Bulgarian ICT National Policy and Strategy

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БЪЛГАРСКА
АКАДЕМИЯ
на НАУКИТЕ
1869

Aims of the Bulgarian Research Development Strategy

- Formulate the national science policy which will create conditions and outline prospects for achieving the tasks laid down in the EU's 2020 strategy;
- launch and encourage an overall process of modernisation of research bodies. This is a necessary prerequisite for a considerable increase in the public funding for science;
- further develop the analysis of problems that entrepreneurs face in developing innovation and provide for problem-solving measures;
- contribute to the transformation of Bulgaria into a knowledge-based society;
- encourage the growth in the share of green technology in the national economy.

Priority areas of the Strategy for Development of Science in Bulgaria until 2020

1. *Energy, energy efficiency and transport. Development of green and environmental technologies;*
2. *Health and quality of life;*
3. *New materials and technologies;*
4. *Cultural heritage and socio-economic development and management;*
5. ***Information and communication technologies**.*

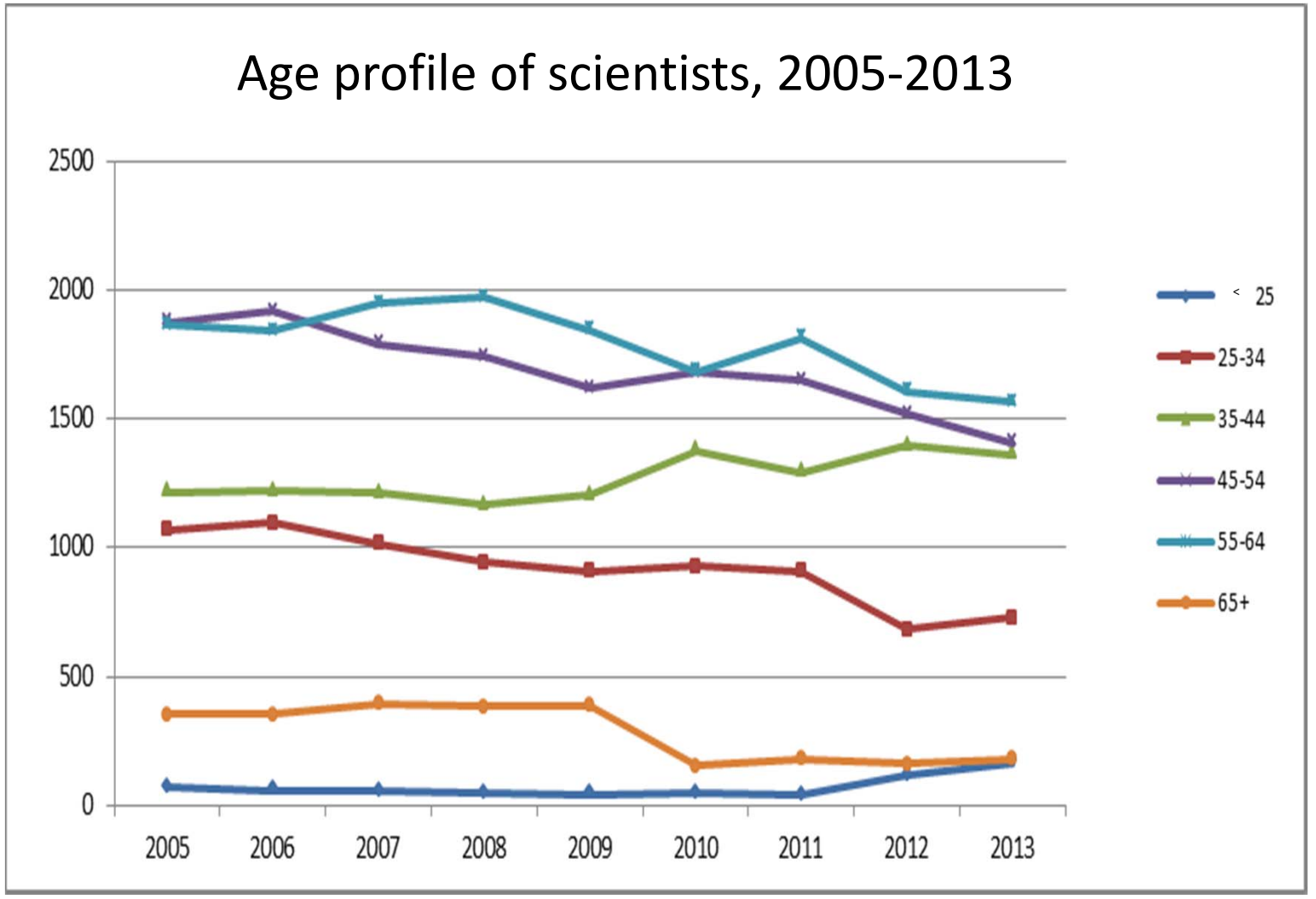
Main Instruments

- Introduction of targeted national thematic programmes in the priority areas;
- Introduction of thematic sectoral programmes in cooperation with ministries and agencies;
- Development of scientific complexes in the priority areas;
- Ensuring specific mechanisms to carry out research in response to urgent needs;
- Support for scientific development through institutional financing on the basis of drafted scientific activity programmes and plans in priority areas;
- Bespoke studies of topical issues and problems and analysis of socio-economic trends.

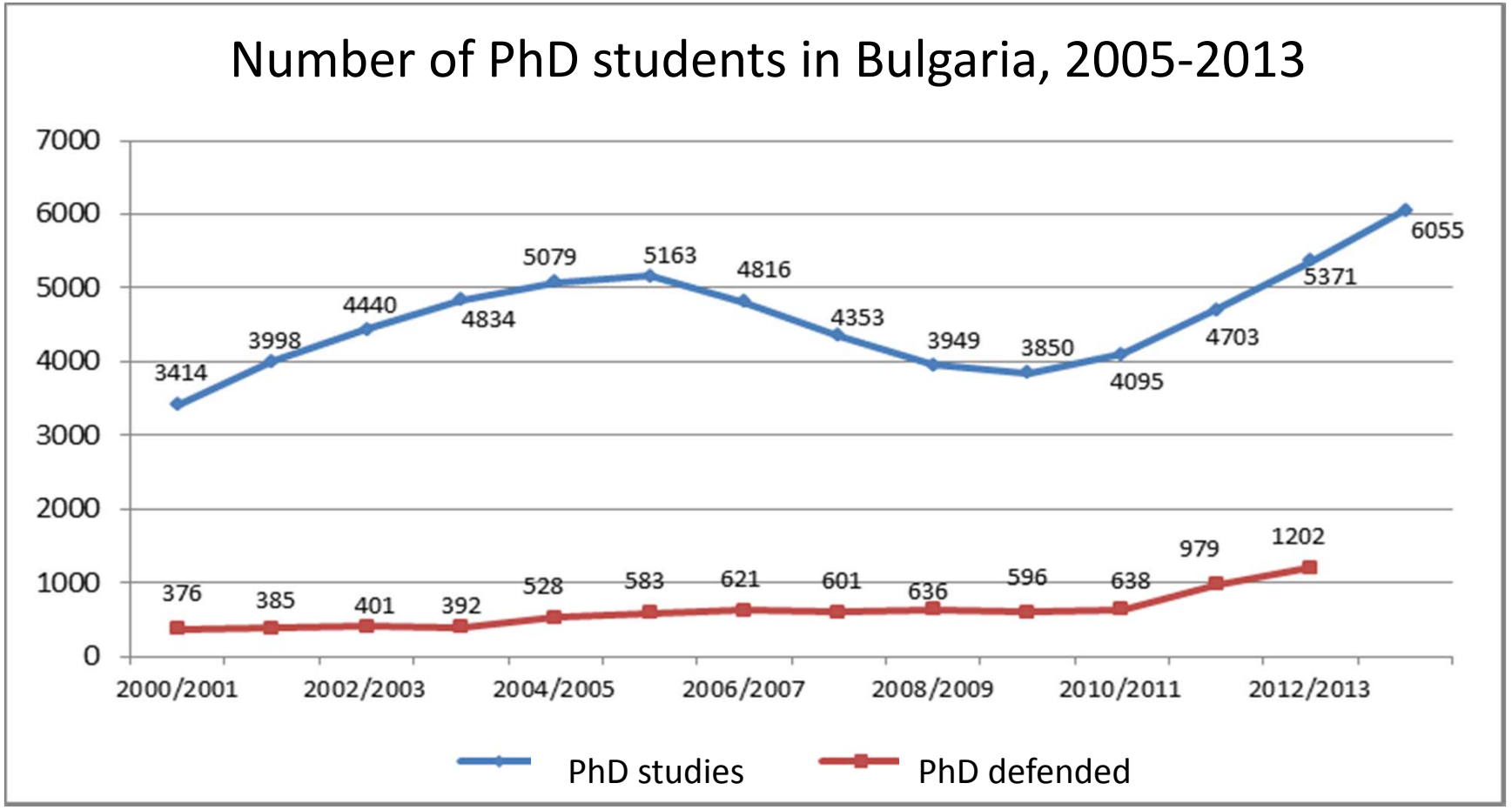
ICT – a driving forse

- The priority area *5.* ***Information and communication technologies*** is considered as a driving forse for the Strategy since it provides a bases for other priority areas. As an important measure for development of the above priority area has been considered "Development of the research potential through creation of attractive conditions for scientific career, professional growth, qualification and specialisation of scientists". The quality of research depends primarily on the human potential - highly qualified and motivated researchers.

HUMAN RESOURCES



of PhD students at Universities and Scientific Organizations



Analysis of specific facts concerning the human recourses in ICT area brings us to the following observations:

- *Actions should be taken to initiate and promote the process of modernisation of research entities in ICT and to enhance their potential.*
- *Meanwhile, actions are required to overcome negative trends of reduced inflow of young people into ICT area and to provide incentives for their retention through scientific career opportunities, as well as special care to ensure the introduction of a scientific approach also in secondary education. The state should encourage the research interest of school and university students in ICT through involvement in various projects and initiatives (a priority task of the National Youth Development Strategy as well);*
- *Facilitation of opportunities for additional qualification of scientists, including doctoral students, post-doctoral and young researchers via programme-based and project-based funding;*
- *The availability of continuous training opportunities is of great significance for ICT area, including distance learning in higher education, improvement of scientific employees' qualification and skills and implementation of joint programmes for scientific training and internships between the academic and business communities.*

ANALYSIS OF THE CONDITION AND PROBLEMS OF THE NATIONAL SCIENTIFIC SYSTEM . INSTITUTIONAL FRAMEWORK

- **HIGHER EDUCATION INSTITUTIONS**
- Bulgaria has 51 higher education institutions in total. They include second-level spending units, which are 37 state-run universities and specialised colleges.
- Currently, higher education institutions carry out research in accordance with the Higher Education Act and Ordinance No 9 concerning the conditions and procedure for planning, allocation and spending of funds allotted in a targeted way from the state budget for scientific and creative activity intrinsic for state-run higher education schools as well as from the involvement of higher education institutions or their units in R&D with project-based public and/or private funds.

BULGARIAN ACADEMY OF SCIENCES

- The BAS is a research organisation, a second-level spending unit of the Ministry of Education, Youth and Science. The BAS carries out basic and applied research. Its structure incorporates 64 units, including 42 standing research bodies with an independent legal status. The BAS structure includes also the assembly of academicians and corresponding members, consisting of 58 academicians and 81 corresponding members. The BAS total staff amounts to 6,747, including 1,531 scientists with an academic rank and 1,594 scientists without an academic rank. In terms of the age structure, nearly 49 % of BAS scientists are over 51 and those under 30 are 3.4 %. In 2010 the BAS was training 273 full-time doctoral students, or 6.5 doctoral students on average per standing scientific unit. The doctoral students who defended their dissertation in 2010 were 64, i.e. 1.5 on average per standing scientific unit.

AGRICULTURE ACADEMY

- The Agriculture Academy performs its activity within the state agricultural policy. It is a second-level spending unit of the Ministry of Agriculture and Food. Its 27 scientific institutes, 19 testing stations and 2 testing bases carry out:
- fundamental strategic and applied experiments in the field of agricultural science and food industry, ecology and environmental protection;
- preservation, enrichment and reproduction of the plant and animal genetic fund of the country;
- provision of pedigreed seeds, nursery and reproduction materials for producers.
- The Agriculture Academy provides also consultancy services and training. The total staff at the Agriculture Academy is 2,742, including 678 researchers – 369 with an academic rank and 309 without a rank (according to the 2008 annual statement). It also holds a number of certificates for varieties of plants and breeds of animals as well as patents.

SCIENTIFIC ORGANISATIONS AT MINISTRIES AND PUBLIC BODIES

Research and innovation entities operate at various sectoral ministries. These include:

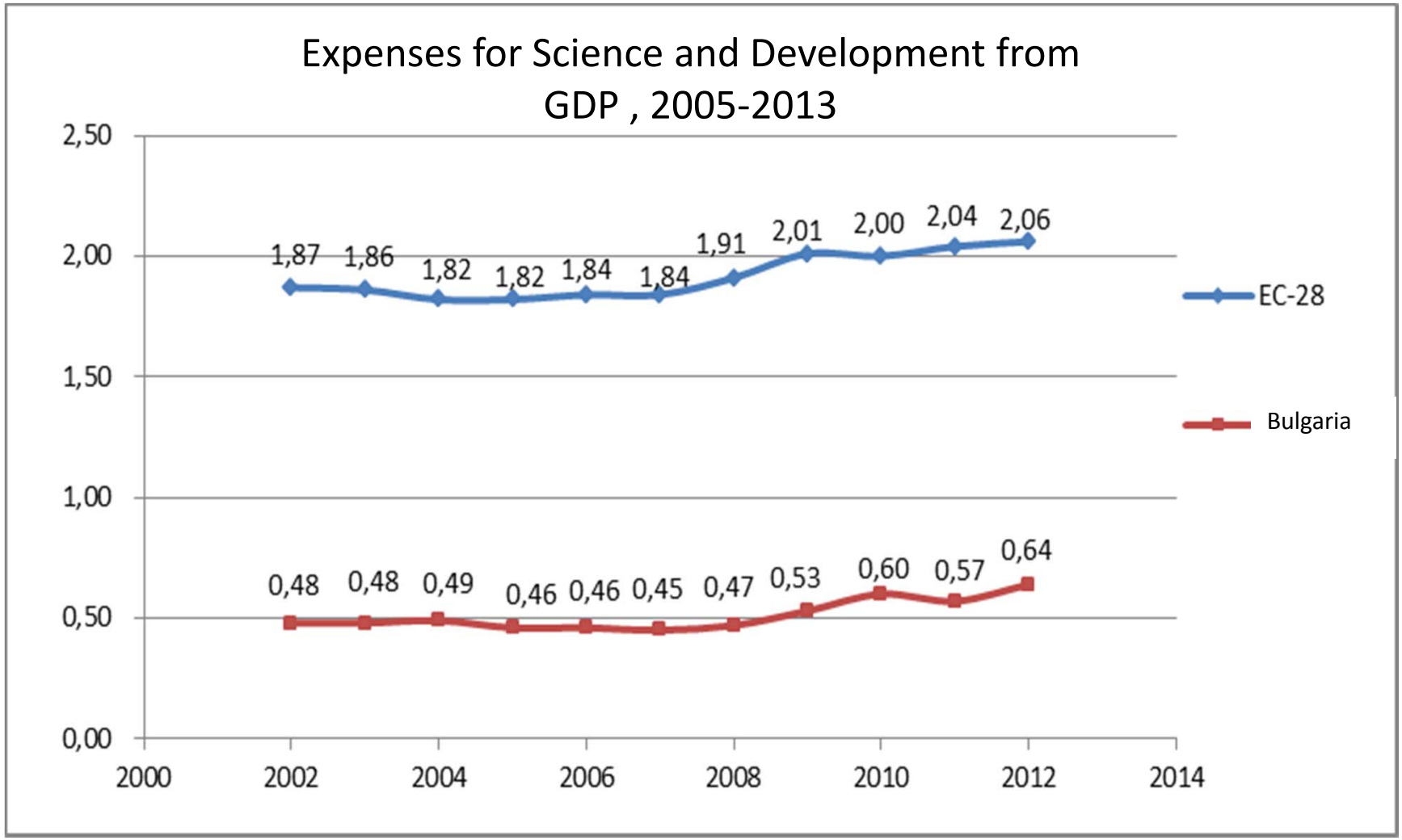
- The Ministry of Health and the Public Health Protection Centres which carry out research activity and are involved in national and EU programmes. The National Centre of Infectious and Parasitic Diseases and the National Centre of Radiobiology and Radiation Protection are most active therein;
- The Ministry of Interior;
- The Ministry of Culture, mainly via national museums and libraries;
- The Ministry of Agriculture and Food via the Institute of Plant Protection.

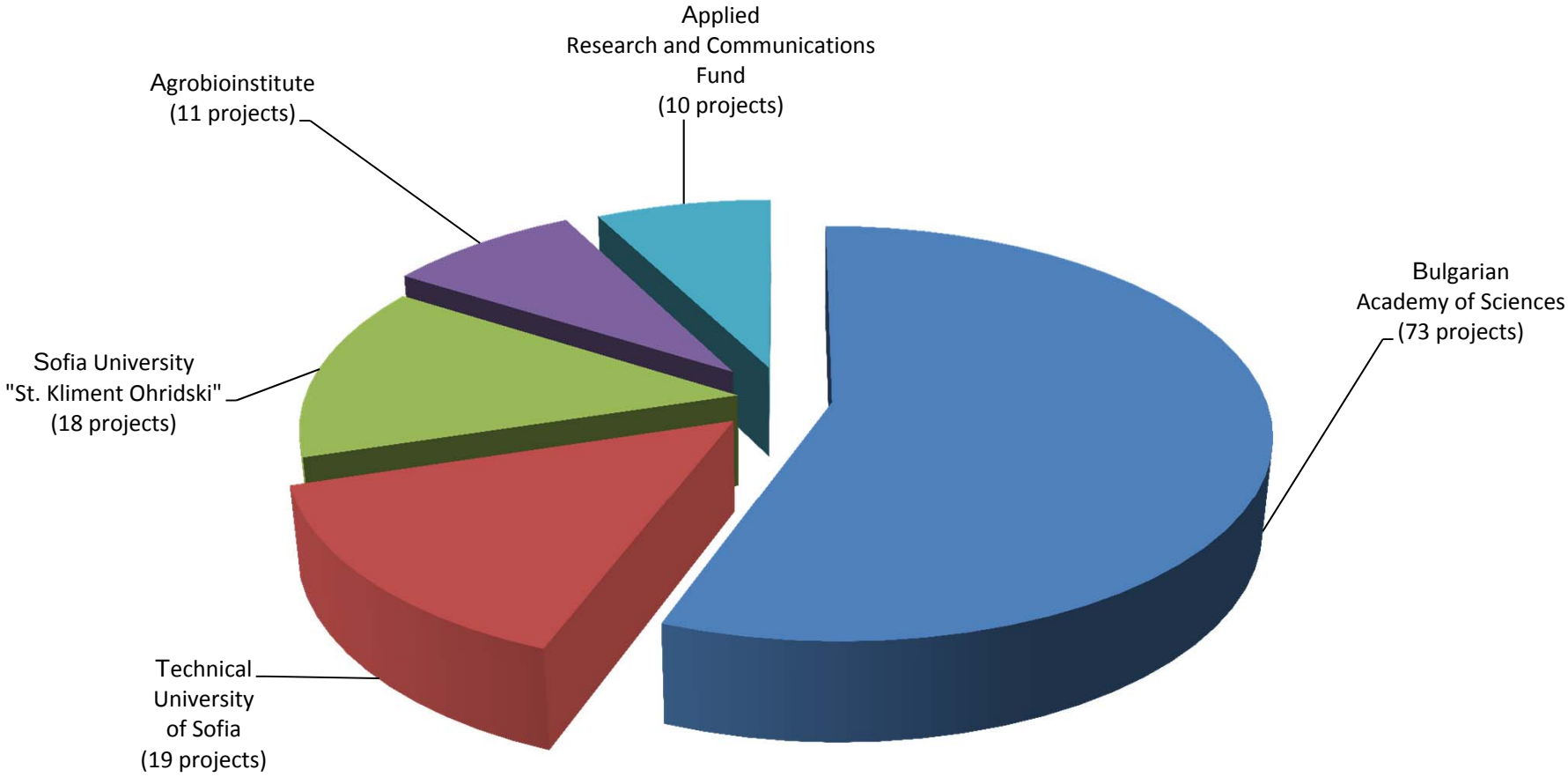
- **ENTERPRISES**
- The structure of the private sector shows the dominant role of small and medium-sized enterprises (SME). By definition, they can hardly set aside funds for research, as they do not have resources or opportunities to develop technology of major significance for certain sectors or branches. The concentration of these enterprises around large economic entities which are well-positioned to develop their own technology has not been intensive enough yet. The small number of SME applying for projects at the National Innovation Fund of the Ministry of Economy, Energy and Tourism reflects the low level of innovation activity at SME. Barely 0.04 % of the 250,000 SME in total have taken part in competitions of the National Innovation Fund.
- **NON-GOVERMENTAL SECTOR**

Based on the analysis of the ICT infrastructure one may formulate the following observations:

- *Launch of policy of establishment of modern ICT infrastructure focusing mainly on supercomputing facilities and modern communication facilities as research bases for other priority areas;*
- *A modern approach to administrative and financial management of available ICT infrastructure within base organisations should be ensured;*
- *The use of Structural Funds for science, research infrastructure and innovation is of major significance. This will guarantee sustainability of funding of large-scale research projects with added value and a growing impact on development of the economy and regions. The national percent of the research expenditure in the Structural Funds has to be defined;*
- *The existing ICT infrastructure, with small exceptions, is not state-of-the-art; it does not concentrate enough indicators of various research institutions and economic units, and hence it is not used effectively and hence it is necessary to draw up a plan for its update and efficient use;*
- *A national catalogue of unique ICT equipment has to be issued.*

FINANCING OF SCIENCE IN BULGARIA




Applied
Research and Communications
Fund
(10 projects)
Agrobioinstitute
(11 projects)
Bulgarian
Academy of Sciences
(73 projects)
Sofia University
"St. Kliment Ohridski"
(18 projects)
Technical
University
of Sofia
(19 projects)

CONCLUSIONS

In this study we present and critically analyse the Bulgarian ICT national policy, activities and instruments. *More precisely, we formulate the following activities:*

- *Creating environmental infrastructure for developing information and communication technologies. The focus should be on creating supercomputing clusters and modern efficient communication facilities.*
- *Introduction of Open Access to scientific information and research data.*
- *The state should make efforts to ensure and extend the access of the Bulgarian scientific ICT community to major cutting-edge information platforms and databases.*
- *The practice for carrying out information campaigns and training on capacity strengthening at scientific teams with regard to absorption of funds under the national and European programmes, including the Research Framework Programmes and the EU Structural Funds should continue.*

- *Bulgaria will play an active role in carrying out activities under the regional strategies and programmes such as the Danube Strategy and the activities of the Regional Cooperation Council for South-Eastern Europe.*
- *Instruments and conditions for long-life education should be involved*
- *Important niche will be development of nano-technologies, ecological systems and other new technology through ICT*

Thanks for your attention !

Questions?