

# **Appendix to Decision #2 of 22 January 2010 of the Academic Council of the Georgian National Academy of Sciences**

## **The Conception of the Development of Science and Technologies in Georgia (2010-2015)**

### **I. Introduction**

The conception of the development of science and technologies in Georgia (2010-2015) is determined by the Georgian Constitution, the Georgian law “On the Georgian National Academy of Sciences”, the Georgian law “On Introducing Changes and Other Amendments in the Georgian Law “On Science, Technologies and Their Development”, and other normative documents that facilitate the development of science and technologies.

The present stage of development of science and technologies is generally characterized by a vast expansion of fundamental and applied research and concentration of forces on priority lines of science and technologies. This trend of development of world science and technologies should doubtless be envisaged for Georgian science as well. However, in present-day conditions special attention should be given to maximum adaptation of research to the spiritual and economic development of Georgian society.

Georgia boasts a strong scientific potential, scientific schools recognized world-wide, a vast network of higher educational institutions and a developed system of scientific institutions. All this is a firm foundation for scientific research to embrace the basic directions of science and technologies in this country. But in this important complex special attention should be given to the directions where a high level has already been achieved and considerable experience accumulated. At the same time, enhancement of research should be envisaged in the fields in which we so far lag behind and whose development is of vital importance in the building of an independent Georgia.

Cooperation and collaboration of states is expanding today in addressing such global issues as preservation and protection of the environment, search for ways of improving the spiritual and physical condition of human beings, investigation of new sources of power, creation of an open information setting, etc. Georgian science should share fully these trends of cooperation and expand international contacts, which will allow it to come to the front line of modern science and engage in costly experimental research at modern level.

Georgian science has always been and still is an inseparable part of world science. The decisive role in determining the priority directions of our science and technologies is given to the economic and geopolitical condition of Georgia, the demands of the spiritual development of our society, and, in general, the basic tendencies in the transformation of human civilization.

Thus, the implementation of the conception of Georgian science and technologies is directed at ensuring the preservation of Georgian national strategic priorities, namely, defence and the security of the country, improvement of the living conditions of the population, economic growth, basic and applied studies, education, culture.

National security and well-being, the physical and mental health of the nation depend on scientific progress, hence the state should shoulder the responsibility for the development of science, in the first place fundamental and most important applied studies. Appropriate budgetary allocations should be made in order that the rates and structure of studies and the sector of processing meet the growing demands, which is partially due to the insufficient implementation of innovations in the country's economy.

The current level of civilization is characterized by not only the unprecedented progress of science and technologies but by an answering drive towards raising universal well-being. In every cultural country science is a clear bearer of this high aspiration. The organizing role of scientific research and constant care for an uninterrupted development of science obliges Georgian scientists not only to bear special responsibility but assigns them the task of striving for high ideals common to mankind, which must find reflection in the theme of their research.

## **II. The Principal Executors of the Conception**

1. Georgian Ministry of Economic Development;
2. Georgian Ministry of Education and Science;
3. The Georgian National Academy of Sciences;
4. Georgian Academy of Agricultural Sciences;
5. The Georgian Engineering Academy;
6. The Georgian National Scientific Foundation;
7. Rustaveli Foundation of Kartvelology, Humanitarian and Social Sciences;
8. National Centre of Intellectual Property;
9. Higher Educational Institutions;
10. Scientific-research Institutions;
11. Non-governmental Organizations;
12. Private companies and enterprises;

### **III. The Objectives and Tasks of the Development of Science and Technologies**

The conception of the development of Georgian science and technologies is directed at ensuring the implementation of Georgia's national strategic priorities. The country's science is one of the principal parts of the development of society. It is the basis of the steady development of the production forces and the state, serving the development of national construction and strengthening socio-political stability.

#### **Objectives of the Conception:**

- Competitive growth of the volume and quality of investments, research and studies in science;
- innovative entrepreneurship – transformation of the scientific potential into the principal resource of steady economic growth.

#### **Tasks of the Conception:**

- Use of fundamental science, applied studies and new technologies;
- Retention of highly skilled personnel and involvement of young workers in science;
- Close links and mutual cooperation between science and educational systems;
- Development of international-technical cooperation;
- Financing science on the basis of the use of budgetary allocations and sources of funding existing in the world;
- Enhancing the competitiveness of the sector of research and processing;
- Introducing a highly effective national innovation system;
- Development and perfection of a national system of protection of intellectual property;
- Expansion of international contacts;
- Modernization of the economy on the basis of technological innovations;
- Training of scientific personnel and raising their qualification; improving its skill;
- Raising the role of social and fundamental research;
- Working out measures of state support for fundamental research;
- Analysis of state decisions;
- Improvement of the infrastructure of the information and information-telecommunication experimental and testing base in the scientific-educational sphere;
- Proactive development of basic research, facilitation of important applied studies, adaptation of the scientific-technological complex to the conditions of market economy;
- Strengthening the scientific-research sectors of higher educational institutions.

#### **IV. The Basis of Development of Science and Technologies**

- The scientific and technical complex involving various organizational-legal and ownership forms;
- Fundamental science, with acknowledged scientific schools and world-level scientific achievements;
- Most important applied research, industrial potential;
- Highly-skilled scientific personnel and specialists with practical experience, information infrastructure with testing and experimental stations.

#### **V. Anticipated Results and Indicators of the Implementation of the Conception**

- Creation of a structure of research and processing with a balanced and stably developing, economically optimal institutional sector, ensuring expanded reproduction of knowledge and competitiveness on the world market;
- Increasing the competitiveness of industry, construction and agriculture on the basis of technological modernization.

##### ***Indicators:***

- Increasing by 2015 up to 3% of the Ynp of expenditure on research and processing, on the basis of participation in non-budgetary and international projects, whose annual contribution in summary funding should reach 30%;
- Facilitation of the flow of young specialists into the scientific sphere on the basis of improving economic conditions;
- Increase of patent activity; quantitative growth of claims to useful model industrial specimen and trademark;
- Raising the innovation activity of enterprises, as a result, up to 15% rise of the share of enterprises implementing technological innovations; creation of new jobs annually;
- Increasing the share of high-technology innovation production in the country's export.

#### **VI. Improvement of State Regulation in the Field of Science and Technologies**

- Assessment of the purposefulness of scientific research and full stock-taking of experimental and industrial stations;
- Improvement of the information infrastructure of fundamental and important applied studies with information-telecommunication networks, use of computer and data bases,

purchase of scientific literature and subsidizing the costs for the development of a system of scientific-technical information;

- Setting up of joint use systems with scientific-educational, integrated for training skilled personnel on the basis of the Georgian National Academy of Sciences, state educational institutions and research institutes;
- Purpose-oriented purchase of scientific and scientific-technological programmes should become one of the principal forms of state support for the development of science and technologies, directed at the implementation of the priority lines of development of science technologies and basic innovation projects;
- Special attention should be given to the propaganda of most important state scientific-technological programmes (projects), informing the population about the achievements of home fundamental science and stimulation by the state of scientific, scientific-technical, educational and innovative activity; creation of a favorable social-psychological climate for innovations;
- Special-purpose allocation of funds to finance state significance priority lines of science;
- Raising the salary of scientists;
- Introduction of additions to the pension of scientific workers (at the expense of special pension funds);
- Use of part of the sum accruing as a result of the sale of excess property and unfinished construction for scientific and innovation activity;
- Improvement of the existing accreditation of scientific organizational standards, gradual transfer to the system of attestation and certification.

## **VII. The Measures to Be Taken and Participation in Programmes**

- Integration of Georgian Science in world science;
- Improvement of the legislative (normative-legal) basis of science and the educational system;
- Streamlining the administrative structure of science;
- Adaptation of the scientific-technological sphere to conditions of market economy;
- Facilitation of the national innovation system;
- Raising the coordinating role of the Ministry of Education and Science and of the leading role of the National Academy of Sciences;

- Diversification of the financing of science and systematic increase of the summary volume of funding;
- Prediction of the development of Georgian science and scholarship;
- Care for the state languages;
- Perfection of scientific technologies;
- Involvement of the society in the reforms of the scientific sector;
- Use of home and international sources in improving the infrastructure of science;
- Effective state support of fundamental and applied studies and ensuring their development;
- Analysis of national research conditions and national values that have a potential of developing and facilitation of the activity of the research institutions that are capable of strengthening Georgia's economy;
- Improvement of the work of the state funds that issue grants;
- Active participation of Georgia in European Union framework and international programmes;
- Broadening the social security programmes of scientists;
- Perfection of the training of highly skilled personnel for the spheres of science and technologies;
- Reintroduction of the institution of awarding the scientific degrees of Candidate of Sciences and Doctor of Sciences;
- Ensuring the attraction and retention of young researchers;
- Launching a programme of the return of prospective researchers working abroad;
- Training of science managers, clear demarcation of administrative and scientific functions at research institutes;
- Support of the enhancement of the scientific potential of the higher educational institutions and research institutes in the regions;
- Launching special institutions for transfer of knowledge (scientific-technological parks, business incubators, etc.);
- Training and requalification of scientists and technologists according to priority directions at advanced international scientific centres;
- Strengthening and support of a network of special schools with a view to getting young people interested in science from early age and their training in an appropriate academic direction;
- Indexation of the salaries of scientists, with account of inflation;
- Creating a legislative basis for the social security of scientists.

## **VIII. Priority Lines of Science and Technologies in Georgia until 2015**

1. Branches studying mathematics, physics and astronomy;
2. Sciences studying life;
3. Humanitarian, economic and social sciences;
4. Ecology, sciences studying the Earth and rational nature use;
5. Information and telecommunication technologies;
6. New materials, chemistry and chemical technologies;
7. Prospective structures and special equipment;
8. Technologies of industrial and agricultural production;
9. Resource- and power-saving technologies; search for new sources of power.

## **IX. The Volume and Sources of Financing**

(Summary financing towards the end of the period)

The summary financing by the end of the period totals 3% of the Gross Domestic Product of this:

- a) Budgetary funding should total 70% of the summary financing;
- b) The remaining financing should constitute sums received from orders by private persons and organizations, money freed by the sale of excess property and unfinished construction and participation in international projects.

Apart from budgetary funding, the Georgian government annually allocates special-purpose funds to finance the Georgian National Academy of Sciences and the Agricultural Academy of sciences.

### **Annex 1**

List of Urgent Problems, on the Development of which Georgia Should Focus Attention in 2010-2015

1. Use of local climatic and physio-factors towards improving the social conditions of the population (ecorehabilitation);
2. Gene diagnostics and gene therapy;
3. Immunocorrection technologies;
4. Control of the safety and quality of agricultural produce and foodstuffs; manufacture of ecologically clean products;
5. Use of the unique medicinal properties of local resources;

6. Development of a complex system of life security with a view to protecting the population;
7. Analysis of the additives to medicines and foodstuffs;
8. Production and processing of local competition agricultural produce;
9. Power- and resource-saving technologies. Search for new sources of power;
10. Protection of the population from the consequences of a possible failure at atomic power stations of neighbouring countries;
11. Scientific solution of problems connected with toxical wastes;
12. Working out new methods of transformation and accumulation of non-traditional renewable energy sources;
13. Mitigation of the consequences of natural and technogenic catastrophes;
14. Monitoring of environmental protection;
15. Processing and reproduction of forest resources;
16. Carrying out restoration work on eroded and desertified lands, landscapes and biodiversity;
17. Improvement of the demographic situation;
18. Industrial construction of seismic-proof living-houses, industrial facilities and their transformation;
19. Protection of the nations material and cultural treasury;
20. Protection of the state languages;
21. Protection of plants and animals by biological means;
22. Working out new schemes of use and processing of mineral raw materials;
23. Production of electric power and heat on the basis of organic wastes;
24. Environmental protection technologies, recycling and utilization of organic wastes;
25. Facilitation of the development of nanotechnologies;
26. Biotechnology;
27. Biodiversity;
28. Development and perfection of the theory of systems control.

## **Appendix 2**

The Priority Directions of the Seventh Framework Programme  
in the European Scientific Space

1. Health care;
2. Foodstuffs, agriculture and biotechnology;
3. Information and communication technologies;



4. Nanosciences, nanotechnologies, materials and new production technologies;
5. Power;
6. Environment (including climate changes);
7. Transport and aeronautics;
8. Social, economic and humanitarian directions;
9. Security;
10. Space;
11. Nuclear studies.

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