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INNOVATION POLICY OF THE REPUBLIC OF BELARUS

The Republic of Belarus is situated in the geographical centre of Europe. It is an industrial developed country with the population of almost 10 million people and open export-oriented economy (the share of export in relation to GDP is 68 % - twice as many as average rates in the world). The Republic supplies goods to the markets of 149 countries (three quarters of all the countries in the world).

Belarus is one of the initiators and the member of the Eurasian Economic Union, that united the markets of Russia, Kazakhstan and Belarus with total population of more than 170 million people, total GDP of more than 2 100 billion US dollars. This Union removed the barriers in the movement of goods, services, investments, workforce and ensured the implementation of the concerted economic policy, aimed at the creation of effective conditions for business activities.

During the last decade the consistent policy in the sphere of knowledge economy development and the growth of standards and quality of living is implemented on the basis of the innovation development of the economy by the Head of the State and the Government of the Republic of Belarus.

All strategies and programs that have been adopted on the state level, including the Program of Social and Economical Development of the Republic of Belarus (2011 –

2015) and the State Program of Innovation Development of the Republic of Belarus (GPIR, 2011 – 2015), are directed at the country's innovation development and the growth of the share of exports. These and other programs heavily emphasize the expansion of the international cooperation in the field of science and technologies as the tool for the national economy development.

As far as the realization of GPIR is concerned, during 3 years (2011 – 2013) works in 79 major projects were put into operation; investment outlay totals more than 4,5 billion US dollars; volume of innovation output of the completed projects totals more than 6,7 billion US dollars; more than 8 thousand workplaces were set up (or modernized). 8 new productions were established, 44 were modernized. Due to the usage of new technologies the production output totals of more than 585 million US dollars.

Using the results of research and development works (NIOKR) and foreign technologies in GPIR the large fundamental projects in the field of information and communication technologies and space industry, oil, chemical and pharmaceutical industries, medicine, energy and energy-saving industry, mechanical engineering and metallurgy, construction technologies and materials production are being implemented. Belarus encourages not only adoption of high-technology productions, but innovation development of traditional economic activities, including the attraction of foreign investments, as well.

The High Technology Park, 7 industrial parks, 4 centers of technology transfer, 40 theoretical and practical centers and 76 innovation centers are located in Belarus. To provide the development of innovations, an effective coordination system (on resources, conductors and dates) of scientific researches in the course of state, republican and trade programs (GNTP and RNTP) is organized in the country. It is directed to the effective solving of system problems in establishing and mastering of new production and technologies in the real economy sector.

Belarus has the high level of human capital development. According to the World Bank, in 2012 Belarus was on the 33d place among 145 countries concerning the education index; in 2013 it took the 17th place in the Global Innovation Index (Higher

education rate), and the 2nd place in the world on the level of higher education according to the Bloomberg's innovation index.

According to the results of the innovation activity, Belarus is located on the 54th place in the category "New knowledge and technology growth" and on the 27th place in the category "New knowledge creation". As far as the amount of patent applications and useful models is concerned, the country takes the 10th and the 7th places respectively (12,6 and 7,2 items on the GDP billion US dollars).

The level of Belarusian presence on the world market of new technologies can be indirectly estimated according to the volume of exports of knowledge-intensive and high-technology production. In 2013 it comprised about 10 billion US dollars (about 22% of total volume of Belarusian exports of the year 2011 – 3,2 billions of US dollars. In the first six months of 2014 the volume of exports of the high-technology production comprised 5,2 billions US dollars. In 2013 the black ink is reached in all range of services connected with the production and transfer of the results of intellectual activity – more than 360 million US dollars.

There are high rates of export growth of information technologies, mainly of software. As far as the export of services in IT-sphere per capita is concerned, Belarus is on the 2nd place, right behind India.

According to the Global Innovation Index, in terms of the amount of researchers per one million of people Belarus is on the 35th place in the world (2 134 researchers). The country with the population less than 10 million people has almost 482 organizations conducting research and development works, according to 2013 data.

The amount of legal persons registered in established order as parties of the innovation infrastructure is comprised of 16 organizations, 13 scientific-technological parks and 3 centers of technology transfer. The total amount of technoparks' residents in 2013 was presented by 91 organizations (in 2012 there were only 65 residents). The total amount of resident workers is 1003 people, in the last year 38 new work-places were created. For the period of 2013 technoparks (together with their residents) had reached the following results of industrial and economic activity:

- 68 research and scientific works had been carried out;

- 12 patents for invention had been given, 2 applications for issuance of patents were submitted;

- total amount of products had comprised 13,1 billion rubles, including new, high-technology and (or) innovative production, – 5,6 billion rubles.

The main spheres of activity are instruments engineering, engineering industry, electronics – 24,6 %.

12,0% of residents operate in the field of informational technologies, software engineering;

11,1% - medicine, pharmaceuticals, medical equipment production;

10,9% - services in the areas of education, natural sciences, market conditions, research and development works;

9,0 % – in the area of ecology, environmental protection, waste recycling, new kinds of fuel;

5,5 % - in the sphere of security and security systems production;

4,2% - optics and laser technologies;

3,3% - energy sector and energy saving;

3,3 % - bio- and nanotechnologies.

There are about 3 – 5 innovations of world level made in Belarus annually. In 2013 the production of modern means of diagnostics of viral, bacterial, immune and allergic human diseases is established, fundamentally new DNA-technologies of innate and inherited pathology diagnostics are developed and implemented into medical practice in the sphere of public health. Scientists of the National Academy of Sciences of Belarus developed the technology of multilayer film radiation monitor formation to protect microelectronic devices. Scientists in the sphere of agriculture invented new kinds of crops which had not grown in the country before.

In 2013 12 state programs of scientific research were conducted, that were the part of 25 state scientific-technical programs, 9 trade scientific-technical programs, 6 regional scientific-technical programs.

The Government of the Republic of Belarus in full measure realizes the importance of science and innovations for the county's development. Today (in 2011 – 2015) the

following priority scientific and technical areas are assigned in the Republic of Belarus, to the development of which the State pays the most attention:

- energy sector and energy saving;
- agricultural technologies and production, in which great successes are achieved;
- industrial technologies and constructional technologies and production;
- medicine, medical equipment and technologies, pharmacy;
- chemical technologies, nano- and biotechnologies;
- informational-communication and aerospace technologies;
- new materials;
- conservancy, resource-saving and protection in cases of emergency situations;
- defense and national security.

Bodies of state administration pay the greatest attention to the development of high technologies and high-technology production based on the technologies of V and VI technological modes. Taking into account the specific character of the Belarusian economy, we can single out the following most developed technologies in the country:

As part of the V technological mode:

- informational-communication technologies, software development and informational services;
- biotechnologies;
- microelectronics and electronic radio industry;
- robot industry and instrument making, computer and fibre optic industries, office devices, medical devices;
- pharmaceutical industry;
- telecommunications;
- aerospace industry, space technologies;
- nuclear power engineering;
- gas production and gas processing.

As part of the VI technological mode

- nanotechnologies (microelectronic production of a new generation, nano-scale structures and coatings, magnetic, ferroelectric, semiconducting, superconducting materials, and others);

- genetic engineering and cell technologies.

Further development of innovation is to be achieved through the implementation of a set of actions in the following areas:

- organizational and structural development of new high-tech sectors of the national economy;
- creation of an institutional environment conducive to accelerated innovation and technological development;
- attracting of investments and high-tech projects' implementation;
- education and training of specialists capable to work with modern organizational management and production technologies.

Along with the creation of new and development of existing highly promising high-tech sectors of the economy it is necessary to single out the following systematic measures for the development of scientific and innovation policy of the Republic of Belarus:

–The development of a single state system of scientific and technical expertise of innovative projects for the selection of the most promising research, development and innovation projects for their further state support and reduction of the level of subjective factors during the expertise.

– Establishment of a system for venture financing of scientific research, the involvement of private capital and additional resources to the venture and innovation projects' implementation.

–Creation and maintenance of the state system of commercialization of the results of scientific and technical activities.

One of the strategic directions of the state work is the organization and coordination of the international scientific, technical and economic cooperation. Today we cooperate with more than 40 countries at the governmental level.

In order to concentrate resources on the production of V and VI technological modes the following list of priority areas for scientific and technical activities in years 2016 - 2020 is proposed:

- energy, energy saving and energy security;

- medical technology, pharmacy, microbiological industry and biotechnological industry;
- industrial and construction technologies;
- device and electronic industries;
- nanoindustry;
- information technology industry;
- nuclear power engineering.

Priority areas, developing the work cycle of 2011 – 2015, are filled with new content having regard to the problems generated by the innovative development of the country in the period from 2016 to 2020, specified by the program of improving of the scientific sphere in the Republic of Belarus, the Concept "Belarus 2020: The science and the economy" and other acts. The direction "Nanoindustry" is allocated separately because of its importance and significance for the economy.

New priority areas meet the requirements of the continuity of the innovation cycle from fundamental and applied research through development to commercial development, the practical application of scientific and technical activities.

A number of breakthrough projects can be realized by combining scientific and industrial potential of Belarus and neighboring countries. Belarusian strategy is to create joint ventures, bring technologies and know-how, work honestly and according to the principles of mutual benefit.

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