

**Questionnaire for preparation of the
national background report**

This questionnaire aims at producing an inventory of research structures, current and future R&D priorities, and policies for cooperation between Western Balkan Countries in the field of R&D in the domain of *[Theme]*. Please use data of the closest year available.

As publication by a project co-funded by the European Commission, the editors and project partners take note that the official name of the country is "The Former Yugoslav Republic of Macedonia"

Theme: ENVIRONMENT

Country name: Republic of MAcedonia

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Section A: Main R&D resources in the field of *[Theme]*

In this section please provide data necessary for identification of main actors.

A 1. List of institutions / organisations: main RESEARCH PERFORMERS in the PUBLIC sector in the S&T field of Environment (*such as national universities, government laboratories, institutes etc.*):

Ministry of Environment and Physical Planning, Central laboratory

Tel. +389 2 3066-930

<http://www.moepp.gov.mk/default-en.asp>

Ministry of Finance

Tel. +389 2 3117-288

<http://www.finance.gov.mk/mk/meni.htm>

Ministry of Economy

Industry

Department for monitoring of industrial production and technological development

Contact person: Gordana Sukleva- sovetnik

Tel. +389 2 3093-505

Energy

Department for energy efficiency and renewable energy

Contact person: Dejan Zrmanovski – chef of the department

Tel. ++389 2 3093-517

<http://www.economy.gov.mk/>

<p>Chamber of Commerce</p> <p>Tel. +389 2 3244-000 http://www.mchamber.org.mk/</p>
<p>European Information & Innovation Centre Macedonia</p> <p>Contact person: 1. Jadranka Arizankovska_ Project manager 2. Aneta Guleva_ Info Officer & Administration</p> <p>Tel. ++389 2 3244-039 ++389 2 3244-038 Address: Dimitrie Cupovski 13, Sala1</p> <p>http://www.eiicm.com.mk/inner.asp?class=busmenu&setlang=mk</p>
<p>Foundation for Management and Industrial Research (M.I.R Foundation)</p> <p>http://mir.org.mk/index.php?option=com_content&task=blogcategory&id=14&Itemid=31</p>
<p>Agency for Promotion of Entrepreneurship of the Republic of Macedonia</p> <p>Tel. +389 2 3120-132</p> <p>http://www.apprm.gov.mk/</p>
<p>Macedonian Bank for Development Promotion</p> <p>Tel. +389 2 3115-844 +389 2 3109-981</p> <p>http://www.mbdp.com.mk/en/index.php</p>
<p>Energy Agency Pance Atanasovski</p> <p>3298-907/ faks 3298-909 http://www.ea.gov.mk/</p>
<p>Macedonian Academy of Sciences and Arts</p> <p>ENERGY NCP - Natasa Markovska, Macedonian Academy of Sciences and Arts, (bul. Krste Misirkov,</p> <p>e-mail: natasa@manu.edu.com tel. 389 3235427, 389 70 384236 http://www.manu.edu.mk/</p>
<p>Ministry for education</p> <p>NPM and SME's NCP – Anita Grozdanov, University Cyril and Methodius, Faculty of Technology and Metallurgy , Ruger Boskovic, 1000 Skopje),e-mail: anita@tmf.ukim.edu.mk ansteg2000@yahoo.com; tel:+389 2 3064 588, 389 70 385 052</p> <p>Environment NCP - Ana Lazarevska, University Cyril and Methodius Faculty of Mechanical Engineering, (Karpos 2 bb, 1000 Skopje e-mail: Ana.lazarevska@gmail.comlazana@mf.ukim.edu.km; tel. ++ 389 2 3099 298/ 389 75 596 182</p> <p>Infrastructure and Transport NCP, Julijana Balevska, Ministry of Education and Science, Ilinden bb, 1000 Skopje, tel. 389 2 3118 022, 389 70 338 717</p>
<p>Faculty of Technology and Metallurgy, Skopje, Rudjer Boskovic bb</p>
<p>Faculty of Geology, Stip</p>
<p>Faculty of Civil Engineering, Ss Cyril and Methodious University, Partizanska</p>

Hydro-biological Institute, Ohrid
Republic health care Institut, Skopje
Faculty of Mechanical Engineering, Ss Cyril and Methodious University a Center for Climate Change and Energy Technologies, Karpos II b.b, P.O Box 464 Tel: +389 2 3099 224 Fax: +389 2 3099 298
Faculty of Agricultural Sciences and Food of Ss Cyril and Methodious University
Institute on Agriculture
Faculty of Natural Sciences, Biology department
Cleaner Production Centre
Mr. Risto V. Filkoski Interim Coordinator of NCP Macedonia Faculty of Mechanical Engineering Karpos II b.b, P.O Box 464 Tel: +389 2 3099 224 Fax: +389 2 3099 298 e-mail: rfilko@mf.edu.mk

A 2. List of institutions / organisations: main RESEARCH PERFORMERS in the PRIVATE sector in the S&T field of Environment (such as national universities, government laboratories, institutes etc.):

South-East European University, Tetovo, Institute for Environment and Health

A 3. Which organisations are responsible for financing R&D in the field of Environemnt

The interdisciplinary nature of environment protection poses difficulties with regard to the precise determination of activities and resources allocated for research aimed at its development and promotion.

Law on Environment defines an Annual Investment Programme aimed at stimulating/financing the following activities:

Article 174

Purpose of the funds

(1) The funds of the Programme referred to in Article 172 of this Law shall be used for financing the development and the implementation of programmes, projects and other activities referred to in Article 172 paragraph (6) of this Law, as well as for undertaking of preventive measures and measures intended for supporting, preservation, sustainable use, protection and improvement of the environment, especially for:

- protection, preservation and improvement of the quality of air, soil, climate change mitigation; ozone layer protection and protection against radiation;
- rehabilitation and construction of waste landfills; encouragement of waste generation reduction; waste recycling and segregation;
- protection and improvement of biological diversity;
- protection and promotion of human health;
- encouragement of cleaner production;
- substitution of fosile fuels use with natural gas, biological fuels and other types of environmentally acceptable fuels,
- improvement of environmental monitoring and state of the environment assessment and introduction of environmental management system;

- encouragement of sustainable use of natural resources;
- encouragement of achievement of environmental standards in the course of economic activities performance,
- encouragement of educational, research and development studies, programmes, projects and other related activities for environment and nature protection and improvement;
- supporting non-governmental and non-for-profit organizations in the area of environment;
- supporting the development of local environmental action plans,
- encouragement of sustainable development of rural areas.

The funds of the Investment programme are provided from a set of environmental charges being stipulated in the Law on the Environment. Presently, there are 3,5 mill. Euro made available for a Call for proposals based on Annual Investment Programmes being issued by the Ministry of Environment and Physical Planning and approved by the Government. Most of funds are used in project preparation and investments in small (social) infrastructure, while eco-innovations are not greatly supported due to the lack of interest of project beneficiaries and the attached risk.

Table 1: Allocated funds from the MoEPP in educational, research and development studies, programmes and projects

2007	2950000,00	DEN (48000 EUR)
2008	8000000,00	DEN (130000 EUR)

There are no subsidies hindering eco-innovations. On the other hand, there aren't any systematic measures (except of a number of running programmes which are supported by international agencies) providing funding mechanisms for eco-innovation.

There is a State Aid Law defining the rules for subsidies on the private sector; funds available for general State Aid are not provided presently from national sources, while continuity of calls for proposals is dependant on the provision of international funding.

Scientific research, as well as innovation activities, i.e. issues of research and development, are regulated by: Law on Science and Research Activity ("Official Gazette of RM", No.13/96, 29/02), Technological Development Enhancement and Facilitation Law ("Official Gazette of RM" No. 98/00) and Technical Culture Enhancement and Facilitation Law ("Official Gazette of RM" No. 53/00) and carried out by the Ministry of Education and Science (MES). Research and development in the field of the environment will be particularly enhanced by introducing this category in by-laws.

The draft application for the financing of scientific research projects (Form - OB 1), under item 11, requires that "the relevance of the research results to the protection and enhancement of the working and living environment, i.e. the quality of living," is defined, which is further on evaluated in the selection process through which the funding of the scientific research project is accepted or rejected.

The Programme for Technological Development for the period 2002-2006:

- in the section "Priority areas for enhancement and facilitation of technological development" -"sustainable development" is defined as a priority;
- in the section "Acquisition, technology and characterization of new and modern materials", "natural resources saving and environment protection" is defined as a priority.
- in the section "Genetic and biological research for human health promotion", the defined priority is "stimulation of multi-disciplinary research of basic nature in order to facilitate real and permanent progress in the domains of health care and the quality of life".
- in the section "Healthy food production", the "methods, analyses, detection and control of food safety and risks of the hazardous impact of environment on human health" is defined as a priority;
- in the section "Science and sustainable development", the defined priority refers to "the development of strategies for mitigation of adverse impacts of human activities on the environment, promotion of sustainable human settlements, environment degradation and protection";

- in the section "Social development and needs for new knowledge" the defined priority is "social integration and the need for the improvement of the quality of life";

Through public competition for awarding financial resources in the form of co-financing development projects, among other projects the projects intended for the improvement of the quality of living in terms of work humanisation and environment protection are co-financed.

According to the Decision on the Establishment of the Network of National Institutions in the Area of Culture ("Official Gazette of RM", No. 84/03), the Museum of Natural Science of Macedonia is a national cultural institution, financed by the Budget of the Republic of Macedonia. According to the Law on Museums ("Official Gazette of SFRY", Nos. 25/79, 51/88 and :Official Gazette of RM" No.12/93), its activity includes research, collection, staffing, professional and scientific processing and study, protection, keeping, dissemination and presentation of museum material, which, considering its expertise, include documents on and objects of flora, fauna and fungi of Macedonia. As such, its activity supports environment protection and promotion. The Ministry of Culture through annual programme aimed at financing the cultural projects of national interest finances the work programme of the Museum of Natural Science of Macedonia.

Environmental research and development hold prominent position in the Law on Cultural Heritage Protection ("Official Gazette of RM" No. 20/04, 71/04), where the protection of the immovable cultural heritage is carried out, *inter alia*, through such compulsory integration of heritage in spatial and urban plans and in plans and programmes for the environment and nature protection, as well as through its recognition as a factor of sustainable economic and social development, especially in the context of cultural tourism, housing, specific professions and education.

A 4. How is research performed? (please indicate all that apply)

	Lead participating body (please use numbers from question A 3)	Other relevant bodies (please use numbers from question A 3)
In own institutions		
Published calls for tenders, open to all researchers		
Restricted tenders to preferred suppliers		
Co-funding with other national bodies		
Co-funding with other countries		
Other approaches – please fill in: _____		
Other approaches – please fill in: _____		
Is support restricted to national bodies (Y / N)		

A 5. R&D capacity* in S&T field:

	1990	2002	2007	2015
Total number of research organizations				
Of which universities				
Of which public research organizations				
Of which private research organizations				
Number of PhD students graduated				
Total number of R&D personnel				
Percentage of women in the total number of R&D personnel				
Total number of employees on a Full-Time-Equivalent (FTE) basis				
Total number of researchers				

Percentage of women in the total number of researchers				
Total number of researchers on a FTE basis				
Number of researchers with Ph.D. degree or higher				
Number of researchers with Ph.D. degree or higher on a FTE basis				
Number of researchers under the age of 35				
Number of researchers under the age of 35 on a FTE basis				

* Please use OECD - Frascati Manual definitions if possible.

A 6. Research infrastructure in S&T field of Environment:

(a) Please assess the physical research infrastructure (without office equipment)

The R&D institutions in general have an internationally competitive research infrastructure and are able to conduct top research in cutting-edge research topics	<input type="checkbox"/>
The R&D institutions in general have top research infrastructure, the infrastructure enables regular international research co-operation but are not competitive if compared with the 'best in this research field'	<input type="checkbox"/>
The R&D institutions in general have good quality research infrastructure, probably one of the most up-to-date in the country, but are not good enough to join in international research on a regular basis	<input type="checkbox"/>
The R&D institutions in general have a rather obsolete research infrastructure if compared with international organisations and this is an obstacle to international research co-operation	<input checked="" type="checkbox"/>
The R&D institutions in general have a rather obsolete research infrastructure and it is an obstacle to more domestic contracts	<input type="checkbox"/>
The R&D institutions in general have no substantial infrastructure, but they have access to it and can participate in top research both nationally and internationally	<input type="checkbox"/>

(b) Please indicate most important physical research infrastructure in S&T field of Environment

1.	_____

2.	_____

3.	_____

A 7. Scientific production and Innovation in S&T field of [Theme]:

S&T field total (*)	2005	2006	2007
Number of important innovations **			
Number of domestic patents granted			
Number of patents granted by the EPO ***			
Number of patents granted by the USPTO ***			
Number of patents granted by the JPO ***			
Number of publications in journals reviewed by the Institute for Scientific Information****			

Important innovation: a new product / process / organisational mode / tool or method had or contributed to an additional turnover of more than EUR 100 thousand or more than 500 people use a new product/process or it saved life or improved the quality of life substantially. The research institutions' contribution is substantial if at least one third of the new knowledge came from the research organisation.

*** EPO: European Patent Office; JPO: Japan Patent Office; USPTO: United States Patent and Trademark Office

**** and thus appears in the Science Citation Index

A 8. Large and/or National R&D projects in S&T field of [Theme] (Please provide a list of large national R&D projects in S&T field in annex of this report):

	ongoing /started in 2007	completed in 2007
Number of large R&D projects**		
Of which: the number of projects in collaboration with industry		
the number of projects in which the national organisation coordinates		
the number of EU FP projects in which national institutions participate		
the number of EU FP projects in which national institutions coordinate		
Number of national R&D projects***		
Of which: the number of projects in collaboration with industry		

** the total project budget is above EUR 100 thousand and the national institutions' share is at least EUR 20 thousand

*** projects funded in some proportion (10-100%) by the national agency / ministry

A 9. Source of financing of R&D activities in S&T field of [Theme]:

	Year 2007 – Share in %:
a) Private companies?	
b) International sources (such as the EU, UN, OECD, NATO etc.)?	
c) Not competitive* government financing?	
d) Competitive* government financing?	
e) Other sources (foundations, non-profit organisations, etc.)?	

*Projects won after competitive bidding procedures – so that the organisation can actually lose the funding targeted at the end of the procedure – count as source on a competitive basis. If the organisation participates in a money-allocation mechanism so that the money cannot be lost (but e.g. 'only' reduced), it counts as source on a non-competitive basis of research funding even if the procedure itself is called 'competitive bidding'.

Section B: Qualitative assessment of the S&T field

In this section please provide comprehensive description of the following issues:

B 1. Current situation, priorities and co-operation in S&T field:

B 1.1 Current situation:

- a) What are the main national development policy priorities?
- b) What are the main R&D priorities?

Main National development policy priorities are covered by two Strategic documents: Second National Environmental Action Plan and draft- National Strategy for Sustainable Development

NEAP II – A general provision/paragraph mentions the approach to eco-innovation relating to **the merits of economic instruments, providing** an incentive for innovation and development. National Environmental Action Plan is identifying science sector as one of the stakeholder in decision making processes as well as a partner in the identification and solving of environmental problems.

NSSD – National Strategy for Sustainable Development Within the framework of the renewed EU SDS (June 9, 2006) there is provision made for the Republic of Macedonia to identify and develop objectives and actions to enable achieving continuous improvement of the quality of life both for current and for future generations, through the creation of sustainable communities able to manage and use resources efficiently and to tap the ecological and social innovation potential of the economy, ensuring prosperity, environmental protection and social cohesion. Meeting the requirements of EU-accession is a major goal for the Republic of Macedonia to join the family of EU countries. Referring to this, process of developing a National Strategy for Sustainable Development should stick to the main provisions stated within the EU legislation.

The National Strategy on Environmental Investments prescribes that Demonstration projects (DP) could be a useful tool for promoting innovative waste management concepts and measures. The DP could be an idea, an approach, a method, a technical solution, a process or any combination of these, which address a real issue in waste management sector in Macedonia.

The DP should:

- be possible to implement it in a time frame of a typical project (1-2 years), and
- be expected to have measurable effects on compliance to / enforcement of the waste legislation.

The project should demonstrate use of approaches in Macedonia that are well-established in EU:

- Recycling / Recovery activities projects including activities on:
 - Separate waste collection
 - Recycling / recovery of recyclable non-organic waste streams (paper, plastics, metals, glass, ...)
- Recycling / recovery of bio-degradable waste (composting; bio-digestion, etc)
- Management of special waste streams and end-of-life products (P&PW; C&D waste; waste oils; WEEE; etc.), that are not in the group of the unique projects.

These projects will initiate benefits to the ELS and/or the Region – the demonstration project supports the waste management strategy/plan objectives for the municipalities/regions.

B 1.2 Future priorities:

Describe how your future R&D priorities are selected and priorities agreed (e.g. foresight)? Are these driven by national policy priorities?

Process of developing priorities in the field of climate change was followed process of stakeholder involvement and consultation as a part of process of development and adoption of the Second National Communication on Climate Change. In Macedonian conditions the **Research and Development (R&D)** becomes decisive factor in all the efforts to limit climate change and its costs and negative effects to society and the environment. Moreover, the climate-change-related R&D is being built upon the following two elements: **translational research** (establishing/strengthening the partnerships of type academia-businesses, academia-policy-making or even academia-businesses-policy-making) and **international cooperation** (in particular, participation in EU Framework Program 7, where climate change is among the top priorities for cooperation).

a) Over the next 10 years, what will be the main R&D policy issues in this S&T field?

In accordance with the Draft-Sustainable Development Strategy, the following incentives towards the stimulating eco-innovation have been foreseen:

Key Objective: To contribute to increasing competitiveness, economic growth and enhancing job creation by performing necessary structural changes which enables the economy at various levels to cope with the challenges of globalization by creating a playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.

In terms of economic performance, higher levels of skills are a necessary but not sufficient condition for success. There are several drivers of economic success, among which: High levels of Research & Development (R&D) and innovation

Free market encourages innovation and entrepreneurship. At the same time, it takes money to implement innovative ideas. The Macedonian market should feature easy access to venture capital.

Policies related to science and technology, industry and education will need to emphasize the role and importance of innovation systems, as well as necessary infrastructure and incentives to boost investments in research and development.

(The Policies should be mainly related to the knowledge rising and educational improvement, with respect to innovations)

The policy framework should ensure sufficient public investment in education, but also needs to encourage effective partnership with the private sector that can provide access to a wider pool of expertise and technology, open up new market opportunities and create more favourable climate for innovation of *efficient and effective methods of education and training* adapted to the specifics of different economic sectors – industry, agriculture and services

B 1.3 What national policy and R&D priorities should be the subject for establishment of specific co-operation with other Western Balkan Countries?

B 1.4 It is hoped that this exercise will identify areas for future collaboration and R&D co-operation in this S&T field, probably leading to a possible WBC R&D co-operation proposals under FP7. These projects foresee four levels of co-operation. They range from:

- a) The minimum – exchange of information and results;
- b) Systematic exchange and development of complementary programmes;
- c) Development of common approaches to agreed R&D priorities;
- d) The maximum – full joint approaches, common programmes and pooled funds with open access to researchers from participating countries.

So, with this in mind, what levels of co-operative actions would your country be able to support in the future in this S&T field?

B 1.5 A suggestion is to have a high level meeting once or twice a year; where WBC could decide upon themes on which to co-operate. This may lead to a proposal for a project or other forms of co-operation. Would your country be willing to participate in a high level meeting with other WBC to decide upon these themes?

We suggest, Principle of good governance,, to be followed in the process of set-up the scientific programs and projects.

We found very much relevant involvement of different stakeholders from the very beginning of the process. For example, the role of the Ministry of environment will be to introduce science with the new expectations of EU member states in the field of climate change mitigation and potential legally binding commitments for candidate and potential candidate countries. Science should give a proper answer to the policy makers. High-level meeting with participation of high-level representatives as different stakeholders (science, government and business) is appreciating.

Section C: Economic background of the S&T field

In this section please provide data necessary for identification of economic sub-sectors in relation with the S&T field

C 1. Performance of economy and sector(s) relevant for S&T field:

	2004		2005		2006		2007	
	GDP (000 €)	(Sector GDP/ Total GDP) %	GDP (000 €)	(Sector GDP/ Total GDP) %	GDP (000 €)	(Sector GDP/ Total GDP) %	GDP (000 €)	(Sector GDP/ Total GDP) %
National economy								
I sector:								
II sector:								
III sector:								
IV sector:								
V sector:								

Source:

C 2. Economic sub-sectors relevant for S&T field:

Sub sector	(sub sector GDP/sector GDP) %	Investment (000 €) ¹	Number of Personnel ²	Exports (000 €)	Imports (000 €)	Number of enterprises

C 3. Main export markets relevant for S&T field:

Market	% share	Main Countries
EU Market		
Other European Countries		
International Market (excluding Europe)		

C 4. Main export products / services relevant for S&T field:

Product / Service	Description

Thank you very much for your effort!

¹ Realised investments are physically realised construction of infrastructure and completed manufacture or purchase of investment goods during a year regardless of payment thereof; Cooperative and mixed ownership included; data relate to modernisation, building onto and extension of facilities

² Employed persons in enterprises, institutions and organisations in all ownership sectors