Contents lists available at Science-Gate

International Journal of Advanced and Applied Sciences

Journal homepage: http://www.science-gate.com/IJAAS.html

Problems of state regulation of innovation policy in the Russian Federation and foreign countries

Aleksandr Jurievich Pavlov[1,*], Vera Nikolaevna Batova [1], Natalia Nikolaevna Kovalyova [2], Andrey Vladimirovich Kolesnikov [2], Alexander Yurevich Sokolov [2], Yulia Viktorovna Soboleva [2]

[1]*Penza State Technological University, Penza, Russia*
[2]*Saratov State Law Academy, Saratov, Russia*

ARTICLE INFO

Article history:
Received 14 March 2016
Received in revised form
10 May 2016
Accepted 13 May 2016

Keywords:
Legal regulation
Nano-technology
Information
Innovation policy
Strategy
Development

ABSTRACT

In modern conditions of nanotechnology, information and other emerging technologies are important factors for sustainable innovative economic development. Innovative development of economy forms the basis of a dynamic, high-quality growth of the national economy, changing its structural characteristics, and defines its international competitiveness and overall vitality. However, the decisive turn to innovation model of development through the intensive use of the latest techniques and technologies, pioneer and major inventions, at the same time creates the preconditions for the destabilization of the economy and a source of specific threats to economic security. Safe development of Nano-industry is an urgent task that promotes the positive dynamics of innovation development for the long term. You must carefully balance the potential risks and benefits of nanotechnology, securing at the normative level, the basic principles of precaution", thereby establishing an objective model of innovation-legal policy in the territory of the State, taking into account the impact of international standards on its formation and continued operation. Establishment of information, its collection, processing, accumulation, storage, retrieval, dissemination and provision of the consumer, the creation and use of information technology and facilities, data protection and the rights of entities involved in information processes, cannot take place without the participation of the State. Information as the process irreversible and unavoidable, is for States to ensure the State of protection of the interests of citizens, society and State, as well as create conditions for qualitative and effective provision for citizens, public authorities and local self-government bodies, organizations, public associations, to develop federal and regional information systems and networks, to ensure their compatibility and interaction in a single information space of the Russian Federation. Given the speed of development in this area, it should be recognized that the legal, organizational and technology information sphere is the least protected part of the State. Formation of an effective system of legal support in the development and application of innovative technologies - a key objective of national development strategies nanotechnology industry, information and other innovative processes in the context of globalization of markets. The paper summarizes the features of state regulation of innovation development in foreign countries in terms of providing legal regulation. Russian analyzed problems of legal regulation of nanotechnologies. Conceptual directions of formation of innovation policy in Russia.

1. Introduction

Innovative development of economy is a strategically important area of public policy in modern conditions, which creates the basis of dynamic growth of the national economy, changes its structural characteristics, and determines its international competitiveness and overall viability

However, a decisive turn in state policy to innovative development due to the intensive use of the potential of new techniques and technologies, and pioneering major inventions creates the prerequisites for the destabilization of the economy and the formation of the specific threats.

* Corresponding Author. Tel.: +89093197589
Email Address: pavlov_85@bk.ru (A.J. Pavlov)

Worldwide trends in modernization of existing methods and the emergence of new ones for solving strategic problems in states with rapidly developing economies, almost complete transition in the Russian Federation to a market economy, the growing trend of volatility in global and national markets of the planet, determined the need for an objective and practical implementation on the basis of advanced foreign experience of domestic procedures to ensure and regulate the promising scientific, technical, innovative products and technologies, including nanotechnologies, knowledge-intensive sectors of the domestic economy.

2. Methods and materials

The implementation of the objectives was achieved on the basis of an analysis of the main provisions of the legislation of the Russian Federation.

While writing the work depending on the nature of the tasks use different methods of research: abstract-logical-when setting objectives and research tasks; a comparative analysis of the main causes for the formation and improvement of the system of legislative in Russia; inductive and deductive methods in identifying legal and economic preconditions for improving the competitiveness of the domestic business.

Theoretical and practical study on State regulation of innovation policy, the authors used a monographic method.

The empirical base of the research and the source of ensuring the conclusiveness of issues and conclusions presented in the work were the official data the native and foreign periodical press; the results of researches of scientific centers, the materials of statistical surveys including the results of experts' reports and opinions, the data of reports about the innovative, financial and economic activity of enterprise structures, the materials of the Russian and international scientific and research-to-practice conferences, seminars, "roundtables", the information sources and the Internet.

3. Innovative legal policy of the Russian state

Nanotechnologies are positioned as a new basic innovations (Frolov and Stratulat, 2010), and the emerging Nano-industry is considered as a system of interrelated processes of innovation in the transition to the sixth technological wave. Production of energy, electronics, medicine, biology, pharmacology, chemical industry, aerospace and defense are closely interrelated with nanotechnology. Nanotechnology products account for about 0.01% of world GDP today and it is expected to increase to 2% in the nearest future.

Nanotechnology is “perspective” for the purposes of improving the competitiveness of the state and its technological leadership, and national security requires a proactive approach to nanotech development and commercialization. Results nanotechnology competition will determine the country's place in the international division of labor and its role in the global financial system, serving the assignment of technological rent the leading countries of innovation development.

Nanotechnology is characterized as a high-cost innovation, its potential is not defined and the risks are very high. The structure and the amount of the cost of the endogenous factors of production in a single product of a certain type at the Nano-scale are not yet defined and measured (Inshakov, 2005). Confidence in the future of the nanotechnology industry is based on forecasts of the market, characterized by a significant range of variation. Estimates of the current Nano-market range in between of 12 billion U.S. dollars to 254 billion U.S. dollars. Many "popular" forecasts (Lux Research) make the mistake of double-counting. Such unrealistic economic expectations of nanotechnology could lead to financial "bubbles" bearing on a priori negative influence on their further progressive development (Perez, 2011).

Thus, the safe development of Nano-industry is an urgent task that contributes to the positive dynamics of innovation development in the long term. It is necessary to carefully balance the potential risks and benefits of nanotechnology, taking into consideration "precautionary principle", thereby developing an objective model of innovation and regulatory policy on the territory of the state, taking into account the impact of international standards on its formation and further operation.

Innovative legal policy constitutes itself a special form of expression of state innovation policy, the activities of entities authorized to establish an effective mechanism of legal regulation of the process of information and means of securing and implementing the political course of the country in the establishment of the information society and nanotechnologies.

Innovative legal policy is one of the types of legal policy as a generic concept of integration and, therefore, its essence is closely linked to the definition of legal policy at all. In other words, any definition of innovation and regulatory policies should be consistent with the general notion of legal policy, which in the most abstract form is interpreted, according to Doctor of Law, Professor Matuzov N.I. "as a set of objectives, measures, targets, programs, systems, implemented within the scope of the law and by the law" (Matuzov and Malko, 2003).

Doctor of Law, Professor Boer stressed that information legal policy (as an element of innovation regulatory policy) is intended to ensure the transition to the information society on the basis of formation of information culture as a code of conduct that fits into the global humanist culture of mankind (Boer, 1998).

Creation of information, its collection, processing, accumulation, storage, retrieval, distribution and its provision to consumers, development and use of

information technologies and means of their maintenance, protection of information and the rights of subjects participating in information processes cannot take place without the participation of the state. Information is irreversible and inevitable process, it generates the state obligation to ensure the protection of the interests of citizens, society and the state, as well as to create conditions for quality and efficient provision of citizens, public authorities and local government bodies, organizations, public associations, to develop federal and regional information systems and networks, ensure their interoperability in a single information space of the Russian Federation. Given the speed of development of this area, it should be recognized that the legal and organizational sphere of innovation policy is the most vulnerable part of the state mechanism.

Innovation policy reflects the conflicting interests of individuals engaged in it, whose activities are not sufficiently regulated by legislation. State innovation policy is one of the most important factors of the management of the political process. Its effective implementation requires:

- organizational, institutional and legal support;
- regulation of information relations between branches of power (Suhomlinova, 1997).

Assuming that the primary activities of public information policy, according to Kapustin should be: analysis of the processes of development of the information sphere, improvement of the legislation; development of the concept of formation and development of information legislation; raising legal culture of society; it should be recognized that only the synthesis of the implementation in practice of information legal policy and state information policy provide significant socio-economic changes in the Russian society, computerization of administrative activity of public authorities and local governments, the rapid development of international economic relations, was carried out using global computer networks .

In connection with the liquidation of the State Duma Committee on Information Policy in December 2011, it takes on special urgency to develop the concept of information and regulatory policies, which should include the following goals and objectives: respect for constitutional rights and freedoms in the field of acquisition and use of information; preservation and strengthening of cultural and scientific potential of the country, spiritual and moral values of society; implementation of information support of the state policy of our country, including the making available to the public accurate information about the ongoing Russian Federation state policy; providing free access to open state information resources, the development of modern national information technology internal information market by local competitive products and yield of these technologies and means to the global information market, as well as information security of information and communication systems on the territory of Russia.

In addition, on February 7, 2008 the President of the Russian Federation approved the Strategy for Information Society Development in the Russian Federation, it establishes principles and basic directions of the state policy on the use and development of information technologies for the development of information society in our country. It is expected that this strategy will develop the doctrinal, conceptual, software and other documents that define the objectives and activities of public authorities, as well as the mechanisms of their interaction with legal entities and individuals in the development of the information society in the Russian Federation. It should be noted that this document contains indicators of information society development in the Russian Federation for the period up to 2015, which in turn became part of the performance of the State program "Information Society 2011-2020". Thus, these documents are the legal expression of information and legal policy at the present stage of development of public relations.

Innovative activity is an economic activity aimed at addressing socio-economic and other challenges through the creation and implementation (practical application) of results of intellectual activity in various spheres of public life for a creation of a new or improved product, service, process, organization of management.

In the most developed countries of the world (leading countries applying for nanotechnology superiority - the US, Japan, EU countries (Germany, Finland, Sweden) and South Korea) state authorities applied Nano-technological development strategies developing conceptual approaches to economic security in the application of nanotechnology according to national circumstances and priorities of the economy.

Elements of the strategic management of the nanotechnology development are:

1. Ensuring the safe development of nanotechnology necessitates the assessment of: potential risks to human health, the environment and safety; ethical, legal and societal implications of nanotechnology (Pelley and Saner, 2009). In the development directions of nanotechnology industry must be taken into account the following factors:

1) the performance of nanotechnology;
2) long-term scenarios for economic development;
3) scenarios of social development and convergence of technologies;
4) threats to national security;
5) ethics, the risks and uncertainties;
6) legal and international aspects;
7) interaction with the public, the development of human resources (Rocco and Litten, 2005).

2. Basis of the concept of safe development of nanotechnology industry combines two interrelated and complementary subsystems: a subsystem of the Nano-technological security research and highly skilled personnel, equipment and technologies, products and services, development and commercial exploitation; serving subsystem: investment, management, and marketing. The main purpose of

the safe development of nanotechnology industry must be to maximize the benefits and prevent potential harm to nanotechnology, and is to be based on a realistic assessment of the social and economic benefits and technical specifications.

3. Key principles of management of safe nanotechnology development.

1) Transparency, accountability and control.

2) Identify all stakeholders, beneficiaries and those responsible for the risks in the development and use of nanotechnologies and management.

3) Responsibility for decision-making, non-performance or improper performance of their duties.

The need to carry out various types of work related to the supervision of the activities of security objects: collection, analysis, compilation of statistical information.

4. The level of investment and innovation in the field of nanotechnology can be considered as one of the criteria for assessing the level of economic security at the level of individual industries, applying nanotechnology, and at the level of the national economy.

The difficulty in evaluating investments in nanotechnology is reflected in the complexity of determining the impact of nanotechnology, where the final product contains Nano-materials and its functionality is not changed by their use; the need to develop appropriate economic indicators at all stages of the value chain to highlight the participation of Nano-materials or Nano-product.

Organization for Economic Cooperation and Development (OECD) proposes the use of three basic indicators for assessing investments:

- Resources (tools and mechanisms of state financing, public-private partnerships, pilot projects and programs, public procurement, the number of researchers involved in nanotechnology, venture capital and other forms of private financing), income and impact indicators;
- The results (publications, patents, sales of Nano-products);
- Contribution to the problems faced by the state in economic and social development (number of nanotechnology companies and market growth, job creation).

Table 1 summarizes the performance of resources and the results of nanotechnology.

In the five years the Strategy addressed the two main objectives set by developers:

1) a national nanotechnology network (10 leading research organizations, 40 universities in 22 cities in 7 federal districts. It is more than seven and half thousand researchers, more than 250 patents and more than 3 thousand publications on topics of nanotechnology (www.nanonewsnet.ru/blog/nikst/o-vypolnenii-prezidentskoi-initsiativy-strategiya-razvitiya-nanoindustrii);

2) "Formed the foundation for the rapid growth of industrial production using nanotechnology in their production cycle."

Nano-industry of Russia is developing fragmentary and suffers from a lack of adequate legal support, regulating the safety of the establishment and application of nanotechnologies and Nano-materials; regulatory mechanisms to regulate the development of the nanotechnology industry, harmonizing Russian and international regulatory and guidance documents on export support in order to stimulate the commercialization of nanotechnology and the output for the domestic and foreign markets of new nanotechnology products.

It is necessary to develop methodical bases of legal regulation of the national innovation system and to stimulate the creation of knowledge-based competitive technologies, the formation of the regulatory framework of the innovation infrastructure, resource support of innovation research organizations and their interaction with the real sector of the economy and the education system.

Currently, the priority areas of legislative regulation in order to stimulate the development of scientific and technological potential of the country are: support for advanced technology development and high-tech sectors in the industry, the most promising of which are research and development in the field of nanotechnology; improvement and harmonization of legislation in the field of basic science and scientific and technical activities; changes to tax legislation in order to create favorable conditions for the financing of innovation.

Experts predict that the long-term trend growth of global spending on nanotechnology, including, both public and private investments, will continue. In this regard, the increased role of the state in regulating and shaping the national nanotechnology network and "artificial" encourage of the development of the nanotechnology industry in developing countries is a debatable question. On the one hand, the recipients of government funding positively evaluate this fact, on the other - a number of foreign analysts and competent representatives of the scientific community are skeptical about "pumping budgetary funds of national nanotechnology network." Large companies use innovative traditional domestic business practices aimed at "development" budget. State-owned companies are too bureaucratic and have a number of functions not directly related to the nanotechnology industry, which increases their potential for corruption.

It is noted that the *de facto* public investments substitute private capital, despite the fact that in certain sectors, these private investments would have come anyway. It is proposed to invest only in companies whose main activity corresponds to the priority areas of science, technology and engineering (medicine and biotechnology, engineering and metalworking, nanostructured materials, optoelectronics and Nano-electronics, solar energy and energy efficiency, infrastructure projects, nanotechnology centers).

This distorts the picture of "supply and demand" in the market of nanotechnology and creates incentives for inefficient "development" of federal funds. One more important negative trend is the emergence of Nanoscience subject as a major public and private capital; it inevitably leads to an increase in affiliated academics (Berube, 2006).

Table 1: Indicators of resources and results

Factor	Advantage	Limitations
	Indicators of resources	
Public finance	Publicly available information.	Limited and fragmented funding Lack of transparency of information about the recipients of state funding Comparison between states requires a harmonized definition
Infractucture	Significant amount of publicly available information Clear indicators of development and growth potential	The presence and the level of infrastructure development varies greatly among different countries Activity of infrastructure is fragmented
Number of researchers	Indicator of the capacity of human resources in the field of nanotechnology (qualified scientists and workers)	Low-level of theoretical elaboration of the problem Names and the content of the training courses and programs may vary There is no database of postgraduate education The difficulty of determining the contribution rate
	Indicators of results	
Publications	The number of publications closely associated with nanotechnology activity. The research - the result of peer review Interdisciplinarity Availability	The bias (in favor of magazines in English language) Combines different databases Covers only codified scientific knowledge Quoting and borrowings Preferences of researchers To a large extent related to the results of basic or applied research
Patents	Closely related to inventions Cover a wide range of technologies The content of the patents is a source of various information Availability	Many patents have no industrial application It does not take into account the possible omission of the patent holder, and, respectively, small commercial success of patented innovations and the low value of the innovative nanoproducts National differences in the patent law Changes in patent law makes it difficult to evaluate over time
Sales of nanoproducts	Indicate the distribution of nanotechnology products in the industry as a whole The index of nanotechnology generation	The lack of standardization of methods for assessments Estimates are based on forecasts and individual market research Valuation levels - regional, sectoral, company Reluctance to disclose information about participation in the research / development Terminology problems (definition of nanoproducts, their classification)
Number of nanotechnology companies	Job creation is a key objective of many innovative strategies, and an important indicator of the development of innovative / successful financing	Estimates are based on forecasts and individual market researches Terminology problems (no different is made between research and technical staff) In most cases, only a part-time job is associated with research in nanotechnology
Growth of market/market share	The key indicator of the success of innovative development, reflecting the contribution of science and technology in showing the contribution of scientific / technological development	Estimates are based on forecasts and individual market researches The reluctance of companies to disclose information about participation in research / development Terminology problems (definition of nanoproduct)

This merge of the institutions of the nanotechnology industry is observed in most areas of modern high-tech business and it leads to a purposeful imitation of extra necessity in obtaining grants in nanotechnology field. In this regard, effective implementation of the state policy in the field of nanotechnology industry at the macroeconomic level, involves the formation of an appropriate economic mechanism for resolution of conflicts arising between the objective needs and resources. And also there is the problem of correlation of public and private regulation.

Charter of "Rosnano" adopted on February 7, 2011 by the Russian Government, determines that the public corporation "ROSNANO" is created as a result of the reorganization of the State Corporation "Russian Corporation of Nanotechnologies" in the form of conversion in accordance with the Civil Code of the Russian Federation, the Federal Law "On Joint Stock Companies", Federal Law "On the

reorganization of the Russian Corporation of Nanotechnologies". Consequently, we can conclude that in this case, there is a cross-sectoral regulation, namely the combination of state (administrative and legal) and private law principles (ROSNANO has hundred percent of shares state-owned). This approach ensures an optimum level of development of innovative activity, since nanotechnology is very expensive and high-tech sphere. Training of specialists in universities requires high material costs paid by the state. However, this is not enough; continuous training and internships are needed. But the most problematic issue is the availability of relevant material and technical base for research, and subsequently for nanofabrication. All of this requires large financial investments, by both the state and private companies. That is why regulation has a dual character.

This dual character is evidently fixed in the Charter, objectives of Rosnano:

- Facilitate the implementation of the state policy in the sphere of creation and development of the nanotechnology industry and the corresponding infrastructure of innovation;
- The funding of innovative projects for the production of nanotechnology products;
- Construction of production chains, ensuring the development of new industries in the field of nanotechnology in the Russian Federation;
- Profit in the implementation of these objectives.

A similar duality of legal regulation of activity in the sphere of nanotechnologies takes place in other countries (Zul'fugarzade and Cirina, 2013).

The question is what should prevail: public law or private law regulation of nanotechnology, that is essentially administrative or civil law regulation. A great contribution to the development of the subject of administrative legal regulation has made professor Manohin V.M., Konin N.M. In particular, professor V.M. Manohin gives the concept of three elements as the subject of administrative law: manegemnet by the government, government regulation and public services (Manohin, 2011). In our opinion, all three elements of administrative legal regulation can be applied to the field of nanotechnology. In fact, the open joint stock company "Rosnano" is in fact state organization; hence, following the teachings of professor V.M. Manohin management by the government applies here. Especially it should be expressed in a state control of compliance with the legislation by Rosnano. However, nanotechnology includes a set of institutions and enterprises, including non-state forms of ownership. Therefore, here applies not only state management, but also state regulation. Moreover, regulation of cross-industry, enterprises and institutions belonging to various sectors of the administration (constructions, medical, etc.). It includes the establishment of tax incentives, the development of state programs for the promotion of certain activities, the initiation of investment projects for the creation and development of the nanotechnology industry and infrastructure, implementation of educational programs in the development of the nanotechnology industry, loans, guarantees, support for organizations involved in scientific research and experimental design activities. But without private law principles regulation of the sphere is impossible. For example, such activities as the commercialization of research activities, ensuring the transfer of technology in the implementation of investment projects in the field of nanotechnology, the implementation of investments in securities, etc., are governed by the rules of civil law.

However, the State as a subject of investments acts as the owner of the property. State property management is the administrative activity, but foreign legislation knows exceptions to this rule, for example, in France, public funds invested in the private sector of the economy are regulated by private law regime. The content of this activity can be of a civil law character, which is one of the components of government regulation. The organization of state property management is a complex set of actions of the State. Such an approach to the concept of state property management lays beyond traditional civilistic approach and allows to fully characterize public law elements having special significance (Talapina, 2001).

The local level regulation may be exemplified by the agreement on cooperation and interaction between the Saratov State Academy of Law and the Centre for Development and Commercialization of the New Technologies. It should be noted that SSLA is the first law-oriented (humanitarian) university, which signed a similar document. Much attention is paid to this area in other regions of Russia, e.g. Tatarstan. During the II International Forum on Nanotechnology the head of State Corporation "Rosnano" Anatoly Chubais called Tatarstan the leader in the field of nanotechnology. The republic is implementing the program of innovative development of industry and specialized program of development of nanotechnologies. Tatarstan and Rosnano signed a package of documents on creation of the Kazan center of the Nano scale technologies, there are already operating enterprises making Nano-based products.

4. Results

Regulation of nanotechnology has interdisciplinary character because of the nature of innovation, science-intensive and costly research and production, but with the necessary predominance of public regulation basis. We believe that the powers of government regulation and control of the area because of its importance for the development of the Russian Federation, should be directly entrusted to the Government of the Russian Federation. This requires an amendment to the Federal Constitutional Law of 17 December 1997 № 2-FKZ "On the Government of the Russian Federation". In particular Art. 14 Powers of the Government of the Russian Federation in the sphere

of economy needs to be supplemented with a provision that the government carries out the general management of nanotechnology. In addition, the question remains: which executive authority is involved in the control of this area. Thus, in accordance with paragraph 1 of the Regulations on the Ministry of education and science of the Russian Federation, it is a federal body of executive authority responsible for the development and implementation of state policy and normative legal regulation, including the field of nanotechnology, and also responsible for providing state services and managing state property, including in the sphere of science, technology and innovation, including the activities of federal centers of science and high technology, public research centers and information support of scientific, technical and innovative activity. Thus, the ministry does not have control function in the field of nanotechnologies, and the Regulations for Federal Service of Supervision in the Sphere of Education and Science. It is therefore proposed to Supplement the present provisions of clause 5.3.1 and be carried out by the Federal service for supervision in education and science of the function of the state control (supervision) over observance of legislation of the Russian Federation in the sphere of nanotechnology. These amendments will help to prevent potential violations of the law in this area.

Requirements for the composition and content of projects in the field of nanotechnology, proposed for financing from the funds of Joint Stock Company "ROSNANO", do not provide an explicit account of what is being done in other federal financing programs. The agenda is: to overcome the sectorial and institutional approaches to the development and implementation of innovative projects, better coordination between the development of nanotechnology, and the borrowing of technologies for modernization of the fifth techno-economical paradigm. The fact that the efforts of Russian researchers in the field of nanotechnology cover many areas, does not guarantee gaining the competitive advantages of the domestic economy in this area. Conclusion reached in "The comprehensive program of scientific and technological development and technological modernization of the economy of the Russian Federation till 2015" is quite applicable: "the strategy of technological development and technological modernization should be based on those areas in which our national science holds a strong position, those areas where it is possible to achieve the leading position only by broad international cooperation, and those where it is advisable to carry out modernization by borrowing other people's experience and technology". The issue of delimitation of such areas of technology development of a new long wave remains to be open. Contradictory interaction of technological ways (competition for resources, on the one hand, and mutual replenishment resources to another) greatly complicates the production of strategy of action in nanotechnology competition.

Currently, the competitiveness of the domestic economy is not completely defined by prosperity of physical resources, but by "the presence and development of its innovative potential, which is high-tech, skilled labor, accumulated intangible assets, competent long-term innovation policy of the state ..." (Korostyshevskaja and Nikolaeva, 2007) and other important components of economic performance.

Basic research in the field of Nano-technology is of strategic nature. In the long term, the results will form the basis for substantially transformed high-tech industries, which to a large extent will determine the innovative, economic and defense potential of the country. Thus, the Nano-industry is becoming one of the most important sectors, set the direction and pace of innovation development of the global economy.

In order to achieve global leadership in the near future in the global innovation market it is necessary:

1. Formation of methodological, legal support, regulating the safety of the establishment and application of nanotechnologies and Nano-materials;
2. the creation of a system of methodical, regulatory support mechanisms for regulating the development of the nanotechnology industry, harmonizing Russian and international regulatory and guidance documents to ensure traceability of measurements and conformity validation of nanotechnology products, support of export in order to stimulate the commercialization of nanotechnology and the output for the domestic and foreign markets of Nano-industry's new products;
3. The improvement of the legal base of scientific and innovative activity in the field of nanotechnology;
4. The establishment and development of innovation infrastructure, improvement of the mechanism of interaction between participants of the innovation process, including the organization of interaction between research organizations and higher education institutions with industry, in order to promote new nanotechnologies and Nano-materials;

The preservation and development of human resources, including the creation of conditions to attract and keep talented young people in the field of nanotechnology, the return to Russia of leading Russian scientists and experts in the field of nanotechnology working abroad.

The authors proposed the following areas of economic security, the understanding of which can contribute to the development of safe nanotechnology industry: analysis of the market of high technology products and determining the state technological needs in this area; forecasting the development of certain technological trends in the field of nanotechnology, as well as implementation of targeted support to the most promising in terms of their introduction into the economy, the development of measures to support spin-off companies and start-ups, cross-disciplinary networks, research groups and institutions, industrial partnerships; intensification of

organizational, legal, financial, economic, foreign-investment forms and ways of enhancing innovation in the country, creating information databases, support for multi-disciplinary training and education.

Acknowledgment

The article was written in the framework of State order of the Ministry of education and science of the Russian Federation, project "Inter-disciplinary socio-humanitarian studies in the context of innovative development and world relations" (project code 2232, 2014).

Conflict of interest

The authors acknowledge that the data do not contain any conflict of interest.

References

Berube DM (2006). Nanohype: The truth behind the nanotechnology buzz. Prometheus Books, St. Petersburg, Russia: 521 p.

Boer VM (1998). Legal information and security policy of Russia: Theoretical and legal aspect. Prometheus Books, St. Petersburg, Russia: 31-32.

Frolov D and Stratulat V (2010). Nanoindustry development and economic safety. Economist, 12: 19-25.

Inshakov OV (2005) Evolutionary Economics and Economic Genetics. Evolution Theory, Innovation and Economic Changes, Moscow: 45-58.

Korostyshevskaja EM and Nikolaeva TP (2007). Innovation potential of Russia and the conditions of its development. Saint-Petersburg University, Herald, 34-44.

Manohin VM (2011). Administrative Law of Russia. Saratov, Russia: 272 p.

Matuzov NI and Malko AV (2003). Russian Legal Policy. Moscow, Russia: 528.

Pelley J and Saner M (2009). International approaches to the regulatory governance of nanotechnology. Available: www. Regulat orygovernance.ca.

Perez C (2011). Finance and technical change: A long-term view. African Journal of Science, Technology, Innovation and Development, 3 (1): 10-35.

Rocco MC and Litten E (2005). Survey on nanotechnology governance. The role of government. IRGC growth on nanotechnology, Geneva. Available: www.irgc.org.

Suhomlinova GP (1997). State information policy-concept and general laws. Issues of State Information Policy, Moscow, Russia: 12 -14.

Talapina JV (2001). Issues of the organization of state property management. Russian Law Journal, 3: 65-67.

Zul'fugarzade TJ and Cirina MA (2013). Discretionary and mandatory legal norms in the legal regulation of nanotechnology in the US. Journal of Foreign and National Law, 1: 68-71.