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THE ECONOMIC CONDITIONS OF ENTERPRISE FUNCTIONING

Development of the Innovation System in Grodno Region: Condition, Problems, Prospects

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The innovational system has multilevel character. On the over national level tendencies to global use of national technological potential, to global cooperation in sphere of innovations are shown. Alongside with it the special urgency is got with a regional level of innovational systems. It is connected because а) at a national level the regional environment in determines competitiveness of business as innovations on the greater degree grow out environments many. б) the postindustrial economy has high dynamism and an individualization both in sphere of manufacture, and in sphere of consumption; в) in connection with глобализацией regions are involved in the international exchange without national borders.

The social economic policy of the Republic of Belarus is based on the following priority directions: increase of the level and quality of living of the population and maintenance of steady socio economic development of the state.

Currently the Republic Belarus is developing its industrial and scientific potential, individual elements of the innovations infrastructure (science-technology parks, business incubators, centers for transfer of technologies etc.) are being actively developed, however there exists a lack of communication between these elements as well as between these elements and other sectors of the economy. As a result, despite of positive experience of a number of initiatives, break of innovative development of the economy has not taken place.

In connection with the beforesaid in the course of development of the innovation system of the Republic of Belarus a significant role is played by the regional innovations policy, creation of the regional innovation system, development of the effective mechanism promoting social-economic development of the region, first of all through effective constant interaction of science and manufacturing and attracting the necessary resources at all stages of the innovation of activity. The research is developed to regional innovation system creation.

Aim of the research – to provide recommendations on facilitation of conditions for development and functioning of the regional innovation system.

The regional innovation system can be defined as a set of interrelated subsystems facilitating access to various resources and services to the participants of the innovation activity. The regional innovation system should be regarded as a process of interaction and feedback between all subsystems ensuring realization of all the processes leading to creation of a product such as innovation. The above approach enables to develop the areas the promotion and stimulation whereof will promote innovation activity and lead to the achievement of the set objectives.

The development and promoting of the innovation system requires performance of requirements of principles:

***compatibility** – the regional system should be a consistent part of the national innovation system as well as the national social-economic system and global economic relations:*
***integrity of the system** – unity of the system and coordinated performance of functions by each element of the system;*
***development** – ensuring development of the subsystems (management);*
***standardization** – the quality of the object being development shall be ensured adhering to the modern standards and first of all meet the requirements of the quality management system.*

Keywords: *innovation, regional innovation system, subsystem, innovation activity, innovation management, innovation development.*

Introduction

The innovational system has multilevel character. On overnational a level tendencies to global use of national technological potential, to global cooperation in sphere of innovations are shown. Alongside with it the special urgency is got with a regional level of innovational systems. It is connected by that a) at a national level the regional environment in determines competitiveness of business as innovations on the greater degree grow out environments many. b) the postindustrial economy has high dynamism and an individualization both in sphere of manufacture, and in sphere of consumption; c) in connection with globalisation regions are involved in the international exchange without national borders (Богдан,2004).

The social economic policy of the Republic of Belarus is based on the following priority directions: increase of the level and quality of living of the population and maintenance of steady socio economic development of the state. The Government has set the next tasks leading to the achievement of the above objectives: to develop the national innovation system, to promote innovation and investment activities, which should guarantee the development of scientific and technical potential of the Republic, implementation of the progress achieved by the

research and experimental-production activities in the real sector as well as serve as the lever of economic rise and allow transition to qualitatively different level of public manufacturing, release of competitive production, saving and exploitation of resources (Мясникович, 2004).

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4. *standardization* – the quality of the object being development shall be ensured adhering to the modern standards and first of all meet the requirements of the quality management system (Голиченко, 2003).

According to 1 principle it is possible to present, that the regional innovation system consists of the following subsystems: production-technologies, finance, science, human resources, expert consultations, information, management (administrative, legal governing), including the area of their interaction (Figure)(Опекун, 2005).

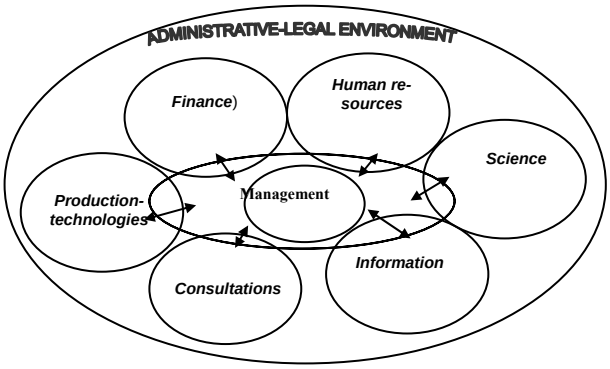

Figure. Regional innovational system

The analysis of the innovation activity of region

Let's analyze the current status of each of subsystems of the innovation activities in Grodno region and the related problems(Статистический ежегодник, 2005).

The *production-technology* subsystem includes:

- industrial enterprises and organizations, including small and medium;
- joint ventures in a free economic zone;
- scientific – technological parks (under development).

The development of the regional industries is quote dynamic. In the 2005 Industry growth compared to 1990 is 146 %. Moreover, the number of the industrial personnel decreased from 117 000 (which was the level in 2001) to 88 800 (in 2005)(Социально-экономическое положение РБ, 2005).

The share of the output produced by the organizations, certificated under ISO 9000, ISO 14000 and containing the label “CE” accounts for more than 58 % of the total industrial output. However, it should be also noted that in 2005 only 10 % of the organizations of the region were recognized to be engaged in innovation activities; furthermore, the number of small and medium enterprises releasing innovative production is decreasing.

The research has allowed to identify the factors preventing the development of innovation activity in the industrial sector (Отчет, 2005)

Factors of organizational – legal character:

- insufficient and imperfect legal framework governing innovation activities;
- low level of absorption of innovations at the level of enterprises and organizations of the region;
- insufficient development level of the innovations infrastructure, market economy;
- uncertainty of terms of the innovation process.

Factors of economic character:

- lack of own financial resources;
- insufficient financial support on the part of the state,
- high costs of innovations;

- high economic risk connected to realization of projects of innovations;
- low purchasing power of the consumers of innovations.

Factors of industrial character:

- low innovation potential of the enterprises;
- lack of preparedness of the enterprises for implementation of scientific and technical achievements;
- shortage of the qualified personnel;
- absence of changes based on reorganization;
- lack of the information about new technologies and markets.

The above leads to a conclusion that production-technologies subsystem is in place and is developing, however in the meantime there exists other serious problems the settlement of which will help to achieve efficient functioning of the innovation system.

The *financial* subsystem includes:

- Innovations fund raised by contributions of the legal entities based in the Grodno area. At least 30 % of the means of fund must be spent for financing of measures on development of manufacturing, including research and experimental-production activities, innovation projects, computerization, certification, energy efficiency.
- The regional scientific-technical program (Sustainable development: science, innovations, technology) and state scientific-technical programs of applied researches are an effective mechanism to promote innovation activity of organizations.
- Innovations Fund of Belarus.
- Banks.
- The main problem – absence of mechanism to attract venture capital, capitalize innovation projects and enterprises.

Science subsystem (universities, Biochemistry Institute, Department of Resource Saving Problems of the Science Academy of Belarus, regional Institute of Agriculture, Institute of Nitrogen Industry)

The researches (Сидоренко, 2004) have demonstrated that the functioning of science, as a subsystem of innovation activities, is prevented by the following factors:

- the number of the personnel engaged in research and development in Grodno region is constantly decreasing;
- the majority of researches have no relation with manufacturing and do not carry applied character;
- the areas of the researches carried out by the organizations of Grodno region poorly correlate with the needs of the region; consequently, the results of the scientific activity are not employed in the production-technologies subsystem;
- there is no motivation inducing the science personnel to undertake scientific activity, which might form the background (in terms of theory, technologies, ways, the processes, etc.) for experimental-production activity and implementation of innovations;
- lack of commercial orientation of the majority of results of research activity;
- out-of-date material base of scientific researches;
- gaps of the system or protection of the intellectual property and underdeveloped market of patent services.

Information subsystem (Institute of Statistics, Information Centre, World Wide Computer Web and databases) (Москвина, 2003).

The number of the users of the Internet and modern computer technologies, the extent of the geo-information computerized network follows positive dynamics; organizations are developing and using different information systems, including automated design systems. All this has a positive effect on the innovations potential of the region. It should be also mentioned that about 35 % of the industrial enterprises of Grodno region have no access to Internet.

Management subsystem (Regional Scientific and Technical Council, Division of Industry, Scientific-Technical and Innovative Activities, Economic Department of the Executive Committee of Grodno region) so far has not shown itself as an active element of the innovation system (Бабенко, 2005), i.e.:

- the priorities of the innovation development of the region have not been identified;
- there exists a lack of regional strategic marketing and coordination of innovation processes in region.

Consultations subsystem includes Regional department of the national center for technologies transfer, specialized departments and units of enterprises and organizations rendering services on the areas of intellectual property, standardization, business planning, project management. The basic problems (Отчет, 2005):

- functional inconsistency with other subsystems;
- absence of the precise mechanism for transfer of technologies;
- lack of qualified staff.

Human resources subsystem. The functioning and development of the innovation system is impossible without the qualified staff working in this sphere. Solution of the following problems is therefore a part of development of the innovation system:

- lack of knowledge in the area of innovations management and lack of practical experience in planning of technologies-oriented project activities;
- lack of the administrative staff for maintenance steady development of innovations of the region;
- lack of administrative and legal knowledge.

The environment of interaction between the basic participants of the innovation process (developers and consumers of innovations) is called to stimulate transfer of new technologies from an academic, high education and branch sciences level to the manufacturing level and from the high technology enterprises to other enterprises. Such environment is needed because of the bellow reasons (Москвина, 2004):

- lack of coordination of activities of the subsystems in the process innovation activities;

- underdevelopment of innovations infrastructure;
- lack of constant communications between the basic participants of the innovations process (developers and consumers of innovations);
- lack of systematic monitoring of the internal market for science and technical production as well as the demand of enterprises and organization for technologies, which results in the lack of information transparency.

Administrative environment of the regional innovation system combines institutes of legal, financial and social character, which in many respects sets models and mechanisms of interaction of the subjects of innovation process. It is necessary to note, that the creation in the country of administrative-legal conditions has not stimulated innovation of activity in the region at all, while the indirect regulation (tax, customs, amortization) had a neutral effect on the areas of high technologies. (Нуретдинов, 2004).

The basic directions of the decision of problems

The innovation system developing in the region requires solution of the above problems through the following measures (Опекун, 2005).

At the *institutional* level:

- to undertake measures to improve administrative-legal system, crediting and tax policy as well as off-budget funding system.

According to 3 principle, the choice of strategy of development of region should be carried out on the basis of the analysis existing and forecasting of the future strategic, strategic segmentation of the market of requirements, forecasting competitive advantages, etc. The choice of correct focus of strategic development, an estimation results, directions correction is main tasks of sphere of management. For efficient *management* of functioning of the innovation system:

- to create Regional Coordination Council, which should include the managers of administrative authorities, leading enterprises, representatives of the education, science, small business and finance sectors of the region. The basic tasks to be assigned to the Council: a) to identify priorities for social-economic and scientific-technical development of the Grodno region, b) to prepare the program of regional development, c) to prepare program implementation plan, and d0 to monitor implementation of the program;
- to facilitate and implement mechanism of cooperation between the regional authorities in order to promote innovation activities of the enterprises and organizations of the region.

In the *production-technologies* subsystem (Гузинов, 1998):

- to establish technological audit divisions in large enterprises which, using new technologies and equipment, together with the departments of new production and marketing services and following the principles of quality management system would generate a comprehensive, long-term program of technical modernization with defined priorities, terms, costs, return, or would adjust the existing technological processes and equipment as well as would carry out the necessary analysis of the economic efficiency of implementation of innovations;
- to establish and develop new enterprises, in particular small and medium ones, which are science-intensive, energy and resources efficient, as customers of science and technologies parks, or affiliated innovation enterprises, thus, improving technological structure of manufacturing of products that are replacing the import and are export oriented.

To further develop scientific – technological parks, as an element of *consulting* subsystem, which provide services and resources on favorable terms to new innovation enterprises.

In the *science* subsystem:

- to orient the scientific activity to applied researches directed at solving of scientific and technical problems of the industrial enterprises of the region;
- to ensure development of scientific-technical (intellectual) potential that is necessary for development and implementation of innovations in commerce;
- to develop the network of technologies transfer in scientific and educational establishments through active use of the world wide computerized web.

The *system of staff training for innovation activity* should be flexible and comprehensive, including university and post-graduate training, short-term courses, seminars, conferences and round table discussions to improve professional skills of the existing managers (Нехорошева, 1996).

The efficiency of the innovation processes in economy depends not only on the efficiency of performance of the economic entities (enterprises, firms, scientific organizations etc.) but also on the way of their *interrelation* with each other, as elements of the common system aimed at development, use, dissemination of innovations, as well on their interaction with the social institutes (such as values, norms, rights). The central role of such interaction, including coordination, monitoring and audit of scientific-technical development of enterprises, organizations and the region as a whole, is vested to the Regional Innovations Development Center, which also supports the regular activities of the Coordination Counsil. The basic tasks to be undertaken: to support investment attractiveness of projects that serve as the basis of the regional development plan, to coordinate interests of the investors and managers of such projects with the needs of the enterprises; to undertake marketing researches; to assess efficiency innovation activities; to develop innovation culture within the business sector. In such Europe enter in network Innovative Regions in Europe (IRE) and unite all characters innovational pol-

icy (business, the trading organizations, universities, banks, the centres transfer technologies etc.) (Богдан, 2005).

For observance of 4-th principle of development innovational systems it is necessary (Евланов, 1978):

1. To estimate end results of efficiency of innovational processes.
2. To develop it in hierarchy of local criteria, having received finally complete system of criteria «innovationalness» economy.
3. To determine directions of its increase through influence on structural elements in the formula of his(its) calculation.

The structure of integrated criterion «innovationalness» economy should be invariant, "through", covering simultaneously three levels: national; regional; corporate.

Especially it is necessary to note, that it is necessary to distinguish concepts «innovationalness» social development and «innovationalness» economy (Садовская, 2006). The concept «innovationalness» social development is much wider than concept «innovationalness» economy and should include:

- «innovationalness» development of economy;
- «innovationalness» development of social sphere;
- «innovationalness» development of ecological sphere.

The concept «innovationalness» social development, thus, covers both social, and ecological, and economic innovations.

As integrated criterion of an estimation of a degree «innovationalness» social development can be c the account resource social development (consumption of resources on unit of an index of harmonious development of a civilization in the analyzed period. Such approach can become a basis for perfection of statistics and planning of innovational activity.

Development of the regional innovation system, transition to innovations-based development and broad employment of scientific achievements determine the pace of economic growth and improvement of the level of living of the population.

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Elena Opekun

Inovacijų sistemos vystymas Grodno regione: sąlygos, problemos, perspektyvos

Santrauka

Kuriant Baltarusijos Respublikos inovacijų sistemą, svarbus vaidmuo tenka regiono inovacijų politikai ir inovacinės sistemos sukūrimui, veiksmingo mechanizmo, užtikrinančio socialinį ir ekonominį inovacijomis grindžiamą regiono vystymąsi, įgyvendinimui, visų pirma sukuriant nuolatinį veiksmingą ryšį tarp mokslo ir gamybos sektorių, visuose inovacinės veiklos etapuose pritraukiant reikalingų išteklių.

Regiono inovacijų sistema – tarpusavyje sąveikaujančių posistemių, kurie inovacijų proceso subjektams padeda pasinaudoti įvairiais ištekliais ir tam tikromis paslaugomis, visuma. Regiono inovacijų sistemą reikia vertinti kaip visų posistemių, užtikrinančių visų procesų, reikalingų sukurti tokiam produktui kaip inovacijos, vyksmą, sąveikos ir grįžtamojo ryšio visumą.

Kuriant ir plėtojant inovacijų sistemą būtina užtikrinti:

sistemos vienumą – vientisą sistemą, kurioje kiekvienas elementas atliktų savo funkcijas;

plėtrą – užtikrinti posistemių plėtrą (valdymą);

suderinamumą – regiono sistema turi tapti visos valstybės inovacinės sistemos dalimi, o kartu ir visos respublikos socialinės ir ekonominės sistemos bei pasaulinių ekonominių santykių dalimi;

standartizaciją – kuriamo objekto kokybė turi būti užtikrinta, atsižvelgiant į šiuolaikinius standartus, visų pirma – atitikti kokybės valdymo sistemos reikalavimus.

Regiono inovacinės sistemos dalis sudaro šio posistemio: gamybos ir technologijų, finansų, mokslo, žmogiškųjų išteklių, ekspertinių konsultacijų, informacijos, valdymo (administracinio ir teisinio valdymo) – ir jų tarpusavio sąveika.

Siekiant sukurti inovacijų sistemą regione ir išspręsti išdėstytąsias problemas, būtina:

- imtis priemonių administracinei ir teisinei sistemai, kreditų ir mokesčių politikai bei nebiudžetinio finansavimo sistemai tobulinti;
- sukurti regioninę koordinavimo Tarybą, į kurios sudėtį turėtų įeiti regiono administravimo institucijų, stambiausių įmonių vadovai, švietimo ir mokslo, smulkiojo verslo ir finansų struktūros atstovai;
- kurti ir plėtoti naujas mokslui imlias, išteklius ir energiją taupančias įmones, visų pirma mažąsias ir vidutinio dydžio įmones;
- orientuoti mokslinę veiklą į taikomuosius tyrimus, kurių tikslas – spręsti mokslines, technines problemas, su kuriomis susiduria regiono pramonės įmonės;
- užtikrinti mokslinio ir techninio (intelektinio) potencialo, kuris būtinas inovacijoms kurti ir pritaikyti komercijoje, vystymąsi;
- plėtoti technologijų perdavimo tinklus mokslo ir švietimo įstaigose, aktyviai pasitelkiant pasaulinį informacinį kompiuterinį tinklą.

Inovacinių procesų efektyvumas ekonomikoje priklauso ne tik nuo pačių ūkio subjektų (įmonių, firmų, mokslo organizacijų ir pan.) veiklos efektyvumo, bet ir nuo to, kaip jie bendradarbiauja tarpusavyje kaip kolektyvinės inovacijų kūrimo, panaudojimo, skleidimo sistemos elementai, taip pat nuo jų ryšio su visuomeniniais institutais (tokiais kaip vertybės, normos, teisė). Pagrindinė tokio bendradarbiavimo, apimančio įmonių, organizacijų ir viso regiono inovacinio ir mokslinio bei techninio vystymosi koordinavimą, monitoringą ir auditą, grandis – Regioninis inovacijų plėtros centras (nuo regioninės inovacinės sistemos sukūrimo, perėjimo prie inovacinio vystymosi ir plataus šalies mokslo pasiekimų panaudojimo gamybos sektoriuje priklauso ir ekonomikos augimo dinamika bei visuomenės gyvenimo lygio kilimas).

Raktažodžiai: *regiono inovacijų sistema, inovacinė veikla, inovacijos, inovacinių procesų efektyvumas*

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