

# SCIENCE AND RESEARCH IN THE REPUBLIC OF MACEDONIA

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The Ministry of Education and Science of Republic of Macedonia is responsible for the science policy in the country, which is organized and executed by the Department of Science and Technology and advised by the Council for Science and Research.

The Ministry of Education and Science of Republic Macedonia is responsible for organization, financing, developing and promotion of scientific research, technological development, technical culture, informatics and information systems as well as the international cooperation related to these issues.

The legal frame for scientific research and technological development in Republic of Macedonia contains four laws (Law on the Scientific and Research Activities, Law on the Macedonian Academy of Sciences and Arts, Law on Encouraging and Supporting the Technology Development, Law on Industrial and Intellectual Property Protection) and several internal regulations and instructions for the various activities in the R&D sector.

The scientific institutional infrastructure consists mainly of faculties and institutes within universities. The scientific activities in the Republic of Macedonia are performed and organized by a network of scientific institutions comprising 3 state and 2 accredited private universities, 13 public research institutes and several R&D units in industry. The Macedonian Academy of Sciences and Arts is a well established and recognized scientific institution.

Considering the overall political, social and economic conditions the country has faced during the past years, the funding of scientific research has been very limited. This has also been followed by a continuous decrease of the number of active researchers in the country. However, the Ministry has promoted and stimulated activities towards an integrated approach in the research activities and especially for regional and international cooperation.

Financing the scientific and technological development activities in Macedonia includes:

- Salary for Public Scientific Institutions and High Education Institutions
- Programs for Public Scientific Institutions
- Fellowships for postgraduate and doctoral students
- Participation in scientific meetings
- Research projects, Technological development projects
- Bilateral projects
- Infrastructure

The Governmental measures for improvement of the R&D sector are defined in several programs, which include **Programs for improvement of R&D** and **Programs for enhanced technological development**. The Ministry of Education and Science has seriously considered the

problem of the technological development of the country, and in that direction, measures are taken in order to stimulate and support the cooperation between the universities and the industry, improve and intensify the use of the scientific research results in the industry, and promotion of the technological development of the enterprises aimed at stimulation of their competitiveness.

During 2004 and 2005, for the first time in Macedonia, a complete database with publications in scientific journals with impact factors (journals referred in SCI and citations of institutions and researchers) was constructed. A database of all patent activities in the country was built, as well.

This year, the National and University Library and the publisher Elsevier, in coordination with the Ministry of Education and Science of the Republic of Macedonia, signed an agreement for national access to the electronic scientific database **Scopus**, which is available for all faculties and institutes at the state universities in the country.

In 2005, the new Council for Scientific research was established. Completely new system of project evaluation was established with assigned National coordinators for every scientific discipline who manage the evaluation process of the scientific projects in the respective fields.

This year the Government accepted a **Program for development of the scientific research activities in the Republic of Macedonia for the period of 2006-2010**. This is the first official document about the development of R&D adopted by government in the independent Macedonia. The Program was prepared during one year from experts and officials from all fields of science and all the future activities are set in the Action Plan of this Program. The new strategy for improvement of R&D defined in this document suggests an integrated approach in the research activities characterized by necessity and quality. Increasing of the funding for research and technological development projects and for fellowships for young researchers is one of the priorities together with the increased regional and international cooperation. Additionally, definition of the national priorities in the R&D sector as well as an improved intragovernmental coordination between the ministries are emphasized as main concerns for the future development of the country. This strategy for the future science policy also includes definition of criteria for supporting the R&D, establishing a completely new peer evaluation procedure, for which national coordinators for every scientific discipline should be responsible.

The Department of Science has also assigned contact persons for continuous coordination with the other ministries and with scientific research and technological development centers in the business sector. Furthermore, efforts have been made to get a credit from the World Bank, which will be used for improving the scientific infrastructure and establishing centers of excellence in the country.

As one of the strategic objectives, five potential centers of excellence have been identified in the Republic of Macedonia based on their results in the scientific research: Institute of Chemistry at the Faculty of Natural Sciences and Mathematics; Research Centre for Genetic Engineering and Biotechnology at the Macedonian Academy of Sciences and Arts; Nephrology Clinic at the Faculty of Medicine; Research Centre for Energy, Informatics and Material Science at the Macedonian Academy of Sciences and Arts and the Institute for Earthquake Engineering and Engineering Seismology. They are recognized not only in the country, but also internationally due to their publications, citations and international cooperation.

During 2003-2006, the Ministry has promoted and stimulated the international cooperation in all fields of scientific research and technological development. This strategy produced a substantial increase in the international scientific cooperation with many countries, especially the EU countries. The scientific cooperation is realized through the 6<sup>th</sup> Framework Program, COST, NATO, UNESCO, IAEA and JICA. The increased participation of the Macedonian scientists in the 6<sup>th</sup> Framework Program should be especially underscored. According to our data, more than 50 projects with our scientists have been approved, which is 4-5 times more than in the 5<sup>th</sup> Framework Program. The Department of Science at the Ministry of Education and Science is an active participant in two large and important multilateral projects in the 6<sup>th</sup> Framework Program (SEE-ERA.Net and ERA-WEST-BALKAN), which enables wider incorporation of Macedonia in the European activities in the scientific research and development. The participation of our scientists in the COST Program during last three years has also significantly increased from 5 Actions in 2003 to 25 Actions in 2006.

The Department of Science creates European oriented science policy and, in every way, promotes, stimulates and assists in establishing the international cooperation. Three years ago, there was a bilateral project cooperation with Slovenia and Germany only. Then, this kind of cooperation was for the first time established with Bulgaria, Serbia, Croatia, France, Albania, Russian Federation, Japan and China with more than a hundred bilateral projects. In the near future, cooperation with USA, Israel, Austria and Spain will begin, as well. There is an open call for joint project proposals with institutions from countries with which Macedonia has not signed agreements for scientific cooperation yet.

All these activities are intended to facilitate the incorporation of Macedonia in the European activities in the scientific research area, which has been recognized in the opinion of the European Commission for the status of this sector in the country, which says that “in the fields of Science and Research Republic of Macedonia should not have major difficulties in applying the *acquis* in the medium term”.

Finally, the necessity of full understanding, coordination and support between the science policy makers and the decision makers should be emphasized because it is the only way for efficient and productive improvement of the scientific research and technological development of the country.