industrial and commercial institutions dealing mainly with the knowledge-intensive sector of the national economy [Национальные ..., 2015]. In the small country of Denmark, in addition to universities, sector research institutes are an important part of NIS. GTS-institutes ("approved technology service provider"), acting as connecting elements between the state and private structures. In Denmark, a powerful innovative infrastructure has also been created. Nevertheless, most of the innovative activity is reduced to small innovations aimed at improving the production process in the field. [Справка ..., p. 5].

From this experience, it should be concluded that in a small country it is impossible to do without large-scale borrowing of new technologies abroad. Especially it concerns Georgia, where, as mentioned above, it is necessary to straighten the hypertrophied sectoral structure of the economy. Therefore, in the country at each stage of innovation in production, special attention should be paid to the problem of borrowing (import) of innovations (ie new technologies), in particular, at the research stage in the relevant institutions (be it a university or research institute) - research unit engaged in research of in-demand foreign innovative technologies and development of recommendations on their promotion into production.

4. Organizations for transfer of technology and other elements of innovation infrastructure. The "Law of Georgia on Innovations" noted the following elements of the innovation infrastructure: scientific / technological park; business incubator; business accelerator; transfer center of technologies; laboratory of industrial innovations; Innovation Laboratory; center of innovation; another innovation infrastructure.

In this area, in our opinion, first of all, it is necessary formally to create technology parks in several regions, the founders of which will outline the range of research organizations involved in it, will help to establish and deepen innovative relationships between research organizations and production, and also - to contribute to the creation of the necessary elements of an innovation infrastructure.

The main task of the innovation infrastructure is the transfer of technologies. However, transfer means a broader range of tasks than defined in the said law for a "technology transfer center". In fact, other elements of the innovation infrastructure directly or indirectly participate in the transfer. For example, the task of business accelerators usually consists in supporting the development of technologies (including investment) by innovative start-ups, which can also be considered as part of the technology transfer process. Therefore, along with business incubators, priority centers

for the transfer of technology and business accelerators are needed in several regions of Georgia.

5. System of interaction with the international innovation environment.

Georgia is a small country and therefore can not produce a large number of new production technologies (and in general such production is now negligible). Basically, it should focus on borrowing (importing) production technologies in foreign countries (and in large countries there is a massive import of foreign and export of domestic new technologies). Therefore, domestic technology transfer centers should cooperate with the corresponding systems of foreign countries, in particular, to assist domestic enterprises in acquiring patent licenses, know-how, attracting foreign engineering firms for setting up new production technologies purchased abroad and delivering them "turnkey" , as well as assistance in the organization of joint ventures, in particular venture companies.

Another area of international cooperation in innovation is cooperation in the development and production of innovations, in particular at the stage of research and development. While the problem of international cooperation in this area has not been resolved at the proper level, there are broad prospects for development of such cooperation with the EU countries on the basis of the provisions of Chapter 12 of Section VI of the Agreement on the Association of Georgia with the EU "Cooperation in Research, Development and Demonstration of Technologies", where , in particular, it is said: "The parties will promote cooperation in all spheres of civil scientific research, development and demonstration (RTD) of technologies with a two-way benefit and in with all levels of appropriate and effective protection of intellectual property (Article 342) ". "Cooperation in research, development and demonstration (RTD) of technologies covers: (a) sectoral dialogue and the exchange of scientific and technical information; (b) the appropriate facilitation of appropriate access to the programs of each party; (c) the growth of research capabilities and participation of Georgian research institutions in EU framework programs; (d) promote joint research projects in all areas of research, development and demonstration (RTD) of technology ... (Article 343)".

6. The block of financing of innovative activity. As noted above, both public and private funding for innovation in Georgia is at a very low level. Meanwhile, in the EU countries with a successful innovation policy, much money is expended on such financing. Thus, in 2009, the share of total expenditures for financing research and development in GDP was 3.70% in Finland, 3.75% - in Sweden, 2.63% - in Germany, 2.66% - in Germany, 2.72% - in Denmark, and 1.99% - in France [СосновФ., 2011, p. 222]. And the share of the state in the total amount of costs accounts for a smaller share, for example, in Finland - 25.4%, Sweden - 30.0%, France - 36.2% (although later in France the share of state expenditures increased to 49.9% [Национальные ..., 2015]). Therefore, in order to form and use NIS in Georgia, it is necessary to dramatically increase both public and private expenditures in this area.

State financing of innovative activity depends on the possibilities of the expenditure part of the state budget. In view of the low tax base for its replenishment, it is now, as noted, negligible. Therefore, in order to ensure acceptable levels of public funding, it is necessary to improve the tax system by increasing the rates of some taxes. And private capital is not yet organized enough to allocate sufficient funds for NIS development and innovation. In private business, most free financial resources are concentrated in the sphere of commercial capital, which, because of the high risk due to incompetence, does not seek to place them in the innovation sector of the industrial sector. Therefore, it is necessary to restructure the system of self-organization of business. In order to confirm the correctness of our following proposals in this area, we first quote the following quotations: "South Korea's rapid successful innovation development was made possible through the active borrowing of foreign technologies and competent patent policy. Important role in the "economic miracle" of Korea was played by large **financial and industrial groups** (chaebols), which for many years were the basis for the development of the national economy "[Справка ..., p. 14]. "In South Korea, initially, the modernization was based on the **borrowing** of foreign technologies, which took place in various forms: turnkey contracts, licensing, advisory services. The

study of foreign experience occurred mainly through **the creation of joint venture firms** with Japanese partners. At present, despite the fact that Korea is in the lead in many high-tech positions in world exports, the country still largely depends on imported equipment due to insufficient development of its own basic technologies "[Справка., p. 7, 8].

In Georgia, in order to increase the investment activity of the business, it is necessary, according to the previous example of the South Caucasus, to create a FIG with the inclusion of trading companies (like the USA [Цветков В., 2000]), and the bank in the FIG should have sufficient competence, in order to select the appropriate financing lines for the creation of innovative firms in the industrial sector, not only through lending, but also through venture capitals produced both directly by the bank and other companies affiliated with FIGs, possibly on public-private partnerships with the participation of the Georgian Agency of Innovation and Technology. Venture innovation firms should be created jointly with foreign partners.

Detailed ways of improving the state and business investment mechanisms in the real sector of the economy are presented by us in [Бурдули В., 2016].

7. Block training. The training of innovative personnel (including innovative managers) can not be conducted haphazardly. It should consist of interrelated stages of increasing knowledge and competence. Along with universities preparing specialists in the field of fundamental and applied science, and institutions directly focused on gaining knowledge in the field of innovation (for example, innovation center under the version of the Law of Georgia on Innovations), national engineering schools play a huge role in developed countries [Модели ..., 2013; Сергеев В., Алексеенкова Е., Нечаев В., 2008, p. 8]. Of great importance for the development of innovative activity is the training of highly qualified specialists, namely doctors of science. In some European countries, for example, in the Netherlands and Austria, there is an increasing shortage of doctors of science in science and technology or lack of competent personnel, which results in a low return on scientific and technical developments [Справка..., p. 6, 9, 10], and inadequate

development of interaction between science and business in some countries, for example, in Germany, encourages them to establish business departments in universities to promote the wider commercialization of developments [Справка..., p. 12].

In our opinion, doctors of sciences in Georgia should be trained not only in university departments (as is currently practiced), but also in specialized research institutes, in which, mainly, scientific developments of both fundamental and applied nature are carried out.

8. Block of support for projects implemented by donors. Important projects in Georgia were carried out by donors, but their commercialization did not take place, and important financial and intellectual resources were spent inconclusively. Therefore, in the future, such projects should be realized, the implementation of which will necessarily occur in production. To this end, under the Georgian Agency for Innovation and Technology, temporary units should be established to support donor-implemented projects that will monitor, if necessary, pre-financing, commercialization of projects and other required activities.

9. The block of support of innovative development of agriculture. At present, agriculture in Georgia is extremely inefficient: its productivity is low; Organizational and institutional forms of agricultural production are not regulated, in particular, there is a large number of nonmarket small-scale households with extremely low labor productivity; There are few specialists, in particular, agronomists, called upon to provide advisory assistance to agricultural producers, and there is no ordered system of their consulting services. Therefore, in our opinion, it is necessary to form a separate system to promote the innovative development of the agricultural sector. It seems expedient to establish urgently the Agency for Innovative Development of Agriculture under the auspices of the Ministry of Agriculture of Georgia, in which consulting and other necessary services will be created on the basis of public-private partnership.

Conclusions.

The national innovation system provides an intensive influx of new knowledge, their transformation into scientific and technological innovations and their commercialization. This process (including the import of innovations) is carried out through an innovative infrastructure, where the market plays a major role, but the state has the most important duty to promote the formation of an innovative economy through the use of various coordination tools (legislative, financial, incentive, organizational, etc.). That is, the state should take on the role of a "helmsman" of innovation processes and, in general, of the economy [Abesadze R., 2014].

The country faces the most difficult task of forming a national innovation system. When forming it, one should adhere to the principle of gradualness, with priorities in the context of each key block of the innovation system. The innovation development strategy should outline the key industries with the prospect of industrial innovation, and special attention should be given to the innovative development of those traditional industries whose production has been severely curtailed during the post-communist collapse of the economy. In the context of the innovation production block, it is necessary to induce large industrial corporations to create innovative divisions, it is also important to create small private and public-private innovative enterprises, which, in particular and to a greater extent, need to absorb borrowed technologies. In the country, it is necessary to create an effective technology transfer network, in which, besides the "technology transfer centers", other elements of the innovation infrastructure will also participate. Domestic technology transfer centers should cooperate with the corresponding systems of foreign countries in order to assist domestic enterprises in mastering new production technologies purchased abroad. It is necessary to increase both public and private funding for innovation, which is currently at an extremely low level compared to financing in developed and successful developing countries. In the private sector, this problem will help to resolve the creation of financial and industrial groups.

CHAPTER V.

IMPROVEMENT OF FINANCIAL SUPPORT FOR THE IMPLEMENTATION OF SECTORAL STRUCTURAL (INDUSTRIAL) POLICY AND ENTERPRISE POLICY

The country is currently taking a course to attract excessive amounts of foreign investment to the manufacturing sector, while it is not possible to attract free financial resources of national capital for investment purposes, which have accumulated quite a lot (although they are mostly sent abroad as "investments", mainly offshore). In this regard, this chapter reveals the negative impact in the medium and long term on the macroeconomic parameters of the excessive prevalence of foreign capital in the production sector compared to the national one and suggests the directions for the transformation of such system-forming mechanisms of the national model of economic development as financial development institutions (funds, banks, including as a part of FIGs), so that they activate the participation of national capital in the creation and expansion of production in sectors and sub-sectors of the economy typical today.

5.1. The current state of financial support for industrial policy and enterprise policies

Why is dynamic and sustainable economic development not achieved? Many believe that there is an economic crisis in the world (to a certain extent this is also a crisis of overproduction), and therefore, under the conditions of the global crisis in Georgia, too, it is difficult to ensure sustainable economic development. But for Georgia, in which a lot of goods are imported uncontrollably, including those goods whose production can be quickly organized on the spot, just this crisis is a hiccup, because it is possible to build import-substituting enterprises, to quickly rehabilitate agricultural production.

To do this, first of all, it is necessary to strengthen investment activity [Burduli V., 2008] both in the public sector and in the business environment. The question of investment activity is considered by us in the form of expedient and inappropriate investment activity. Examples of inexpedient investment activity in Georgia include the acquisition by foreigners of agricultural land, the construction of an aquapark in Anaklia and many others. Appropriate investment activity should be aimed at increasing the level of self-sufficiency of the economy [Burduli V., 2015; Бурдули В., 2015], that is, the construction of import-substituting and export-oriented industries (the latter is now difficult due to the crisis of overproduction, but this does not exclude the sale of segments at foreign markets, which must first be identified and then built accordingly). However, in Georgia, for the time being, there are almost no construction of modern, expedient production facilities, both import-substituting and export-oriented ones. True, several modern enterprises were built (or built) with the help of the Partnership Fund, and in the business sector, new progressive enterprises are built mainly through the efforts of Bidzina Ivanishvili.

Where can we get money for the implementation of an expedient investment activity aimed at building modern import-substituting and export-oriented industries (sales of which will significantly improve the export-import balance)?

First of all, there must be reliable, as it is customarily called, private as well as state financial development institutions (it does not really matter how they are called - investment funds, development funds, institutional investors, investment bank, banks and other investment institutions in the composition of financial-industrial groups (FIGs), a co-investment fund, etc.). Of course, business can invest in the construction of feasible industries directly (without accumulating them in financial development institutions) at the expense of its own funds and bank loans), but it is difficult to carry out large projects independently, especially when it is necessary to invest not in its sphere of activity, but in this stage of activities (industry). It is possible to attract suitable

activities and investments for the development of TNCs, but now, in view of the global crisis of overproduction, it is very difficult, although possible.

As it is known, in Georgia **the coinvestment fund** has been created. It was assumed that the national large business would contribute there to co-finance the foundation for the construction of well-grounded projects, which was very easy to do with a miserable profit tax rate (15%) for large businesses. But big business, with the exception of Bidzina Ivanishvili (whose funds were used to implement several large projects), is in no hurry to actively participate in this fund.

Instead, the profits of large corporations are exchanged in the country for hard currency and in the form of investments are sent abroad (most of all to offshore zones). So, according to the statistical yearbook, in 2014, in the form of direct investments from the country, it took 406.7 million US dollars, in the form of portfolio investments - 37.5 million dollars, in the form of other investments - 232.8 million US dollars [Statistical ...,2015, p. 242]. "In the second quarter of 2015, in the form of foreign investment in Georgia, 530 million US dollars were received, but in the same months, \$ 175 million is gone from the country, which is the lowest figure for the last 2-3 years. Capital flight from 2013 is increasing, mainly in offshore zones. For example, during this year more than \$ 106 million was exported to Cyprus, more than \$ 1 billion has gone from the country this year, approximately the same amount was paid in 2014. If we look at the data of the public register, we will find that many large companies, especially those companies that are connected with members of the previous government and close to them, are registered in Cyprus, the Cayman Islands and other offshore zones. Therefore, the question arises whether, along with many other factors, capital leaks from Georgia are contributing to the growth of demand for the dollar and the depreciation of the lari?" [According to official data ..., 2015; Why does Georgia ..., 2015]. Most experts agree that such a leakage of capital from Georgia reinforces devaluation trends, that is, it affects the stability of the lari rate [Why does Georgia ...,2015].

It should be noted that most of the large wealth in Georgia was created through the sale of imported products in the country. Naturally, in order to import the next batch of imported products into the country, it is necessary to exchange the income received in lari for dollars or other hard currency. But when, in addition, companies begin to exchange their profits for dollars and send them for investment abroad, there is a rush demand for dollars and euros in the country, and as a consequence, the lari exchange rate becomes unstable, that is, it seriously damages the preservation of the macroeconomic stability.

Meanwhile, the president of the business association G. Chirakadze repeatedly made the following statement: "when the rate is very fluctuating for business it is difficult to make a correct prediction about what will happen tomorrow, therefore all abstain from both investment and real actions. To continue stable work, it is necessary to stop fluctuations in the rate"[Giorgi Chirakadze ... A, 2015; Giorgi Chirakadze ... B, 2015]. There is a vicious circle: they themselves demand from the state to ensure macroeconomic stability and they themselves undermine it by withdrawing dollars from the state (by exchanging profits received in lari for dollars) and sending them abroad as investments, rather than building so necessary now import-substituting and export-oriented enterprises (in this case, of course, it would also be necessary to send a part of the funds from the profits received abroad for the purchase of production technologies, but the rest would work in the country).

Now about the state financial development institutions. Even before the new government came to power in Georgia, there was a "Partnership Fund", whose portfolio of assets includes several large state corporations (Georgian Railways - 100%, Georgian Oil and Gas Corporation - 100%, Commercial Electricity System Operator - 100%, JSC Telasi - 24.5%). But if we take into account the fact that large enough funds have been mobilized, it is obvious that the finances of this fund were not used expediently, since a small number of facilities were built (and proper control over the expenditure of this state fund is not established, but there is a cumbersome bureaucratic management

structure). In December 2013, the government prepared legislative materials on the formation of the Sovereign Fund of Georgia, but then it was stated that the Partnership Fund had not exhausted its capabilities. At the same time, earlier the chairman of the Partnership Fund stated that he would agree to assume the post of chairman of the state financial development institute only on condition that it would be transformed into the Bank of Georgia's Development [Natia Turnava ..., 2016]. Therefore, it was decided by its reorganization to establish the Development Bank of Georgia JSC, the legislative package for which was submitted to Parliament in April 2014 (the bank was supposed to issue loans through commercial banks, provide guarantees, carry out insurance operations, issue bonds, etc.). However, the essence of the state financial development institution has been emasculated by this, and therefore this project was not implemented either. In the end, they came to an agreement on the establishment of the Georgian Development Corporation on the basis of the Partnership Fund. But the main purpose of the reorganization of the Partnership Fund is to increase its financial resources. How is the corporation going to solve this problem? We read: "The second result and direction of changes is the introduction of more stable financing of the corporation's activities and the best opportunities to attract resources from international financial markets" [Natia Turnava ..., 2016]. As for "introducing more stable funding for the activities of the corporation," this is correct, but it is not clear where the additional national financial resources will come from. As for the "best opportunities for attracting resources from international financial markets," the question arises whether it is worthwhile to maximally and unrestrainedly attract international financial resources, in conditions when most of the national reserves are not used for investment. After all, there are opportunities for a significant increase in attracting (in the public and private sectors) investment resources for national financial resources (primarily due to corporate profits), and foreign financial resources should be attracted to the necessary extent (in particular, excessive involvement in the Georgian Corporation development of international

financial institutions means a serious increase in public debt, which already in the medium term will affect the ability to maintain macroeconomic stability).

Given the very low investment activity of the national business in Georgia, in fact, a course has been taken toward excessive (more than necessary) attraction of foreign investments, both expedient and inexpedient. This entails a short one-time positive macroeconomic effect (due to an increase in foreign currency flows, an increase in the number of jobs), but in the medium and long terms this (excessive number of foreign enterprises) will ruin the macroeconomic parameters and increase poverty in the country. After all, foreign enterprises will take all their profits out of the country in hard currency, and with the abolition of the corporate profit tax and the budget will be weakly replenished due to their functioning (although the unemployment rate will decrease somewhat and the income tax levied on employees of these enterprises will come to the budget).

As an example of an inexpedient investment project, let us cite an unrealized agreement on the construction of the Khudoni Hydroelectric Power Station, according to which a foreign construction company (simultaneously an investor) would have the right for many years to export most of the electricity generated by the station abroad and only a small part of it - to the energy system of the country in the winter. In the case of the "Estonian option" and the tax on profits from the company will not be charged, and all profits, both from electricity exports and from supplies to the domestic grid, will be exported in hard currency abroad. That is, for the country and its population, there will be no use for the operation of such a hydropower plant. Why, on such conditions, should it be built? However, the new government took into account this circumstance and now, for example, the average capacity (280 Megawatt) of the Nenskra Hydroelectric Power Station is built on fairly acceptable conditions: (although the construction is financed by foreign capital (project investor responsible for its implementation is South Korean K Woter), but it is maintained by a separate contractor (the well-known Italian company Salini Impregilo will be built) [Nenskra ..., 2015],

which, naturally, does not put forward any conditions for the disposal of electricity produced.

Herefore, for investments within the country, it is most necessary to use the profits received by the national business as much as possible in order to increase the share of national capital in both the real and financial sectors of the economy (the latter is also necessary because it is impossible to create a regional hub declared by the government without a powerful support of the development and functioning of the real sector of the economy from the national financial and directly banking sectors).

5.2. Ways of restructuring financial development institutions to increase the investment activity of national business

There are three main directions for restructuring the systems of financial development institutions in the country aimed at increasing the investment activity of the national business.

1. To increase corporate tax rates and the additional funds received for this account to be placed in the state development institute. It does not matter how it will be called: a state development corporation, an investment fund or a development fund. However, the charter clearly should indicate that the main direction of its activities is investing in the construction of enterprises in the real sector of the economy. Now the question of starting business is very acute in the country. There are experienced managers, specialists who worked in the real sector before the post-Soviet collapse of the economy. Therefore, the main activity of the state financial development institute at this stage should include the identification of capable persons who can make a serious contribution to the process of sectoral economic restructuring and provide them with the necessary financial, consulting and other support to create import-substituting and export-oriented enterprises in the real sector of the economy.

2. To attract more funds of national capital to the co-investment fund. To do this, it is necessary to create restrictive legislation for companies (mainly making money from

imports) to export profits in the form of investments abroad (mainly offshore), and to intensify business in order to place part of the profits in the co-investment fund.

3. But the most important thing is to create FIGs that exist in all developed and successful developing countries (see, eg: [Цверков Б., 2000]). To do this, first of all, it is necessary to adopt a package of necessary laws regulating their activities, aimed, in particular, at ensuring that large companies can direct free profits to expand the statutory fund of banks and other financial development institutions that are part of the FIG.

Thus, the country faces the most difficult task of attracting the free resources of the national capital to invest in the creation of topical enterprises for today in various sectors and subsectors of the economy. To implement this task, it is necessary to reform the main financial development institutions - 1. Georgian State Corporation, 2. co-investment fund and 3. banks and other financial institutions as part of the FIG (reforming, first of all, should be aimed at improving mechanisms for attracting financial resources of national capital in financial development institutions and mechanisms for their use of these funds for investment construction purposes).

Let us dwell in more detail on these three areas of restructuring of financial development institutions.

First. First of all, let us consider whether the "Estonian model of tax reform" was really proposed to the country [The Prime Minister briefed ..., 2016]. For this, let us compare the tax burden on the profit of enterprises, as well as the tax burden (calculated as the ratio of the total amount of taxes paid and duties to GDP) in Georgia with similar indices for other countries.

According to the methodology used by PwCexperts and the World Bank in carrying out international comparisons of the tax burden (see: [PwC and World Bank ... 2014, p. 139-145]), this load is calculated as the ratio of the average amount of taxes paid by hypothetical enterprises to their total profits. This method takes into account only taxes paid by enterprises or by the employer and represent the tax burden on profits (profit taxes, labor taxes (for example, social tax paid by the employer) and other taxes),

but such, for example, taxes as VAT (value-added tax) and personal income tax (income tax), which do not represent a direct burden on the profits of enterprises. Table 1 presents data on the indicators of the total tax rate and its components, taxes on profits, taxes on labor and other taxes (profit taxes, labor taxes (for example, social tax) and other taxes) for a number of countries in 2012 and 2014).

Table 1.
The total tax rate and its components in 2012 and 2014.¹(%)

				2012 r.				2014r.
	Profit taxes	Labor taxes	Other taxes	Total tax rate	Profit taxes	Labor taxes	Other taxes	Total tax rate
Macedonia	6.3	-	1.9	8.2	10.9	-	2.0	12.9
Georgia	14.3	-	2.1	16.4	14.3	-	2.1	16.4
Singapore	4.9	17.1	4.9	27.1	2.0	15.3	1.1	18.4
Armenia	15.0	23.0	0.8	38.8	19.1	-	0.8	19.9
Cyprus	9.1	12.0	1.4	22.5	9.3	13.4	1.7	24.4
Switzerland	9.2	17.8	2.1	29.1	9.3	17.7	1.8	27.0
Kazakhstan	15.9	11.2	1.5	28.6	18.9	11.2	1.8	29.2
Latvia	4.9	27.3	3.7	35.9	6.3	26.6	3.0	35.9
Finland	14.1	24.5	1.2	39.8	11.8	24.8	1.3	37.9
Azerbaijan	12.9	24.8	2.3	40.0	12.9	19.9	3.1	39.8
Poland	14.1	26.0	1.5	41.6	14.5	24.8	1.0	40.3
Netherlands	20.8	18.2	0.3	39.3	20.4	20.2	0.4	41.0
Lithuania	6.0	35.2	1.9	43.1	5.9	35.2	1.5	42.6
RF	8.0	36.7	6.0	50.7	8.9	35.6	2.5	47.0
Germany	23.0	21.8	4.6	49.4	23.2	21.2	4.4	48.8
Estonia	8.1	39.6	0.6	47.2	8.4	39.0	2.0	49.4
Belarus	13.4	39.0	1.6	54.0	11.7	39.0	1.1	51.8
Ukraine	11.2	43.1	0.6	54.9	9.0	43.1	0.1	52.2
Belgium	6.4	50.3	0.8	57.5	8.4	49.4	0.6	58.4
France	8.7	51.7	4.3	64.7	0.5	53.5	8.7	62.7
Italy	20.3	43.4	2.1	65.8	19.5	43.4	1.9	64.8

As can be seen from Table 1, Georgia, even before the introduction of the "Estonian option", was among the countries with the lowest tax burden on enterprises¹

¹ The table is compiled from the following sources: [PwCandWorldBank... 2014; PayingTaxes... 2016].

profits. This load in Georgia is even less than in countries that are more or less free economic zones (Singapore, Cyprus offshore). As for Estonia, it is one of the world leaders in terms of the tax burden on enterprises' profits, slightly outstripping even Russia and Germany, not to mention all the other neighboring countries (Latvia, Lithuania, Finland). As can be seen from Table 1, the tax burden on enterprises' profits in Estonia is 3 times higher than the tax burden in Georgia (49.4% vs. 16.4%). Why is there such a difference in the tax burden on enterprises' profits between Georgia and Estonia? The fact is that in Estonia the employer pays a social tax, the amount of which is also considered a tax burden on the enterprise's profit [Преимущества..., 2014; Социальный..., 2015]. *(For reference, we note that the social tax rate paid by the employer in Estonia is 33% of all employees' salaries, while the personal income tax rate (which is not included in the tax burden on the company's profits) and the distributed profit tax is 21% which is levied in the form of income tax from the dividends of the founders, regardless of their residency, and the reinvested profit is not taxed, in this case the tax rate is 0% [Преимущества..., 2014]).* In view of this circumstance *(the social pressure on the employer in Estonia is one of the highest in the world [Налоговая..., 2012])*, the tax burden on profits in Estonia is very high, and in Georgia labor taxes paid by the employer do not exist (see Table 1). Thus, not the Estonian version of taxation was introduced in Georgia, but something very strange, uncharacteristic even for free economic zones. So, arguing that the Estonian version of taxation is being introduced, the government does not quite accurately inform the public about the requirements of the destructive part of big business. Where is the guarantee that reinvestment of profits will be made in Georgia, and not abroad, especially since under the Estonian variant *"reinvested profit is used for various activities of the firm"* [Преимущества..., 2014], whereas in the present period, national financial resources are needed first of all, to direct to the construction of import-substituting industries in the country. The introduction of the "Estonian option" (without taking into account the fact that there is a significant social tax on the employer in the Estonian

version) will also require the reduction of the revenue part without this tight (with the current tax system) state budget.

High is in Estonia the total tax burden calculated as the ratio of the amount of all taxes (including excises) plus compulsory social insurance payments to GDP. So in 2012 it was: in Estonia - 32.5%, in Lithuania - 27.2%, in Latvia - 27.9% (highest in France - 45.0% and Belgium - 45.4% (see: [Налоговое бремя ..., 2014].) The tax burden calculated on the basis of the ratio of tax revenues to GDP for Georgia, according to approximate data, was 24.2% (see: [Aslanov I., 2015, p. 145]), that is, again, much less than in Estonia.

Therefore, in order to replenish the financial resources of the Georgian Development Corporation (through the relevant budget line items) at the expense of national monetary resources and in order to replenish the state budget normally, it is necessary to raise the rates of some taxes, reintroduce the social tax paid by the employer, introduce a progressive rate of income tax (after all, in March 2015, the head of the IMF mission, Mark Griffiths, recommended to increase certain taxes in order to limit the budget deficit²). For example, set the corporate tax rate at 30% (leaving 15% for small businesses), set the income tax scale at 20, 25 and 30%, and set the social tax rate paid by the employer at 25% at the same time, introduce in the budget items of expenditure aimed at replenishing the financial resources of the Georgian Development Corporation (which will be spent not on the construction of infrastructure projects (for this purpose, budget provisions include provisions for the investment part of the budget), but on the construction of facilities, the sale of products of which can significantly improve the country's export-import balance). This is one of the opportunities to force the non-constructive part of big business to direct a part of its profits (which is obtained most often through import operations, often due to the import of such products, the production of which can be quickly established in the country) for the development of

²See.: [Грузия отказала МВФ... 2015].

import-substituting and other topical industries in different sectors of the national economy. And for accelerated development and stimulation of the current in priority business sectors, it is necessary to introduce the usual system of tax incentives as practiced in all developed countries.

When creating the mechanisms for regulating the investment activities of the Georgian Development Corporation, you can take advantage of the experience of some European countries, for example, Italy, where there are state holdings (ie, in fact, state corporations) - Institute for Industry Reconstruction (IRI), Office of Shareholder Participation and Financing for Manufacturing (EFIM) and others structured as FIGs (for details, see below). But if in Italy, state holdings, for example, the IRI, bought up private enterprises, and then modernized them (later, sometimes, selling out the stake, but leaving a controlling stake for them), then in Georgia, as in a country with a transformational economy, where many were lost useful production, before the state corporation the first task is to direct its funds to the construction of completely new productions.

The second. The second possibility to increase the financial potential for investment in order to create actual production, primarily from revenues from the profits of the national business, is the proper organization of the co-investment fund, which should be transformed into an investment fund like the ones existing in the United States, with equity participation in the statutory fund of participants accumulating financial resources in this fund, with the right of partners to decide the direction of investing in specific projects (that is, transform it into a purely market structure) . With the foundation, it is necessary to create a small organization to facilitate the selection and implementation of technologies in the necessary industries. The principles of the fund should be, as far as possible, enshrined in legislation. Moreover, in a country that is in a transformational period in which the business reluctantly invests free funds for investment projects within the country, preferring to keep them abroad, it is necessary to temporarily establish obligatory deductions from the profits of large businesses in this

fund (and larger allocations must be established for hard-core importers who receive a large profit from the import of such products, the production of which can be established within a short time within the country, and thereby suppress the organization and substitution industries). At the same time, the fund also needs to limit the participation of international investors. The enterprises under construction with the participation of the fund should be predominantly the property of the national capital, and for construction and initial adjustment of technologies, if necessary, a foreign contractor may be recruited, as, for example, for the construction of Nenskra Hydroelectric Power Station, although the investor is in this case also foreign (what is the participation of the partner fund?).

Third. It is necessary to create financial-industrial groups (FIGs), the presence of which is typical for all developed countries, both with a market-oriented financial system (USA, Great Britain) and with a banking-oriented financial system (continental Europe, Japan, South Korea) [Цветков Б., 2000]. The creation of FIGs is the most reliable and right way to ensure sustainable economic development of the country (The author of this article, together with G. Tsereteli, previously worked out ways of interaction between financial development institutions, primarily banks, with industrial enterprises [Бурдули В., Церетели Г., 1998; Tsereteli G., Burduli V., 1998], but in these articles insufficient attention was paid to the organization of FIGs). The structure of the FIG and the relations between its participants in each country have their own characteristics, depending on the specifics of the country's legislation. Moreover, there are FIGs covering, along with financial institutions (primarily banks), enterprises of any industry (for example, the Siemens concern in Germany, which extends its activities to the entire electrical industry) or sub-sectors (commercial banks are the undisputed centers of groups), a wide range of industrial enterprises. For example, in the US, **thefinancial component** of the Chase group includes the commercial bank Chase Manhattan Corp. (Chase Manhattan Corp.), created in April 1, 1996 as a result of the merger of the Chase Manhattan Bank with the Chemical Bank, and two life insurance

companies (Metropolitan Life Insurance C. and Equitable Life). **The industrial component** of the group is 21 non-financial corporations, each of which is one of the 100 largest US companies, including five transport companies, three airlines and two railways; two aircraft manufacturers, two chemical companies; two retailers. All these companies are controlled by Chase Manhattan Corp. [Цветков Б., 2000], for the USA, in particular, there is a tendency to increase the activity of commercial capital both in penetration into industry and in financial institutions [Цветков Б., 2000].

It is clear that in Georgia, as in a small country, it is difficult to create a FIG with a highly specialized set of industrial enterprises, due to the narrowness of the financial resources, a wider range of enterprises is required. But it is extremely necessary to create FIGs and the banks that are part of the FIGs, at this stage of Georgia's development, must assume responsibility for coordination and partial financing of the construction of new industries in the relevant sectors of the economy. But in Georgia there are currently not enough powerful banks for this. Therefore, it is necessary that rich national companies (in particular, trade) increase the financial resources of banks, first, by placing part of their free financial resources in the statutory fund of banks (that is, becoming their co-owners), secondly, by placing they have free financial resources in the form of deposits. The leading bank of the FIG (or two or three banks) will choose the directions of investment, provide a technical justification for the projects, partially finance the construction of enterprises, and the other part of the financing should be assumed by the industrial and other enterprises included in FIGs (ie, they must become co-investors, having received a corresponding part of shares on the capital of already constructed enterprises). Now, in order to strengthen the self-sufficiency of the economy, Georgia faces the urgent task of constructing hydropower plants and other import-substituting industries. It is not necessary for this to attract a lot of private foreign investors (since subsequently it will cause the aforementioned difficulties in the economy). Name at least one European country, in whose economy foreign capital would prevail, the same is in Japan and the South Caucasus. For example, "in Japan,

traditionally, there has been and remains a significant role for the state in the development and full support of national business. It is no coincidence that speaking of the support of large-scale domestic business in Japan (in particular, the automobile industry), one of the largest theoreticians and practitioners in the field of management, Lee Iacocca, in the early 90's. wrote: 'The Japanese auto industry was cherished by a number of incentives: state loans, shorter amortization periods, R & D assistance, protectionist measures against imports and prohibition of foreign investment. Under the combined impact of all these measures, the Japanese automotive industry has gone from an annual output of 100,000 cars in the mid-1950s. up to 11 million now'"([Цветков В., 2000] from [Якокка Л., 2000]).

Therefore, in Georgia, it is necessary to prevent such a serious error (attracting the bulk of the population of the country to permanent poverty) as attracting a huge amount of foreign private investments, whether they meet the criteria of expediency or are inexpedient. It is better to take additional money for the restructuring of the industry from the IMF and the World Bank (but in this case the state should become a co-owner of banks that operate with investment resources), with which, with due development of the economy, it will be easy to pay back later, given that new enterprises and banks will be timely to repay the "investment" debts due to the received profit.

Banks in FIGs play a very large fundamental role. For example, in Germany "commercial banks, which are the undisputed center of the group, are universal credit and financial complexes that combine credit and settlement activities with a wide range of services. This is, first of all: a variety of consulting services on the analysis and forecasting of markets, information on technical solutions and innovations, on providing labor resources, the bank implements financial planning, solves the issues of organization of enterprise management; penetration into insurance business and rendering to the clients of the bank of combined services on the basis of a combination of deposit operations with insurance protection of the depositor. In addition, banks play an active role in ensuring the foreign interests of enterprises that make up the FIG,

participating in both lending to local exporters, and in investments abroad or in direct production contacts. There is no doubt that **German banks are a very important supplier of borrowed capital for companies seeking sources of external financing.** Moreover, banks have become an important link in other financing channels: they are engaged in the placement of newly issued securities, they provide brokerage and advisory services when corporations receive non-bank, foreign and government loans. In fact, German banks are the main source and "repeater" of financial "energy" [Цветков B., 2000].

In addition to private companies, public concerns in Western European countries, which form the basis of **state FIGs**, have received sufficient distribution. Thus, in Italy, the organizational structure of the management of state property of numerous private joint-stock companies, whose controlling stakes were purchased by the state, are state holding companies that allow the government to consistently implement its economic policy in various areas of economic and social development. To date, under the auspices of the Ministry of State Property, there are three large state interdisciplinary holdings: IRI (Institute for Reconstruction of Industry), ENI (National Liquid Fuel Administration) and EFIM (Office of Shareholder Participation and Financing for Manufacturing Industry). For example, through subholdings and directly IRI controls over 300 companies. In the sphere of finance: Banco di Roma, Credito Italo, Banco Commerciale Italiano, in the sphere of industry: Terni and Ilva (metallurgy), Alfa Romeo (automotive industry), Ansaldo, Breda, Dalmine (machine building), Alitalia (transport), etc. [Цветков B., 2000]. The experience of European state financial and industrial groups (**state holding companies**) should be taken into account when structuring the Georgian Development Corporation.

With the right approach and effective coordination from the government (taking into account the experience of developed countries) the creation of FIGs and their functioning will be the most important tool and the fastest working mechanism for effective restructuring and development of production.

Conclusions

Thus, the country faces the most difficult task of attracting the free resources of the national capital to invest in the creation of topical enterprises for today in various sectors and subsectors of the economy. For this, it is necessary to reform the main financial development institutions, the Georgian Development Corporation, the co-investment fund and banks and other financial institutions as part of the FIG. Reforms should first of all be aimed at improving the mechanisms for attracting the financial resources of the national capital to the financial development institutions and the mechanisms by which they use these funds for investment construction. To increase the resources of the Georgian Development Corporation at the expense of national capital, it seems necessary to increase the tax rates (and re-introduce the social tax on the employer) and send most of the money received to the development corporation, whose main task is to invest in the construction of new industries in the public sector. When improving its organizational structure, it is advisable to take into account the experience of Italian state holdings. In order to hasten the activity of the co-investment fund, the mechanism of its functioning must be reconstructed in accordance with the laws of a market economy (for example, according to the principles of the US investment institutions) - this should be a purely market education, and individuals and legal entities that contribute to this fund should have joint-stock shares. The creation of a national capital for the purpose of investment construction will also be supported by the creation of FIGs. For their creation and functioning in the business environment, taking into account the existing legislation, certain principles should be worked out (in particular, on the interaction of financial and industrial capital), and the government should conduct coordinating work aimed at encouraging the creation of such entities, as well as strengthening the positions of those commercial banks, investment activity in which occupies a significant place among the whole range of activities.

Bibliography:

1. Abesadze R., Burduli V. 2009. Innovative Activities and Their Coordination under Advancing Globalization. J.: The Caucasus & Globalization. Journal of Social, Political and Economic Studies. Volume 3. Issue 4. CA&CC Press. SWEDEN, 2009. P. 68-79. – Электронный ресурс: <http://cyberleninka.ru/article/n/innovative-activities-and-their-coordination-under-advancing-globalization>
2. Abesadze R. 2014. The state is the "helmsman" of the economy (in Georgian). – Proceedings of Scientific Works of Paata Gugushvili Institute of Economics of TSU. VII. Tbilisi.
3. Abesadze R. 2016. Innovation Policy of the European Union. Proceedings of Scientific Works of Paata Gugushvili Institute of Economics of TSU. IX, Tbilisi. (in Georgian).
4. Abesadze R. 2017. Innovative system of the European Union. Proceedings of Scientific Works of Paata Gugushvili Institute of Economics of TSU. X, Tbilisi. (in Georgian).
5. According to official data, the capital flight from the country has increased (in Georgian) from 21-09-2015. – Electronic resource: <http://www.interpressnews.ge/ge/sazogadoeba/346233-oficialuri-monacemebith-qveynidan-kapitalis-gadineba-2013-tslidan-gaizarda.html>
6. Adam B. Jaffe, Josh Lerner, and Scott Stern. 2005. National Bureau of Economic Research. Innovation Policy and the Economy, Volume 5, The MIT Press, Cambridge, Massachusetts.
7. A Practical Guide to Cluster Development: A Report to the Department of Trade and Industry and the English RDAs by Ecotec Research & Consulting. – England's Regional Development Agencies, 2004. – Electronic resource: <http://www.dti.gov.uk/files/file14008.pdf>
8. **Arora A.** and Gambardella A. 2005. “ Bridging the Gap”. In A. Aurora and A. Gambardella, eds., From Underdogs to Tigers: The Rise and Growth of the Software Industry in Some Emerging Economies. Oxford, UK: Oxford University Press.

9. Aslanov Ilkin. Government Budget Revenues in Azerbaijan the Tax Burden and the Role of the Oil Factor. – Central Asia and the Caucasus. Journal of Social and Political Studies. Volum 16. Issue 3-4. 2015. *CA&CC Press® SWEDEN*. P. 137-155.
10. Association Agreement between, on the one hand, the EU and the European Atomic Energy Association and their member countries, on the other hand, Georgia (in Georgian) - Electronic resource:
<http://www.mfa.gov.ge/%E1%83%94%E1%83%95%E1%83%A0%E1%83%9D%E1%83%9E%E1%83%A3%E1%83%9A%E1%83%98%E1%83%93%E1%83%90%E1%83%94%E1%83%95%E1%83%A0%E1%83%9D%E1%83%90%E1%83%A2%E1%83%9A%E1%83%90%E1%83%9C%E1%83%A2%E1%83%98%E1%83%99%E1%83%A3%E1%83%A0%E1%83%98%E1%83%98%E1%83%9C%E1%83%A2%E1%83%94%E1%83%92%E1%83%A0%E1%83%90%E1%83%AA%E1%83%98%E1%83%90/Association-Agreement.aspx>
11. A technological park was opened in Zugdidi. 10/03/2016 (in the Georgian language). - Electronic resource: <https://www.ipress.ge/new/46952-zugdidsi-teqnologiuri-parki-gaikhsna>
12. Berulava George, Teimuraz Gogokhia. 2018. Complementarities of Innovation Strategies: Evidence from Transition Economies In: Bilgin M., Danis H., Demir E., Can U. (eds) Eurasian Economic Perspectives. Eurasian Studies in Business and Economics, vol 8/2. Springer, Cham, pp. 169-192
13. Burduli Vakhtang. Georgia: Problems of Increasing National Economic Self-Sufficiency (Sectoral-Structure Aspect). – Central Asia and the Caucasus. Journal of Social and Political Studies. Volum 16. Issue 3-4. 2015. *CA&CC Press® SWEDEN*. P. 155-175.
14. Burduli Vakhtang. The Potential of Higher Investment Activity of Georgia. – The Caucasus & Globalization. Journal of Social, Political and Economic Studies. Volume 2. Issue 4. 2008. *CA&CC Press® SWEDEN*. P. 86-94.
15. Convention on the Recognition of Qualifications concerning Higher Education in the European Region. – Electronic resource:
<https://www.coe.int/en/web/conventions/full-list/-/conventions/rms/090000168007f2c7>
16. Giorgi Chirakadze expects revenue growth and course stabilization (in Georgian). B. 2015. Electronic resource:

<http://www.economic.ge/%E1%83%92%E1%83%98%E1%83%9D%E1%83%A0%E1%83%92%E1%83%98%E1%83%AD%E1%83%98%E1%83%A0%E1%83%90%E1%83%A5%E1%83%90%E1%83%AB%E1%83%94%E1%83%A8%E1%83%94%E1%83%9B%E1%83%9D%E1%83%93%E1%83%98%E1%83%9C%E1%83%94/>

17. Giarratana M., Torrissi S., and Alessandro Pagano. 2005. "The Role of MNCs in the Evolution of the Software Industry in India, Ireland and Israel". In A. Aurora and A. Gambardella, eds., *From Underdogs to Tigers: The Rise and Growth of the Software Industry in Some Emerging Economies*. – Oxford, UK: Oxford University Press.
18. Giorgi Chirakadze: "When the course fluctuates, everyone refrains from investment actions" (in Georgian). A. 26.3.2015. Electronic resource:
<http://www.ipress.ge/new/3697-giorgi-chirakadze-rodesac-kursi-meryevia-yvela-tavs-ikavebs-sainvesticio-qmedebebisgan->
19. Gogodze I., 2013. Innovative Georgia: current status. Tbilisi.
20. Green Paper on Innovation – 1995. – Electronic resource:
http://europa.eu/documents/comm/green_papers/pdf/com95_688_en.pdf
21. European Commission (2017). *Study on urban vehicle access regulation. Final report*. Brussels. – Electronic resource:
https://ec.europa.eu/transport/sites/transport/files/uvar_final_report_august_28.pdf
22. European Community Business& innovation Centre (EBN). – Electronic resource:
<http://www.europeanace.eu/index.php/about-us/partners/item/265-the-european-business-and-innovation-centre-network-ebn>
23. Europe 2020 strategy. – Electronic resource: https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/framework/europe-2020-strategy_en
24. European Institute of Innovation and Technology, EIT. – Electronic resource:
<https://ec.europa.eu/programmes/horizon2020/en/h2020-section/european-institute-innovation-and-technology-eit>
25. European Parliamentary Research Services (2016). *Global trendometer. Essays of medium and long-term global trends*. Brussels. – Electronic resource:

- [https://espas.secure.europarl.europa.eu/orbis/sites/default/files/generated/document/en/EPRS_STU\(2016\)573301_EN.pdf](https://espas.secure.europarl.europa.eu/orbis/sites/default/files/generated/document/en/EPRS_STU(2016)573301_EN.pdf)
26. Eurostate newsrelease. 16-06-2014. The overall tax to-GDP ratio in the EU28 up to 39.4% of GDP in 2012. – Electronic resource:
http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/economic_analysis/tax_structures/2014/pr_92-2014_en.pdf
 27. European Research Area Committee, ERAC. – Electronic resource:
<http://www.consilium.europa.eu/en/council-eu/preparatory-bodies/european-research-area-innovation-committee/>
 28. European Research Council, ERC. – Electronic resource:
<https://ec.europa.eu/programmes/horizon2020/en/h2020-section/european-research-council>
 29. FabLabs in Georgia (in Georgian). - Electronic resource:
<https://fablab.gov.ge/geo/static/43/saqartvelos-fablabebi>
 30. For a European Industrial Renaissance. – European Commission, Brussels, COM (2014) 14/2 – Electronic resource:
<http://www.confindustria.eu/documentDownload;jsessionid=3385183795A593536C2F5C186EA7A715?id=3513&ext=pdf&name=Communication+-+For+a+European+Industrial+Renaissance+-+EN>
 31. Forrester J. W. 1977. New Perspectives on Economic Growth. *Alternatives to Growth* — A Search for Sustainable Futures / Ed. by D. L. Meadows. Cambridge, MA: Ballinger, 1977. P. 107—121.
 32. Giarratana M., Torrisi S., and Alessandro Pagano: “The Role of MNCs in the Evolution of the Software Industry in India, Ireland and Israel”. In A. Aurora and A. Gambardella, eds., *From Underdogs to Tigers: The Rise and Growth of the Software Industry in Some Emerging Economies*. – Oxford
 33. Gross Domestic Spending on R&D, % of GDP (2015). – Electronic resource:
<http://www.compareyourcountry.org/science-and-technology>

34. Horizon 2020: EU framework programme for research and innovation. – Electronic resource: <https://www.emeraldinsight.com/doi/full/10.1108/IJDRBE-03-2014-0023>
35. Hiroka M. 2006. Innovation Dynamism and Economic Growth. A Nonlinear Perspective. – Cheltenham, UK – Northampton, MA, USA, Edward Elgar.
36. Kitchin, J. «[Cycles and Trends in Economic Factors](#)». Review of Economics and Statistics **5** (1): 10–16, 1923.
37. Law of Georgia on Innovation. 2016 (in Georgian). - Electronic resource: <https://matsne.gov.ge/ka/document/download/3322328/0/ge/pdf>
38. Kuznets S. 1983. Cyclical Fluctuations: Retail and Wholesale Trade, United States, 1919—1925 .
39. Kuznetz, S. 1973. «Modern economic growth: Findings and reflections», *The American Economic Review*, Vol. 63, No. 3 (Jun., 1973 Published by: [American Economic Associatio](#)), pp. 247-258
40. Machavariani Ket. Construction of the Technological Institute in Tbilisi - Ivanishvili visited the presentation. 05/23/2016. (in Georgian). – Electronic resource: <http://netgazeti.ge/news/116937/>
41. Mathews, J. (2001), “National systems of economic learning: The case of technology diffusion management in East Asia”. – International Journal of Technology Management, Vol. 22, Nos. 5/6, pp. 455-479.
42. Magna Charta Universitatum. – Electronic resource: <http://www.magna-charta.org/resources/files/the-magna-charta/english>
43. Mensch G. 1979. Stalemate in Technology- Innovations Overcame the Depression – New York: Ballinger Publishing Company.
44. Natia Turnava - The Georgian economy stands the test and opposes the challenges to a healthy investment environment (in Georgian). 19-01-2016. – Electronic resource: <http://www.interpressnews.ge/ge/eqskluzivi/362513-saqarthvelos-ekonomika-gamocdas-udzlebs-da-gamotsvevbs-gajansaghebul-sainvesticio-garemos-upirispirebs.html>

45. Nenskra Hydroelectric Power Station will be built by the Italian company Salini Impregilo (in Georgian). 20-07-2015. – Electronic resource:
<http://www.ipress.ge/new/10003-nenskra-hess-italiuri-kompania-SALINI-IMPREGILO-aashenebs>
46. OECD, IEA (2017). *Global EV outlook 2017*. International Energy Agency, Clean Energy Ministerial. – Electronic resource:
<https://www.iea.org/publications/freepublications/publication/GlobalEVO Outlook2017.pdf>
47. Paying Taxes 2016 PwC and World Bank Group. P. 111-128. – Electronic resource:
<http://www.doingbusiness.org/~media/GIAWB/Doing%20Business/Documents/Special-Reports/Paying-Taxes-2016.pdf>
48. Papava V. *Necroeconomics: The Political Economy of Post-Communist Capitalism*. New York, iUniverse, 2005.
49. Putting knowledge into practice: Abroad-based innovation strategy for the European Union. – Electronic resource:
<http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+REPORT+A6-2007-0159+0+DOC+XML+V0//EN>
50. PwC and World Bank/IFC «Paying Taxes 2014: The Global Picture». P. 139—145. – Electronic resource:
<http://www.doingbusiness.org/~media/GIAWB/Doing%20Business/Documents/Special-Reports/Paying-Taxes-2014.pdf>
51. Resolution of the Georgian Government No. 32 (3.2.2015) "On the establishment of the Council for Innovation and the approval of its provisions" (in Georgian). – Electronic resource: <https://matsne.gov.ge/ka/document/view/2712487>
52. Silicon Valley" opened in Tbilisi. 09/09/2016 (in Georgian). – Electronic resource: <https://sputnik-georgia.com/economy/20160917/233236511/tbilisshi-silikonis-veli-gaixsna.html>
53. Sorbonne Declaration. – Electronic resource:
<https://www.wg.aegge.org/ewg/sorbonne.htm>
54. Statistical Yearbook of Georgia. / National Statistics Office of Georgia. – Tbilisi, 2015.
55. The Bologna Declaration of 19 June 1999 – Electronic resource:

http://www.magna-charta.org/resources/files/BOLOGNA_DECLARATION.pdf

56. The Government and the National Bank should cooperate (in Georgian). 05-03-2015.
<http://www.interpressnews.ge/ge/politika/319808-mark-grifithsi-mthavrobam-da-erovnulma-bankma-unda-ithanamshromlon.html?ar=A>
57. The Prime Minister briefed the business sector on the four main directions of economic development (in Georgian). 18-01-2016. – Electronic resource:
<http://www.interpressnews.ge/ge/politika/362384-premier-ministrma-biznessektors-ekonomikuri-ganvitharebis-4-dzirithadi-mimarhuleba-gaacno.html>
58. The European Organisation for Nuclear Research. 2015. – Electronic resource:
<https://www.cvce.eu/en/education/unit-content/-/unit/026961fe-0d57-4314-a40a-a4ac066a1801/4c106bc7-73a0-443a-a8ef-56dad08223e0>
59. Trade crises and their periodic return to France, England and the United States Paris: Giyumin, 1862 (In french)
60. Tsereteli G., Burduli V. Problems of the formation of the financial system of Georgia (in Georgian). – Известия АН Грузии, Серия экономическая, Том 6. Выпуск 3, 1998. С. 111-130.
61. What will bring Georgia a technological cluster, which is created in cooperation with Ireland. 12/20/2017 (in Georgian). - Electronic resource:
<https://www.ambebi.ge/article/218384-ras-moutans-sakartvelos-teknologiuri-klasteri-romelic-irlandiastan-tanamshromlobit-ikmneba/>
62. Why does Georgia run capital? (in Georgian) 21-09-2015. Electronic resource:
<http://www.kvirispalitra.ge/economic/26552-ratom-garbis-saqarthvelodan-kapitali.html>
63. Абесадзе Р., Бурдули В. Структурные и инновационные проблемы экономического развития. Тбилиси, 2014. 372 с. – Электронный ресурс:
http://pgie.tsu.ge/contentimage/sxvadasxva/Abesadze_Burduli.pdf
64. Агафонов В. А. Региональные инновационные кластеры. – Региональная экономика и управление: электронный научный журнал. №3 (43). 2015-07-15. – Электронный ресурс: <http://eee-region.ru/article/4301/>

65. Агентство инноваций и технологий. 16.02.2014. – Электронный ресурс:
<http://novost.ge/2014/02/16/%D0%B0%D0%B3%D0%B5%D0%BD%D1%82%D1%81%D1%82%D0%B2%D0%BE-%D0%B8%D0%BD%D0%BD%D0%BE%D0%B2%D0%B0%D1%86%D0%B8%D0%B9-%D0%B8-%D1%82%D0%B5%D1%85%D0%BD%D0%BE%D0%BB%D0%BE%D0%B3%D0%B8%D0%B9/>
66. Абдурасулова Д., 2009, Промышленная политика Южной Кореи. 16.02.2009. – Электронный ресурс: <http://instituteones.com/industry/897-promyshlennaya-politika-yuzhnoj-korei.html>
67. Абесадзе Р., 2016. Инновации, инновационные сети и общие направления формирования инновационной экономики в Грузии. – В сборнике: PRZEDSIĘBIORSTWO W STRUKTURACH SIECI. Lublin, Wydawnictwo KUL.
68. Авдокушин Е.Ф., 2010, Национальная инновационная система Японии. – Ж.: Вопросы новой экономики, № 4 (16).
69. Антюшина Н. М. Промышленная политика Швеции. В сборнике: Промышленная политика европейских стран (Институт Европы РАН). М., 2010. – Электронный ресурс: [ieras.ru/doclad/259/259-1%20\(1\).doc](http://ieras.ru/doclad/259/259-1%20(1).doc)
70. Акопян А. Р. Роль кластеров в развитии современных национальных инновационных систем субъектов мирового хозяйства. Диссертация на соискание ученой степени к. э. н. Москва, 2016. – Электронный ресурс:
https://guu.ru/files/dissertations/2016/06/akopyan_a_r/dissertation.pdf
71. Амелина К. Е. 2011. Инновационная деятельность вузов Германии. «НАУКА и ОБРАЗОВАНИЕ», Издатель ФГБОУ ВПО "МГТУ им. Н.Э. Баумана", Эл № ФС 77 – 48211. – Электронный ресурс: <http://technomag.bmstu.ru/doc/275706.html>
72. Анчишкин А.И. 1986. Наука-Техника-Экономика. М.: Экономика
73. Асатиани Р. 2015. Усиление глобальных тенденций конкуренции и новые перспективы конкурентоспособности экономики Грузии. Тб. Ж., Социальная экономика, № 6.
74. Асул А. Н. 2009. [Организация предпринимательской деятельности](#). Учебник. СПб.: АНО ИПЭВ

75. Беляева Ю., Тимонин А. Региональная инновационная политика: опыт развитых стран и уроки для России. – Škola biznisa Broj 1/2012. – Электронный ресурс: <http://scindeks-clanci.ceon.rs/data/pdf/1451-6551/2012/1451-65511201063B.pdf>
76. Белов В. Б., Баранова К. К. Промышленная политика в Германии. В сборнике: Промышленная политика европейских стран (Институт Европы РАН). М., 2010. – Электронный ресурс: [ieras.ru/doclad/259/259-1%20\(1\).doc](http://ieras.ru/doclad/259/259-1%20(1).doc)
77. **Бернал Дж.** 1956. Наука в истории общества. М.: ИЛ.
78. **Блауг М.** 1994. Экономическая мысль в ретроспективе. Пер. с англ., 4-е изд. – М.: «Дело Лтд».
79. Богдан Н. И. Проблемы региональной инновационной политики: опыт европейских стран и специфика Беларуси. – Белорусский экономический журнал, 2006, №1. Электронный ресурс: <http://edoc.bseu.by:8080/bitstream/edoc/3841/1/Bogdan%20N%20Problemy..pdf>
80. Борисов В. В., Соколов Д. В. 2012. Инновационная политика: европейский опыт. Москва: Языки славянской культуры. – Электронный ресурс: <http://window.edu.ru/resource/606/79606/files/riep02.pdf>
81. Бурдули Вахтанг. Структурно-отраслевой анализ уровня самодостаточности экономики Грузии и общие направления формирования прогрессивной отраслевой структуры. В сб.: Proceedings of Materials of International Scientific-Practical Conference Dedicated to the 110th Birth of Academician Paata Gugushvili: Actual Problems of Sustainable Development of National Economies. Tbilisi: 2015.
82. Бурдули В., Абесадзе Р. Опыт трансформации национальных инновационных систем в развитых странах и направления его использования в Грузии. – International Journal of New Economics and Social Sciences (IJONESS), № 1 (5), Warszawa 2017. Стр. 301-311. – Электронный ресурс: <https://drive.google.com/file/d/0B44xfv0p0H50U0VnZ0ZQVkdwRIE/view>
83. Бурдули В. Формирование экономических механизмов привлечения свободных финансовых ресурсов национального бизнеса на создание производств в

- актуальных секторах экономики. – Ekonomisti, 2016, № 1 (Volume VIII). Стр. 46-66. – Электронный ресурс:
http://www.pgie.tsu.ge/contentimage/sxvadasxva/jurnali_ekonomisti/_1-2016_.pdf
84. Бурдули В., Церетели Г. Финансовая система Грузии и проблемы развития и структурной организации производства. – Известия АН Грузии, Серия экономическая, Том 6. Выпуск 3, 1998. С. 147-170.
85. Бурдули В. Ш. Проблемы реформирования механизмов государственной и бизнес-координации привлечения финансовых ресурсов национального бизнеса на инвестиции в реальный сектор экономики. – В коллективной монографии: Problems and Possibilities of Public Administration Development in Conditions of Reformes: Collective Monograph. Mariupol – Bielsko-Biala, 2017. Стр. 200-218. – Электронный ресурс: http://dsum.edu.ua/upload/doc/monografiya_chechel.pdf
86. Бурнаева Е. М. Финляндии необходимо новое видение национальной инновационной политики (ИМЭМО). 02.03.2017. – Электронный ресурс:
http://www.imemo.ru/index.php?page_id=502&id=2959
87. В Грузии открылся первый технологический парк. 11.01.2016. – Электронный ресурс: <https://sputnik-georgia.ru/economy/20160111/229745692.html>
88. Гельвих М. В. Инновационный кластер как эффективная форма повышения конкурентоспособности региона // Инновации в науке: сб. ст. по матер. LIX междунар. научно-практич. конф. №7 (56). – Новосибирск: СибАК, 2016. С. 158-162. – Электронный ресурс: <https://sibac.info/conf/innovation/lix/58662>
89. Глобальная трансформация инновационных систем. Под ред. Н. И. Ивановой, М., ИМЭМО РАН, 2010.
90. Гомбоев А. Б. Инновационная политика Республики Корея: историческая и территориальная специфика (1966-2009 гг.). – Вестник Бурятского государственного университета, 2015, №7.

91. Горбатенко Е. Ю. Стратегия инновационного развития ЕС до 2020 года. – Журнал научных публикаций ДИСКУССИЯ. Выпуск 3 (55), 2015. – Электронный ресурс: <http://www.journal-discussion.ru/publication.php?id=1302>
92. Государственная инновационная политика 3. – Электронный ресурс: <http://mirznanii.com/a/169013/gosudarstvennaya-innovatsionnaya-politika-3>
93. Грузия отказала МВФ в повышении налогов. 05-03-15. Электронный ресурс: <https://focus.ua/money/326052/>
94. Грузия стала полноценным членом программы исследования и инновации “Horizon 2020”. 2016. – Электронный ресурс: <http://www.apsny.ge/2016/soc/1462302696.php>
95. Европейский институт инноваций и технологии. 2011. – Электронный ресурс: <http://ru.knowledgr.com/02043035/ЕвропейскийИнститутНовшестваИТехнологии>
96. Европейский меморандум о кластерах (Поиск в Интернете по заголовку). [The european cluster memorandum](http://www.corallia.org/images/stories/documents/AboutCorallia/AboutCorallia-doc-005.pdf)
<http://www.corallia.org/images/stories/documents/AboutCorallia/AboutCorallia-doc-005.pdf>
97. Европейский Научный Фонд. 2014. – Электронный ресурс: <http://www.wdcb.ru/grants/esf.html>
98. ЕС поможет предпринимателям в создании кластеров. 2017. – Электронный ресурс: <https://pia.ge/ru/post/161535>
99. Европейская южная обсерватория. 2018. – Электронный ресурс: https://ru.wikipedia.org/wiki/Европейская_южная_обсерватория#История
100. Европейская молекулярно-биологическая лаборатория. 2018. – Электронный ресурс: https://ru.wikipedia.org/wiki/Европейская_молекулярно-биологическая_лаборатория
101. Животовская И. Г., 2013. [Три десятилетия реформ образования в Европе](http://www.inion.ru/files/File/APE_2013_2_Zhivotovskaya.pdf). – Электронный ресурс: http://www.inion.ru/files/File/APE_2013_2_Zhivotovskaya.pdf

102. Захарова Н. В. 2010. Формирование инновационной экономики и инновационных систем стран Европейского союза. Дисс. На соиск. уч. степени дэн. М. – Электронный ресурс: <http://www.dslib.net/economika-mira/formirovanie-innovacionnoj-jekonomiki-i-innovacionnyh-sistem-stran-evropejskogo.html>
103. Зверев А. В. 2009. Формирование национальной инновационной системы: мировой опыт и российские перспективы. Автореферат диссертации д.э.н. М. – Электронный ресурс: <http://dissers.ru/avtoreferati-dissertatsii-ekonomika/a840.php>.
104. Инновационная система Финляндии. 2014. – Электронный ресурс: www.rusfintrade.ru/files/article/3221/20140731_1.doc
105. Ицковиц Г., 2011, Модель тройной спирали. – Ж.: Инновационная Россия, №4.
106. Калугина Е. Ю., 2010. Промышленная политика Франции. В сборнике: Промышленная политика европейских стран (Институт Европы РАН). М., 2010. – Электронный ресурс: [ieras.ru/doclad/259/259-1%20\(1\).doc](http://ieras.ru/doclad/259/259-1%20(1).doc)
107. Карта полюсов конкурентоспособности. – Электронный ресурс: http://competitivite.gouv.fr/documents/commun/Documentation_poles/cartes-poles/carte-russe.pdf
108. Катуков Д.Д., Малыгин В.Е., Смородинская Н.В. 2012. Институциональная среда глобализированной экономики: развитие сетевых взаимодействий. М., Институт экономики, 2012.
109. Клавдиенко В. П. 2007. Рамочные программы исследований и развития ЕС: цели, приоритеты, механизмы реализации. ИННОВАЦИИ № 10 (108). – Электронный ресурс: http://www.eurasiancommission.org/ru/act/prom_i_agroprom/dep_prom/SiteAssets/Европейские%20сети.pdf
110. Клавдиенко В. П. 2018. Новая рамочная программа ЕС «Горизонт 2020» – Электронный ресурс:

<file:///C:/Users/PC/Desktop/2018%D0%A1%D1%82%D0%B0%D1%82%D1%8C%D1%8F%20%D0%A0%D0%98%D0%9F-%D0%BC%D0%B0%D1%82%D0%B5%D1%80%D0%B8%D0%B0%D0%BB%D1%8B/novaya-ramochnaya-programma-es-dlya-issledovaniy-i-innovatsiy-schedroe-finansirovanie-v-trudnye-vremena.htm>

111. Кондратьев В., 2014. Свежее дыхание промышленной политики. ИМЭМО РАН. – Электронный ресурс:
http://www.perspektivy.info/rus/ekob/svezheje_dyhaniije_promyshlennoj_politiki_2014-05-22.htm
112. **Кондратьев Н. Д.** 2002. Большие циклы конъюнктуры и теория предвидения. М.: Экономика.
113. Корейское чудо – уроки для России. 2008. – Электронный ресурс:
<http://www.contrtv.ru/common/2641/>
114. Котова Н. В., Павлова П. Н. Структурные фонды ЕС как инструмент региональной политики. 2014. – Электронный ресурс:
<http://ego.uapa.ru/en/issue/2014/02/7/>
115. Кузык Б.Н., Яковец Ю.В. 2004. Россия – 2050: стратегия инновационного прорыва. – М.: ЗАО «Издательство Экономика».
116. Ленчук Е. Б., Власкин Г. А. 2010. Кластерный подход в стратегии инновационного развития зарубежных стран. – Ж.: Проблемы прогнозирования:– Электронный ресурс (25.03.2011): <http://institutiones.com/strategies/1928-klasternyj-podxod-v-strategii-innovacionnogo-razvitiya-zarubezhnyx-stran.html> а также (2010): <https://cyberleninka.ru/article/n/klasternyy-podhod-v-strategii-innovatsionnogo-razvitiya-zarubezhnyh-stran>
117. Лиссабонская конвенция. – Электронный ресурс:
<http://control.edu.gov.kz/ru/content/лиссабонская-конвенция>
118. Лукша О., Пильнов Г., Тарасова О., Яновский А. [Европейские сети поддержки инновационной деятельности](#). – Электронный ресурс:
http://www.eurasiancommission.org/ru/act/prom_i_agroprom/dep_prom/SiteAssets/Европейские%20сети.pdf

119. Ляпина И. Р., Ветров Н. П. 2011. Инновационная составляющая промышленной политики. – Ж.: Вестник ОрелГИЭТ, №2(16). – Электронный ресурс:
http://orelgiel.ru/docs/lyapina_vetrov_2_16.pdf
120. **Макконнелл К.Р., Брю С.Л.** 1997. Экономикс: Принципы, проблемы и политика. В 2т.:Пер. с англ. – М. Т.2
121. Мальцева А. А., Кархунен П. 2012. Феномен Финляндии: развитие инфраструктуры генерации и трансфера инноваций как фактор экономического роста. Ж.: Контурь глобальных трансформаций: политика, экономика, право. Выпуск №6 (26), Том 5, Электронный ресурс:
<http://cyberleninka.ru/article/n/fenomen-finlyandii-razvitie-infrastruktury-generatsii-i-transfera-innovatsiy-kak-faktor-ekonomicheskogo-rosta>
122. **Мэнсфилд Э.** 1970. Экономика научно-технического прогресса. – М.: «Прогресс».
123. Модели формирования национальных инновационных систем. 2013. – Электронный ресурс: http://kapital-rus.ru/articles/article/modeli_formirovaniya_nacionalnyh_innovacionnyh_sistem/#
124. Налоги на рабочую силу в Эстонии – одни из самых высоких в мире. 2012. – Электронный ресурс: <http://rus.delfi.ee/daily/business/nalogi-na-rabochuyu-silu-v-estonii-odni-iz-samyh-vysokih-v-mire?id=64326849>
125. Налоговое бремя в Эстонии – самое высокое в Прибалтике. 2014. – Электронный ресурс: <http://rus.postimees.ee/2830461/nalogovoe-bremja-v-jestonii-samoe-vysokoe-v-pribaltike>
126. Национальные инновационные системы в России и ЕС, 2006. **М.:** ЦИПРАН РАН. Под редакцией: **Иванова В. В.** (Россия), **Ивановой Н. И.** (Россия), **Розебума Й** (Нидерланды), **Хайсберса Х.** (Нидерланды).
127. Национальные инновационные системы крупных западноевропейских стран (Великобритания, Германия, Франция, Италия). 2015. Минск, – Электронный

ресурс:

http://knowledge.allbest.ru/economy/2c0a65635b2ac69b4d43b89421316d36_1.html

128. О европейской сети бизнес-инновационных центров (ЕБН). 2010. – Электронный ресурс: <http://www.tpidea.ru/EBN>

129. **Папава Г.** Методология познания качеств реалий смешанной рыночной экономики и паралогизмы, стокгольм, C&ACC, 2009.

130. **Папава В., Месхия Я.** Проблемы активизации инновационно-инвестиционной политики в Грузии. В кн.: Инновации и экономический рост. Под ред. К. Микульского. М., Наука, 2002.

131. **Папава В.** Экономика Грузии: в поиске модели развития. Мир перемен, № 3, 2013.

132. Партнерский фонд начал финансировать победителей «Стартап-Грузия». 2016. – Электронный ресурс:

<https://sputnik-georgia.ru/economy/20161110/233782838/Partnerskij-fond-nachal-finansirovat-pobeditelej-Startup-Gruzija.html>

133. Преимущества и особенности налоговой системы Эстонии. 2014. – Электронный ресурс: <http://www.estbuhgalter.eu/nalogi.html>

134. Радченко А. Инновационная система Финляндии. – Ж.: Научная жизнь, №1 (16), 2011. – Электронный ресурс: <http://www.mirec.ru/2011-01/innovacionnaya-sistema-finlyandii>

135. Рамочные программы научных исследований и технологического развития Европейского сообщества, 2018. – Электронный ресурс:

<file:///C:/Users/PC/Desktop/2018%D0%A1%D1%82%D0%B0%D1%82%D1%8C%D1%8F%20%D0%A0%D0%98%D0%9F-%D0%BC%D0%B0%D1%82%D0%B5%D1%80%D0%B8%D0%B0%D0%BB%D1%8B/frame-%D0%93%D0%BE%D1%80%D0%B8%D0%B7%D0%BE%D0%BD%D1%82-2000.htm>

136. Региональная политика Европейского союза. 2015. – Электронный ресурс:

https://ru.wikipedia.org/wiki/%D0%A0%D0%B5%D0%B3%D0%B8%D0%BE%D0%BD%D0%B0%D0%BB%D1%8C%D0%BD%D0%B0%D1%8F_%D0%BF%D0%BE%D0%BB%D0%B8%D1%82%D0%B8%D0%BA%D0%B0_%D0%95%D0%B2%D1%80%D0%BE%D0%BF%D0%B5%D0%B9%D1%81%D0%BA%D0%BE%D0%B3%D0%BE_%D1%81%D0%BE%D1%8E%D0%B7%D0%B0

137. Савина А.К. 2014. Образование Европейского Союза. – Электронный ресурс: <https://cyberleninka.ru/article/n/obrazovanie-v-evropeyskom-soyuze>
138. Сахариева А. С. 2013. Национальная инновационная система Южной Кореи: со скамейки запасных в форварды. – Вестник КазНУ. Серия экономическая. №6 (100).
139. Седьмая Рамочная Программа Европейского Союза. – Электронный ресурс: http://www.bioeconomy.ru/ramochnaya_programma_es/7_ramochnaya_programma_es/
140. Селезнев П. С., 2014. Инновационная политика современного государства: стратегии, модели, практика. Диссертация на соискание ученой степени д. п. н. Москва, 2014. Электронный ресурс: <http://www.library.fa.ru/files/Seleznev.pdf>
141. Сергеев В. М., Алексеенкова Е. С., Нечаев В. Д. 2008. Типология моделей инновационного развития. – Ж.: «Полития. Анализ. Хроника. Прогноз», №4(51). – Электронный ресурс: <http://cyberleninka.ru/article/n/tipologiya-modeley-innovatsionnogo-razvitiya>
142. **Силагадзе А.** 2010. Некоторые вопросы экономических доктрин в Грузии. М.: «Взфэи».
143. Смирнов Е. Н. 2016. Инновационный механизм развития экономики Европейского союза. Автореферат на соискание ученой степени д. э. н. М. Электронный ресурс: https://guu.ru/files/dissertations/2015/10/smironov_e_n/autoreferat.pdf
144. Соловьева Ю., 2015, Формирование и развитие системы трансфера технологий в России и за рубежом. – Ж.: Вопросы экономики. 2015, №4.
145. Сорокин П. С. 2000. Социальная и культурная динамика.
146. Соснов Ф. Г. 2011. Роль Франции в процессе инновационного развития Европейского союза на современном этапе. – Ж.: Известия Тульского государственного университета. Экономические и юридические науки, №1-2. – Электронный ресурс: <http://cyberleninka.ru/article/n/rol-frantsii-v-protssesse-innovatsionnogo-razvitiya-evropeyskogo-soyuza-na-sovremennom-etape-1>

147. Справка о международном опыте инновационного развития, 2011. Министерство экономического развития Российской Федерации. Департамент координации, развития и регулирования внешнеэкономической деятельности. Электронный ресурс: http://economy.gov.ru/minec/about/structure/depsvod/doc20110407_02
148. Социальный налог – 2015. – Электронный ресурс: <http://dv.ee/novosti/2014/12/23/socialnyj-nalog-2015>
149. Структурная политика в России: новые условия и возможная повестка (*Доклад НИУ ВШЭ*). 2018. – ж.: Вопросы экономики, , №6. С. 5-28.
150. Структурные фонды, финансирующие региональную инновационную политику Европейского союза 2013. – Электронный ресурс: https://studme.org/48878/ekonomika/strukturnye_fondy_finansiruyuschie_regionalnuyu_politiku_evropeyskogo_soyuza
151. Твисс Б. 1989. Управление научно-техническими нововведениями. М.: Экономика.
152. Учеба в профессионально-техническом среднем заведении 2017. – Электронный ресурс: <http://www.rajaleidja.ee/3-2/>
153. Фатеев В. С. 2011. Координация региональной и инновационной политики: опыт Европейского союза и Республики Беларусь / В.С. Фатеев // Экономика глазами молодых: материалы IV Междунар. экон. форума молодых ученых (Вилейка, 3–5 июня 2011 г.). – Минск: БГАТУ, – С. 28–32. – Электронный ресурс: http://ekonomika.by/downloads/Fateev_2011-4.pdf
154. Цветков В. А. 2000. Финансово-промышленные группы в современном мире. Опубликовано в журнале *«Промышленная политика Российской Федерации»*. Электронный ресурс: <http://www.ipr-ras.ru/articles/tsvet-00.htm>
155. Черноуцан Е. М., 2010. Полюса конкурентоспособности как инструмент реализации инновационной политики Франции в условиях глобализации. – В сб.: Глобальная трансформация инновационных систем. Под ред. Н.И. Ивановой, М., ИМЭМО РАН, 2010. – Электронный ресурс:

<http://www.imemo.ru/files/File/ru/publ/2010/10022.pdf>

156. Шелюбская Н. В. 2010. Конвергенция европейского научно-технического и инновационного развития. – В сб.: Глобальная трансформация инновационных систем. Под ред. Н. И. Ивановой, М., ИМЭМО РАН,– Электронный ресурс: <http://www.imemo.ru/files/File/ru/publ/2010/10022.pdf>
157. Шелюбская Н. 2003. Новые направления инновационной политики ЕС. – Электронный ресурс: http://vasilievaa.narod.ru/12_4_03.htm
158. Шумпетер Й. А. 1982. Теория экономического развития. М.: Прогресс.
159. Яковец Ю.В. 2004. Эпохальные инновации XXI века. – М: «Экономика».
160. Яковец Ю. В. 2004. Россия – 2050: стратегия инновационного прорыва. – М.: ЗАО «Издательство Экономика».
161. Якокка Л. 1991. Карьера менеджера. Пер. с англ. М.

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