Private Sector Interaction in the Decision Making Processes of Public Research Policies

Country Profile: Macedonia

1. Political, institutional and economic framework and important actors

After its constitution as an independent and sovereign state in 1991, the Republic of Macedonia embarked on the process of institutionalisation of its international cooperation in the domain of research and technological development. Hence, international cooperation has been effected through bilateral and multilateral agreements on scientific and cultural cooperation.

In accordance with Article 47 of the Constitution of the Republic of Macedonia, the state is committed to fostering and supporting scientific research, as well as technological development. The RTD activities in the Republic of Macedonia are regulated by several laws: The Law on the Macedonian Academy of Sciences and Arts, the Law on the Scientific and Research Activities, the Law on Higher Education, the Law on Encouraging and Supporting the Technology Development, the Law for Technical Culture and the Law on Industrial and Intellectual Property Protection.

Provisions of the Law on the Scientific and Research Activity\(^1\) are based on the freedom of scientific creative work, autonomy and implementation of the findings, diversity of scientific views and methods, as well as international cooperation. The mentioned law contains a clear definition of the public interest related to scientific research as a basic prerequisite for the overall development of the state. The research infrastructure and activities carried out in order to raise the level of research excellence and creativity and the transfer of world-class knowledge are also determined by this Law.

The objectives of the Law on Stimulation and Facilitation of the Technological Development\(^2\) are to foster and support the technological development at a national level, and to programme and fund these activities. The technological development as defined by this Law comprises also establishment of innovation and technology centres and development of the necessary technological infrastructure.

Research in the Republic of Macedonia is insufficiently funded, especially by the Private Sector. Total R&D expenditures are constantly decreasing and became almost the lowest in Europe, reaching only 0.22% of GDP, of which Private Sector funding accounts for only 1.4% in the year 2003.\(^3\)

The vast majority of R&D activities in Macedonia is still concentrated in the Public Sector. The country has managed to achieve significant results in certain scientific areas, for example seismology, despite its difficulties. However, the role and position of the Private Sector as a performer of R&D is still underdeveloped and has even significantly decreased. Macedonia lacks stable enterprises, which are able to perform R&D activities, as well as coordination between potential research partners. Only a small number of Private Sector enterprises are directly involved in R&D activities in Macedonia.

In the Macedonian National Innovation System, several actors interact on several levels:

a. Political and governmental authorities

The Macedonian Parliament instigates policies, defines and approves the national R&D policy framework and its main objectives through the preparation and adoption of legislative acts, in particular through its Committee for Education and Science.

The Government of the Republic of Macedonia is the highest executive body for the preparation and implementation of research policies. The Government approves basic programs and policy documents and adapts all budgetary regulations relevant to the distribution of innova-

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\(^1\) Official Journal of the Republic of Macedonia No.13/96 and 29/02.
\(^2\) Official Journal of the Republic of Macedonia No.98/00.
tion financing. The overall responsibility for developing and administrating Macedonia’s Science and Innovation System is concentrated in the Ministry of Science and Education. The ministry has the overall responsibility for research policy and for all levels of education. This includes the promotion of education and science, the development of the National Science System, technological development, informatics, technical culture and information system and international scientific-technical cooperation. The ministry provides the funds for the development of science and scientific education, national research and technology development projects and the development of the research and technology infrastructure.

The ministry’s Department of Science and Technology accomplishes the ministry’s tasks in research and innovation policies. The Department consists of several units (e.g. the Unit for Planning of Science, the Unit for Projects, the Unit for Legal Aspects of Science and Technology, the Unit for Technological Development and Technical Culture and the Unit for International Scientific Cooperation). The ministry maintains a Scientific Council (Советот за научноистражувачка дејност) which consists of members of the scientific community without Private Sector participation.

In addition, other ministries such as the Ministry of Economy, the Ministry of Agriculture, Forestry and Water Management, the Ministry of Health, the Ministry of Environmental protection and the Department for European Integration are also active in the field or research and innovation policies with a focus on their specific (mostly sector-oriented) responsibilities. Examples include the Ministry of Economy (responsible for industrial property, the development of SMEs and SME collaborations, for geological research and the exploitation of mineral raw materials and for energetics) or the Ministry of Agriculture, Forestry and Water Supply (which promotes studies and research in the areas of meteorological, hydrological and biometeorological occurrences and processes).

b. Intermediate bodies and research performing institutions

The Macedonian Academy of Sciences and Arts is the country’s highest scientific, scholarly and artistic institution. It participates in the establishment of Macedonian research policy, acts as an advisor to the Government on scientific issues, promotes and performs research. The Academy assists in the planning of a national policy regarding the sciences and arts, stimulates, co-ordinates, organises and conducts scientific and scholarly research, especially in areas where research is particularly relevant to the Republic of Macedonia. As an independent scientific and artistic institution, the Academy achieves these objectives through basic, developmental and applied research, comprehensive and inter-disciplinary research projects, by organising scientific and scholarly conferences, symposia and events in the field of the arts and by publishing the results of scientific research. The Academy operates five own research centres and collaborates with universities, other scientific, scholarly and cultural institutions, scientific and artistic societies and with other comparable organisations in the Republic of Macedonia.

Other Macedonian research performers include a limited number of national institutions which include three universities (in Skopje, Bitola and Tetovo), 14 independent research institutes active in various fields, and 20 research and development units in industry (innovation centres) within several larger enterprises. All university research is financed by the state budget, with resources allocated to universities in lump sums so that industry has no influence on university funding decisions.

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4 Research Centre for Energy, Informatics and Materials (ICEIM), Research Centre for Genetic Engineering and Biotechnology (RCGEB), Lexicographical Centre, Centre for Areal Linguistics, Centre for Strategic Research

5 In 2002 the structure of the Macedonian research community by organisations was as follows: University St. Cyril and Methodius (88%), University St Clement Ohridski (8%), Macedonian Academy of Sciences and Arts (2%), and others (2%). (Source: Science, Research and Technology Development in the Republic of Macedonia, Ministry of Education and Science of Macedonia, March 2002).
Macedonian research institutes, universities and R&D units need help in establishing partnerships and obtaining contracts for outsourced corporate R&D and new product development.

c. Private Sector

The Economic Chamber of Macedonia represents the interests of commercial, industry and service enterprises. Its status, organisation, tasks and issues are determined by the Law of Economic Chamber of Macedonia and the Statute of the Chamber. Membership in the Chamber is open to all entities engaged in economic activities. Its tasks include the representation of the interests of the Chamber’s members vis-à-vis the government organs and in the social partnership, the provision of professional assistance to the Chamber members, functional education and advanced training of the managing and professional personnel in the economic sector and economic promotion and business information. Currently, there are no consultative bodies and advisory councils at the Chamber level which deal with research and innovation issues. Two years ago the chamber established a separate body to address the specific needs of small businesses, but few small enterprises actively participate in this so far.

The strongest Macedonian lobby industry association supporting companies in promoting their sector and international marketing is the Macedonian Association of Information Technology (MASIT) which was set up in 2001. Among the important expectations which MASIT expressed is the support of R&D activities of member companies. MASIT offers its members a permanent communication platform to intensify relations with the government. MASIT’s lobbying activity is aimed at improving political conditions for the ICT industry, orientating the education system to challenges of ICT and creating an appropriate legal framework for e-economy.

Many other business associations have been established in the last few years on a sectoral or geographic basic as voluntary associations or foundations. These are small bodies with limited resources, mainly focused on providing specific services to their members. To date, the government has not been able to involve these organisations in discussions, though it is intended to involve some of these in the National Competitiveness and Entrepreneurship Council.

Private Sector R&D funding constituted only 1.4 % of overall R&D expenditure in 2003. Only a small number of Private Sector enterprises are directly involved in R&D activities in Macedonia. Macedonia lacks a critical mass of stable companies able to perform R&D activities as well as coordination between potential research partners.

Only few examples of research- and innovation-based cooperation are known. International assistance programmes and European R&D-programmes initiated the few existent projects. The tradition of systematic R&D business networks is not developed in Macedonia. Therefore, collaborative research and innovation activities are promoted by indigenous and foreign business associations, for example the Macedonian Association of Information Technology in cooperation with the German Deutsche Gesellschaft für Technische Zusammenarbeit GmbH.

Private foundations as sources of research funding or as think-tanks to fuel reforms in this field are not common in Macedonia.

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6 Source: http://www.unioncamere.net/cei/macedonia.htm
7 Currently, 35 companies are members in MASIT and about further 12 companies did express interest to become members. MASIT members represent about 95 % of the market volume.
8 See page 4.
2. National research policy decision processes and Private Sector involvement

In a summary view, the efficiency of national research and innovation governance structures still needs to be improved to ensure efficient decision-making and Private Sector involvement.

Instigation and design stages

The instigation of research and innovation-related policies falls under the competency of the Macedonian Parliament and Government. Within the Parliament, a Committee for Education and Science deals with legal issues of research and innovation policy. This Committee has regular public hearings where Private Sector representatives participate often in debates. Although the occasional interventions of Private Sector representatives are not obligatory, they can informally influence the conclusions and recommendations of the committees.

The business community in general can participate in public debates on legislation that refer to the business environment and to research and innovation policies through the Chamber of Commerce. However, the most active members of the Chamber are primarily the large companies and there is little room for small enterprises to influence decisions and priorities in their favour.

The National Competitiveness and Entrepreneurship Council and the National Economic Team are new formal advisory groups with Private Sector participation, established with the ambition to promote the dialogue between the government and the stakeholders, especially the Private Sector. Based on the initiative of the USAID MCA Project, the National Competitiveness and Entrepreneurship Council, was established in June 2003 by the Ministry of Economy, in collaboration with USAID, with the mission to improve the competitiveness of the Macedonian economy. This public-private body is also occasionally involved in research policy debates. 75% of its members were drawn from the Private Sector. It is hoped that this new initiative will create a channel of communication between Government and the Private Sector also in the areas of research and innovation.

Although Macedonia’s S&T infrastructure and research policy making process are still in their infancies, some debate on a national level has already been initiated about the Lisbon / Barcelona targets and participation in the 6th and upcoming 7th EU Framework Programme. The Private Sector participates in these debates. But today, Macedonia has no comprehensive system to involve main stakeholders in national debates on research and innovation policies. The Ministry of Education and Science is in charge of the design of these policies and for international co-operation in bilateral and multilateral programmes.

Implementation and assessment/revision stages

The Ministry of Education and Science is also the main responsible for the implementation of research policies and disposes of the financial instruments for the support of scientific research. The Private Sector has financially contributed to several national research programmes initiated by the ministry. These include the programme for encouraging and supporting national R&D projects, the programme for supporting researchers for participation at international meetings, the programme for encouraging and supporting technological development and the programme for development of R&D infrastructure. The main objectives of all these programmes are aimed at stimulating, encouraging and facilitating R&D in general.

Due to the unfavourable situation of the industry, the resources for the research and technology development activities are mainly provided from the budget of the Republic of Macedonia. Thus, there is an urgent need to stimulate a more active role of the Private Sector to stimulate its own R&D investment for the development of innovations, new products and new technologies.

Examples of good practice in service delivery to SME’s in support of research and innovation policies can be attributed mostly to voluntary organisations rather than to policy makers or the Chamber of Commerce. For example, the ESA Enterprise Support Agencies in Tetovo,
and Gostivar, PREDA and the informal cluster around the Strumica support a small business incubator.

The revision and evaluation process of research activities still needs to be developed and improved. The selection of projects is carried out institutionally on the basis of a public competition followed by an anonymous review. After the completion of projects, their findings are presented to the concerned scientific public. This implies a certain level of peer review. The evaluation system will be upgraded by the solutions laid down in the new Law on Scientific Research and Technological Development. The Law foresees for this purpose the establishment of a network of national coordinators for different domains and disciplines in order to achieve objective evaluation procedures. Moreover, for projects of a broader public interest, international expertise and the involvement of stakeholders, including the Private Sector, shall be strengthened.

Observations: Possible barriers and current initiatives

The main challenges of the Macedonian Science and Innovation System include an unsatisfactory level of public funds for financing these activities, an insufficient research and innovation infrastructure (facilities, equipment and materials), an inefficient institutional infrastructure, underdeveloped mechanisms for the transfer of knowledge and research results, an inconvenient distribution of researchers by sectors (the number of researchers in the business sector is very poor), too little investments in applied research and innovation, the low level of private investments in R&D sector, and an unsatisfactory level of young researchers in relation to the total number of researchers.

The Ministry of Education and Science has undertaken a number of steps to address these issues. These include the introduction of an engagement of academic research groups in target-oriented basic research and in applied research and development services, the promotion of the participation of ‘users’ (companies, enterprises) in financing research and the introduction of national research programmes in coordination with other ministries (e.g. environment, culture, etc). Furthermore, the introduction of procedures for monitoring and evaluating scientific and research work and the output of research groups on the basis of internationally accepted standards and criteria has been initiated and support for high level training of young researchers and for schemes for the mobility of the researchers is provided increasingly.

For the moment, Macedonia has almost no system to enable the participation of stakeholders in the research and innovation policy decision making processes. Furthermore, the Macedonian enterprise community still needs to develop dedicated and powerful business associations with the necessary competencies in research and innovation matters.

3. Other important examples of policy decisions with Private Sector involvement

Regional research and innovation systems

Currently, Macedonian companies initiate partnerships that extend to the whole region, especially to the neighbouring countries (e.g. the former Yugoslavia) where the market is growing rapidly. These are natural markets to penetrate, first because they used to be part of one market and a lot of the Macedonian companies know the markets, but also because of the language and proximity.

In Macedonia itself, there is no particular focus or specific rules for regional activities with regard to research, technology, development and innovation, but rather on economic development and entrepreneurship in general.

4. Overview: Types and extent of Private Sector involvement

As described, the development of the Macedonian Science and Innovation System, its governance structures and Private Sector involvement therein is still in development. The current status can be summarised as follows:
Some forms of networking, general dialogue and informal involvement are used to maintain a general exchange of views with the Private Sector. In last two years a few important conferences were organised in order to specify the instruments and mechanisms of national R&D system. But so far, no significant conference was focused especially on the private and public sectors cooperation.

The most important element of Private Sector involvement is its advisory role, especially in advisory boards for research policy formulation and in scientific advisory boards of research institutions.

Formal involvement is not directly presumed by any research or innovation policy programme. Although the Law on Scientific Activity underlines the need for more intensive co-operation of science institutions and the Private Sector, this objective has not yet been implemented consequently in research policy-oriented decision processes.

Joint activities between the Public and the Private Sector could not be observed in Macedonia until now. But it is expected that first examples are going to appear soon.

Staff interaction as a way to enhance mutual understanding and involvement of Private Sector expertise in public research decision making is not formally developed in Macedonia.

Research funding is used occasionally by individual large companies. But such activities have not yet reached a critical mass to stimulate applied research and knowledge transfer-oriented activities in Higher Education and research Institutes. There are also no Private Sector foundations which are engaged in financing research.

5. Selected useful examples of transferable approaches and experiences

Macedonia’s National Science and Innovation System and related policy and governance structures are still under construction and undergo continuous transformation. However, several approaches have already emerged which may be of interest especially for countries with comparable challenges.

5.1 Programmes for promotion of technology dissemination towards small enterprises

Enabled by support from the German Government in the framework of bilateral German-Macedonian technical co-operation, a large scale technology transfer project has been initiated with participation of the Ministry of Economics and major Macedonian R&D institutions. The project aims to foster the dialog about technology transfer, to establish efficient technology transfer institutions and to improve the collaboration between R&D institutions and SMEs in the country.

In addition, the SME ART Project implemented by SINTEF with Norwegian governmental aid is fostering applied research projects to link Macedonian and Norwegian faculty with Macedonian small business.

The CARDS programme is currently financing the feasibility study of a Technology Park based in Bitola, co-ordinating this work with Bitola Municipality and the University and the successful Science and Technology Parks in Northern Greece.

5.2 Law on Scientific and Research Activity

Provisions of the Law on the Scientific and Research Activity are based on the freedom of scientific creative work, autonomy and implementation of the findings, diversity of scientific views and methods, as well as international cooperation. The mentioned Law contains a clear definition of the public interest related to the scientific research as a basic prerequisite for the overall development of the state.

The Ministry of Education and Science is in a final phase of assigning new regulations for financing scientific research, and also a draft proposal for a new Law on Science and Devel-

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The Law will bring the national legislation closer to the European regulations. Reorganisation of research activities will take place, enabling enhanced support for research projects with an application-oriented character. This will encourage university–enterprise cooperation and contribute to the establishment of new R&D centres in the companies.

5.3 Inter-firm co-operation and clustering: Initiatives, achievements and problems

The concept of clustering is not yet properly communicated among the business community. The lack of adherence to contractual obligations, which is very common amongst Macedonian small enterprises, makes clustering difficult to achieve because the necessary basis of trust is absent.

USAID is currently promoting a competitiveness project which tries to foster the cluster approach in various industries in Macedonia (construction, food production, tourism and some other) in order to make them able to compete successfully on an international level.

Under the framework of its project for Macedonia-Italy industrial co-operation, ICE Italian Institute for Export Promotion facilitates and promotes the development of the footwear cluster in Kumanovo on the principles of Italian clusters that is largely responsible for the Italian industrial expansion based mainly on small enterprises.
## Appendix 1: Overview of identified instruments for Private Sector involvement and their use in Macedonia

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Intensity of use</th>
<th>Initiated by</th>
<th>Used for</th>
<th>Used in</th>
<th>Examples and remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>General dialogue</td>
<td>Beginning to use</td>
<td>Policy institutions</td>
<td>Awareness &amp; identification of emerging technologies &amp; trends</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conference</td>
<td>Occasional</td>
<td>Policy institutions</td>
<td>Discussion platform</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Brainstorming / task forces</td>
<td>Beginning to use</td>
<td>Policy institutions</td>
<td>Identification of priorities and possible policy actions</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Evaluation studies</td>
<td>Not common</td>
<td>Policy institutions</td>
<td>Programme review, identification of policy need</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advisory groups</td>
<td>Beginning to use</td>
<td>Policy institutions</td>
<td>Participation in design, evaluation, etc.</td>
<td>✓ ✓</td>
<td></td>
</tr>
<tr>
<td>Informal consultations</td>
<td>Occasional</td>
<td>Policy institutions</td>
<td>Exchange of viewpoints between stakeholders</td>
<td>✓ ✓ ✓ ✓</td>
<td></td>
</tr>
<tr>
<td>Formal consultations</td>
<td>Occasional</td>
<td>Policy institutions</td>
<td>“Official” opinion</td>
<td>✓ ✓ ✓ ✓</td>
<td></td>
</tr>
<tr>
<td>Task force</td>
<td>Not common</td>
<td>Policy institutions</td>
<td>Joint policy development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation in decision making bodies (observer status)</td>
<td>Not common</td>
<td>Policy institutions</td>
<td>Decision involvement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation in decision making bodies with (co-) decision right</td>
<td>Not common</td>
<td>Policy institutions</td>
<td>Decision involvement, shared responsibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative / supervisory boards</td>
<td>Beginning to use</td>
<td>Policy institutions</td>
<td>Private Sector representatives involved in important institutional decisions</td>
<td>✓ ✓</td>
<td></td>
</tr>
<tr>
<td>Initiation of networks</td>
<td>Beginning to use</td>
<td>Policy institutions</td>
<td>Stimulation of joint Public-Private Sector initiatives</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Co-financing of projects / programmes</td>
<td>Not common</td>
<td>Both parties</td>
<td>Sharing of cost / risks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Private Partnership</td>
<td>Not common</td>
<td>Both parties</td>
<td>Pooling of resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Temporary) Staff exchange</td>
<td>Not common</td>
<td>Both parties</td>
<td>Enhance mutual understanding and mobility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff mobility</td>
<td>Not common</td>
<td>Policy institutions</td>
<td>Public Sector expertise in research leadership positions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unsolicited contributions</td>
<td>Not common</td>
<td>Private Sector</td>
<td>Express views, recommend changes, influence decisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dialogue platforms</td>
<td>Beginning to use</td>
<td>Private Sector</td>
<td>Initiate / facilitate dialogue with public sector</td>
<td>✓ ✓</td>
<td></td>
</tr>
<tr>
<td>Research funding</td>
<td>Rare</td>
<td>Private Sector</td>
<td>Initiate / support research in desired areas</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

*Table 1: Overview of instruments used for Private Sector involvement*
Appendix 2: Selected relevant sources and literature

1. General and country information
Macedonian Academy of Sciences and Arts, *Science and Technology in the Republic of Macedonia*, 2004

2. Important actors
http://www.sobranie.mk National Parliament
http://www.vlada.mk Government of Macedonia
http://www.mon.gov.mk/ Ministry of Education and Science
http://www.economy.gov.mk Ministry of Economy
http://www.manu.edu.mk Macedonian Academy of Sciences and Arts
http://www.mchamber.org.mk Economic Chamber of Macedonia
http://www.sinf.gov.mk Macedonian Agency of Information
http://www.mlrc.gov.mk Macedonian Legal Resource Centre

3. Further information and feedback
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