PRIORITY AREAS FOR SCIENCE PROGRESS IN KAZAKHSTAN

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In the period of globalization and the country's deeper integration into global economy, Kazakhstan economy has transferred to the innovative course of development and has become more open which is on the whole an imperative to keep stable economic growth in medium-term and long-term perspective. In the period of world economy globalization, accomplished position of a country, region or a sector of economy is based on the constant renewal aimed at achieving maximum efficiency, competitiveness, and human capital development. These basic principles are the main ones in Kazakhstan Presidential Addresses.

In the Conception of the Kazakhstan's transfer to the stable development for 2007-2024 rather ambitious goals are stated: Kazakhstan citizens' salaries are to become similar to those in developed countries, labor efficiency is to grow multiply, new positions are to be gained on the world market, etc. According to the existing evaluation, 30% to 50% of GDP growth is determined by innovations and technical developments. They can be carried out only in case there is a radical increase of economy competitiveness in our country on the basis of constant technological renewal and qualitative increase of technological development's level of sectors of economy. For that purpose it is necessary for all the participants of Kazakhstan technological development (government, business, science, society) to have a common point of view on the country's technological future. The key role in the process is that of the state which does not only initiates but also guarantees achieved agreements implementation.

Of a special significance in the development of the state scientific and technical and innovative strategy is a new practice of scientific development priorities definition by means of Foresight Method, which is understood as process of systematic definition of new strategic scientific trends and technological achievements that in the long-term perspective can impact economic and social development of the country. Nowadays such a method is widely used in all the industrially-developed countries.

Technological Foresight initiative in Central and Eastern Europe and the CIS has been implemented since 2001. This program includes distribution of the best world experience of Foresight Projects, trainings, regional foresight centers net development.

In order to achieve goals of the science development, the State Program of Science Development until 2012 has been developed which provides new approaches to organization and management of science and development of innovative environment able to promote research activity in the Republic. To continue improvement of the state system of scientific-technical information and to form expert and analytical environment, this Program provides prognostication of research and scientific-technical development. In accordance with this Program, appointed by Ministry of Education and Science of the Republic of Kazakhstan S. Amanzholov EKSU is doing foresight research aimed at definition of priorities of scientific and technical development of the country. The partners

are leading research centers, universities and organizations of Kazakhstan and foreign countries.

Objective of Foresight Research

The Foresight Research (FR) objective is to define priorities of scientific and technical development and working out alternatives of long-term scientific and technical development of the Republic of Kazakhstan in the system of international scientific and technical cooperation based on the development of national innovation system.

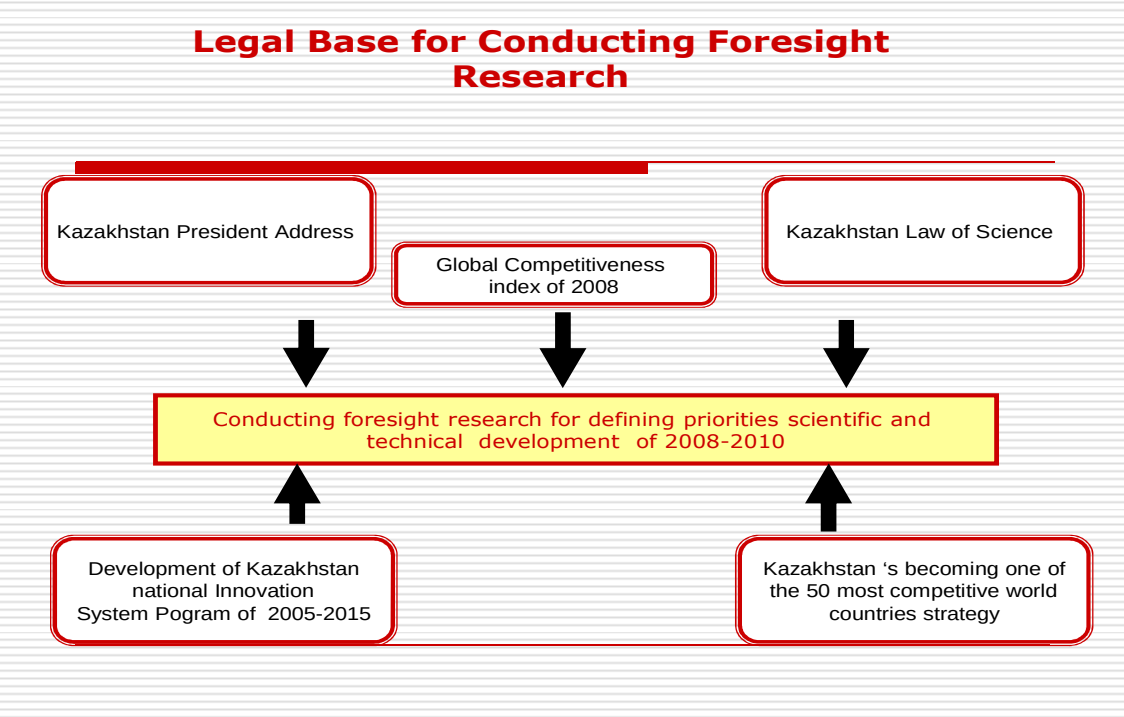
To realize the above mentioned objective the following tasks are to be done:

- analysis of the best world foresight research practices;
- definition of prospective sciences and technologies which could be the base for Kazakhstan long-term scientific and innovation development policy;
- evaluation of technical application of the chosen sciences and technologies to increase competitiveness on the world and national markets and to develop sectoral development strategies;
- definition of mechanisms of supplying bodies of state administration and subjects of national innovation system by analytical materials on trends, threats and possibilities in the field of science and technologies.

Kazakhstan has adopted a very ambitious program aimed at long-run increasing its technological competitiveness on the global market. At the same time the government states that success on the international and national level will much depend on effectiveness of modernized science and technology potential of the country in educational and research institutions, design projects, businesses and services. Taking into consideration growing public support of scientific research it is most important to define priorities for public financing. While defining investment priorities it is most significant to consider international competitiveness of Kazakhstan. At present even developed countries with breakthrough technologies are not able to conduct research in all sciences and technologies and have to focus on development of five-seven scientific priorities.

Priorities suggested as a result of the foresight research are based on the priorities defined by High Science and Technology Committee of the Republic of Kazakhstan. Support of a scientific or technical priority is at the same time to enhance a significant growth of national education opportunities, to promote career of promising young scientists and technologists and increasing prestige of Kazakhstan science and technology on the national and international level. It is important to define the policy promoting companies to invest in innovations either into their own laboratories or to research institutions by outsourcing.

Today in the country definition of priorities is done collectively with consideration of proposals of government bodies, scientific and higher educational institutions, scientific community and outstanding scientists, foreign experts. The final approval of research priorities is made at the meeting of High Science and Technology Committee of the Republic of Kazakhstan with consideration of recommendations given by the International Expert Council.



International Expert Council is an advisory consultative body which is every three years to report to the High Science and Technology Committee of the Republic of Kazakhstan about world trends in scientific and technical development and Kazakhstan potential for conducting cutting edge research in certain fields.

Among scientific and technical priorities of the High Science and Technology Committee of the Republic of Kazakhstan for 2007-2010 there are the following sectors of economy:

- nuclear research and technologies;
- IT-technologies;
- biotechnology and bioindustry productions;
- chemical industry;
- environmental protection and nature management technologies;
- agro-industry;
- energy and industry.

The following scientific and technological fields can be defined as priorities for the next 5 years:

1. nuclear research and technologies (radioecology, uranium extraction);

2. biomedicine and biotechnologies (disease diagnostics and prevention, cancer treatment, chemistry of natural products);

3. agricultural sciences and technologies (grain production and processing, increase of meat and milk production, food industry);

4. natural resources (ore deposits review, environmental protection);

5. hydrology and meteorology (irrigation systems, water quality monitoring, automatic air monitoring, non-environmentally friendly weather conditions forecasting).

Research in innovation is the most important component of the world scientific and technical development. So the leading educational centers which combine educa-

tional and research activities increasingly pay their special attention to the latter. Focus on innovations is the key element of the Republic of Kazakhstan Development Strategy until 2020 and the basic principle of the "New Decade – New Economic Growth – New Opportunities for Kazakhstan" address of Head of the State.

Within the framework of Industrial and Innovation Development Strategy until 2015 necessary conditions for innovation implementation have been provided. The institutional system has been formed: the National Investment Fund, Engineering and Technology Transfer Center, Science Fund, Science Committee, financial institutions of development have been founded. The "Innovation Support of Activities" law has been adopted. To upgrade Kazakhstan scientific research infrastructure 5 open national laboratories in priorities of scientific development have been founded, one of which being established at our University in 2009. This year the Accelerated Industrial and Innovation Development Program for 2010-2014 has started. Within the framework of the program the up-to-date national innovation system is to be formed.

To reinforce scientific and technical potential of the country, Head of the State has underlined the necessity of profound modernization of the scientific complex of the country. A new science draft bill which goes with current international practices has been prepared.

Kazakhstan scientific and technological potential should develop rapidly, attracting scientists in breakthrough fields of study. Besides, if Kazakhstan is intended to get profit from expanding global information infrastructure, which enables to export services and evaluate export markets in many fields, it should train talented and mobile workforce which can play a more active part in country priorities' support and on the international level. The main innovation resource of a country is human capital that is why the main aim of the national education system is development of human capital and enhancing its creativity and intellectual level.

Speaking about specific scientific and technological fields which are to be supported, while evaluating their significance it is necessary to consider if Kazakhstan has or is able to get within next 5 years leaders in technology as well as human and material resources essential for realizing research programs and providing scientific and technological services which could contribute much to the social and economic development of the country. In the course of time such a progress could be measured by the following criteria:

1. increase of production profit of Kazakhstan exporters based on scientific achievements or of supplies of scientific and technological services for foreign clients;

2. attraction to Kazakhstan of new national and foreign investments for research or scientific and technological services of national organizations;

3. growth of well-being of the population as a result of implementation pf results of scientific research or scientific and technological services.

Kazakhstan has great resources enabling it to develop and use science and technologies for increasing world competitiveness of the country and economic and social well-being of the population. In general, the

results of the Foresight Research show that at present the country has the necessary preconditions and facilities to put economy to the innovative course of development and thus to achieve strategic aims of the country development.