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ФОНДАЦИЈА ОТВОРЕНО ОПШТЕСТВО МАКЕДОНИЈА

CHALLENGES AND OPPORTUNITIES FOR SCIENTIFIC RESEARCH FUNDING IN THE REPUBLIC OF MACEDONIA

European Policy Institute. Skopje

healthgrouper

CHALLENGES AND OPPORTUNITIES FOR SCIENTIFIC RESEARCH FUNDING IN THE REPUBLIC OF MACEDONIA

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CONTENTS

This publication ***Challenges and Opportunities for Scientific Research Funding in the Republic of Macedonia*** is prepared within the Regional Research Promotion Programme in the Western Balkans (RRPP). The RRPP promotes social science research in the Western Balkans (Albania, Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro and Serbia). Social science research aids in the understanding of the specific reform needs of countries in the region and in identifying the long-term implications of policy choices. Researchers receive support through research grants, methodological and thematic trainings as well as opportunities for regional and international networking and mentoring. The RRPP is coordinated and operated by the Interfaculty Institute for Central and Eastern Europe (IICEE) at the University of Fribourg (Switzerland). The programme is fully funded by the Swiss Agency for Development and Cooperation (SDC), Federal Department of Foreign Affairs.

The views expressed in this publication are those of the authors and do not necessarily represent opinions of the SDC and the University of Fribourg.

The publication *Challenges and Opportunities for Scientific Research Funding in the Republic of Macedonia* is a result of joint efforts made by group of researchers and organizations, with a view to advance policies that regulate scientific research activity in Macedonia. These activities were implemented within the *National Policy Dialogue in Macedonia*, as part of the *Regional Research Promotion Programme in the Western Balkans*. Our shared goal was to develop the model for scientific research activity funding in Macedonia, the implementation of which could promote the quality, efficiency and impact of research activities and, at the same, address the needs of the research community.

In that, the primary task was to create a constructive and participatory process to develop this model. Although we failed to instigate greater interest and proactivity on the part of the Ministry of Education and Science, in the past we succeeded in imposing that science and research be included as topics for discussion and framework for involvement of other stakeholders in the process. In the course of 2016, we conducted survey, comparative analyses, and initiated debates on several important issues that targeted the principles of independence, efficiency, expertise, transparency and accountability, as key elements for supporting scientific research. Research results and recommendations were transformed into a feasible model which we believe, at an opportune moment in time, could serve as an excellent basis for the systemic improvement of scientific research activity and the provision of real support to the research community in Macedonia.

The Foundation Open Society – Macedonia implemented the *National Policy Dialogue* in cooperation with three research organizations, namely: European Policy Institute – Skopje, Association "Healthgrouper Summit" – Skopje and Coalition "Sexual and Health Rights of Marginalized Communities", including two independent experts, professors Emilija Simoska, PhD, and Snezana Bilik, PhD.

Moreover, three individual researchers were directly involved in the process: professors Marjan Petreski, PhD, and Miso Dokmanovik, PhD, and Marija Basevska, MA, and the legal expert Valentin Fetadjokoski.

For more information about RRPP, visit the following link:
http://rrpp-westernbalkans.net/en/News.html

The editors

INTRODUCTION

The Republic of Macedonia, as a candidate for EU membership, is facing major challenges in relation to scientific research activity (hereinafter: SRA). Although this activity has been financed for more than 60 years, in the last decade it is characterized by significant deterioration.

According to the applicable legislation in the Republic of Macedonia, the Ministry of Education and Science (hereinafter: MES) plays a key role in policy development and implementation for support to SRA and, therefore, is held directly responsible for such deterioration.

Specifically, SRA is regulated by 3 laws that have been subject to amendments over several occasions; these are: the Law on Scientific Research Activity (hereinafter: Law on SRA) (10 amendments to the basic text), the Law on Higher Education (21 amendments to the basic text) and the Law on Innovation (4 amendments to the basic text). A high number of law amendments, including their non-alignment, makes the existing Law on SRA non-functional and inapplicable. Moreover, these amendments included changes and deletion of professional bodies whose competences include the performance of SRA. The 2011 amendments to the Law on SRA deleted the following professional bodies competent for the performance of SRA from the legislative text: the National Committee for Development and the Council of SRA. On that account, a new body called the National Council for High Education, Science, Innovation and Technology (hereinafter: the National Council) was introduced, but its competences are not regulated by the Law on SRA, but rather by the Law on Innovation Activity. Despite this, the Government of the Republic of Macedonia (hereinafter: the Government) has still not established this body.

In the capacity of baseline strategic document, the Law on SRA anticipates the development and implementation of National Programme on High Education and Scientific Research Activity of the Republic of Macedonia for a period of four years, adopted by the Parliament of Republic of Macedonia (hereinafter: Parliament) upon the proposal from the Government and previously obtained opinion from the National Council. This document is not developed. At the moment, the single publicly available strategic document in the field of science is the National Programme on Scientific Research and Development Activity (2012–2016). This Programme was developed by the Council on SRA and was submitted to the European Commission, but was not adopted by Parliament. Also the National Council did not issue its opinion for this document; therefore it cannot be considered as official.

The National Council is the competent authority to announce open calls for financing annual national scientific research projects and programmes of special interest for the Republic of Macedonia. Due to the fact that the said National Council is not established, from 2012 onwards, there are no possibilities for announcing open calls for financing programmes and projects. The last two open calls were announced in 2010 and 2011. In 2010, the open call was completed with signed contracts for financing programmes and projects, but the funds were not distributed in their full amount. Also no contracts were signed under the open call announced in 2011. Therefore, it could be fairly concluded that from 2006, when the last open call was fully implemented, the MES does not finance projects and programmes by means of open calls.

According to the Law on Budget Execution, budget funds intended for science are realized on the basis of Annual Programme on SRA adopted by the Government, following Parliament's adoption of the State budget. Although relevant procedures for its adoption have been complied with, the Annual Programme does not follow law-anticipated solutions and forms for financing SRA. With regards to the distribution of funds for national projects, bilateral projects, etc., the entities entitled to funding under this Annual Programme include only the State universities. All other entities, although enlisted in the Law on SRA (private universities, private scientific institutions, independent researchers, etc.) are not included as beneficiaries of funding under this programme. This only confirms the impression of non-compliance between the legal framework in place and actual financing of SRA.

According to statistical data from the World Bank, SRA investments in Macedonia are marked by an insignificant increase of 0.22% of GDP in 2010 to 0.44% of GDP in 2013. Nevertheless, in spite of increased allocations for SRA investments, funds intended for national programmes and projects, in addition to being very low, are also marked by a continuous decrease from year to year. Hence, in 2016, funds anticipated for national programmes and projects amount to around 64,000 EUR, i.e. 62,000 EUR respectively. On the other hand, by allocating funds in amount of 1.4 million EUR, the Government gave greater priority to supporting individual scholarships for second and third cycle of studies in the country and abroad, scholarships for the Academy of Film and Performing Arts in Prague, Czech Republic, scholarships for the Public National Institution "Film Academy" – Ohrid, etc.

In this regard, it should be noted that for more than ten years people without relevant experience in science and research are appointed Ministers of Education of the Republic of Macedonia.

The existing method for funding SRA does not ensure independence and transparency of the overall process, thus bringing into question the quality of research results. All these have led to increasingly low participation of Macedonian research institutions in the Horizon 2020 Programme and other international projects.

RESEARCH METHODOLOGY

The National Policy Dialogue in Macedonia is based on analyses of data obtained from primary and secondary sources, which served as baseline for development of 3 policy studies and proposed model for financing scientific research activity.

Data provided from secondary sources include:

- A content analysis of relevant laws and by-laws governing or related to financing science in Republic of Macedonia;
- An analysis of the EU acquis in the field of financing science;
- An analysis of relevant statistical data;
- An analysis of results from similar research surveys implemented in the Republic of Macedonia.

Data provided from primary sources included research survey and in-depth interviews.

The anonymous survey was conducted electronically via *SurveyMonkey* between 19th February and 8th March 2016. A link to the questionnaire was e-mailed to all public and private higher education institutions and scientific institutions in the field of social sciences and humanities. The survey was preceded by a pilot-research, which served the purpose of fine-tuning the survey questionnaire.

The questionnaire was answered by a total of 294 scientific professionals, accounting for 27% of the total population.

The sample for in-depth interviews was comprised of 14 respondents and included representatives from public and private higher education institutions, scientific institutions, the MES and non-governmental research organizations.

ACTIVITIES AND RESULTS

Preliminary results from the empirical research were presented at three public debates organized between March - April 2016. Each of these discussions focused on one of three topics of interest for the model of financing SRA. The first discussion covered thematic priorities, i.e. the need for thematic focus in open calls for scientific research projects. Focus of the second discussion was on improving the application process for scientific research grants awarded by the MES, while the third discussion covered the topic on ensuring high quality process for assessment of scientific research project-proposals.

Public debates were attended by scientific staff from public and private higher education and science institutions, MPs, representatives from university management, non-governmental research organizations and individual researchers. Despite the fact that the MES officially supported the project implementation, MES' representative only attended the first discussion.

A draft version of the proposed model for financing scientific research activity was presented in June 2016, before the domestic and foreign expert public and other interested parties.

Insights collected by means of the research survey and public debates were incorporated in the proposed model and the three policy studies.

The proposed model for funding SRA anticipates the establishment of Agency for Scientific Research as autonomous and independent state bodies which will be held accountable before the Parliament. The Agency will be the beneficiary of budget funds and will be responsible for transparent, efficient and effective implementation of the National Programme on SRA and international cooperation. Young researchers are of special interest under this model and their inclusion in all forms of support is of vital importance. With some adjustment to specificities in particular scientific fields, this model could be unique, while being integral part of the future Law on SRA. The model is prepared by prof. Snezana Bilik, PhD and prof. Emilija Simoska, PhD.

The proposed model is supported by *Legal Concept for the Establishment of the Agency for Scientific Research*, prepared by the legal expert Valentin Fetadjokoski and *Budget Breakdown of the Agency for Scientific Research*, prepared by prof. Snezana Bilik, PhD.

These policy studies were developed by three young researchers, with mentorship and expert assistance, and covered the following three topics:

- *What should be our focus? Research Priority-Setting for Addressing Challenges in Science and Society*, by Irena Cvetkovik MA from the Coalition "Sexual and Health Rights of Marginalized Communities" – Skopje;
- *(Re)Activation of Open Calls for Financing Scientific Research Projects as Precondition for Promotion of Scientific Research in Macedonia*, by Sanja Spasova MSc from the Association "Healthgrouper Summit" – Skopje;
- *Introducing Key Principles to Ensure High Quality Assessment of Scientific Research Projects: Transparency and Conflict of Interests*, by Elena Ancevska MA from the European Policy Institute – Skopje.

Pre-final versions of these documents were sent to two foreign consultants: prof. Mitja Zagar, PhD, who is a member of the Scientific Council at the Slovenian Research Agency and Madis Saluveer, PhD, who is the funding officer at the Estonian Research Council. Their comments/recommendations were later incorporated in the three policy studies and the proposed model.

In addition to the issues addressed under the policy studies, three additional issues related to comparative experiences in the region and beyond, were addressed and analysed by different researchers. These were also related to the proposed model. They resulted in preparation of three position papers, i.e. policy briefs, as follows:

- *Scientific Research Projects of the Ministry of Education and Science of the Republic of Macedonia: Instruments, Modalities and the Need for Thematic Focus*, by prof. Marjan Petreski, PhD, University American College– Skopje;
- *How to Involve the Academic Community in the Process on Assessment of Scientific Research Project-Proposals?*, by prof. Miso Dokmanovik, PhD, Faculty of Law "Iustinianus Primus", University "Ss. Cyril and Methodius" – Skopje;
- *Involving Research Think-Tank Organizations in Open Calls for Scientific Research Projects*, Marija Basevska MSc, Reactor – Research in Action – Skopje.

PROPOSED MODEL

PROPOSED MODEL FOR FUNDING SCIENTIFIC RESEARCH ACTIVITY IN THE REPUBLIC OF MACEDONIA

Prof. Snezana Bilik, PhD
Prof. Emilija Simoska, PhD
(November 2016)

This proposed model for funding scientific research activity in the Republic of Macedonia is based firstly, on an analysis of results from the research survey conducted among entities in the field of social sciences and humanities in Macedonia. Secondly, it is based on comprehensive comparative analyses of the systems supporting science and research established in several developed countries or developing countries. If necessary, this model could be instituted as a single model and become part of the future Law on Scientific Research Activity, with certain amendments to include specificities of other science fields.

1. COMPETENT INSTITUTIONS

Under this proposed model, competent institutions shall include the Ministry of Education and Science and the Agency for Scientific Research.

The Ministry of Education and Science (Ministry) shall be competent for policy making in the field of science, technology development and innovation; development and preparation of medium- and long-term strategies in the field of science, technology development and innovation; as well policy making for international cooperation.

The Agency for Scientific Research (Agency) shall be competent for transparent, efficient and effective implementation of the National Programme on Scientific Research Activity (National Programme) and international cooperation. The primary activity of the Agency shall be to announce and implement open calls for activities falling within its competences.

The Agency shall be an autonomous and independent state body that is accountable for its operation before the Parliament of Republic of Macedonia. It shall have the status of a legal entity and be a direct beneficiary of the Budget of Republic of Macedonia.

The Agency shall be governed by the **Executive Board**. The Executive Board shall be comprised of 5 members with term of office of 5 years. In order to maintain continuity in operation, 2 from a total of 5 board members shall be re-appointed for another term of office.

The Executive Board shall appoint the **Agency Director**, who shall act as the executive of the Agency with term of office of 5 years and without a right to re-appointment.

The Agency shall be comprised of seven departments, tasked with the implementation of different activities, as follows:

- Department of National Scientific Research Projects – administrative and technical implementation of open calls for national projects;
- Department of Programmes of Special National Interest for Republic of Macedonia – administration and technical implementation of open calls for annual programmes of special national interest;
- Department of International Cooperation – administrative and technical support for international cooperation;

- Department of Young Scientific Research Staff – administrative and technical implementation of open calls for fellowships and development of young researchers;
- Department of Research Infrastructure – administrative and technical implementation of open calls for procurement of research equipment and development of research staff by financing participation in international conferences, publications and publishing activity, and access to databases;
- Department of IT and Technical Support – keeping and maintaining the register of research staff and projects;
- Department of Legal, Financial and Accounting Matters.

The Science Council (Council) shall be the Agency's expert body. The Parliament of the Republic of Macedonia shall appoint 7 Council Members, upon proposal from the Inter-University Conference. Council Members shall have a term of office of 5 years, without a right to re-appointment. The Council's President shall be selected from a set of 7 members. Council Members shall nominate and select the President.

The Council shall ensure the adequate implementation of relevant policies created by the Ministry.

For the purpose of performing tasks falling within its competences, the Council shall establish professional **standing** and **ad-hoc bodies**. These bodies shall operate in compliance with relevant bylaws.

Standing professional bodies shall be established in relevant fields of science, as follows:

- Commission on Social Sciences;
- Commission on Humanities;
- Commission on Medical Sciences;
- Commission on Natural Sciences;
- Commission on Technical and Technology Sciences;
- Commission on Biotechnical Sciences.

The Council may also establish a Commission on Interdisciplinary Research and other commissions deemed necessary for research purposes, in the form of **ad-hoc** science bodies.

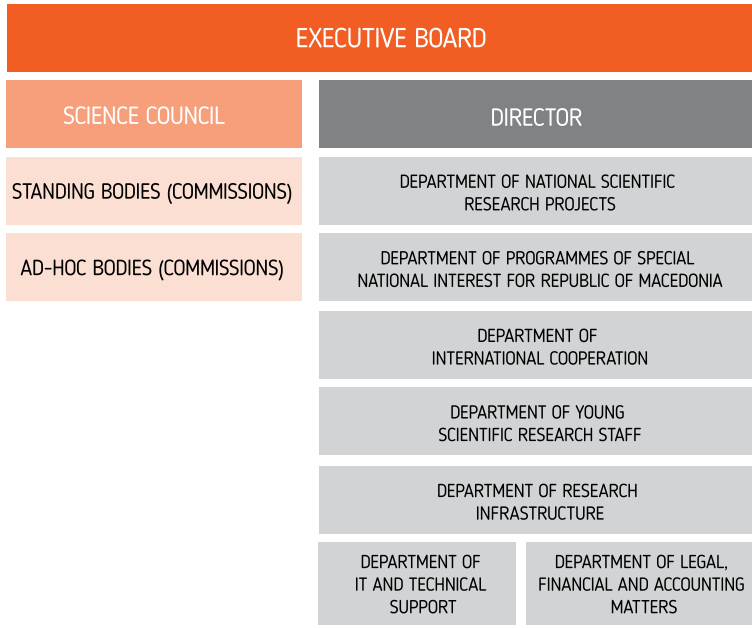
Each Commission shall be comprised of 5 members, all appointed by the Council. The president of the Commission shall be selected from Commission members. Members of these bodies should represent different areas in the relevant field of science.

Each Commission shall work on expert aspects of open calls for financing national programmes and projects, international projects, young research staff and research infrastructure. Commissions shall propose lists of programmes, projects and other activities for financing to the Council. In addition, these commissions shall propose reviewers to the Council.

Administrative work at the Agency shall be performed by civil servants from its expert services. The operation of the Agency and the Council shall be regulated under the Agency's Statute and Rules of Procedure.

The Agency's organizational set-up is shown on Figure 1 below.

FIGURE 1. ORGANIZATIONAL SET-UP



2. SCIENTIFIC RESEARCH ENTITIES

The Agency shall recognize the following entities performing scientific research activity:

- Public higher education institutions;
- Private higher education institutions;
- Public-private non-profit higher education institutions;
- Private scientific institutions;
- Independent researches enlisted in the register for scientific research activity;
- Centres of excellence;
- Think-tank organizations.

Terms and conditions for centres of excellence and think-tank organizations to be registered as entities performing scientific research activity shall be developed by the Ministry, on the basis of previously obtained expert opinion from the Agency.

3. FORMS OF SUPPORT

The Agency shall be competent for financing:

- National scientific research projects;
- Programmes of special national interest for Republic of Macedonia;
- International projects;
- Young research staff;
- Research infrastructure.

At least once a year, the Agency shall announce an open call for national projects and programmes of special national interest for the Republic of Macedonia. The remaining forms of support may be ensured and organized throughout the entire year.

3.1 FINANCING NATIONAL SCIENTIFIC RESEARCH PROJECTS

The criteria for participation in open calls, contents and language of application forms for financing projects shall be proposed by the Council and shall be adopted by the Agency.

The Agency may announce one open call for financing projects that would cover both general and thematic priorities, or two separate open calls: one with general and one with thematic priorities. The Council shall decide on the type of priorities for which the open call is announced.

All scientific research entities shall be entitled to apply for open calls for financing projects.

3.1.1 SELECTION OF PROJECTS

Project applications shall be submitted to the Agency, which shall perform technical verification and establish whether they are complete and compliant with their requisites.

The Council shall collect the list of submitted project applications. The Council shall establish which applications fulfil the initial formal criteria from the open call and shall inform applicants thereof.

The Council shall distribute applications to standing commissions, according to the relevant field of projects.

Two reviewers shall then be assigned to each individual project-proposal: one domestic and one foreign.

Reviewers shall be selected from a database of domestic and foreign experts, which is kept by the Agency.

Reviewers must fulfil following conditions; they must:

- hold PhD in the relevant field;
- have implemented at least 5 scientific projects in the relevant field;
- have published at least 3 papers in the last 5 years in international scientific journals in the relevant field;
- not hold a conflict of interest; they must sign declaration that they or their institution or member of their family are not participating in the same open call.

Names of reviewers shall be considered confidential information.

The Council shall present the list of ranking points for project-proposals to the reviewers. The list of ranking points and their value shall be established by the Council by means of a separate decision.

Reviewers shall be obliged to rank the projects according to following assessment criteria:

- Topic relevance in general;
- Specific relevance of the topic for the Republic of Macedonia;
- Competencies of the leading researcher;
- Competencies of the team;
- Adequacy of the research methodology;
- Involvement of young researchers;
- Capacity of the institution where the project is implemented;
- Project budget.

Reviewers shall be obliged to perform review of applications within the deadline defined by the Council.

Reviewers shall be obliged to report to the Agency any form of pressure or attempts to influence their decision.

The Commissions shall reconsider these reviews and shall present the Council with proposed list of projects to be financed.

The Council will be responsible for deciding which projects will be funded.

Reviews of projects selected for funding shall be published on the Agency's website, and will include a short project description. This, however, will not include the reviewers' names.

Applicants whose project-proposals have been rejected shall be entitled to lodge a complaint to the Council. The Council shall thereafter consider complaints lodged and shall take decision on their approval or rejection.

The final list of projects to be financed shall be compiled after expiration of the deadline for the lodging of complaints.

3.1.2 OBLIGATIONS OF ENTITIES IN FUNDED PROJECTS

In the course of project implementation, entities acting as project holders shall be obliged to develop progress reports, as well as reports on funds spent. Form, length and dynamics for submission of these reports shall be regulated by means of a rulebook developed by the Agency.

Upon completion of the project, project holders shall be obliged to submit a final report on project implementation. This report shall contain financial and narrative sections, as well as final study that presents project results.

When, in the course of work, project holders are forced, due to objective reasons, to request change or a reallocation of budget items, they shall submit adequate requests. The commissions shall decide upon such requests within a given deadline.

When project holders, due to objective reasons, are unable to submit reports, they shall submit a request for deadline extension. The commissions shall decide upon such requests.

The Agency shall establish the list of projects for which adequate reports have been submitted. Provisions on liability shall be applied in cases of institutions that have failed to comply with these obligations.

3.1.3 EVALUATION OF COMPLETED PROJECTS

An evaluation of completed projects shall be performed by two domestic reviewers; one being the reviewer who assessed the project-proposal. If this reviewer is prevented to perform the evaluation, a new reviewer shall be selected from the list of reviewers, according to the same procedure.

Names of reviewers shall be considered confidential information.

Reviewers shall be obliged to evaluate the following components:

- The scientific character of the final study;
- The attainment of proposed project goals;
- The use of proposed methodology;
- The relevance of obtained results (whether research data are relevant to the conclusions presented in the final study);
- The involvement of proposed team;
- The spending of funds in compliance with the approved budget.

Reviewers shall be obliged to perform reviews of completed projects within the deadline given by the Council.

Reviewers shall be obliged to report to the Agency any form of pressure or attempts to influence their decision.

The Council shall approve these reviews and shall inform the teams thereof.

Evaluation reviews shall be published on the Agency's website, without the names of reviewers.

Project holders shall be obliged to act upon remarks made by the reviewers.

Project holders shall be entitled to lodge complaints to challenge negative reviews to the Council.

Final studies shall be published on the Agency's website.

The Agency shall check the final studies in the system to check for any plagiarism.

3.1.4 PROVISIONS ON LIABILITY

Unless institutions submit progress reports or requests for deadline extension in time, thus failing to comply with the given deadline, financing for the project shall be discontinued. Institutions shall be obliged to reimburse funds already granted for the project.

Unless institutions submit final reports or requests for deadline extension in time, thus failing to comply with the given deadline, they shall be obliged to fully reimburse all funds disbursed for the project.

On the grounds of non-submission of reports, projects shall be considered unimplemented.

Institutions that have received funding, but did not implement their projects, shall not be allowed to participate in the next open call announced by the Agency.

Projects for which final studies have not been developed shall be considered unimplemented.

3.2 FINANCING PROGRAMMES OF SPECIAL NATIONAL INTEREST FOR REPUBLIC OF MACEDONIA

The Agency shall develop an annual programme on financing:

- Programmes of special national interest;
- The development of research staff (international conferences, study visits, publication of scientific papers and publishing activity, access to scientific databases);
- Research equipment.

The criteria for the participation in open calls shall be established in compliance with the annual programme.

All public scientific institutions, defined at law as institutions of special national interest, shall be entitled to apply to open calls for financing programmes.

In this regard, the Agency shall finance short, medium and long-term projects.

Any state institution can appear as a commissioning party for these projects.

3.3 FINANCING INTERNATIONAL PROJECTS

The Agency shall finance international projects in compliance with its work programme and contracts signed by domestic and international partners.

The Agency shall finance:

- Cooperation on the basis of commitments assumed under international agreements, programmes, memoranda, protocols and other international documents;
- Reimbursements of fees for successful applications approved for financing within international programmes, such as *Horizon 2020*, in the form of financial contribution for project application costs;
- The advancement of national research that results from the participation in large scale international projects within *COST*, *ERA NET*, *Horizon 2020*, *Science for Europe*, etc., where domestic institutions or researchers are part of international consortia, on topics that are not covered by national research.

3.4 FINANCING YOUNG RESEARCH STAFF

The Agency shall finance fellowships for young research staff enrolled in second and third cycle of studies in the country and abroad. Funding criteria and the selection of applicants shall be regulated by means of a separate rulebook adopted by the Agency.

3.5 FINANCING RESEARCH INFRASTRUCTURE

Financing research infrastructure includes procuring research equipment and development of scientific research staff.

The procurement of research infrastructure shall be performed in compliance with developed criteria enlisted in the Agency's Rulebook.

The professional development of scientific research staff shall be performed by financing the staff's participation in international scientific conferences, organization of scientific meetings, study visits abroad and visits of foreign scientists in Macedonia, publication of papers in international scientific journals, access to databases and publishing activity.

The participation in international scientific conferences, organization of scientific meetings, study visits abroad and visits of foreign scientists in Macedonia, publication of papers in international scientific journals and access to databases shall be financed in compliance with the Agency's Rulebook.

The publishing activity shall be performed in compliance with the Guidelines on Selection of Scientific Papers (books).

All scientific research entities shall be entitled to apply for these open calls.

3.5.1 SELECTION OF SCIENTIFIC PAPERS (BOOKS)

At least once a year, the Agency shall announce open calls to fund the publication of scientific papers.

Applications shall be submitted to the Agency, which shall perform technical verification and establish whether they are complete.

The Council shall establish a list of submitted applications. The Council shall establish which applications fulfil the formal criteria for the open call and shall inform applicants thereof.

The Council shall distribute papers to the standing commissions according to the relevant field of applications.

For each paper, the commissions shall propose two domestic reviewers.

Reviewers shall be selected from the database of experts.

Reviewers must fulfil following conditions:

- They must hold a PhD in their respective field;
- They must have published at least 5 scientific papers in their respective field, of which at least 2 should be published within the last 5 years;
- They must avoid any conflict of interest; sign a declaration stating that they, their institution or family member are not participating in the same open call.

Names of reviewers shall be considered confidential information.

The Council shall present reviewers with a list of ranking points for scientific papers. The list of ranking points and weight of points shall be established by the Council by means of a separate decision.

Reviewers shall rank according to:

- The scientific character of the paper;
- The originality of the paper;
- Topic relevance in general;
- Specific relevance of the topic for the Republic of Macedonia.

Reviewers shall be obliged to perform reviews within the deadline defined by the Council.

Reviewers shall be obliged to report to the Agency any form of pressure or attempts to influence their decision.

Commissioners shall reconsider these reviews and shall present the Council with a proposed list of papers to be financed.

The Council shall take decisions on establishing the list of papers to be financed.

Reviews of papers selected for financing shall be published on the Agency's website, without the names of reviewers.

Authors whose papers have been rejected shall be entitled to lodge a complaint to the Council. The Council shall thereafter consider complaints lodged and shall take decision on their approval or rejection.

The final list of papers to be financed shall be compiled after the expiration of the deadline for lodging complaints.

LEGAL CONCEPT FOR THE ESTABLISHMENT OF THE AGENCY FOR SCIENTIFIC RESEARCH

Valentin Fetadjokoski

(November 2016)

1. INTRODUCTION

In order to put into operation the proposed model for funding scientific research activity, a separate law needs to be adopted for the establishment of the Agency for Scientific Research with status of an autonomous and independent state body, which will be held accountable for its operation before the Parliament of Republic of Macedonia. This state body will be tasked with ensuring the transparent, efficient and effective implementation of the National Programme on Scientific Research Activity, as well as other programmes, projects and activities in the field of scientific research. In that context, this document recommends that the new proposed Law on Establishing the Agency for Scientific Research should have the following structure:

CHAPTER I – General provisions

CHAPTER II – Agency's Governance and Management

1. Executive Board;
2. Management;
3. Expert Body;
4. Professional Bodies;
5. Expert Service.

CHAPTER III – Financial Support Managed by the Agency

1. Financing national scientific research projects;
2. Financing programmes of special national interest for the Republic of Macedonia;
3. Financing international projects;
4. Financing young research staff;
5. Financing research infrastructure.

CHAPTER IV – Financing the Agency

CHAPTER V – Supervision

CHAPTER VI – Transitional and Final Provisions

Chapter I – General Provisions will include provisions laying down the status and the overall goal for the establishment of the Agency for Scientific Research (hereinafter: the Agency), as well as provisions stipulating competences of the Agency.

The Agency shall be established as autonomous and independent body and shall have the status of legal entity with public authorizations as stipulated in the Law. This is to ensure the implementation of the National Programme on Scientific Research Activity (hereinafter: National Programme), as well as annual programmes adopted pursuant to the National Programme, and for the purpose of international cooperation. Furthermore, the Agency shall be held accountable for its operation as a state body before the Parliament of Republic of Macedonia. In addition, the Agency shall be obliged to present an annual operation report for the previous year and annual operation programme for the next year to Parliament.

At the same time, the Agency shall be responsible for:

- planning, guiding and financing activities for the promotion of scientific research activity and the transfer of knowledge;
- encouraging and supporting international cooperation and transfer of international knowledge;
- implementing programmes on education and advancement of young research staff;
- monitoring and evaluating programmes, projects and other activities for which it has approved funding, for the purpose of developing scientific research activity;
- monitoring quality of entities performing scientific research activity;
- controlling the designated utilization of funds approved by the Budget of Republic of Macedonia and from other sources;
- ensuring the provision of additional funds for the implementation of the National Programme, in cooperation with other institutions and donors;
- guaranteeing transparency in its operation;
- performing other activities as stipulated by the Law.

Chapter II – The Agency's Executive and Management will be comprised of five sub-sections, including a detailed description of the Agency's mode of governance, management, its experts involved and professional bodies within it.

The Executive Board, being the first sub-section, shall outline the composition and appointment of members to the Executive Board, conditions for the appointment of members to the Executive Board, the incompatibility of office board members with the performance of other professions, the early dismissal of board members, and the Executive Board's scope of work.

The Agency's Executive Board shall be comprised of 5 members, appointed and dismissed by the Parliament of Republic of Macedonia following proposals from the parliamentary committee on members' elections and appointments. In general, members of the Executive Board shall be appointed for a term of office not exceeding 5 years; but in order to maintain continuity in operation, 2 of 5 board members shall be re-appointed for another term of office.

The Executive Board shall be responsible for:

- adopting the Agency's Statute;
- appointing and dismissing the Agency Director, in compliance with this Law and in procedure stipulated by the Agency's Statute;
- adopting the Agency's annual operation programme;
- adopting the final balance sheet;
- adopting the Agency's annual operation report;
- adopting the Agency's annual financial report;
- adopting the Code of Conduct;
- approving acts on internal organization, operation and job systematization at the Agency,
- taking decisions upon complaints related to the Agency's human resources;
- adopting the Rules of Procedures; and
- performing other activities, as stipulated in the Statute.

Management, being the second sub-section, shall cover the appointment of the Agency Director, the incompatibility of his / her office with the performance of other professional positions outside of the role and as well as tasks and duties entrusted to the Agency Director.

The Executive Board shall appoint the Agency Director with a term of office not exceeding 5 years and without a right to re-appointment.

The Agency Director shall perform the following duties:

- managing the Agency's operation;
- acting as the Agency's main representative;
- proposing the Agency's annual operation programme, Statute and final balance sheet;
- proposing the Agency's annual operation report by 31st March in the current year;
- proposing the Agency's annual financial report;
- organizing implementation of the annual programme;
- adopting acts related to labour relations of staff members;
- accounting for material and financial operations and the legality of matters falling within his/her scope of work; and
- performing other activities, as stipulated by the Law and the Statute.

In addition, the Director shall be obliged to present the Executive Board with quarterly reports on implementation of the Agency's annual programme.

The Expert body, being the third sub-section, will constitute the composition and appointment of members to the Science Council, as the Agency's highest professional and advisory body, conditions for appointment of members to the Science Council, as well as its scope of work.

Parliament of the Republic of Macedonia shall appoint 7 members to the Science Council upon recommendation from the Inter-University Conference. Council Members shall hold a term of office not exceeding 5 years, without a right of re-appointment. The Council's President shall be selected from its members.

The Science Council shall be responsible for:

- establishing national, regional and international priorities for cooperation;
- proposing guidelines for the implementation of the National Programme for the current year;
- monitoring the development of scientific research activity and performing evaluation of institutions;
- drafting reports on research results and development of scientific research activity;

- defining professional principles for the development of the Agency's general regulatory instruments and proposing the Code of Conduct;
- ensuring transparency of the implementation of the National Programme;
- establishing conditions and criteria related to open calls for financing programmes, projects and other activities falling within competences of the Agency;
- establishing a list of programmes, projects and other activities approved for financing;
- performing other activities, as stipulated by the Law and the Statute.

For the purpose of performing its tasks and duties, the Science Council shall establish both standing and ad-hoc bodies.

Professional Bodies, being the fourth sub-section, shall define the composition and scope of work for standing professional bodies established in specific science fields.

Professional Bodies shall be:

- Commission on Social Sciences;
- Commission on Humanities;
- Commission on Medical Sciences;
- Commission on Natural Sciences;
- Commission on Technical and Technology Sciences;
- Commission on Biotechnical Sciences.

The Science Council may also establish a Commission on Interdisciplinary Research and other commissions deemed necessary for research purposes, in the form of ad-hoc science bodies.

Each commission shall be comprised of 5 members, all appointed by the Science Council. Commission members must represent different areas within the relevant scientific field. Each commission shall work on expert aspects of open calls for financing national programmes and projects, international projects, young research staff and research infrastructure. Commissions shall propose lists of programmes, projects and other activities for financing to the Science Council. In addition, these commissions shall propose reviewers to the Science Council.

Expert Service, being the fifth sub-section, shall outline matters related to the Agency's organization and employment.

Matters of the Agency shall be performed by expert service, whose internal organization, scope of work and employment criteria shall be established in detail by means of acts on internal organization and job systematization. Such matters include: expert, normative-legal, administrative, control-supervision, material-financial, accounting and information. Staff members at the expert service shall have the status of civil servants, in compliance with the Law on Civil Servants. Staff members at the Agency performing technical-assistance shall have the status of technical-assistance staff in compliance with the Law on Public Service Employees and general employment law.

Chapter III – Financial Support Managed by the Agency - will be comprised of five sub-sections, offering detailed description of activities implemented by the Agency and aimed at achieving goals defined under the National Programme and other programmes falling within the scope of its work. Namely, these five sub-sections shall cover the overall process of application to open calls, and include:

- financing national scientific research projects;
- financing programmes of special national interest for Republic of Macedonia;
- financing international projects;
- financing young research staff;
- financing research infrastructure.

The sub-sections enlisted above will thus cover the eligibility criteria and the methods on allocation of funds, contents of open calls for financing, the method of assessment/review of applications submitted, the method of promotion and other procedures related to distribution of funds for financial support.

Chapter IV – Financing of the Agency - shall regulate matters related to the Agency's financing, including the sources of funds to finance the Agency's operation, utilization of funds made available to the Agency, as well as financing documents including programmes and plans adopted by the Agency in regard to its financing and operation.

In that context, funds for the Agency's operation shall be secured from:

- Budget of Republic of Macedonia;
- Donations, contributions, sponsorships and assistance;
- International cooperation on programmes, projects and other activities in the field of scientific research activity;
- Other sources, in compliance with the Law.

Funds intended to cover salaries and salary contributions, ongoing operations and equipment necessary for the Agency's operation shall be secured from the Budget of Republic of Macedonia.

Chapter V – Supervision - shall elaborate matters related to supervision of the Agency's financial operations, as well as the method on direct supervision of financial operations related to funds awarded from international organizations, financing institutions and bodies, and other foreign legal entities.

The State's Audit Office shall be responsible for the supervision of the Agency's financial operations related to funds secured from the Budget of Republic of Macedonia. Further, the Agency shall be obliged to perform annual audits of its financial operations, by contracting an audit company in compliance with regulations on public procurements.

The direct supervision of financial operations related to funds from international organizations, financing institutions and bodies, and other foreign legal entities shall be performed in a manner agreed by the Agency together with any other relevant grant provider.

Chapter VI – Transitional and Final Provisions - shall cover expert, administrative and financial matters related to the preparations needed for the initial stages of the Agency's operation. This chapter will include provisions on ensuring the continuity of the announcement of open calls for financing scientific research activity. Specifically this will target those calls that have been initiated, but have not been completed on the day when the new law enters into effect. This is for the purpose of completing them in compliance with provisions from the existing law. At the same time, transitional and final provisions will establish a deadline for the Agency's alignment of operation with a view to implement the new Law. Finally, this chapter shall include provisions on the new law's entry in effect, in compliance with Article 52 of the Constitution of Republic of Macedonia.

3. NOVELTIES

For the purpose of normative-legal completion of the process on establishing the Agency for Scientific Research, relevant provisions of the Law on Scientific Research Activity ("*Official Gazette of the Republic of Macedonia*" no. 46/08, 103/08, 24/11, 80/12, 24/13, 147/13, 41/14, 145/15, 154/15, 30/16 and 53/16) should be adequately amended, as follows:

- Article 6 (National Programme on Higher Education and Scientific Research Activity of the Republic of Macedonia);
- Article 8;
- Article 13 (expert bodies);
- Article 14 (Board of Ethics);
- Article 46;
- Chapter XI;
- Article 57.

BUDGET BREAKDOWN OF THE AGENCY FOR SCIENTIFIC RESEARCH[1]

(in MKD)[2]

A	SALARIES AND SALARY CONTRIBUTIONS	ESTIMATE	MONTHLY	ANNUALLY
A.1.	Director	1 staff member with a net salary of 60,000 MKD, i.e. gross salary of 81,780 MKD	81,780	981,360
A.2.	Administrative staff	15 staff members with a net salary of 30,000 MKD i.e. gross salary of 40,890 MKD	613,350	7,360,200
A.3.	Science Council	7 members contracted to earn 40,000 MKD, i.e. gross amount of 44,400 MKD	310,800	3.729.600
A.4.	Commissions	6 standing commissions and 1 ad hoc commission with 5 members each contracted to earn 40,000 MKD, i.e. gross amount of 44,400 MKD	1.554,000	18,648,000
A.5.	Governance Board	5 members contracted to earn 40,000 MKD, i.e. gross amount of 44,400 MKD	222,000	2,664,000

[1] Prepared by prof. Snezana Bilik, PhD

[2] 61.5 MKD = 1 EUR

A.6.	Databases	Contracted services related to database design, estimated for 2 databases (projects and staff) in the amount of 300,000 MKD each	-	600,000
A	TOTAL		**2,781,930**	**33,983,160**
B	AGENCY'S ONGOING OPERATION	ESTIMATE	MONTHLY	ANNUALLY
B.1.	Travelling and per-diem costs	12 trips amounting to 60,000 MKD each	60,000	720,000
B.2.	Utility bills	50,000 MKD	50,000	600,000
B.3.	Office supplies	60,000 MKD	60,000	720,000
B.4.	Other running costs	30,000 MKD	30,000	360,000
B	TOTAL		**200,000**	**2,400,000**
C	AGENCY EQUIPMENT	ESTIMATE	MONTHLY	ANNUALLY
C.1.	Procurement of IT equipment	30 desk computers and 20 laptops, printers, photocopier, telephone switchboard	-	1,665,000
C.2.	Procurement of office furniture	150,000 MKD per staff member	-	2,400,000
C	TOTAL		**-**	**4,065,000**
A+B+C	TOTAL		**-**	**40,448,160**

BUDGET PROJECTIONS OF THE AGENCY FOR SCIENTIFIC RESEARCH

AGENCY FOR SCIENTIFIC RESEARCH	**153,337,160**
1 ADMINISTRATION	**40,448,160**
2 PROGRAMME ON SRA	**119,354,000**

EXPENDITURE

1 ADMINISTRATION	**40,448,160**
40 SALARIES AND SALARY CONTRIBUTIONS	**8,341,560**
401 Net salaries	6,120,000
402 Social insurance contributions	2,221,560
42 GOODS AND SERVICES	**28,041,600**
420 Travelling and per-diem costs	720,000
421 Utility bills, heating, communications and transport	600,000
423 Small inventory and supplies	720,000
425 Contracted services	25.641,600
426 Other running expenditure	360,000
48 CAPITAL EXPENDITURE	**4,065,000**
480 Procurement of equipment and machinery	1,665,000
483 Procurement of office furniture	2,400,000
2 PROGRAMME ON SRA	**119.354.000 (2016)**
42 GOODS AND SERVICES	**95,483,200**
420 Travelling and per-diem costs	23,870,800 (20%)
425 Contracted services	47,741,600 (40%)
426 Other running expenditure – memberships	11,935,400 (10%)
464 Various transfers – fellowships	11,935,400 (10%)
48 CAPITAL EXPENDITURE	**23,870,800**
480 Procurement of equipment and machinery	23,870,800 (20%)

POLICY STUDIES

WHAT SHOULD BE OUR FOCUS? RESEARCH PRIORITY-SETTING FOR ADDRESSING CHALLENGES IN SCIENCE AND SOCIETY

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(September 2016)

CONTENTS:

EXECUTIVE SUMMARY

The purpose of this document is to highlight the need for priority setting research, as one of the key steps in establishing a model for supporting scientific research activity in the Republic of Macedonia. It is focused on thematic priority setting and explains the strengths and weaknesses of possible approaches when announcing open calls for financing national scientific research projects. We attempt to find the answer to this dilemma in comparative experiences from several countries and in the current context and national specificities of the scientific reality in Macedonia. This document contains a series of recommendations for research priority-setting, by means of proposed models for policy development for scientific activity that is characterized by transparency, participation and effectiveness as core values. Based on our analysis and results thereof, the combined approach is recommended, i.e. the model that supports both general and thematic open calls. We find that this is the most adequate manner for cost-benefit investment in science. It brings about benefits for the entire society and enables autonomy of the scientific community and respect for the scientific curiosity.

1. INTRODUCTION

This policy study is an integral part of comprehensive and participatory process on establishing model for funding scientific research activity in the Republic of Macedonia. Research and innovation contribute to job creation, prosperity and improved quality of life. This is the reason why the focus of research and innovation is placed at the heart of the strategy *Europe 2020* adopted by the European Union (hereinafter: EU). *Europe 2020*[1] aims to ensure smart growth, by means of more effective investment in education, research and innovation. The European Research Council's mission is to provide and encourage high quality research in Europe, by means of competitive funding, and to support frontier research, on the basis of scientific excellence. Finally, the founding documents of the European Research Council[2] enlist that it aims to develop research capacity and science that will be able to respond to the needs of knowledge-based societies, as well as ensure capabilities in frontier research, necessary to meet global challenges. *Horizon 2020*[3] is the biggest research and innovation programme in the EU. It is based on the idea that science and innovation are key factors that will move Europe towards smart, sustainable and inclusive growth. Consequently, these will explain and resolve burning problems and challenges in society.

The theme on structural prioritization in research is of key importance for EU member-states, as is demonstrated by the adoption of the Lisbon Strategy,[4] which represents the plan developed in 2000 aiming to transform the EU into the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth, with more and better jobs, and greater social cohesion. By adopting goals defined under the Lisbon Strategy, EU member-states commit to better utilization of research for the purpose of ensuring sustainable growth.

A key actor in the promotion and development of scientific research activity in Macedonia is the Ministry of Education and Science (MES). The MES' mission is to develop education systems in Macedonia, as well as to develop science, scientific achievements and innovation, by applying principles of quality, cost-benefit and civil responsibility, and to link them to the labour market. The application of these principles will enable equitable participation of Macedonia in European educational, economic and political integration processes. The MES promotes values and foundations of quality education and science, as a basis for improving quality of life in the entire society.

In addition to other principles and as part of its quality policy,[5] the MES:

- strives to raise the quality of educational and scientific institutions and to build mechanisms for their effective and efficient operation;
- implements positive changes in the fields of education and science, for the purpose of reducing unemployment and producing quality staff;
- enhances and promotes international cooperation in the fields of education and science;
- establishes dynamic links to the labour market and addresses economy needs.

2. ANALYSIS OF STATE-OF-AFFAIRS

The MES' internal organization includes 7 sectors,[6] one of which is the Sector on Science and Technology-Technical Development. This sector is comprised of five departments organized around the following areas: support for science; international cooperation in science; EU framework programmes on research and development (*Horizon 2020*); policy-making, analyses and databases for innovation; translation of expert and scholar literature. The MES' Strategic Plan[7] defines the following priority goals for the next two years (2016–2018):

> **Priority 1:** Improve quality of education and science, by implementing education and science strategies and reforms.
>
> **Priority 2:** Modernize the education system and science, for the purpose of ensuring competences needed on the labour market and economic development.
>
> **Priority 3:** Greater application of achievements on modern information and communications technologies (ICTs), for the purpose of increasing education level and investment in education.

The Strategic Plan of the MES in the period between 2016–2018 states that the Sector on Promotion of Science and Technology-Technical Development is responsible for organization, financing, development and promotion of science, technology development and technical culture, international cooperation in science and technology, as well as other activities, such as advancing science, technology development and technical culture as active factors in overall development of the country and beyond. This Strategic Plan includes 12 programmes and 21 sub-programmes that would be in the MES' focus in the next two years. According to the Strategic Plan, this ministry is much more focused on education, than on science. Among the total of 12 programmes and 21 sub-programmes, only one programme and two sub-programmes concern science.

8. PROGRAMME:
Science and Technology-Technical Development – Factors of Economic Growth, Increased Employment and Reduced Poverty

Rationale:
The programme "Securing Conditions for Science and Technology-Technical Development to Become Factors of Economic Growth, Increased Employment and Reduced Poverty" arises from the strategic priority of the Government of RM, enlisted in the Decision on 2016 Strategic Priorities, the Lisbon Declaration and Europe 2020.

Strategic priority:
- Strategic priority of the Government of RM is contained in the Decision on 2016 Strategic Priorities.
- Investment in education, innovation and information technology as key elements for creation of knowledge-based society.

Priority goal:
- Improve the business climate and increase domestic and foreign direct investments.
  - Continue reforms in science and technology-technical development.
  - Create better business conditions for development of scientific research activity and technology-technical development, in the interest of high quality conditions for living and working of citizens in RM.

NPAA: 3. Capacity to assume obligations from EU membership

3.25. Science and Technology Development
Aligning laws on scientific research activity and technology development with the EU acquis.

Strategic priorities and goals of the state administration body:
Increase contribution of science and technology-technical development in overall development of the Republic of Macedonia.

A: Justification and program design

Program title:	**Program goal:**
Ensure conditions for science and technology-technical development to become factors of economic growth, increased employment and reduced poverty, in compliance with commitments from the Lisbon Declaration and Europe 2020.	To contribute to increased employment and reduced poverty, by quality programming and modernization of the Sector's operation.

Program's success indicators: 1. Increased competitiveness of results from scientific research activity, from investments in technology development and from support for development of technical culture by 5%. 2. Increased number of submitted international projects by 10%.	
Program is: **horizontal + vertical**	
Expected results (components) of the program:	
Sub-program: international affirmation of science and technology-technical development in the context of Macedonia's European integration.	**Success indicator:** developed and adopted acts; increases allocations for science, technology development and technical culture by 5%.
Sub-program: increased participation of RM in international programmes on science and research.	**Success indicator:** Increased number of submitted international projects by 10%.

Science section under the MES' Strategic Plan is focused on the development of science for the purpose of increasing employment and reducing poverty. Although scientific research activity is rather marginalized in this strategic plan, it should be noted that projections are in place to increase budget allocations for science, technology development and technical culture by 5%.

According to the most recent data, budget allocations for scientific research activity in Republic of Macedonia in 2013 account for 0.44% of GDP[8]; which is an exceptionally small percentage. Such minimal investment in science does not promise major achievements. Therefore, legitimate are the concerns as to whether or not the strategically defined goal on reducing poverty and increasing employment by means of quality programming of this activity and modernizing operation of the sector is attainable.

The National Programme on Scientific Research and Development Activity (2012–2016) states that investment in scientific research and development activity is an assumption for development of any country, which imposes the need for Macedonia to include this aspect in developmental goals for the country and its economy. According to data referred to under this programme and dating from 2008, the Western Balkans have much lover investments in research and development compared to other European countries, while Macedonia is ranked among the bottom group of countries in this list.

Data of the State Statistical Office, compiled in the publication "Scientific Research and Development Activity – 2014",[9] provide a good basis for understanding the scientific reality in Republic of Macedonia. According to this data, the biggest financer of scientific research activity in the public sector for the year 2014 is the MES, accounting for 48.71% of total income of research organizations. It is followed by other line ministries, local self-governments, state funds, agencies, foundations, etc. In 2014, there were a total of 111 research organizations. In the same year (2014), these organizations produced a total of 303 completed research projects, 91 of which were basic research, 186 were applied research and 26 were experimental or developmental research. Commissioning entities for these research projects included: business entities in economy (158); the MES (19); other line ministries (65); other state or international organizations (29); and other commissioning entities (32).

According to data from the State Statistical Office, compiled in the publication "Scientific Research Development Activity – 2014 ", 47 from total of 111 research organizations operate in the field of social sciences and humanities. The total number of completed projects in the field of social sciences and humanities accounts for 95, i.e. 31% or one third of all completed projects. When reconsidered in greater depth, it could be concluded that the number of research projects conducted in the field of social sciences accounts for 38 or 12.5% of the total number of completed projects, compared to 57 research projects in the field of humanities, accounting for 18.8% of all completed projects. Applied research projects are more dominant in the field of social sciences (26 applied compared to 11 fundamental and 1 experimental research), while fundamental research is more frequent in the field of humanities (33 fundamental compared to 20 applied and 4 experimental research).

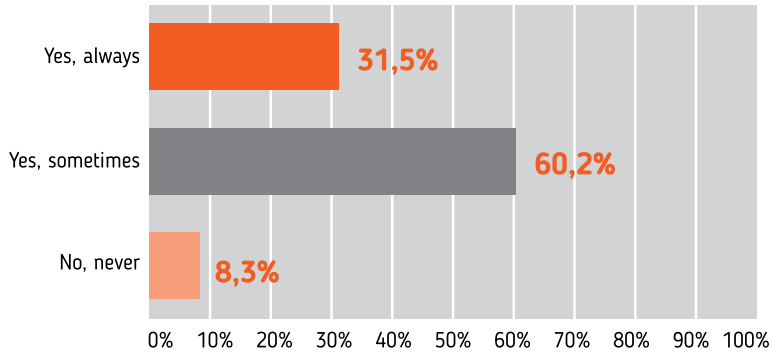
Social sciences and humanities demonstrate preparedness for greater focus on and investment in development of science and research in these fields. Total investment in science in Macedonia shows a minor increase from 0.22% to 0.44 % of GDP. However, the effects that result from this upward trend are not visible. From 2012 onwards, the MES does not announce open calls for supporting scientific research. The National Programme on Scientific Research and Development Activity (2012–2016), envisaged this to serve as a strategy, yet is still not present as necessary parliamentary procedure and therefore remains a programme that is neither implemented nor evaluated. Nevertheless, this situation can be changed with the creation of successful policies and effective implementation thereof.

3. NEED FOR THEMATIC PRIORITY-SETTING IN SCIENTIFIC RESEARCH

From the very beginning, our process on developing a proposed model for funding scientific research activity is envisaged as participatory and inclusive. Among other questions raised, the conducted survey research[10] included a question as to whether new directions are needed to focus on research themes or research areas, and respondents had to elaborate their position.

A total of 254 respondents answered the question "Should open calls for scientific research projects contain previously defined themes that would be given priority in the selection process?". In that, 31.50% of them believe that open calls should always contain previously defined themes, 60.24% are of the opinion that open calls should sometimes contain previously defined themes, while only 8.27% indicated that open calls should never contain previously defined themes. In other words, the majority of respondents believe that thematic priorities are desirable, but are not necessarily needed in all open calls.

SHOULD OPEN CALLS FOR SCIENTIFIC RESEARCH PROJECTS CONTAIN PREVIOUSLY DEFINED THEMES THAT WOULD BE GIVEN PRIORITY IN THE SELECTION PROCESS?



Answered question: 254 Skipped question: 40

[10] For more information, see p. 9 – Description of the survey methodology.

Follow-up interviews with 14 selected respondents allowed a further in-depth examination of issues relevant for the creation of a model for financing scientific research projects. All interviews contained different theses and views on the issue of whether open calls should contain previously defined themes. Some interviewees believe that the decision for open calls to contain previously defined priority themes or areas is positive. Others believe that priority areas should be defined, but that the selection of themes should be left to the applicants. A third group of interviewees believe it is good for open calls to contain thematic directions. The indicated reasons behind their respective positions are various and range from a lack of sufficient funds to support different themes, to the need for investment in areas that are of strategic importance for the state.

> *According to one respondent: "Our society suffers from many problems and in that regard, directions about thematic areas would be welcomed. Thematic priorities should be defined by strategic means. That strategy should have a clear vision, and should not only be on paper, but also be implemented. The strategy should enlist its stakeholders and should cover a period of 5 to 10 years, with clearly defined expectations and results we want to see in 5 to 10 years. This strategy should define thematic priorities and research areas whose results would be useful for the society, i.e. it should not end in somebody's drawer. There is a ton of research studies that has no relevance for society. Consensus about this strategy must be reached within the scientific community, institutes and other stakeholders. Thematic priorities should allow for an interdisciplinary approach, which would motivate researchers from different fields and disciplines."* [11]

> *According to another: "In some years, more opportunities should be given only to specific themes because financing possibilities, as they are, cannot secure subsidies in all fields at once. Themes should be selected in line with the strategy on economic and industry development, and in line with directions for EU projects."* [12]

Some respondents strongly objected to defining themes or areas under open calls announced by the MES.

> *According a respondent: "There is no need for priority areas. I think that would be completely wrong. The open calls should be general, thus not limiting the majority of areas that are the subject of research. If we set priorities now, i.e. in 2016, they might imply migrants and everything related to them. But, you would not be able to define areas that are not covered by any form of financing. There is a high number of areas, even in European projects for which you apply, that will remain uncovered. The states finance their own research areas, and you rarely see research projects related to languages or history."* [13]

In the opinion of another: "There must be an approach based on competition for research funding, so researchers could select their own themes. If the state sets priorities and it has a special interest in certain themes, it should adopt a separate strategy and allocate funds for that purpose. They would include issues that are of interest for the state, but should not be imposed on researchers. If the Ministry of Defence needs particular research, or the Ministry of Labour and Social Policy needs particular research, i.e. if line ministries need research for the purpose of policy-making, they should commission them separately. Practices from other countries show which institutions or ministries appear as commissioning entities of such research projects. Why would the state research particular issue if it does not plan to use it for specific purpose? These two things should be separated. Your model is geared towards research work and should be open for researchers to select their own themes. Thematic priorities for research projects should be targeting public policies." [14]

Some interviewees believe that there must be open calls that will be announced on previously defined themes, as well as open calls that will be open for research projects on themes selected by the applicants.

"It will be very difficult to set thematic priority areas, because that would be a limiting factor for the entities, but there might be lots, different lots for different research areas, and funding should be prioritized accordingly." [15]

"There must be space for both types of open calls. If the Council on Science and Education is functional, it should develop a 4-year strategy with thematic priorities that are also priorities in the society. But, research should not be limited to these themes only, especially because of individual researchers or institutions that continuously work in one research area. A portion of funds should always be allocated to finance these projects or to finance emerging themes." [16]

Nevertheless, all interviewees who believe that thematic or area priorities are needed agreed on one thing: the process of setting priority areas or themes should not be managed and implemented exclusively by the MES, but by a body comprised of renowned experts with different professional backgrounds.

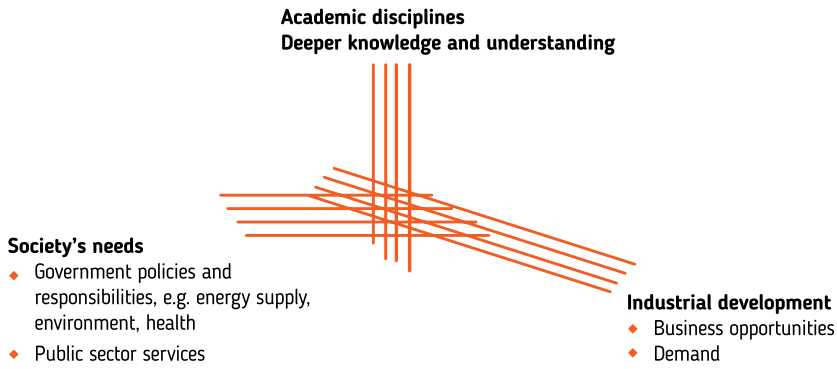
4. POSSIBLE APPROACHES TO OPEN CALLS FOR SCIENTIFIC RESEARCH

The analysis document entitled "Setting Priorities in Public Research Financing: Context and Synthesis of Reports from China, the EU, Japan and the US", developed by the Swedish Governmental Agency for Innovation Systems, explains the historical perspective of changes in perception of the role played by science in society.[17] The concept and mechanism on setting thematic priorities for research projects have changed in time, in parallel with processes on changed perception about the role of science in society. In the period following World War II, three key paradigms can be defined:[18]

- Science as the engine of progress was the dominant paradigm in the period after World War II. Research was in service of society and research themes were defined by researchers. This phase is characterized by a linear development with benefits from investment in science and research.
- In the 1960s, research started to be perceived as "problem solver". Research faced new challenges and needs in society, and the need for research and use thereof was no longer exclusively dictated by researchers. The dominant paradigm in this period implied that research could generate benefits for the industry and the society, and could be steered and planned.
- Nowadays, research has a multifaceted role. Science is integrated in society. This third paradigm offers a view at science as a strategic opportunity.

Debates on research priorities most often follow patterns arising from the model of three perspectives. The analysis of the Swedish Governmental Agency for Innovation Systems offers the pattern of the three key perspectives in public research financing.

Debates around research prioritization range from a selection of one of the three perspectives as the most dominant one, to combination of all three perspectives in effective joint agenda that implies greatest potential for societal benefits.



The question on the need to define thematic priorities under open calls for supporting scientific research projects is seemingly simple and could trap us into thinking that the answer depends on individual wishes and motives of the party being questioned. Nevertheless, a careful examination of two approaches: one favouring thematic priorities (top-down) and the other favouring scientific research individual curiosity and freedom in selecting research themes and issues (bottom-up), shows that the two both have advantages and challenges that need to be taken into account when deciding which approach to select. The answer to the question whether to support or dismiss thematic priorities should mainly be sought in the context, i.e. the overall situation in the scientific, but also in the economic reality in the state that develops its model for supporting scientific research activity. However, there is a third alternative. It implies a somewhat combined approach, i.e. announcement of open calls with thematic priorities, as well as open calls without thematic priorities, the ratio of which should be determined by the MES. Therefore, it can be concluded that there are three approaches to open calls for scientific research projects in terms of thematic focuses as follows:

1. general, i.e. open calls that do not include thematic priorities and allow the applicants to select their research themes or issues;
2. targeted, i.e. open calls that always include thematic priorities or priority research areas;
3. combined, i.e. targeted and general open calls, whose ratio is determined by the MES.

5. ANALYTICAL FRAMEWORK

Setting research priorities is a process of planning/organization and decision-making. The theory of decision-making developed by Simon (1977)[19] suggests three key phases in this process:

- The identification of problems or challenges that necessitate decision-making (intelligence phase),
- The creation or development of possible directions of actions and testing their feasibility (design phase) and
- The selection of specific direction of action to be implemented (selection phase).

All these phases are necessary in the process on setting research priorities. Nevertheless, the overall process could be fundamentally different, having in mind possible models for decision-making, as well as differences among them. Huber (1981)[20] distinguishes between four models of decision-making:

- The Rational Model, according to which decisions are a consequence of purposeful rational use of evidence-based information.
- The Policy Model, according to which decisions are a consequence of strategies and tactics of groups of people or individuals attempting to influence decision-making processes for personal or societal benefit.
- The Organizational Model, according to which decisions are a consequence of programming process or programmes of groups involved. In other words, they are a consequence of the process on monitoring already established organizational patterns, directions, plans and processes.
- The Garbage Can Model, according to which decisions are consequence of coincidental events.

Research prioritization, to large extent, is guided by the principles of the first three models, but the fourth model is not always excluded. More precisely, in regard to thematic priority setting to research the use of the rational and policy models is almost mandatory. The process on research priority-setting in context like the one in Macedonia should follow, i.e. should combine the rational and policy models, instead of the organizational model (due to lack of serious science policies and programmes) and the garbage can model (due to the systematization needed in putting science on healthy and strong foundations).

This policy study illustrates examples related to setting of research priorities in Slovenia, Montenegro, Bulgaria, Japan and the EU, with a view to better

understanding the possible national models for research priority-setting. It is important to note that none of these examples (national models for supporting research) practices absolute general or absolute thematic or targeted open calls. On the contrary, the majority of them combine the two approaches, i.e. they practice combined open calls, but with different ratio or focus. Some national models practice the announcement of general open calls in significantly greater scope; others practice targeted open calls, while the third group of models have equal representation of both types of open calls, or apply a previously defined ratio. Nevertheless, for the purpose of this study, national models are not grouped according to their absolute definition, but rather according to general or dominant practice and policy of the model. This shows that combined open calls best solve the dilemma as to whether or not to engage in thematic research priority-setting.

6. GENERAL OPEN CALLS

The European Research Council is a body established within the European Commission with a mandate to finance scientific and technology research.[21] The European Research Council allocated 13 billion Euros to finance the first pillar under the EU's *Horizon 2020* Programme called "Excellent Science", which is focused on basic science. Open calls of the European Research Council are open for application by top researchers from the European Union and beyond. Excellence is the single criterion used for the selection of scientific research projects. There are no thematic priorities or geographical quotas for the allocation of funds. The overall goal of the European Research Council is to encourage high quality research across Europe by means of competitive funding. Its success is noted in the fact that five Nobel Prize winners were grant beneficiaries of the European Research Council.

Slovenia is one of the countries in the region that most often practices general open calls, although there are options for both types of calls.[22] The existing Resolution on Research and Innovation Strategy of Slovenia (2011–2020) shows a noticeable change concerning the decision about whether or not to pursue a definition of thematic priorities for scientific research. Notably, one of the guarantees for greater autonomy and responsibility of public scientific institutions is to enable progress in science which, as highlighted in the said resolution, "is only possible if research is free from previously set priorities and based only on the primal curiosity of researchers. Therefore, this area of scientific development should

be implemented within autonomous research organizations where the only measure for the assessment of scientific work is globally comparable excellence. Universities and institutes are independent in developing fields in which they might achieve outstanding breakthrough results, thereby making important contributions to the world's bank of knowledge."[23]

As observed in the two examples above, general open calls enable greater independence of researchers and scientific institutions, favour research curiosity, and the only goal or expected outcome is the attainment of scientific excellence and increasing global competitiveness of professionals. Nevertheless, the European Research Council and Slovenia dispose of a significantly greater budget for research and development compared to Macedonia. In 2013, Slovenia allocated 2.6% of GDP for research and development, while in the same period Macedonia allocated 0.44% of GDP[24]. Slovenia leads the region in regard to scientific research activity. For example, the number of scientific publications compared to public investment in research and development places Slovenia above the EU27 average, and immediately below this average in terms of economic impact of science. Under its previous National Programme on Scientific Research and Development Activity (2006–2010), the Ministry of Higher Education, Science and Technology of Slovenia offered a different approach, i.e. shifted the balance of public research funds from basic, non-targeted research to targeted, applied research. One of possible reasons for this policy change is increased investment in science and results from building its national scientific capacity.

In the absence of seriously defined thematic priorities or priority areas, i.e. absolute favouring of general open calls, especially in a context like that of Macedonia, it is possible to create practices on individual assessment about the relevance of selected research themes which does not necessarily imply it is a wrong assessment, but that could seriously influence continuity, progress and long-term achievements in the resolution of certain problems, challenges and issues that are of exceptional importance and relevance in society. Macedonia is still far behind Slovenia in terms of investment in science and research and development. In addition to the low share of GDP allocated for science, Macedonia still lacks a strategic vision for development of science, scientific research, and research capacity. Furthermore, Macedonia is in strong need of comprehensive and continuous resolution or treatment of especially burning societal problems, which is possible with assistance from science, through evidence-based solutions. Therefore, we would suggest that investment in science should also be investment in society, which could be achieved by means of strategic prioritization of themes and issues whose explanation and resolution will include the scientific community.

7. THEMATIC OR TARGETED OPEN CALLS

Montenegro is another country from the region with a political and economic context similar to the one in Macedonia. A Reconsideration of policies adopted by the Ministry of Science in Montenegro allows the conclusion that they include priority areas. The current Strategy on Scientific Research Activities of Montenegro (2008–2016)[25] presents two approaches to the selection of priority areas defined by means of analysis of strategies on scientific research activity adopted by the European states. Moreover, it enlists that certain states have selected particular areas as thematic priorities, having in mind their comparative advantages and conditions for assuming the leading role in said research areas, such as: biotechnology, genetics and medicine. The other approach allocates funds for particular activities, i.e. programmes (functional priorities), such as: scientific research process at universities, links between universities and the real economy, and the inclusion of economy in scientific research processes. Both approaches can be noted as parallel in some strategies, with either one assuming a dominant role. When selecting its priority areas, Montenegro paid due attention to the fulfilment of clearly defined and measurable conditions. For example, the alignment with other strategic documents of Montenegro (National Strategy on Sustainable Development, etc.), affirmation of research in fields in which Montenegro can be competitive at European level, preservation of natural and cultural heritage, etc. The strategy defines priority fields, such as: science and education, ecology, tourism, health of the population and the like. Moreover, it emphasizes that priority areas should be taken into account when planning its annual investment of budget funds by affected ministries for the purpose of programme co-financing for adequate scientific institutions and for realization of capital developmental projects in indicated areas, with the maximum involvement of domestic scientific staff. Thematic priorities are inevitable for this type of scientific research. Nevertheless, research priority setting is not an exclusive approach in Montenegro. Instead, advantage is given to so-called functional priority setting, i.e. defining priority policies and measures intended to address barriers and deficits in the research system and to stimulate growth.

Under its strategy, Bulgaria includes priority areas for development of science and innovation.[26] These priority areas are based on: priorities from the Government's Programme for European Development of Bulgaria, thematic priorities defined under European research programmes and existing analysis and assessments of scientific systems and institutions. The strategy states that direct investment in priority areas will enable the anticipation of "big challenges" and realization of the commitment whereby results from research and innovation are useful for the economy.

There are several reasons why thematic priority setting is important for the development of science and scientific research; they are outlined below:

1. The setting of thematic-priorities or previous definition of research focus is desirable and pragmatic in situations when available funds are small in scope, science and research is insufficiently developed, and scientific reality is in deep crisis. In that way, resources can be used to solve priority problems in society, if research results are implemented by affected ministries, state bodies and authorities.
2. The setting of thematic priorities is of key importance for promotion of applied research. This type of research project is not less important than basic research, even in the field of social sciences and humanities.
3. Research organizations and units, which are still undergoing institutional development, and young researchers, who are still insufficiently supported to build their research capacity and competences, create a context in which policy development for scientific activity must take priority setting into serious account not only in terms of themes, but also for the overall public scientific research agenda, followed by a comprehensive process on monitoring and evaluation.
4. The development of serious and well-thought strategy for supporting scientific research activity that is compatible with the state's strategic commitments, inter alia, in definition of priority themes and areas, guarantees that policy-making is based on evidence, and thereby, maximizes its effectiveness.
5. The definition of thematic priorities is compatible with the state's priorities and creates favourable conditions for science and research to be supported by other line ministries and state bodies, in addition to the MES.

We believe that investments are needed. Having in mind the current state-of-affairs related to the scientific reality in Macedonia, as well as the overall negative situation in relation to policy-making, strategic decision-making and dedication to solve burning issues in the society, this is the case for the development of *all* segments, including investment in science, notably by putting science in the function of providing relevant and quality research that would address the most burning issues in society.

Despite the advantages related to setting thematic priorities, as listed above, absolute preference of targeted and thematic open calls is not considered good policy. This is a top-down approach that marginalizes scientific curiosity and independence of the research profession for the benefit of policy priorities, i.e. priorities imposed by dominant political structures. At the same time,

this approach can be extremely detrimental for certain disciplines and fields that would not be prioritized for longer periods of time, especially the social sciences and humanities. These would be affected by the widespread myth that investment in these sciences is not cost-beneficial. Setting research priorities, however, must leave space for autonomy of the research profession and must value scientific curiosity to the extent allowed by resources available.

8. COMBINED APPROACH: GENERAL AND TARGETED OPEN CALLS

The above indicated models that favour general open calls cannot be absolutely categorized in this group, as already explained in the section on analytical frame. Namely, although Slovenia favours general open calls, it does not absolutely exclude targeted and thematic open calls. The Slovenian ministry competent for science and research can determine priority areas or themes based on governmental documents on public policies or national documents and policies on research and science development. In Slovenia, thematic open calls are more frequent in the case of applied and targeted open calls and programmes, which most often reflect thematic priorities and interests of the agencies financing research projects. In cases of targeted research projects, ministries and state institutions define the themes and the co-financing amount. This type of open calls is co-financed by specific institutions and by the Slovenian ministry competent for research and science. In cases of applied research projects, as part of their statements of intent whereby they express their interest to co-finance given projects, the co-financers also enlist their interest in particular research themes. Similar practices are observed in the EU, where both general and targeted open calls are announced. *Horizon 2020* Programme announces individual calls that include theme/topic (general title) and specific interests and priorities. Nevertheless, in both cases thematic priorities are not defined by means of strategies or programmes and do not represent the systemic focus of the states.

For the purpose of this study, Montenegro is enlisted in the category of states organizing targeted open calls, but the position of thematic focuses is not absolute. Namely, priority thematic areas were defined by the Ministry of Science, on the proposal from the Council on Scientific Research Activity in 2011, as part of changes to the Strategy on Scientific Research Activity of Montenegro (2008–2016) adopted in 2013. Nevertheless, the initial version of

this strategy, which has been in effect from 2008, contains the clear position that the Montenegrin Ministry of Science will not focus on thematic priority-setting, thus giving advantage to general open calls, but will focus on functional priority-setting. Hence, the initial version of this strategy indicates that "instead of establishing thematic priorities, the Ministry of Education and Science finds it is more important to pursue so-called functional priority-setting, i.e. definition of priority policies and measures aimed at eliminating barriers and shortcomings in the research system and aimed at encouraging its development. These policies include: stimulation of public-private partnerships for research, establishing a balance between different sources of funding for the research activity, improving conditions for attracting foreign investments in research and development, increasing enrolment of high-school graduates in engineering sciences, etc."

Japan is a country marked by one of the highest investments in science. In 2014, it allocated 3.6% of GDP for research and science. At policy level, Japan develops "Basic Plans" that reflect strategic priorities in science and technology. The first Basic Plan sets priorities only in science and technology fields, but they are broadly defined. The second Basic Plan includes four broadly defined areas that are given priority in the allocation of funds. An additional four areas are promoted under the second Basic Plan, but they are not accompanied with projected growth of resources. The analysis "Priority-Setting in Japanese Research and Innovation Policy"[27] states that experience with the second Basic Plan shows that selection of four priority areas has prevented allocation of funds for any other research initiatives beyond these four priority areas. Therefore, the third Basic Plan contains a much higher number of focused priorities.

The body tasked with drafting the third Basic Plan is the Expert Panel on Basic Policy, comprised of 9 members and 20 external experts. This Panel first selects hierarchically distributed goals. These goals, together with other principles and criteria on priority selection, form the basis for specific "project teams" in each of the eight broadly defined areas. The third Basic Plan expressly distinguishes between two types of basic research:

- Type 1: basic research that is conducted according to the free ideas of researchers, including research in the field of social sciences and humanities.
- Type 2: basic research that aims at future applications based on policies.

The framework of public policy goals is applicable for research under type 2, but not for research under type 1.

This combined approach to announcement of open calls could have the greatest benefits in Macedonia. Namely, this approach incorporates advantages from the two previous approaches, while mitigating challenges and problems that might arise in the selection of only one from previous two alternatives. Description of the second option, i.e., thematic and targeted open calls, allowed us to see advantages of the approach based on priority setting in terms of areas, including themes. Nevertheless, the combined approach offers the possibility to bridge barriers and obstacles that appear in selecting the second approach, which would be especially felt by disciplines and sciences that are not always current in the society, but also by scientific institutes whose fields of interest is most often related to identity issues, such as: language, culture, history. The possibility to announce open calls for basic research, whose themes and interests will be dictated by the researchers themselves, i.e. by applicants, must not be absolutely cancelled.

A process is needed to define the ratio (80%-20%, 50%-50% and the like) in terms of allocation of funds for the two types of open calls. Due to reasons argued above in the section on targeted open calls, we believe that a large share of funds should be allocated to applied research, i.e. basic and applied research that would be part of thematic areas selected as priorities.

In Macedonia, public resources for science and research are very limited. In such a situation, thematic focus whose goal is clear and measurable in terms of investment in science according to the cost-benefit principle might seem as the first logical step in achieving the comprehensive process on reforms and progress of science and scientific research activity. This process should have a projected start, development and end, and its goal should be creation of sustainable system for supporting science and scientific research and development activity, without major thematic restrictions. The process on selecting thematic priorities, in addition to following the logic on linking research priorities with strategic governmental priorities, should also follow the logic of linking them with thematic areas identified by international funds, such as *Horizon 2020*. Reasons thereof are more than clear. Namely, the need for the creation of research staff and capacity that will compete on the global market can be addressed not only by means of domestic support, but also by means of directing research issues to match those of global or European interest.

These efforts are important also in terms of securing greater access to international funds for research support. It is because of this very reason that, the National Programme on Scientific Research and Development Activity (2012–2016) notes: "*Europe 2020* anticipates transformation of the EU into knowledge-based society, marked by sustainable growth, open to the world, with fast growing economy, and high employment rate, i.e. society of high standards in all

fields. This goal is reflected in the flagship initiatives defined under *Europe 2020*. Investment in scientific research activity should be guided by these thematic priorities, but should also take into account social and economic characteristics of the Macedonian society and the available scientific research potential."

9. HOW TO DEFINE PRIORITY RESEARCH AREAS?

Selecting the combined approach when announcing open calls for financing scientific research projects makes way for another challenge. In particular, general open calls are relatively simple for announcement in terms of their thematic framework, i.e. they are open and do not imply thematic restrictions. Nevertheless, targeted and thematic open calls must be guided by previously established priority setting frameworks that would provide directions for developing support for scientific research projects. Development and definition of thematic priorities is a complex process that implies well-developed goals and expected results, the involvement of all stakeholders and clear and measurable expectations about co-funding the amount to be provided by Macedonia in international programmes on science and research. Thematic priorities should emerge from the process on developing the strategy on scientific research activity, which also includes the definition of thematic areas that will be supported throughout a 4-year period. The definition of thematic areas outlined in this strategic document should provide the basis for definition of thematic priorities for annual open calls for supporting scientific research projects.

The thematic areas represent broadly defined areas in which the state plans to focus and invest funds in the next period. Defining thematic areas as one segment in the process on developing strategic document of the MES, should make due account of guidelines from *Europe 2020*, but should not exclude contextual specificities. In other words, it should not exclude social and economic characteristics of the Macedonian society and the available scientific research potential, human resources and infrastructure. The last National Programme on Scientific Research and Development Activity enlists the following goals, the attainment of which should guide scientific research activity in Macedonia:

- To stimulate economic development in the country, by strengthening competitiveness and accelerating the dynamics of the Macedonian economy;
- To expand employment opportunities;
- To ensure better living standard for the citizens in Macedonia;
- To protect environmental and natural heritage.

These defined goals should be attained, inter alia, by investing in scientific research in defined thematic areas (TA) as follows:

- TA1: The development of the Republic of Macedonia as an open society with a competitive economy, by supporting integrated social and economic development and supporting macro- and micro-economic policies, structural reform agenda, employment, education and skills, information society, integrative processes in the state, as well as by supporting research and innovation with a view to creating a "Macedonian innovative society".
- TA2: Development of Republic of Macedonia as low carbon society, by solving problems in the field of energy, renewable energy sources, biomass, transport problems, the implementation of clean production and consumption technologies, as well as all other issues that would be of central importance for Macedonia's progressive transition into becoming a "low carbon society".
- TA3: The development of the Republic of Macedonia with a society that makes use of sustainable natural resources, by solving issues related to sustainable management and use of natural resources, such as: food, water, air, minerals, energy and land.
- TA4: The development of Republic of Macedonia with a society with a special focus on public health and promotion of population's health, by applying most current methods and procedures in prevention, diagnosis and treatment of diseases, including measures to guarantee safety of food and mass consumption products, and promotion of living conditions.
- TA5: The development of Republic of Macedonia as a society with a special focus on security and crisis management, thus contributing to development of new technology approaches to improving security of citizens.
- TA6: The development of Republic of Macedonia as a society that pays special attention to reference materials and measurements, by supporting implementation of standards and reference measurements for faster societal, social, economic and cultural development of the state.

As presented above, the National Programme on Scientific Research and Development Activity (2012–2016) has very broadly defined thematic areas. Broad definition of thematic areas opens the possibility for the influence of individual research curiosity by setting research themes and issues for which research teams believe it is important to be given scientific attention. By researching different segments in areas that are considered a priority for development of the state, the comprehensive approach is enabled to resolve challenges and problems, whose ultimate goal is securing progress in the society.

It must nevertheless be noted that steps in programme development and the definition of thematic areas are not transparent. In other words, the programme does not offer an explanation about the basis for the definition of these thematic areas, whether and which stakeholders were involved in the process, which framework of indicators will be used to measure and evaluate success and achievements anticipated under this document. These shortcomings seriously affect the possibility for effective impact on processes and in areas defined as relevant under this document. Having in mind the fact that the programme expires in 2016, i.e. that process on drafting the new programme should start soon, we have the opportunity to create policies for scientific activity by developing well designed policies and documents that will be ambitious, but feasible at the same time.

Due to the absence of a strategic document on scientific research activity, we believe that instead of a programme that already resembles a strategy, it would be more desirable to draft a strategic document (strategy or strategic plan) that would provide the basis for development of the MES' annual programmes, and annual programmes of other public and private scientific institutions. This strategic planning process must be participatory and transparent. The strategy developed must include a framework for the evaluation of its successful implementation.

The process on developing a new strategy on scientific research activity must start after the final evaluation of the previous National Programme on Scientific Research and Development Activity. Based on that evaluation, and in relation to defined priority areas; for the purpose of ensuring continuity, we believe it is important to maintain the focus on priority areas that have failed to perform, or have underperformed in terms of defined goals and results. That being said, space should be left for the definition of new thematic areas that would represent actual challenge in society which did not exist at the time when previous priorities were defined, such as: the refugee crisis, migration flows, and challenges faced by Macedonia due to these current phenomena.

Participation is a key value of any strategic planning process. Therefore, the new strategy, and in particular the process on defining thematic areas, must not be left solely in the hands of the MES. For the purpose of involving direct stakeholders, in particular public scientific institutions, we propose the establishment of a special body that will be comprised of delegated representatives from public and private scientific institutions. This body could be established according to principles of the Inter-University Conference, where representatives from public and private scientific institutions will present views and arguments of their respective institutions, by means of special policy documents relevant to their

scientific field and discipline. The process on defining thematic areas will include the following steps:

- The creation of broad list of proposed thematic areas by each public scientific institution;
- The joint effort for shortlisting areas according to their priority;
- Aligning selected thematic priorities with the state's priority strategic areas;
- Aligning selected thematic priorities with Europe 2020;
- The finalization and adoption of final thematic areas and their incorporation in the strategic document.

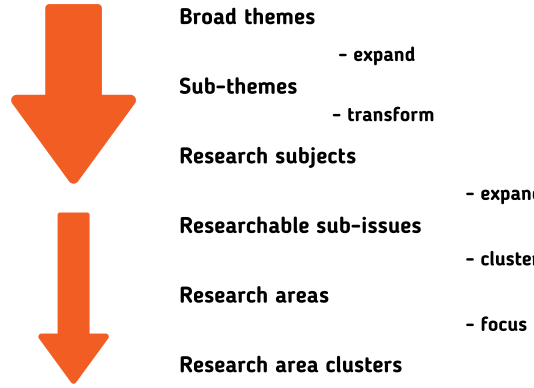
Having in mind that this is both a complex and comprehensive process, the issue about the place and role of social sciences and humanities remains open. At first glance, the above-described thematic areas from the National Programme on Scientific Research and Development Activity (2012–2016) do not seem to sufficiently incorporate social sciences and humanities. In truth, this programme does not contain vision or special measures about investment in these sciences. Nevertheless, a broad definition of thematic areas, inter alia, offers the possibility for research in social sciences and humanities to be conducted under each of defined thematic areas. A large share of research issues that might arise from proposed thematic areas are applicable to research in social sciences and humanities. One example thereof is 'Area 4' related to public health and promotion of population's health in Macedonia. Although, at first sight, this thematic area is closely related to medical sciences, it does not exclude and should promote research of population habits related to their health and hygiene, reasons for insufficient immunization coverage among children from certain ethnic groups, a growing popularization of practices on refusing vaccination and consequences thereof, etc.

This is just another argument in support of broadly defining thematic areas. Again, this should not be done merely for the possibility of enhanced involvement of social sciences and humanities or to further a more comprehensive approach to explaining certain phenomena, thereby solving certain problems. This should also take place to promote networking and cooperation among researchers from different fields, as well as for regional and international networking and cooperation. Therefore, the National Programme on Scientific Research and Development Activity (2012–2016) states: "The current institutional framework (...) must be mobilized and networked through process on mutual trust building and cooperation, with a view to implement joint activities and research (...). For that purpose, greater cooperation and exchange of scientific thought should be

stimulated among all scientific institutions in Republic of Macedonia, as well as mobility of staff, joint application for research projects, implementing research projects by putting in function all facilities, scientific equipment, laboratories or information systems". The promotion of networking and cooperation by promoting mixed teams of researchers from different fields will provide a new stimulus in the development of science and research and will enable thorough comprehensive understanding of different aspects of research phenomena, and thereby it will offer more effective solutions.

10. PROCESS AND CRITERIA ON THEMATIC PRIORITY-SETTING

The process on research priority setting is complex and involves processes of expansion, transformation, establishing clusters and final focus. As part of its analysis on priority setting for the public financing of research, and in relation to process on selection of priorities, the Swedish Governmental Agency for Innovation Systems follows the pattern outlined below:



According to this pattern, the process starts with policy priorities summarized under broad themes. The next step implies breaking them down into sub-themes that are easier to manage. Then, sub-themes should be transformed into researchable issues. This step must involve researchers and scientists with rich professional backgrounds and visions for the development of science and research. Research issues are further expanded into research sub-issues that could form really long and detailed lists. Although this list could be very long, researching sub-issues greatly contributes to several areas, and therefore it is only natural to group them into research area clusters.

The process on selecting thematic areas and their prioritization must be led according to previously defined criteria. Priority setting criteria should be clear and as measurable as possible. Some of them should concern the current social problems and issues that need to be researched, while others should concern the state's research capacity. Thematic priorities should be sufficiently broad and aligned with a significant portion of the government's strategic visions and plans, as well as EU research programmes. It is desirable for thematic priorities to be selected according to criteria that would offer the promotion of mixed teams, i.e. networking and the cooperation among researchers from different institutions and areas. In that regard, the definition of broad thematic areas is needed, and they should aim at:

- promoting research of relevant and current themes;
- promoting cooperation among scientific institutions;
- encouraging international and regional cooperation, by means of themes of Pan-European interest.

The selection of priorities is a process that should be transparent and inclusive. Public and private scientific institutions should be involved in this process from its very start, while the process itself should guarantee their active participation. This will ensure the realization of key values in policy development for scientific activity, such as transparency, participation and effectiveness.

Thematic priority-setting should be accompanied by parallel process on functional prioritization, i.e. defining priority policies and measures intended to address barriers and deficits of the research system and stimulating growth. This will ensure the most effective parallel investment in science and in society.

11. CONCLUSIONS AND RECOMMENDATIONS

Investment in science is investment in the development of the economy and the entire society in any country. In a country where scientific research activity is insufficiently supported, a country which is yet to make a serious commitment to research capacity-building, and thereby, be competitive on the global market, the decision as to whether priority setting of research areas is needed or not will exclusively depend on the state's available funds and the human resources necessary to start the comprehensive process on development of science and research. This process must start with small and attainable steps, and be projected to result in real possibilities, in the long term, for greater reforms and efforts whose ultimate goal is to strengthen the role of Macedonia in the global research community and to promote innovation in Macedonian research. Therefore, among the approaches proposed, it is our belief that initially the combined approach is the most favourable for the announcement of open calls for financing scientific research projects. This approach offers the possibility for simultaneous investment in, and effects from, basic and applied research.

Thematic priorities as part of open calls represent small but important initial steps that will put science at the service of the entire society. One of the goals under this approach, i.e. favouring combined open calls (with and without thematic priorities) is the creation of strategic steps that will, in parallel, strengthen all key areas and aspects important to ensure comprehensive societal and scientific progress. Science must be clearly steered to support key areas whose development is defined as vital for our state, but should also leave space for the autonomy of the research profession. In other words, investment in science in Macedonia must start with the cost-benefit logic of the state, following the principle of thematic, but also functional priority setting. In the beginning, this investment must be clearly and measurably cost-effective for the development of economy, policy and society.

The process of policy development for scientific activity should define the specific areas in science in which the state will make investments. This process must be well planned, open to participation and transparent. The creation of priority thematic areas is an integral part of these processes. Mapping, definition and creation of priority research areas is part of the creation and implementation of national public policies on scientific research activity that will address key problems and issues in society and science and that will be attractive to those financing and supporting the research activity. This is a strategic planning process that will include all necessary steps for the definition of strategic areas to be supported by strengthening science and scientific research.

Having in mind that the existing Programme on Scientific Research and Development Activity expired in 2016, it is necessary for this to be evaluated. The evaluation will provide an initial framework for the development of a new strategy for supporting scientific research and development activity. The framework provides a solid basis for the development of the National Research Roadmap. The National Research Roadmap should provide answers to following questions:

- What are the most important scientific research priorities?
- What is the expected impact of the supported scientific research projects?
- What research infrastructure is needed to address these priorities?
- What human resources are needed to address these priorities?
- What is the added research value in Europe (international programmes, EU programmes, national programmes)?
- Which stakeholders will benefit from the supported scientific research projects?

For such assessments under the National Research Roadmap to be successful, there is the need to define the ratio between basic and applied research. This will determine the number and scope of the general and targeted open calls in order to finance scientific research projects at annual level.

Strategic planning is not closed and internal process at the MES. It is a process that should take place within one body, which in addition to representatives from the MES, will also include experts in the field of policy development for scientific activity and representatives from all public and private scientific institutions. Public and private scientific institutions, within their own organizations, should develop analyses on needs and capacity, as well as proposed areas that are a priority for support by the MES. These lists will follow proposed steps of transformation and clustering. They will thus result in defined priority areas that would be included in the 4-year national strategy for supporting scientific research activity. Annual open calls will be based on this strategic document and will be announced according to the determined ratio.

We believe that the proposed process will be the initial step in reforming the scientific reality in Macedonia. The negative situation described above that affects the scientific reality in Macedonia can be changed by the successful development and effective implementation of policies. We believe that now is the right moment to start this process.

ENDNOTES

[1] Europe 2020 Strategy, available at: http://ec.europa.eu/europe2020/index_en.htm [last accessed on May 27, 2016].

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(RE)ACTIVATION OF OPEN CALLS FOR FINANCING SCIENTIFIC RESEARCH PROJECTS AS PRECONDITION FOR PROMOTION OF SCIENTIFIC RESEARCH IN MACEDONIA

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CONTENTS:

EXECUTIVE SUMMARY

In the last years, the Republic of Macedonia has allocated insignificant funds (0.44% of GDP in 2013)[1] for science and research in comparison to the EU average of 2.01% of GDP.[2] Although the financing of scientific research projects is the most frequently used form of support for scientific research activity (SRA) in Macedonia, the state has not announced open calls for financing these projects in the last five years. The last open call of the Ministry of Education and Science (MES) was announced in 2011,[3] but the initiated process is still not completed. Except for the fact that the open call was published, no information is available about the selected projects and their status. Whether they are in the stage of implementation, completed or simply discontinued is unknown.[4] Having in mind the impact that project results could have on the overall development in society; the purpose of this study is to provide recommendations aimed at the (re)activation of open calls for financing scientific research projects and (re)design of the application process in order to respond to needs of the research community in Macedonia. This will be done via the analysis of the current situation in Macedonia and the comparative overview of good practices in the region and beyond.

1. INTRODUCTION

This study is part of the process on developing a new model for funding SRA in Macedonia. The purpose of this document is to underline the need for the (re) activation of open calls for financing scientific research projects, (re)design of the overall application process, and to provide recommendations that will reflect needs of the research community in Macedonia, while contributing towards the development of the new model. The focus of this study is on the last open calls announced by the MES, their application procedures, relevant legislation and funds awarded to support these projects.

A detailed description of the methodology approach used in this study is presented on page 9.

The document is structured as follows: the first section provides a description of the situation related to the absence of open calls for financing projects that has been affecting the research community in Macedonia for a long period of time. The second section is focused on comparative experiences from several countries in the region and beyond, including an analysis from the stage of the announce-

ment of open calls to the submission of applications. The third section presents results from the survey research and finally, the fourth section presents recommendations for the (re)activation of open calls and the (re)design of the application process as preconditions for developing a transparent model for supporting scientific research in Macedonia.

2. DESCRIPTION OF THE CURRENT SITUATION

It is a generally acknowledged fact that research results contribute to development of any state and promote quality of life. States determine their strategic interests and make investments in SRA on that basis.

Although, in declarative terms, science and research are defined as one of the Republic of Macedonia's priorities, practice shows the opposite. The unpredictable political context, frequent changes to legislation and budget adjustments are negatively reflected in SRA. The MES' open calls for the distribution of funds to finance scientific research projects are marked by discontinuity in the last decade. More specifically, open calls have not been announced in the last five years.[5] Therefore, this document is based on the analysis of the last two open calls announced in 2010 and 2011, respectively.[6]

Projects selected for funding under these open calls were not published by the MES. The MES' website does not host any information about their implementation, project results, or even the current status of these projects (are they in the stage of implementation, are they completed or simply discontinued).[7] Documents received from the MES by means of submitted requests for access to public information reveal that amounts of funds awarded to projects selected from the 2011 open call have been reduced on several occasions, by means of annex contracts.[8] The reduction of selected projects' budgets brings into question the quality of the project results produced, and deteriorates the conditions under which these projects are implemented.

2.1 OPEN CALLS FOR SCIENTIFIC RESEARCH PROJECTS IN 2010 AND 2011

Scientific research projects supported by the MES are part of the two types of open calls, as follows:

- Open calls for the distribution of funds to finance annual programmes on scientific research activity; and
- Open calls for distribution of funds to finance scientific research projects.

The last open calls for distribution of funds to finance annual programmes on SRA were announced in 2010 and 2011.[9] The 2010 open call targeted public scientific institutions exclusively. Contrarily, the 2011 open call targeted science-oriented units (scientific institutes) at state universities in addition to public scientific institutions. Funds were distributed for projects, publishing activity, the organization of science meetings, infrastructure and the participation of domestic researchers in international science conferences. The duration of projects within annual programmes was set at 2 years and the annual amount awarded was capped at 400,000 MKD (around 6,500 EUR).[10] Project applications for annual programmes were submitted in Macedonian language, in hardcopy, to the MES' archive. The application process was performed in one phase.

The open call for the distribution of funds to finance scientific research projects announced in 2010[11] covered state universities and their science-oriented units (scientific institutes) and their units on science-based education (faculties), public scientific institutions, mixed scientific institutions, private higher education institutions, private scientific institutions, independent researchers and centres of excellence. The duration of projects was set at a maximum of 2 years, with an annual amount of funds capped at 600,000 MKD (around 9,760 EUR). The open call did not define any thematic priorities. Project applications were submitted in Macedonian language, in hardcopy, to the MES' Archive. The application process was performed in one phase.

Open call for distribution of funds to finance scientific research projects announced in 2011[12] covered the same entities as those defined under the 2010 open call. The duration of projects was also set at 2 years. Unlike the 2010 open call for scientific research projects, the annual amount of funds for projects under this open call depended on the scientific field. Projects in the fields of natural sciences and mathematics, technical, bio-technical and medical sciences were capped at an annual amount of 400,000 MKD (around 6,500 EUR); whilst those in the

[10] 61.5 MKD = 1 EUR

field of social sciences and humanities were capped at 300.000 MKD (around 4,880 EUR). The open call did not define any thematic priorities. The application process was organized in one phase. Project applications were submitted only in Macedonian language. The submissions were made electronically; however this was a novelty and it was the first and last time that this submission process was employed. Although electronic submission of applications is already an established practice across the world, unfortunately this practice is an exception in Macedonia.

Below are quotations from interviewees concerning the electronic submission of applications to the 2011 open call:

> *"These were the first steps to manifest a computerised process. However, there were certain problems; many people did not prefer that method [electronic submission of applications]. It lasted for one year and was going smoothly; the second [open call] was announced and then [the process] was blocked, because the person who developed the software left the MES and there was nobody to manage the system".*[13]

Others believed that the electronic submission of applications is more expensive and therefore relevant authorities preferred submitting applications in hardcopy:

> *"It is good for the application process to be on-line, but that necessitates funds".* [14]

2.2 LAW, PROGRAMME AND BUDGET ON SRA

Scientific research activity in Macedonia is regulated by the Law on Scientific Research Activity (Law on SRA), the Law on Higher Education and the Law on Innovation. These laws are subject to frequent amendments. The Law on SRA was subject to 10 rounds of changes to its basic text from 2008 onwards; whilst the Law on Higher Education (adopted in 2008) was changed as many as 21 times. The Law on Innovation, adopted in 2013,[15] was changed 4 times. Frequent amendments render these laws inconsistent and difficult to enforce.

The announcement of open calls for scientific research projects is regulated under Article 50 of the Law on SRA,[16] as follows: the MES shall announce open calls on proposals from the Government of the Republic of Macedonia on the basis of opinions obtained from the National Council on Higher Education, Science, Innovation and Technology. The National Council was established in 2011 after the

cancellation of the previous Council on SRA, which issued opinions for the open calls announced in 2010 and 2011. Although formally established, the National Council does not perform its duties and obligations as stipulated by law preventing the possibility of announcing open calls.

The Law on SRA includes a list of entities eligible to apply to the MES' open calls for annual programmes[17] (state and private universities, i.e. their science-oriented units, the Macedonian Academy of Science and Arts, independent state higher education institutions, independent private higher education institutions, public scientific institutions, mixed scientific institutions, private scientific institutions and independent researchers). Nevertheless, only public scientific institutions and scientific institutes at state universities were enlisted as entities eligible to apply for the 2011 open call for annual programmes.[18]

With the last round of amendments to the Law on SRA (adopted in February 2016), for the first time, Article 52 stipulates that private scientific and higher education institutions and independent researchers shall secure funds from the Budget of the Republic of Macedonia to support their scientific research projects and programmes. One month earlier, the Government adopted the 2016 Annual Programme on SRA,[19] wherein private scientific and higher education institutions and independent researchers are not enlisted as entities that will be supported with budget funds under the activities defined in this programme.

These examples of non-compliance between the Law on SRA, Annual Programme on SRA and budget allocations for 2016 are presented in Table 1 below.

TABLE 1: EXAMPLES OF NON-COMPLIANCE BETWEEN THE LAW, 2016 PROGRAMME AND BUDGET ON SRA

LAW ON SRA		ANNUAL PROGRAMME ON SRA		BUDGET ON SRA
Article 50 of the Law on SRA (2016): On proposal from the National Council and upon decision of the Government, the MES may finance scientific research projects of special and public interest.	≠	Scientific research projects of special and public interest are not part of the 2016 Annual Programme on SRA.	≠	2016 budget allocations do not include funds for scientific research projects of special and public interest, despite their enlistment in the Law on SRA.
Article 52 of the Law o SRA: Private scientific institutions, mixed scientific institutions, private higher education institutions and independdent researchers shall be allocated funds from the Budget of the Republic of Macedonia to finance their scientific research projects and programmes.	≠	Activities related to scientific research projects and programmes defined under the Annual Programme on SRA target only public scientific institutions and state facilities.	≠	Budget allocations are made according to activities defined under the programme and are exclusively intended for public scientific institutuins and state faculties.

Although open calls for the distribution of funds to SRA have not been announced since 2012, science and research in Macedonia still receive minimum funds through the Annual Programme on SRA. The Annual Programme is adopted by the Government and includes the following activities[20] for which budget funds have been secured:

1. The Annual Programme on Development and Operation of Public Scientific Institutions, which also includes scientific research projects;
2. Scientific research projects – university departments (national);
3. Scientific research projects (bilateral);
4. Publishing activity (science books);
5. The organization of scientific meetings;
6. The participation of science professionals from the Republic of Macedonia in scientific conferences organized abroad and their participation in meetings organized by the European Commission for national contact points and members of programme committees, Horizon 2020;
7. Study visits abroad and visiting science professionals in Macedonia;
8. The publication of papers in foreign scientific journals (with impact factors);

9. Fellowships for young scientific research staff in second and third cycle of their studies in the country and abroad;
10. Technical culture;
11. State awards (award "Goce Delcev");
12. The co-financing of various membership fees in international journals;
13. CEEPUS, and
14. Other expenditure for expert and advisory bodies.

The total budget for the implementation of above-enlisted activities from the 2016 Annual Programme on SRA amounts to 119,354,000 MKD (see Table 2). Budget allocations for scientific research projects (national) amount to 3,800,000 MKD, i.e. 3% of the total budget, while budget allocations for annual programmes amount to 3,950,000 MKD, i.e. 3.30%.

TABLE 2: BREAKDOWN OF BUDGET FUNDS FOR ANNUAL PROGRAMMES AND PROJECTS IN 2013, 2014, 2015 AND 2016

	Total annual funds for SRA	Funds for annual programmes that include projects	Funds for projects (national)
2013	78,438,000 MKD[21] (around 1,275,415 EUR)	5,314,000 MKD (around 86,410 EUR)	5,900,000 MKD (around 95,930 EUR)
2014	108,000,000 MKD[22] (around 1,756,098 EUR)	5,500,000 MKD (around 89,430 EUR)	6,100,000 MKD (around 99,187 EUR)
2015	108,354,000 MKD[23] (around 1,761,854 EUR)	5,900,000 MKD (around 95,935 EUR)	6,100,000 MKD (around 99,187 EUR)
2016	119,354,000 MKD[24] (around 1,940,715 EUR)	3,950,000 MKD (around 64,228 EUR)	3,800,000 MKD (around 61,789 EUR)

In comparison to 2011 when 44,000,000 MKD were allocated for projects, the amount of funds intended for these projects in 2016 has reduced by almost 90%. These budget cuts take place under conditions of minimum, but still visible increase of the total budget for SRA.

It is obvious that this budget cannot even meet the basic needs for projects, and the criteria for the distribution of these budget funds are also unclear. One survey

interviewees indicated that at his (or her) university, scientific research projects are financed from revenue generated by the same university.[25]

Transparency is the missing element in this process. The question is raised as to whether and which projects are financed by these funds? Unfortunately, the MES' official website does not provide such information.

Surveyed interviewees agreed that open calls and transparency in the process are conditions that must be guaranteed.

The 2016 state budget funds for projects only amount to 3,800,000 MKD raise a series of questions: Is this a serious approach to science and research? How many projects can be financed with these funds? What would be their quality and contribution to social development?

On the last question, some interviewees indicated that priority should be given to the quality of projects supported, clearly defined criteria (that would not be changed), as well as a continuous and secure payment of funds.

However, other interviewees were more precise in their comments:

> *"The minimum annual amount should be set at 5,000 EUR, while the maximum annual amount should be 50,000 EUR for social sciences and humanities. If funding amounted to half a million EUR, on average, there would be 30 projects per year (some smaller, others bigger). That is much more than we have now."* [26]

An additional problem identified by interviewees is the fact that this budget does not reflect the needs of scientific research institutions. Funds that are awarded under different budget lines are defined by the Ministry of Finance and the MES, without previous consultations with stakeholders. Thus, for example, the budget item on travelling and per diem costs allocates 100,000 MKD (around 1,630 EUR) to support projects, whilst the budget item on utilities accounts for 1,200,000 MKD (around 19,510 EUR) from the total of 3,800,000 MKD (around 61,790 EUR).[27] A portion of these funds, received by institutions at the end of the year, are returned in the state budget due to the inability to allocate them for specific purposes.

The distribution of funds under budget items for annual programmes (including scientific research projects) and scientific research projects (national) is presented in Table 3 and 4, respectively.

TABLE 3: BREAKDOWN OF TOTAL AMOUNT OF FUNDS ALLOCATED FOR ANNUAL PROGRAMMES PER BUDGET ITEM FOR 2013, 2014, 2015 AND 2016

	Travelling and per diem costs	Utility services and heating, communications and transport	Petty inventory, tools, and other materials
2013	700,000 MKD (around 11,382 EUR)	1,486,800 MKD (around 24,176 EUR)	500,000 MKD (around 8,130 EUR)
2014	700,000 MKD (around 11,382 EUR)	1,500,000 MKD (around 24,390 EUR)	500,000 MKD (around 8,130 EUR)
2015	400,000 MKD (around 6,504 EUR)	1,550,000 MKD (around 25,203 EUR)	400,000 MKD (around 6,504 EUR)
2016	100,000 MKD (around 1,626 EUR)	1,350,000 MKD (around 21,951 EUR)	700,000 MKD (around 11,382 EUR)

TABLE 4: BREAKDOWN OF TOTAL AMOUNT OF FUNDS ALLOCATED FOR PROJECTS PER BUDGET ITEM, FOR 2013, 2014, 2015 AND 2016

	Travelling and per diem costs	Utility services and heating, communications and transport	Petty inventory, tools, and other materials
2013	700,000 MKD (around 11,382 EUR)	1,400,000 MKD (around 22,764 EUR)	1,300,000 MKD (around 21,138 EUR)
2014	700,000 MKD (around 11,382 EUR)	1,400,000 MKD (around 22,764 EUR)	1,300,000 MKD (around 21,138 EUR)
2015	400,000 MKD (around 6,504 EUR)	1,200,000 MKD (around 19,512 EUR)	400,000 MKD (around 6,504 EUR)
2016	100,000 MKD (around 1,626 EUR)	1,200,000 MKD (around 19,512 EUR)	800,000 MKD (around 13,008 EUR)

Reparation and maintenance	Contracting services	Other current expenditure	Early transfers	Total amount of funds for annual programmes
982,200 MKD (around 15,971 EUR)	1,645,000 MKD (around 26,748 EUR)	/	/	5,314,000 MKD[28] (around 86,410 EUR)
1,100,000 MKD (around 17,886 EUR)	1,700,000 MKD (around 27,642 EUR)	/	/	5,500,000 MKD[29] (around 89,430 EUR)
1,110,000 MKD (around 17,886 EUR)	1,200,000 MKD (around 19,512 EUR)	/	/	4,650,000 MKD[30] (around 75,610 EUR)
1,100,000 MKD (around 17,886 EUR)	700,000 MKD (around 11,382 EUR)	/	/	3,950,000 MKD[31] (around 64,228 EUR)

Reparation and maintenance	Contracting services	Other current expenditure	Early transfers	Total amount of funds for projects
800,000 MKD (around 13,008 EUR)	1,700,000 MKD (around 27,642 EUR)	/	/	5,900,000 MKD[32] (around 95,935 EUR)
1,000,000 MKD (around 16,260 EUR)	1,700,000 MKD (around 27,642 EUR)	/	/	6,100,000 MKD[33] (around 99,187 EUR)
1,000,000 MKD (around 16,260 EUR)	1,200,000 MKD (around 19,512 EUR)	/	/	4,200,000 MKD[34] (around 68,293 EUR)
1,000,000 MKD (around 16,260 EUR)	700,000 MKD (around 11,382 EUR)	/	/	3,800,000 MKD[35] (around 61,789 EUR)

On the question about whether the MES should finance budget items proposed by the applicants or by the line ministries, interviewees believe that funds should be allocated according to the project's specific needs, rather than in compliance with the budget lines defined by the MES:

> *"Money should be used according to the project. Budgets should not be as they are now."*[36]

3. COMPARATIVE ANALYSIS

A comparative analysis of the application processes for financing scientific research projects in other states was also conducted for the purpose of this study. Findings obtained from the analysis of these practices contributed to drafting recommendations for the (re)activation of open calls and (re)design of the application process in Macedonia. The countries included in the comparative analysis are Serbia, Slovenia, Estonia, Croatia and Sweden.

The following elements were the subject of analysis: the institutions announcing open calls, entities eligible to apply on these open calls, deadlines for submission of applications (from the moment open calls are announced to the moment applications are submitted), the mode of application (electronic or hardcopy), phases in the application process and language in which applications are submitted.

In addition, the comparative analysis targeted other elements, such as the share of GDP allocated for science and research, the year when open calls were last announced and the continuity of the announcement of open calls.

Data from the comparative analysis are summarized in Table 5 below.

Compared to other countries, Macedonia allocates the lowest share of GDP (0.44%) for science and research. Under the current dynamics related to the increase of this share, Macedonia would need almost 40 years to attain a "fantastic" 3% increase that should be allocated according to recommendations from the European Union.

In Macedonia and in Serbia, the open call for financing scientific research project is announced by the competent ministry. In Slovenia[37], Estonia[38], Croatia[39] and Sweden[40], the open call is announced by a designated agency/council responsible for the overall process on application, selection, monitoring and financing.

Macedonia is the only country where open calls have not been announced since 2012. All other countries targeted with the comparative analysis maintained consistency in the announcement of open calls.

In recent years, the electronic submissions of project applications have been broadly present. In comparison to the submission of applications in hardcopy, the electronic submission of applications is evidently more transparent, streamlined, cost-effective and efficient[41]. It also increases transparency, whilst promoting good governance[42]. The development and maintenance of the contemporary electronic system (software) can, however, be expensive. Despite this, it is only Macedonia that lacks this electronic system for the submission of applications.

In Macedonia applications are only submitted in one language, i.e. Macedonian. In other countries, applications are bilingual using the country's official language and English. The use of English is important for the involvement of foreign reviewers in the process on assessment of project-proposals.

Slovenia and Croatia have a two-phase application process, whilst other countries organize their process in one phase.

TABLE 5: COMPARATIVE ANALYSIS

	Macedonia	Slovenia
Share of GDP allocated for science and research in 2016	0.44%	2.59%
Institution announcing the open call	The MES	Slovenian Research Agency
Year when the last open call was announced	2011	2016
Continuity in announcement of open calls on annual basis	NO	YES
Deadline for submission of applications from the announcement of the open call until the final day for submission of applications	45 days	15 days
Manner of application	Hardcopy, in 2011 electronic submission of applications was organized for the first and last time	Electronic, on the website
Stages in the application process	One phase	Two phases
Language for submission of applications	Macedonian	Slovenian and English

Estonia	Serbia	Croatia	Sweden
1.74%	0.73%	0.81%	3.30%
Estonian Research Council	Ministry of Education, Science and Technology Development	Croatian Science Foundation	Swedish Research Council
2016	2016	2015	2016
YES	YES	YES	YES
30 days for personal grants, 45 days for institutional grants	30 days	30 days	30 days
Electronic, on the website	Electronic, on the website	Electronic, on the website	Electronic, on the website
One phase	One phase	Two phases	One phase
Estonian and English	Serbian and English	Croatian and English	Swedish and English

Slovenian and Croatian think-tank organizations, non-profit organizations and/or the business sector are defined as entities eligible to apply for open calls for scientific research projects. This is not the case in Macedonia. Public scientific institutions in Croatia, for example, implement national projects in partnership with non-profit organizations and foreign private companies.[43] For example, Slovenia has post-doctoral research projects implemented by researchers who have obtained their PhD degree and are currently working in the private sector.[44]

4. RESULTS OF THE EMPIRICAL RESEARCH

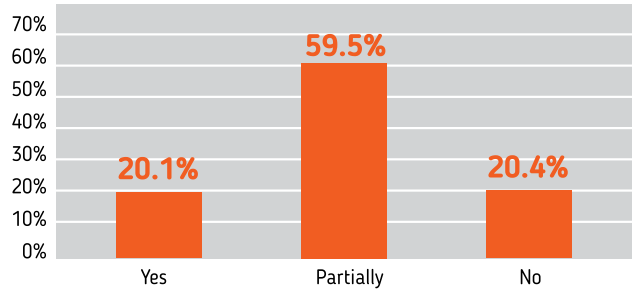
This section of the document presents data from the empirical research concerning the application process for financing scientific research projects by the MES.

A detailed description of the survey methodology is presented on page 9.

Only 20 % of respondents provided positive answers to the question *Are you familiar with the MES' model for financing SRA?* (see Chart 1 below).

CHART 1: FAMILIARITY WITH THE MODEL FOR FINANCING SRA

ARE YOU FAMILIAR WITH THE MES' MODEL FOR FINANCING SCIENTIFIC RESERACH ACTIVITY?



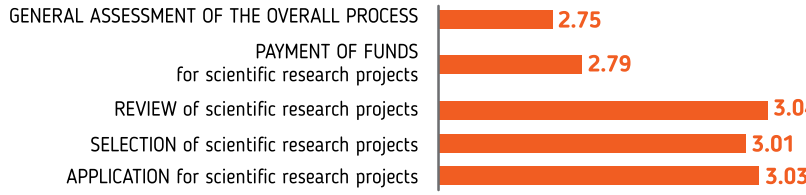
Answered question: 294 Skipped question: 0

Considering the fact that open calls have not been announced since 2012 and that procedures on awarding funds in compliance with the Annual Programme on SRA are not transparent, this share of answers is disappointing, but is not surprising.

The next question: *On the scale from 1 to 5, please indicate your assessment for the MES' process, with respect to different aspects of the overall process*, was answered only by respondents that indicated familiarity with or partial familiarity with this model. The average assessment that has been assigned for the overall process is 2.75 (see Chart 2).

CHART 2: ASSESSMENT OF THE MES' MODEL

ON THE SCALE FROM 1 TO 5 (WHERE 1 IS THE LOWEST AND 5 IS THE HIGHEST ASSESSMENT), PLEASE INDICATE YOUR ASSESSMENT FOR THE MES' PROCESS FOR THE FOLLOWING ELEMENTS:

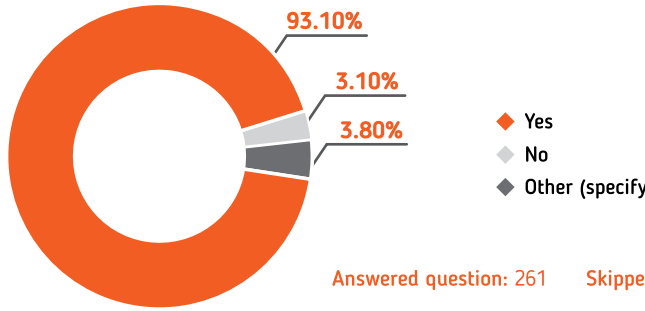


Answered question: 205 Skipped question: 89

Respondents assigned an average assessment score of 3 to the application process.

On the question: *Should the MES announce open calls for financing projects?* as many as 93% of respondents provided positive answers (shown on Chart 3).

CHART 3: SHOULD THE MES ANNOUNCE OPEN CALLS FOR FINANCING SCIENTIFIC RESEARCH PROJECTS?



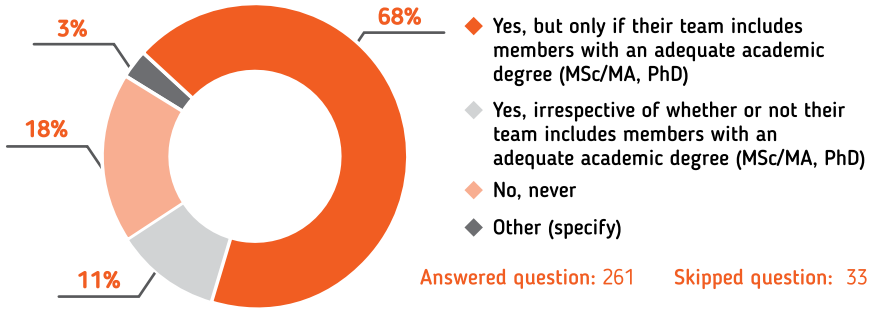
Answered question: 261 Skipped question: 33

The same was confirmed with data from the qualitative analysis:

> *"First, there is no dilemma about the announcement [of open calls]. They must be announced; that is the only way to finance science."* [45]

With regards to entities that should be given possibility to apply to the MES' open calls, 68% of respondents believe that *non-governmental think-tank organizations, as well, should have that possibility, but only if their teams include members holding adequate academic degree*. The share of respondents that opposed this possibility is around 18% (see Chart 4).

CHART 4: SHOULD NON-GOVERNMENTAL (THINK-TANK) ORGANIZATIONS HAVE THE POSSIBILITY TO APPLY FOR SCIENTIFIC RESEARCH PROJECTS WITH THE MES?



Interviewees have different positions concerning this question:

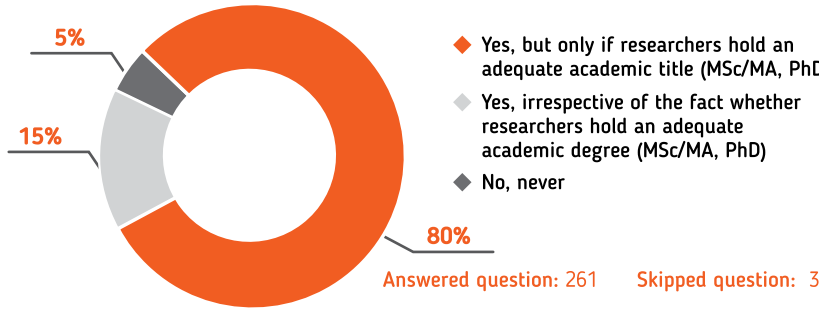
> *"Absolutely. I think there should be different types of grants and all possible potentials should be included whatsoever... there should be as little as possible institutional and formal restrictions. Anyway, the criteria should be in place to guarantee quality."* [46]

Some interviewees did not share this position and stated:

> *"These calls should be open for private and for public institutions, but primarily for public institutions. Think-tank organizations, because they are not registered as scientific institutions, should not have the possibility to apply. Open calls should primarily target public institutions, because they have the least access to funding opportunities."* [47]

The possibility for individual MA/MSc and PhD qualified researchers to apply for scientific research grants was positively assessed by 80% of respondents (see Chart 5).

CHART 5: SHOULD INDIVIDUAL RESEARCHERS HAVE THE POSSIBILITY TO APPLY FOR SCIENTIFIC RESEARCH PROJECTS WITH THE MES?



"The MES finances SRA with money from tax payers, so there should be no discrimination. Individual researchers and non-governmental (think-tank) organizations should not be excluded, but the manner in which they apply for the grants should be regulated. There are think-tank organizations that create evidence that could be used for policy-making, but also there are NGOs that predominantly work on activism. Those dealing with evidence and research should not be excluded. Researchers that are really good in their profession, but are not linked to any higher education institution, should not be excluded either." [48]

5. CONCLUSION

Science and research are defined as one of the priorities of the Republic of Macedonia, but practice shows the opposite. Despite the fact that budget funds for the implementation of the Annual Programme on SRA are increasing, open calls for the distribution of these funds to finance scientific research projects have not been announced in the last five years.

Compared to other countries included in the analysis (Slovenia, Estonia, Serbia, Croatia and Sweden), Macedonia allocates the lowest share of GDP for science and research, does not announce open calls and there is no electronic system for submission of project applications. All developed countries in the region that are also EU members have a separate body (agency or council) that is directly competent for SRA.

Only 20% of respondents are familiar with the MES' current model for financing SRA, while as many as 93% of respondents believe that MES should announce open calls for financing scientific research projects. Data from the quantitative analysis show that a high share of the research community in Macedonia is of the opinion that the MES should announce open calls for projects that will target both state and private scientific institutions, but also non-governmental (think-tank) organizations and individual researchers, provided they fulfil certain criteria.

Quantitative data obtained from the survey research emphasize the necessity for the (re)activation of open calls for financing scientific research projects and underline the need for expanding the range of entities eligible to apply to the MES.

6. ALTERNATIVE SOLUTIONS

The general solution inferred from this analysis is the indispensable (re)activation of open calls for funding scientific research projects and introduction of electronic submission of applications, as well as expanding the list of entities that will be covered by the open call (think-tank organizations, provided they fulfil certain criteria).

Initially, think-tank organizations could appear as partner organizations, i.e. the project will be implemented by the application holder from the list of already defined entities for SRA. The key problem in this solution is the fact that think-tank organizations that are one of the main research entities on the international research scene would be excluded from the possibility to appear as leading organizations/project holders. An additional challenge would be the possibility for networking, i.e. establishing partnerships, having in mind that under current practices such cooperation is not supported by the MES.

An alternative solution is to support think-tank organizations by means of specially designed open calls. This solution could be functional after several years of continuous support to scientific research projects in Macedonia, with previously secured preconditions and an increased budget of bursaries for these projects.

7. RECOMMENDATIONS

We therefore recommend the following:

- Science and research should receive significant financial support from the state;
- Legislation and other relevant documents should be aligned; and
- Budget funds for scientific research projects should be increased.

For the purpose of ensuring the transparent application process for scientific research project grants, it is of great importance:

- That open calls for the distribution of funds to finance projects and to enable continuous support are announced at least once a year. The open call should include clearly defined criteria that will not be subject of changes.
- That the announcement of open calls and the submission of funding applications should be electronic. An automated response that applications have been received should follow.
- To strengthen human, institutional and organizational capacity resources for the support of scientific research work.
- To broadly define entities that will be eligible to apply for grants following open calls, including think-tank organizations; provided they fulfil certain conditions, such as the criterion that their teams include MA/MSc and PhD qualified members.
- For the purpose of involving foreign reviewers in the process on the assessment of project-proposals, applications should be submitted in English.

For the purpose of ensuring the continuity, transparency and stability of funds intended to support SRA, due consideration should be given to the possibility of:

- Establishing an agency, i.e. a body that will be directly responsible for the announcement of open calls and the selection, monitoring and financing of projects.

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[22] Programme on Scientific Research Activity for the year 2014 ("Official Gazette of the Republic of Macedonia" no. 8/14 and 141/14).

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[25] Interviewee _NPD_04_3.3.2016

[26] Interviewee_NPD_02_2.3.2016

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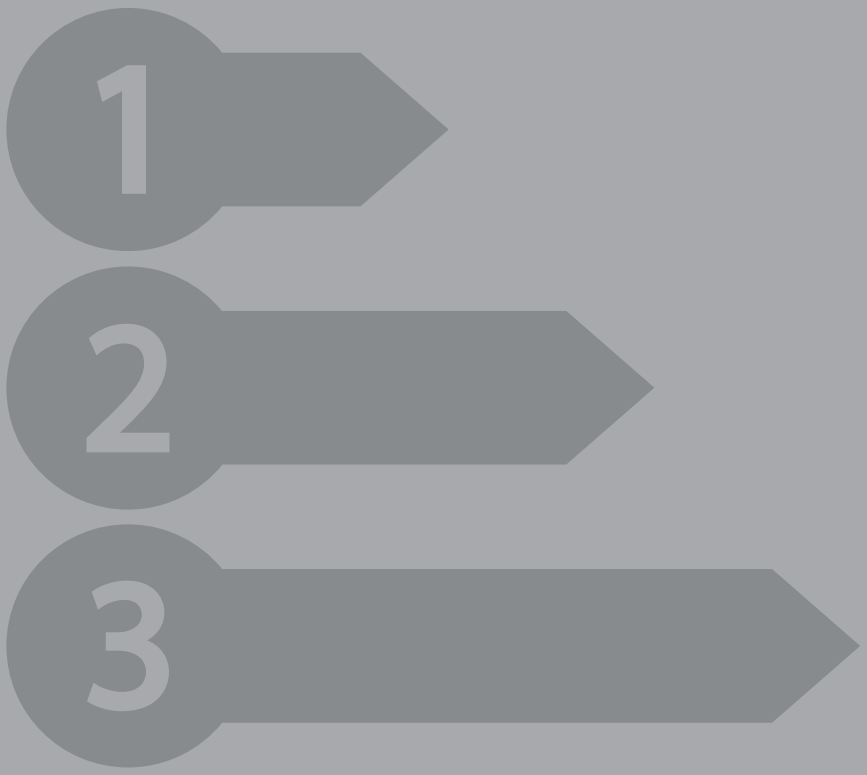
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INTRODUCING KEY PRINCIPLES TO ENSURE HIGH QUALITY ASSESSMENT OF SCIENTIFIC RESEARCH PROJECT-PROPOSALS: TRANSPARENCY AND CONFLICTS OF INTEREST

Elena Anchevska
European Policy Institute – Skopje
(September 2016)

CONTENTS:

EXECUTIVE SUMMARY

This document aims to highlight the need for the introduction of and compliance with internationally accepted key principles in the assessment process of scientific research project-proposals. These include excellence, transparency, impartiality, conflicts of interest, efficiency and speed, as well as ethical considerations and integrity. Undoubtedly, all principles must be respected in the assessment process. Nevertheless, based on the analysis conducted and the results obtained within this research, a lack of transparency and management of conflicts of interest are crucial problems in the context of the Republic of Macedonia.
In a situation where funds for scientific research projects are not only limited, but also rarely available, distributing these funds in a transparent manner and based on objective and independent review, with focus on scientific quality, is particularly necessary. For this reason, this policy study pays special attention to these two principles. Such focus will help all stakeholders, especially the applicants, to view the process on assessment of scientific research project-proposals as transparent and fair. In that regard, this document offers a detailed analysis and a series of recommendations aimed at improving the assessment process to guarantee that funding goes to the best project-proposals.

1. INTRODUCTION

This study is part of the process on developing a new model for funding scientific research activity (SRA) in Macedonia. The idea and need for such a document emerged from the initial analysis of research questions related to the assessment of project-proposals, as follows: How should the assessment process look like? What criteria need to be assessed? Who should assess project-proposals? Is there a need to involve foreign reviewers? How should the notification process look like?

In comparison to positive practices across Europe, an analysis of current state-of-affairs in Macedonia indicates an inconsistent adherence to internationally accepted key principles on reviewing project-proposals. More specifically, in the case of Macedonia, the role played by the Ministry of Education and Science (MES), as a key institution for the allocation of budget funds intended for scientific research projects, is – mildly put – problematic. Our findings show distrust in the MES' capability and credibility to perform competences it has been entrusted with.

Primarily, this is due to its non-transparent decision-making processes, the unavailability of information related to open calls and outcome thereof, as well as unfilled obligations from previous open calls. All these give rise to scepticism that was expressed by respondents who participated in our survey towards the process on assessment of scientific research project-proposals, but also towards the MES.

Peer review is considered a "golden standard" in the assessment of scientific research project-proposals[1]. However, this review has certain weaknesses in particular when funds are limited and are rarely awarded, as is the case in Macedonia. These weaknesses include the reviewers' potential lack of expertise, lack of objectiveness, possible inconsistencies and bias[2]. On the grounds of all reasons indicated above, adequate measures need to be introduced in order to address possible discretion and bias of reviewers in their decision-making, thus guaranteeing confidentiality and eliminating conflicts of in terest.

The purpose of this document is to highlight the need for the introduction of key principles for assessment of scientific research project-proposals, similar to those already recommended and applied by the European Research Area (ERA)[3] and globally, such as: excellence, impartiality, transparency, appropriateness, efficiency and speed, confidentiality, integrity and ethical considerations. Adherence to these principles will ensure the quality of assessments, as well as the overall effectiveness in the allocation of funds intended for these projects. In that manner, the process will be transparent and fair for all relevant stakeholders, in particular for the research community. The best applicants will receive funds for the implementation of their projects, thus encouraging academic excellence and competitiveness, and promoting research integrity.

A detailed description of the methodology approach used in this study is presented on page 9.

This policy document has the following structure: the first section provides a description of the problem that is the subject of this analysis, taking into account the legal and institutional frameworks compared against results from the survey; the second section reconsiders comparative practices from neighbouring countries and EU member-states in relation to the application of principles for assessing scientific research project-proposals; the third section presents the principles that should be introduced to improve the process on the assessment of project-proposals; lastly, the fourth section outlines the conclusions and provides detailed recommendations.

2. PROBLEM DESCRIPTION

In this section, we first describe the legal and institutional framework that regulates the assessment and funding of scientific research projects and discuss the findings from the empirical survey related to Macedonian practices. Furthermore, we present findings from the conducted research related primarily to transparency and conflicts of interest.

2.1 LEGAL AND INSTITUTIONAL FRAMEWORK

According to Article 3 of the Law on Scientific Research Activity (Law on SRA),[4] the principles on which scientific research work is based, inter alia, include: ethics, transparency of the operation and dissemination of results, the application of international standards for quality in science, the inviolability and protection of individuality and dignity of people, competitiveness and equality of opportunities, and the protection of intellectual property.

Firstly the MES is the key actor tasked with the management of funds for scientific research projects. The operation of this institution was the subject of analysis under previous research studies which indicated a widespread perception of the way in which these funds are allocated is biased; based on party relations and nepotism, instead of merits.[5] For these reasons, but also due to the non-transparency of the selection procedure and personal influences, researchers are not motivated to apply to open calls announced by the MES, while those who have submitted project-proposals described the MES' policy as "unpredictable and discouraging, mainly due to irregularity in the announcement of open calls, non-publication of projects awarded funds, non-publication of information on assessment of submissions/applications and credibility of reviewers".[6]

Similarly, Cvetkovik (2013) noted a lack of transparency in the availability of open calls, information on projects selected, projects awarded funds, as well as results from completed research projects, on the MES' website and on www.nauka.mon.gov.mk.[7]

On the other hand, Article 10-a of the Law on SRA[8] stipulates that the Council on SRA is tasked with ranking positively assessed projects on the basis of assessments made by independent reviewers, as well as drafting decisions to finance them.[9] Members of this Council were appointed by the Minister, while their role was envisaged as advisory. However, changes to the Law on Higher Education[10] adopted in 2013 cancelled this body and anticipated the establishment of another body: The National Council on Higher Education, Science, Innovation and Technology.[11] As was the case with the Council on SRA, the Government appoints members to this new council, which is indicative of high centralization of this process. Having in mind that open calls for scientific research projects have not been announced from 2012 onwards, performance of this body cannot be assessed and reviewing its efficiency is impossible. In addition, the non-announcement of open calls from 2012 onwards is another indicator of this body's (in)efficiency.

The Law on SRA anticipated another body: Board of Ethics, tasked with "monitoring and assessment of application of ethical principles in SRA, protection of human integrity in scientific research, and ethics in business relations between entities performing SRA".[12] The Board is comprised of nine members, six of which are researchers

nominated by the Inter-University Conference, and three members are nominated by the Macedonian Academy of Science and Art. The fact that they are appointed by the Government additionally brings into question their ability to objectively monitor of ethical principles in the assessment of project-proposals.[13] Article 14 of the Law on SRA also anticipates the application of the principle of adequate and equitable representation of members of all communities in the appointment of the Board Members, as well as respect for criteria on expertise and competence. Furthermore, the Board is tasked with the adoption of the Code of Ethics that will determine ethical principles "in scientific research work; in publication of results from scientific research activity; in relations among researchers; in procedures and activities related to competition and in relations with the public and the media".[14] This body never became operational.

All these point at frequent legal changes, as well complication of the procedure of the selection of high quality projects. The most worrying element continues to be the excessive concentration of power in the hands of the Minister of Education and Science.

It is important to note that in the period between 2010-2016 only two open calls were announced for the allocation of funds for scientific research projects; in 2010 and 2011 respectively. Developed on the basis of the Rulebook on the Manner and Procedure for Financing Scientific Research Projects or Programmes, these two open calls contained information about: the right to application, project duration and the amount of funds granted, the composition and professions of research team members, the prohibition of participation of main researchers who have not fulfilled their obligations under previously financed projects, guidelines and deadline for submission of applications, assessment criteria to be applied by independent reviewers and a list of ranking points. Open calls anticipated the establishment of a rank-list by the Council on SRA and decisions on financing projects. The MES was tasked with publishing this decision on its website, while applicants should be notified about the results within a period of three months the latest after completion of the open call. Having in mind that in the last five years no open call has been announced for financing scientific research project, the subject of analysis in terms of transparency and conflicts of interest will concentrate on these two open calls.

2.2 FINDINGS OF THE EMPIRICAL RESEARCH

2.2.1 TRANSPARENCY

Respondents that participated in the survey emphasized the lack of and need for transparency, both in the selection procedures, as well as in the selection of reviewers and decision-making processes. Transparency is assessed on the basis of avail-

ability and the timely publication of information related to: rules for application, contents of the project-proposals, reviewers and the final outcome of the open call.[15]

In the previous two open calls, elements used to "defended" transparency of these open calls included available and timely published information related to the manner, procedure, criteria for application and a list of ranking points.

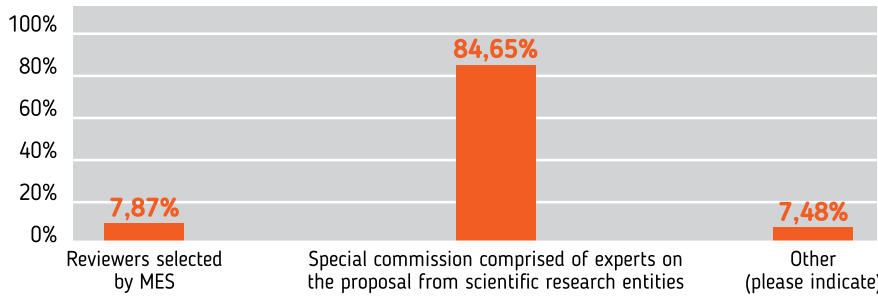
With regards to reviewers tasked with the assessment of project-proposals, the Rulebook on the Manner and Procedure for Financing Scientific Research Projects states that "project-proposals shall be reviewed by two or more independent reviewers from different fields".[16] It is obvious that the single and most tangible criterion for the selection of reviewers is their *independence*, which is not fully explained in terms of what it implies and what it covers. Other criteria, such as participation in the implementation of international projects, experience in assessing international projects, published scientific and scholarly papers in the relevant field, and the like, are not taken into account.

By 2013 it was not clear who selects these reviewers and how. However, with the last changes to the Rulebook adopted in 2013, reviewers are selected by the Minister of Education and Science on following the announcement of an open call. However, as already mentioned, this solution has not yet been implemented in practice because no open calls have been announced since 2012.

Respondents were almost unanimous in their position that scientific research projects should be assessed by professional and unbiased experts from the relevant field. Experts should hold relevant knowledge and expertise in order to be able to assess project-proposals and their contribution to the relevant fields, together with defined goals and anticipated research methods.

Further, the majority of the total of 254 respondents that answered the question on selection of reviewers believe that reviewers should be selected by a special commission comprised of experts appointed on the proposal from scientific research entities (84.65%), compared to 7.87% of them who believe that MES should select the reviewers (See Chart 1 below).

CHART 1. WHO SHOULD SELECT REVIEWERS OF SCIENTIFIC RESEARCH PROJECTS?



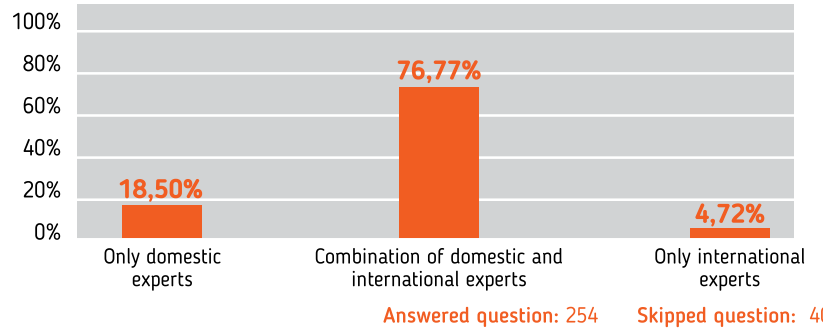
Answered question: 254 Skipped question: 40

The high share of respondents (84.65%) who believe that reviewers should be selected by a special commission comprised of experts appointed following their nomination from scientific research entities is indicative of the distrust in the institutions selecting the reviewers. Such scepticism is primarily due to its poor capacity, insufficient staffing and previous negative experiences. Nevertheless, a suggested solution would be to have the MES establish a database of potential reviewers in specific fields, based on previously defined eligibility criteria for reviewers. That would ensure quality and an objective system for the assessment of project-proposals.

Part of the respondents that participated in the survey suggested the possibility of establishing a mixed body whose composition would include representatives from the MES, as well as experts nominated by scientific research entities. Some proposed that the MES would cooperate with the Inter-University Conference and the two institutions would select the reviewers together.

On the question inquiring as to who should assess project-proposals, the most frequently indicated option among the total of 254 respondents includes a combination of domestic and international experts (76.77%) (See Chart 2 below).

CHART 2. WHO SHOULD REVIEW SCIENTIFIC RESEARCH PROJECT-PROPOSALS?



Some survey respondents prefer foreign reviewers to have a decisive role because "*the state, at this moment with its existing human resources, is not prepared to properly implement this process*".[17] Moreover, it was stressed that foreign experts must be included, at least in the first years "*until we learn some standards*".[18] These excerpts from conducted interviews indicate that involvement of foreign reviews will give quality to the process.

> "*Reviewers should be published on the MES' website. They should be credible reviewers, and not persons enlisted for the purpose of earning honoraria*".[19]

On the other hand, some respondents believe that domestic reviewers should be more represented, because they have better knowledge of the context. Nevertheless, what is obvious is that more financial resources are needed to include foreign reviewers.

"Foreign reviewers are expensive. Consultants could be engaged as reviewers, by means of video-link. But, we should create conditions for peer control and peer review".[20]

For the time being, the MES does not publish successful projects on its website. This contributes to a situation where people interested in applying to the open call have not seen approved scientific research projects. Doing otherwise could facilitate the preparation of their project-proposals. Moreover, names of project holders, institutions they come from, executive summaries, or even contents of relevant applications, are not published at all.

Contrary to the provisions obliging that applicants be notified about outcomes of open calls, a portion of our respondents that have submitted project-proposals reported that they have not been informed whether their projects were approved or not. One of them explained:

"I, for example, have participated in one open call and know that [my project] was not approved, but I learned that only from the newspaper. One year later, I met with one professor who told me 'congratulations on the project, I gave positive review and know the other college also gave positive review'. That happened at the MES".[21]

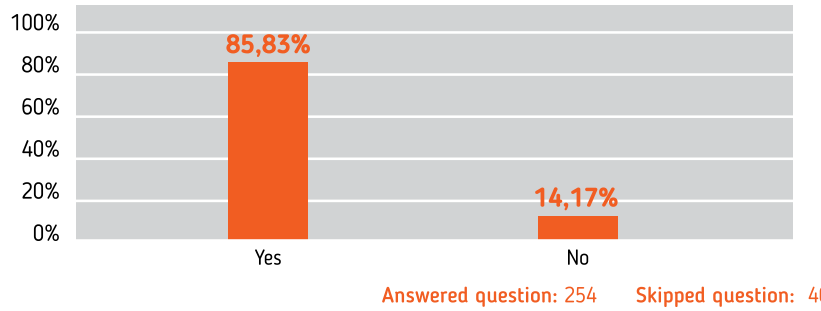
The above presented testimony leads to a conclusion that notification mechanisms are not used in terms of outcomes related to selected projects. The respondent's experience is also indicative of possible inconsistency between assessments made by reviewers and final decisions taken by the Council. This raises additional concerns about the irrelevancy of expert assessments and the scientific quality of research projects compared to personal, clientelistic and/or political relations that are of decisive importance in the selection of projects. Another respondent shared similar experience. Namely, not only did her research team not receive notification about the outcome of their application, but when they attempted to contact representatives of the MES and learn more about their application's outcome, they received the following answer: "*[the application] was for last year's budget, why are you calling about last year's budget*".[22]

This obviates the MES' lack of transparency in terms of availability of information related to the outcome of the open call and the non-adherence notification of applicants.

2.2.2 CONFLICTS OF INTEREST

Survey findings show that 85.83% of 254 respondents believe that reviewers should declare conflicts of interest, while 14.17% of them believe that declaring conflicts of interest is not necessary (See Chart 3 below).

CHART 3. SHOULD REVIEWERS DECLARE CONFLICTS OF INTEREST?



International practices highlight the importance of this principle for effective, fair and objective distribution of state funds for scientific research projects. The Macedonian Rulebook on the Manner and Procedure for Financing Scientific Research Projects or Programmes exemplifies the following as a conflict of interest:

> *"When a member of the Council on Scientific Research Activity is a manager, participant, or in any other manner takes part in project submitted on the open call for financing scientific research projects, he/she shall be exempted from the process on evaluation and decision-making for that project".*[23]

The manner in which conflicts of interest is defined in the Macedonian Rulebook anticipates an exemption from the process on assessment, but does not provide a precise definition about what a conflict of interest represents, which forms of conflicts of interest exist and how they can be recognized.

In addition, respondents to our survey raised concerns about the regulation of conflicts of interest related to the context in which the research community operates and the small number of staff:

> *"Unknown reviewers should review projects and thereby avoid a conflict of interest, when possible, because we are a small community".*[24]

Under these conditions, the regulation and management of conflicts of interest can be exceptionally difficult, especially given that the Republic of Macedonia is a small country with an even smaller research community. The next section offers an overview of manners in which conflicts of interest is addressed in other countries, as well as other principles focusing on transparency.

5. COMPARATIVE ANALYSIS

This comparative analysis aims to establish which principles receive special attention, how are they formulated and regulated in the countries included in this analysis. Namely, we analyse good practices and principles for reviewing scientific research project-proposals that have led to a better understanding of shortcomings in the existing system and have indicated the possibilities for improvement.

In this section, we first consider the key principles used in assessing project-proposals within the ERA and the principles proposed by the Global Research Council (GRC). Furthermore, we discuss existing principles in three developed countries: Switzerland, Sweden and the United Kingdom; three countries from the region that are also EU member-states: Slovenia, Croatia and Bulgaria; and two countries from the region that are candidate countries for EU membership: Serbia and Montenegro. In doing so, we analysed relevant websites in English language of bodies responsible for financing scientific research projects. Limitations of this approach are identified in the fact that the analysis targeted only eight countries and data available in English language, as well as the fact that there is a lack of knowledge in absolute terms around the organizational setup and first-hand experiences of financing scientific research projects.

The ERA and the GRC propose frameworks on key principles that will primarily enable the promotion of international cooperation, especially in regard to co-financing by means of competitive open calls. The ERA is defined as a "unified research area that enables free movement of researchers, scientific knowledge and technology".[25] It is focused on five priorities: (1) a more effective national research systems; (2) optimal transnational cooperation and competition; (3) an open market for researchers; (4) gender equality and gender mainstreaming in research; (5) optimal circulation, access to and transfer of scientific knowledge.

The first priority concerns the creation of more effective national research systems, whereby member states are expected to ensure that "all public bodies responsible for allocation of research funds apply the core principles of international peer review",[26] as presented in Table 1.

The GRC is comprised of the heads of bodies tasked with financing scientific research from around the world, and is dedicated to the exchange of data, best practices and strengthening of the international cooperation. At the Global Summit on Scientific Merit Review held in May 2012, the GRC adopted the key principles on assessment (enlisted in Table 1.)

TABLE 1. CORE PRINCIPLES OF ERA AND GRC

Principles	ERA	GRC
Excellence/ Expert Assessment	Projects selected for funding must demonstrate high quality in the context of the topics and criteria set out in the calls. The excellence of the proposals should be based on an assessment performed by experts. These experts, panel members and expert peer reviewers should be selected according to clear criteria and operate on procedures that avoid bias and manage conflicts of interest.	Collectively, reviewers should have the appropriate knowledge and expertise to assess the proposal both at the level of the broad context of the research field(s) to which it contributes and with respect to the specific objectives and methodology. Reviewers should be selected according to clear criteria.
Impartiality	All proposals submitted must be treated equally. They should be evaluated on their merits, irrespective of their origin or the identity of the applicants.	Proposals must be assessed fairly and on their merit. Conflicts of interest must be declared and managed according to defined, published processes.
Transparency	Decisions must be based on clearly described rules and procedures that are published a priori. All applicants must receive adequate feedback on the outcome of the evaluation of their proposal. All applicants should have the right to reply to the conclusions of the review. Adequate procedures should be in place to deal with the right to reply.	Decisions must be based on clearly described rules, procedures and evaluation criteria that are published a priori. Applicants should receive appropriate feedback on the evaluation of their proposal.
Appropriateness	The evaluation process should be appropriate to the nature of the call, the research area addressed, and in proportion with the investment and complexity of the work.	The review process should be consistent with the nature of the call, with the research area addressed, and in proportion to the investment and complexity of the work.
Efficiency and speed	The end-to-end evaluation process must be as rapid as possible, commensurate with maintaining the quality of the evaluation, and respecting the legal framework. The process needs to be efficient and simple.	/

Confidentiality	All proposals and related data, intellectual property and other documents must be treated in confidence by reviewers and organisations involved in the process. There should be arrangements for the disclosure of the identity of the experts.	All proposals, including related data, intellectual property and other documents, must be treated in confidence by reviewers and organizations involved in the review process.
Integrity and Ethical Considerations	Any proposal which contravenes fundamental ethical or integrity principles may be excluded at any time of the peer review process.	Ethics and integrity are paramount to the review process.

There are great similarities in terms of the principles defined above. Small differences were noted in the fact that the GRC does not foresee efficiency and speed in decision-making. The ERA's emphasis on excellence in the assessment procedures ensures that high quality projects are selected for financing, as well as excellence in terms of quality of reviewers, while the GRC's principles are primarily focused on the expertise of reviewers.

The websites of the Swiss National Science Foundation, Economic and Social Research Council in the United Kingdom and the Swedish Research Council contain the key principles applied in the assessment processes.

There are certain differences among these three developed countries in terms of their prioritization of principles, their scope and the manner in which they are formulated. The Swiss National Science Foundation underlines excellence through competition, fairness and equal opportunities, transparency, integrity and confidentiality.[27] On the other hand, as part of its Code of Conduct for Reviewers, the UK's Economic and Social Research Council anticipates confidentiality, respect, impartiality and transparency,[28] while the Swedish Research Council is focused on conflicts of interest, openness and gender equality.[29]

Among countries in the region, Croatia applies the principles of the GRC and they are enlisted in the Project Evaluation Manual.[30] The Rulebook of the Bulgarian Fund for Scientific Research indicates that reviewers should be guided by the principles of impartiality, competence and avoidance of conflicts of interest.[31] According to Article 3 of the Slovenian Rulebook on Co-Financing and Monitoring Implementation of Research Activities, procedures on project selection should be transparent and in compliance with established international practices.[32]

Assessment principles are publicly available on the websites in Switzerland, Sweden and the United Kingdom, while in the other countries they are most often integrated in rulebooks, books of procedures and other by-laws. Rules related to the application, assessment and decision-making are publicly available on the websites of bodies responsible for financing scientific research projects, which renders this aspect one of the most transparent. Table 2 provides clear insight in the manner in which different countries regulate issues related to transparency.

Criteria on selection of reviewers are publicly available in almost all countries, although the extent of definition differs from country to country. In Serbia, reviewers should be competent, while in Macedonia they should be independent. Except for Macedonia, all other countries anticipate the participation of foreign reviewers.

In all countries targeted by this analysis, the contents of project-proposals are not made publicly available, except in Sweden, where project-proposals become public immediately after submission. [33] In addition, Sweden is the only country where names of reviewers are publicly known during the assessment process, and are also published on the website of the Swedish Research Council.[34] In all other countries, reviewers are anonymous for the purpose of preventing influence and pressure by applicants.

In all countries, applicants are informed about the outcome of the open call by means of the review reports. The list of selected projects is usually published on the websites of bodies tasked with funding scientific research projects. They enlist the name and surname of project holders, institutions they come from, project titles, overall assessment, awarded funds and project duration. It is common to exclude the identity of unsuccessful applicants in the publication. In Slovenia, for example, the list published on the website includes reference numbers for unsuccessful applicants instead of names. [35]

TABLE 2. TRANSPARENCY OF PROJECT-PROPOSALS ASSESSMENT PROCEDURES

	Switzerland National Science Foundation	**United Kingdom** Economic and Social Research Council	**Sweden** Research Council	**Slovenia** Research Agency
Rules for application, assessment and decision-making are publicly available	YES	YES	YES	YES
Contents of project-proposals are publicly available	NO	NO	YES***	NO
Names of reviewers are publicly available	NO	NO	YES	NO
Criteria on selection of reviewers are publicly available	YES	YES	YES	YES
Participation of foreign reviewers	YES	YES	YES	YES
Assessment reports are publicly available for approved projects	NO	NO	NO	YES*
All applicants are informed about assessment results	YES	YES	YES	YES
Contents of approved and rejected projects are publicly available	NO	NO	YES**	NO

roatia Science Foundation	Bulgaria National Science Fund	Serbia Ministry of Education, Science and Technology Development	Montenegro Ministry of Science	Macedonia Ministry of Education and Science
YES	YES	YES	YES	YES
NO	NO	NO	NO	NO
NO	NO	NO	NO	NO
YES	YES	YES	YES	YES
YES	YES	YES	YES	NO
NO	YES	NO	NO	NO
YES	YES	YES	YES	YES
YES, only approved projects	NO	NO	NO	NO

With regards to the contents of project-proposals submitted, the rules of the Swedish Research Council state that the Council shall maintain its right to publish popular scientific description of approved projects,[36] whilst in Croatia the list of approved projects contains their short excerpts.[37] In other countries, contents of approved and rejected projects are not published, not even in the form of brief excerpts.

It can be concluded that the above bodies responsible for financing scientific research projects are most transparent in terms of availability of assessment criteria, rules for application and a list of ranking points. In terms of international practices, the most frequent is the practice on publishing lists of approved projects on the websites of relevant bodies which sometimes include short excerpts.

With regards to conflicts of interest, although all countries that were the subject of analysis anticipate measures for the prevention of conflicts of interest, differences were noted in the manner in which such were defined and regulated. The minimum requirement covered in all countries is that reviewers are exempted from acting as experts in projects in which they participate directly. Measures on the establishment and regulation of conflicts of interest are of particular importance because they enable objective and fair assessments, thus financing the best projects. Further, these measures restore and strengthen the trust in the body tasked with their financing.

Within the conditions of small research communities, as is the case in Macedonia, different countries select different manners for the regulation of conflicts of interest. Ireland, for example, completely relies on foreign reviewers.[38] In the Macedonian context, the basic prerequisite is a signed declaration that they, or the institution where they or their family members are employed, do not participate in the same open call. If reviewers disclose conflicts of interest, they should be exempted from the process on assessment of project-proposals and should be replaced by reviewers who will be able to provide objective assessments thereof. Similar procedures need to be introduced also in cases where conflicts of interest are not identified at the beginning, but become evident at a later stage of the assessment process.

6. CONCLUSIONS

Research findings are indicative of Macedonia's non-compliance with international principles accepted at European and global level. The lack of transparency in the assessment process of scientific research project-proposals and high level of distrust in the MES' capacity and objectiveness for selection and their financing is especially worrying. Accordingly, there is a need to accept and apply internationally recognized principles on such assessment practises, in particular those related to the transparency of the process and regulation of conflicts of interest.

Transparency is of crucial importance because the review process is most effective when assessment procedures and methods are implemented fully and in a timely manner, are made available to the research community and include the publication of assessment procedures, selection of reviewers, and manners in which decisions are taken. Improved transparency will allow the research community and the broader public insight into the manner of spending state funds intended for this activity. Two aspects are of key importance in improving transparency: availability and the prompt publication of information. More specifically, this includes:

a) Application procedures – they should be available to stakeholders at the moment when the open call is published on the website of the body tasked with financing scientific research projects. They should contain the following components:

- Criteria on assessment of project-proposals;
- A list of ranking points (i.e. how to compile the ranking list, how to formulate assessments);
- Decision-making process (manner of voting, who takes the final decision);
- The amount of funds to be awarded.

b) Criteria for the selection of reviewers

- Criteria for the selection of reviewers should be publicly available. Contrary to imprecise regulations in Macedonia, where the single criterion is independence, most countries included in this analysis have clearly defined criteria for selection of reviewers. Most often they concern: competence in the field, scientific title, number of publications and elimination of conflicts of interest.
- Names of reviewers should not be known to the public; this is to avoid pressure and influence. Candidates should abstain from efforts to learn reviewers' identity and influence them or the review results. They should be provided with conditions conducive to objective assessment, which

is particularly important in cases of negative reviews. This is a generally accepted practice, with the exception of the Swedish Research Council, that publishes reviewers' names on the website and are available during the assessment process.

- Project-proposals should be assessed by national, as well as foreign reviewers. Results from our research highlight the need for the participation of foreign reviewers in order to secure or increase the overall credibility of the process.

c) Transparency in decision-making processes and management of conflicts of interest.

Final assessment and notification of applicants about the decision: after the selection of projects to be financed, applicants must be notified about the decision by means of a detailed report. A list of approved projects must also be published on the website of the body tasked with financing scientific research projects. The report should include assessments under each individual criterion, overall assessment and comments from reviewers. On the basis of detailed review reports, applicants whose projects have not been approved will be able to use comments from reviewers as feedback to improve their proposals for the next open call. Unsuccessful applicants should be given the right to appeal, by way of being able to have the opportunity to reply to comments from reviewers and clarify certain misunderstandings.

The list of approved projects that will be published on the website should include the names of research team members, the institutions they come from, the approved amount of funds, project duration, project title and executive summary.

In addition to transparency, the management of conflicts of interest is another priority in terms of improving the process on assessment of scientific research project-proposals. Successful identification, prevention and management of conflicts of interest contributes to higher quality of the assessment process, as well as better public perception about the allocation of state funds intended for these projects (based on quality and merit, and not personal or other interests). Therefore, it is necessary to define conflicts of interest (what is financial, personal, academic, political interest and clarification of situations that could be interpreted as problematic). Additionally, under conditions in which the scientific community is small in number, the potential for conflicts of interest is greater. For this reason it is important to establish procedures and measures that will be adequate to the context. In Macedonia, the solution preferred by surveyed respondents is the involvement of foreign reviewers. In addition, reviewers should sign declarations that they or the institution where they or their family members are employed do

not participate in the same open call. Reviewers should not abuse their positions or the information available to them as a result of the reviewing engagement. In other words, they should respect the intellectual property rights of the project-holders; they must refrain from usurpation, not claim authorship of or share or use any material that is part of the project-proposal.

7. ALTERNATIVE SOLUTIONS

General recommendation from the above analysis is to focus on introducing recognized and accepted international principles for assessing scientific research project-proposals.

With regards to transparency, the first alternative solution is known in literature as the "radical approach" and advocates for the full openness of the assessment process.[39] According to Gurwitz, bodies tasked with financing scientific research projects are generally more open in their procedures compared to contents of project applications and manners in which decisions are taken, which additionally contributes to inconsistency and injustice in the assessment process.[40] Therefore, it is recommended for full project applications, together with review repots, to be published on websites, for both approved and rejected projects. That will enable the sharing of knowledge and increase possibilities for cooperation and opportunities for unsuccessful applicants to learn from successful applicants, for the purpose of improving their future project-proposals. Two key problems are: a) the publication of full contents of project-proposals leaves space for possible abuse and claim that it is a matter of somebody's own idea, and therefore unpublished ideas and data should be protected. Non-publication of names of applicants whose projects were rejected will protect their identity and their reputation; and b) in conditions when the basic principles of transparency are not applied; the radical approach is overly ambitious and does not correspond to the current context.

The second alternative solution is not to take any improvement measures, maintain the status quo, and thereby leave the process non-transparent. This solution will have far-reaching negative consequences on both the quality of financed projects and researchers' trust in the institutions and in the process itself.

8. RECOMMENDATIONS

- "Rules of the game" should be clearly defined, publicly and promptly available and they should be equally applicable to all.
- A Code of Conduct pertaining to the SRA financing body's should be developed and must include ethical and professional standards and further stipulate sanctions for non-compliance.
- Criteria for selection of reviewers should be clearly defined and a register of reviewers should be established.
- Reviewers should apply internationally accepted principles on assessing project-proposals. In that regard, the principles proposed by the ERA and the GRC can be used as an appropriate benchmark of standards.
- Reviewers should be given clear guidelines for the methods of assessment and selection of projects, on the basis of criteria established in advance and quality of submitted applications.
- Reviewers should mandatorily declare conflicts of interest, should possess integrity and should be guided by the highest ethical standards, such as confidentiality and respect for intellectual property. Reviewers should sign statements whereby they declare that they or the institution where they or their family members are employed do not participate in the same open call.
- Applicants should be given specific, clear and timely information on the guidelines for application, criteria and methods of assessment, ranking and decision-making.
- Applicants should be notified of the final outcome and should be presented with a detailed report that will include assessments and comments from reviewers.
- Applicants must be given the right to complain/appeal the decision.
- It should be mandatory that successful project-proposals should be published on the website of the MES/body tasked with allocation of funds.

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POLICY BRIEFS

SCIENTIFIC RESEARCH PROJECTS OF THE MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF MACEDONIA: INSTRUMENTS, MODALITIES AND THE NEED FOR THEMATIC FOCUS

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[1] Views presented in this policy brief belong to the author and do not reflect positions of institutions he is related to.

1. CONTEXT AND PROBLEM IMPORTANCE

A knowledge-based society is the key foundation for economic development and wellbeing of any country. Aiming at such a society underlines the need for strengthened focus on science and its products. On a global level, movement towards a knowledge-based society has increased not only the demand, but also the supply of funds intended to support, on a competitive basis, the production of evidence via the application of scientific tools, which are later translated into relevant policies and practices aimed to improve society and quality of life.

Another value of having a knowledge-based society lies in the fact that it encourages cooperation among researchers and the internationalization of the research profession. Hence, global debates are centred on two strategic issues in research: financing instruments for research and modalities for research implementation.

With only 0.44% of GDP allocated for science, Macedonia is at the bottom on the list of countries in terms of funding science and research and is far behind the average of EU-28 standing at 2% in 2013 (Eurostat, 2015). Not only is the amount of funds allocated for science low, but its use value has also been brought under question. In the last several years, the Ministry of Education and Science (MES) has announced two types of open calls: the first is an open call for financing papers published in impact-factor journals and the second one regards participation in international conferences. The purpose of the first open call is to reward publication of papers in high-ranked journals (indexed in journal databases, such as: Web of Science, Scopus and others), whereby the open call does not finance research work, but awards results therefrom with symbolic fund. The second type of open call is in line with the goal of the knowledge-based society - on encouraging networking and internationalization. However, none of the above-indicated open calls finances scientific research work. The MES' last open call for financing scientific research projects dates back to 2011 and was never implemented. Hence, in the last five years science in Macedonia has been left without financing sources and instruments. Researchers are left to finance their own research activities from international sources. A further negative consequence is that there exists a significant number of those who, within their universities and scientific institutes, do not receive any financing for research activities, except for funds received as salary.[2]

The scientific community in the country and several regional initiatives are advocating for the establishment of a more robust system for financing science in Macedonia, managed by the MES. The **purpose of this policy brief** is to highlight

[2] Here, we refer to situations in which university employees are primarily tasked to deliver instruction, and their salaries are financed by the education activity, which does not aim to finance their research activity per se.

the need for constructive contribution within that debate. More specifically, this policy brief aims to propose practical solutions concerning the form and design of financing instruments for science in Macedonia, with a special focus on thematic profiling (restriction) of these calls.

To emphasise the aforementioned need, this brief is structured as follows: section 2 provides an overview of several ideas for financing instruments that would encourage and support scientific thought in Macedonia; section 3 reflects on modalities for practical design of financing instruments; section 4 provides an overview of the need for thematic focus in the MES' open calls for scientific applications; and lastly, section 5 outlines conclusions and recommendations for holders of relevant policies.

2. OPTIONS FOR FINANCING INSTRUMENTS FOR SCIENCE

Generally, financing instruments for science represent an arrangement for financing or enabling access to funds for scientific community. They can apply for funds using these calls as individuals, as part of an organization (university department, institute, think-tank), or as part of a group of organizations or group of individuals related to different organizations. A summary of practices related to financing science in different countries allows the conclusion that financing instruments usually appear in three forms: projects, programmes and grants. In addition, there are also fellowships and vouchers, which are usually used as instruments to finance post-graduate degrees in education for example Masters or PhD, or to cover specific costs related to scholar visits, scientific equipment and the like. This policy brief provides a detailed overview of the first group of financing instruments.

Project financing is the most broadly distributed financing instrument for science used by ministries that support science and by science councils. Funded projects are usually short-term or medium-term and funds are awarded on a competitive basis by means of open calls for applications. They have precisely defined target groups and usually require recipients of funds to provide details about their research goals that would be achieved with their project-proposal, expected results, beneficiaries of project results, and timeframe for attainment of these goals.

According to the author's knowledge, the MES has previously implemented this type for financing science. Its 2011 open call concerned project financing on a competitive basis. The MES required project-proposals to be submitted and to have clearly defined goals, a theoretical baseline, a methodology, timeframe and expected results. Target groups of researchers that could apply on the open call were to be clearly de-

fined. Having in mind that project financing is broadly present and has been practiced in the past by the MES, its implementation should continue in future.

Programme financing is similar to project financing, but implies longer timeframes, is more comprehensive and therefore includes longer-term goals. Usually, programme financing is comprised of several projects within a programme packages that are united around one central theme. They are implemented by a group of scientists that are organized into a team or network. This type of funding was practiced by the MES until 2006 (annual programmes of public scientific institutions) and in between 2010–2011.It was mainly used to finance projects related to Macedonian language, literature and history. One limiting factor under the programme approach could be the scope of funds needed to implement this approach. Only developed states could afford such programme financing, such as programme financing under the Seventh Framework Programme (FP7) or *Horizon 2020*. However, programme financing is interesting in terms of thematic profiling of potential open calls announced by the MES, as discussed in section 4 below.

Grant financing, as a notion, is used to define the funding instrument for scientists, in general or specific form. In its specific form, the grant usually allows freedom in the utilization of funds awarded and flexibility in its administrative management. These features distinguish grant financing from project financing. Grant financing is traditionally used by charitable organizations, but its use also extends to ministries or science councils.

3. MODALITIES FOR THE PRACTICAL DESIGN OF FINANCING INSTRUMENTS

Modalities can be understood as practical solutions for the way in which the financing instruments for science operate. This policy brief is focused on **modalities for the design of open calls for applications**. That implies that modalities for implementation of open calls for applications (deadlines, assessment of applications, ranking, etc.) are not subject of discussion here.

Modalities can be related to several aspects of financing instruments. One aspect concerns whether the open call for applications (project-proposals) has an **open or (semi)closed character.** Commonly, the vast majority of open calls are of open character. In the past, the MES organized its calls for applications as open, although some calls were restricted in regard to whether or not ownership of scientific institutions was public or private. Nevertheless, this restriction is not a common practice across the world and should be abandoned.

Another aspect of open calls for applications is whether the application procedure is organized in one or two **phases.** Usually, the first phase implies the submission of a brief project-proposal, or so-called "concept note". The second phase includes the submission of full application after the concept note is approved. The purpose of this modality of financing instruments is to shortlist potential applications that will be financed and to reduce the administrative burden for the institution announcing and organizing the open call. This is also related to the scope of available funds.. Commonly the two-phase procedure is used for programme financing and where larger funds are available, while project financing is organized as single-phase procedure. Having in mind the amount of budgets financed by the MES in the past and taking into consideration that probably similar projects will be financed in the future, single-phase procedure should be maintained as a concept. However, if science becomes a priority and the MES decides to opt for programme financing, then it is it is desirable to organize the application procedure in two phases.

The third aspect of open calls for applications is **scientific excellence**, i.e. whether the open call aims to support researchers in a particular stage of development or to support all researchers. In the past, the MES announced open calls that covered all researchers according to excellence. However, it seems that this approach is wrong. Namely, the common practice in Macedonia related to teams comprised of both senior and junior researchers implies that young researchers carry the burden of research work, while benefits thereof are attributed to senior researchers. Reverence upheld by and developed among young researchers towards their professors in the course of time is yet another factor that affects this situation. Therefore, mixed research teams according to scientific excellence should be abandoned and replaced with the practice on defining at least three levels: young researchers (from completion of master studies up to 5 years after completion of PhD studies); middle-age researchers (5 to 15 years after completion of PhD studies) and senior researchers (more than 15 years after completion of PhD studies). They should be targeted under three separate groups of open calls.

The fourth aspect is the definition of **scientific disciplines** that will be financed by the ministry or by a separate body outside the ministry, such as the science council. While many researchers may perceive this as discrimination (for example, social sciences will be financed, but not natural sciences), that could be a result of the degree of development of scientific disciplines in the country which are targeted by the open call for financing. For example, in the Western Balkans social sciences are less developed than natural, technical and medical sciences. Therefore, there are several research initiatives in the region that finance projects only in the field of social sciences. With regards to cases where- the Ministry of Science announces this type of open calls for the distribution of budget funds, it is recommended that open calls do not impose restrictions in terms of scientific disciplines. This is to

ensure that certain disciplines are not exempted from financing. An intermediary solution would be for certain scientific disciplines marked by a lower level of development (for example, measured according to number of papers published in given database by researchers from that country in the last 5 years) to receive a greater grant compared to disciplines marked by a higher level of development that could more easily compete for other forms of (international) funding.

The last aspect that relates to, but still slightly differs from the latter, includes a thematic **focus** (restriction) of open calls for applications. Open calls can either be thematically focused or not. A large number of open calls, especially those whose task is to distribute large amounts of funds, do not have thematic restrictions. Other open calls have thematic focuses: on a global level these include themes related to the United Nations' Sustainable Development Goals (such as eradication of extreme poverty and hunger), global warming and the like; while at the national level they usually include issues that require urgent solutions from the government and domestic community. Under its previous practice, the MES did not have thematic profiling of open calls, in other words the open calls were general. Therefore the question is raised as to whether thematic profiling of open calls for scientific research applications is needed in the case of the MES and Macedonia.

Having in mind that this policy brief pays special attention to this issue, it is analysed in greater detail as part of the comparative overview given below.

4. THE MES' OPEN CALLS FOR PROJECTS: INSTRUMENTS AND MODALITIES FOR FINANCING SCIENCE IN MACEDONIA

4.1. EXPERIENCES FROM COUNTRIES WITH DEVELOPED SYSTEMS FOR FINANCING SCIENCE

Experiences with thematic restrictions of open calls for financing scientific research projects by ministries and/or science councils differ throughout the world. Nevertheless, a greater quantity of information is available from developed countries which, to large extent, have their own science councils or agencies that are exclusively tasked with financing science in the country (and wider). In this section of the policy brief we provide a short overview of international experiences, without any attempt to ensure representativeness of the cases selected for analysis.

The European Research Council (ERC), which is a form of scientific research agency of the European Commission, does not have thematic priorities. Howev-

er, there are two key criteria regarding the character of financed research projects: they should imply frontier research in scientific and research thought and should include high degree of innovation. In addition, open calls announced by ERC make an adequate distinction according to scientific excellence, i.e. they separately target researchers in different periods of their careers. ERC does not favour scientific disciplines; however, physical and natural sciences receive twice as much funding in comparison to social sciences and humanities. The absence of defined themes and disciplines in financing science at the European level is possible, inter alia, due to the ERC's enormous budget and scope.

Ireland's Science Foundation does not practice thematic priorities either. Nevertheless, in the last years, the Foundation has moved away from open calls without thematic focus and closer towards research projects that are important for applied industry in the country. This has enabled an implicit definition of themes that will be financed, which include urgent business research needs. In the case of Ireland, financing puts great importance on scientific excellence, i.e. separately targets researchers in different stages of their scientific career.

The Netherlands Organization for Scientific Research distinguishes between disciplines that will be funded by means of establishing a so-called practice of "science divisions". Each division disposes its own budget that is distributed by means of open calls, which are often not thematically restricted. This is similar to the position of the Research Council of Norway that does not distinguish between thematic orientations at all. Nevertheless, this council does at times differentiate between certain thematic areas that are designated as priority for science development and/or areas in which Norway has relevant scientific staff. In this case, funds are awarded according to precise thematic areas and they operate at the level of initiatives within the Research Council. A similar operation is noted with research councils in the United States, the United Kingdom and Switzerland.

From this comparison one can conclude that scientific research councils in developed countries do not practice thematic profiling when funding scientific research projects.. The only exception is the fact that some of them place a strong focus on links between science and industry. Thus the themes are defined in accordance to the problems that industry and business are facing. Is the absence of thematic profile privilege of developed research councils/agencies? The answer is probably in the affirmative. These funding institutions dispose of significant budget resources for scientific, usually exceeding 3% of GDP. Given the size of their respective GDPs (plus knowing that it is a matter for developed countries), reach very high amounts in absolute figures. Therefore, the institutions are in position to finance thematic diversity. In addition, they have an interest and ambition to finance ground-breaking and frontier research, which implies that the decision on funding research themes should be left in the hands of applicants using their research skills.

It must be noted that this comparative overview did not include developing countries and countries similar to Macedonia, due to limited availability of relevant information and data.

4.2. WHY DOES MACEDONIA NEED OPEN CALLS WITH A THEMATIC FOCUS?

Are scientific research experiences from developed countries a relevant benchmark for open calls for research projects in Macedonia? The answer is probably negative, as is outlined below.

In 2013, The Republic of Macedonia allocated 0.44% of GDP for scientific research activity (National Programme on Scientific Research Activity 2012–2016). In absolute figures this is a very small amount compared to the funds allocated by developed countries and the average of the EU-28 standing at 2% of GDP in 2013. With relatively limited resources, Macedonia cannot afford to finance a great thematic diversity. Notably, such limited resources should be geared towards themes that have the biggest impact on solving burning issues and/or on improving social life.. According to this argument, the MES' open calls need to have thematic focus. It should be noted that such thematic focus does not imply financing particular scientific disciplines, but rather funding current and relevant topics within each scientific discipline. For the most part, these would be problems of a predominantly local character, but could contribute to regional as well as global scientific debates. As such, they are unlikely to attract international funding.

Let us reconsider two examples: the persistent high poverty rate under conditions of solid economic growth, and identity issues and the Macedonian language in the context of the name dispute with Greece. Both themes have a local context and would not be interesting on a global level. This makes it difficult to attract international funding, but are marked by specificities that at given moment could become interesting for scientific thought in general. Therefore, support for such themes under open calls announced by the MES seems to be necessary. An opposite example would be a globally important theme, such as global warming. If Macedonia has researchers whose research skills are at advanced enough to contribute to scientific thought aimed at resolving this global problem. Such research would easily attract international funding and will allow for a better utilization of the limited resources for science in the country.

In conclusion, therefore, the thematic profiling of MES's open calls, combined with respect for the principle of scientific excellence, is the most adequate solution. The definition of thematic priorities in any scientific discipline according to societal and industrial problems will enable a more systematic and evidence-based approach to the resolution of the problems outlined above.

5. CONCLUSIONS AND RECOMMENDATIONS

The main conclusion from the discussion presented in this policy brief is that open calls for scientific research projects that will be announced by the MES in the future should have a clear thematic profile. This will enable solutions to the country's relevant social and/or industrial problems, with the ultimate goal of improving life in society and raising living standards of citizens. It is desirable for thematic profiles to be combined with lots under open calls according to the development stage of scientific careers, and avoid the announcement of one and the same open call for researchers in different stages of development.

Accordingly, several recommendations are valid for policy makers in this field. They include:

- The MES' open calls for financing science should allow different forms of research teams: individual researchers, research organizations (university departments, institutes, think-tanks), groups of organizations or groups of individual researchers related to different organizations;
- Project financing should urgently and immediately continue after the break of five years.
- Programme financing should be designed, but only in the context of thematic profiling of the MES' open calls, as well as in the form of signalling political will for long-term financing of science and sustainability of that process.
- The restriction of open calls in terms of whether the eligible institutions needing funding are private or public should be fully abandoned;
- Considering expectations that the majority of funds intended for science and disbursed through the MES should be distributed by means of project financing, it is recommended that the application procedure be organized in one phase.
- It is recommended to abandon the practice on allowing mixed research teams according to scientific excellence (one team to have both senior and junior researchers) and to establish at least three clusters (young, middle-aged and senior researchers) that will be targeted under separate open calls.
- Open calls should have a clear thematic profile that corresponds to Macedonia's social and industrial needs and problems.

INVOLVING RESEARCH THINK-TANK ORGANIZATIONS IN OPEN CALLS FOR SCIENTIFIC RESEARCH PROJECTS

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1. INTRODUCTION

In comparison to other countries in the Balkan region and in the European Union (EU), the Republic of Macedonia has one of the lowest investment rates in development of science, research and innovation. According to data published by the World Bank, the total amount of funds the country has invested in science and research in 2013 accounted for 0.44% of GDP.[1] Relevant investment rates of some countries in the region are significantly higher, for example Serbia (0.73% of GDP), Croatia (0.82% of GDP) or Slovenia (2.6% of GDP). The EU-28 average stands at 2.01% of GDP.[2]

The last open call for financing scientific and research programmes and projects in Macedonia was implemented in 2011. According to the Rulebook on Financing Scientific Research Activity,[3] research think-tank organizations (hereinafter: think-tanks) were denied the right to participate in these open calls because the Law on Scientific Research Activity[4] does not recognize them as entities performing scientific research activity (hereinafter: SRA). Notably, the Law on SRA recognizes only the following entities: "state universities and private universities, i.e. their science departments (scientific institutes) and departments of science-based education (faculties); the Macedonian Academy of Science and Arts; independent national high education institutions; independent private high education institutions; public scientific institutions; combined scientific institutions; private scientific institutions and independent researchers" (Article 15 of the Law on SRA). Hence, contrary to the public interest (as defined in Article 5 of the Law on SRA[5]), the state is limiting the possibility of utilizing the capacity and experience of think-tanks that are working, in continuity, on various national, regional and international scientific research projects. Some of these organizations have even participated in projects supported by highly competitive programmes, such as *Horizon 2020*.[6]

This policy document examines various possibilities for the inclusion of think-tanks in the list of entities eligible for financial support from the Ministry of Education and Science, with a view to improve the quality of research by utilizing their capacity. This is done by means of analyses of the national legal framework on SRA and comparative analysis of relevant experiences in the countries from the region and the EU. Conclusions and recommendations are presented at the end of this policy document.

2. CONTEXT AND PROBLEM DESCRIPTION

The Law on SRA[7] does not recognize think-tanks as entities performing SRA (Article 15), although the activity they perform is in line with basic principles (Article 3) and public interest of SRA, as defined in the Law (Article 5). Moreover, think-tanks are not allowed to appear as partners to applicant organizations in the open calls for financing scientific research projects.

A large portion of think-tanks in the country apply an academic approach in their operation, based on scientific methods that are deemed necessary for the implementation of high-quality, objective and independent research studies and should later contribute to efficient policy making.[8] Research studies conducted by these organizations are frequently assessed by mentor academic institutions.[9] Think-tanks have the possibility to build their research capacity and produce quality research studies, published in international journals with impact factor. Think-thank staff often includes researchers who have completed their education (postgraduate and PhD studies) at universities in the country and abroad, and have advanced their professional skills not only by implementing national projects, but also by participating in regional and international projects, at professional training events, international conferences, etc.[10]

Research studies of think-tanks operating in the country are focused in different fields, most commonly in the fields of democracy and the rule of law, economic and social policies, foreign and security policy, EU integration, gender equality, youth policies, etc. Some of them are profiled in several related areas, while others are focused only in one field (e.g. economic policies). Almost all think-tanks in the country are non-profit, independent and non-partisan research organizations, with the exception of two organizations that are organized as political institutes with clearly defined objectives on supporting and promoting political values they are ideologically related to.

Think-tanks were first established in Macedonia after the country declared its independence in the 1990s.[11] Unlike civil society organizations (which most often work on promotion, protection and advocacy in specific fields of their operation), the primary activity of think-tanks is based on conducting research, analysis and dissemination of results. Their main focus is on public policies. There are certain differences in respective definitions of think-tanks applied by different countries. These differences emanate from the individual country's political system and legislation, the work, and working environment of the respective think-tanks.[12]

According to the last Global Think-Thank Index Report[13], think-tanks are defined as institutions that generate policy-oriented research, analysis and advice on

domestic and international issues, thus enabling policymakers and the public to make informed decisions about public policy issues. Macedonia does not have a legal framework that specifically defines and regulates the operation of these organizations, and they are often registered as association of citizens in compliance with the Law on Associations and Foundations (2010).[14] According to the last Global Think-Tank Index Report[15], in Macedonia there are a total of 18 think-tanks, which is a relatively high number compared to other countries in the region like Slovenia (19), Serbia (24), Albania (14), Croatia (11), Montenegro (4), Bosnia and Herzegovina (14) and Kosovo (3).

Despite evident capacity of think-tanks to manage research projects and implement high quality research, the national legal framework fails to recognize them as entities performing SRA. Therefore, the thesis in this policy docume

3. COMPARATIVE EXPERIENCES: WHAT MODELS ARE IN PLACE FOR RESEARCH THINK-TANKS TO BE INCLUDED IN SRA PROGRAMMES AND OPEN CALLS?

A comparative analysis of experiences related to involvement of think-tanks in open calls for scientific research projects in countries from the region or the EU shows that they all have different practices in place. In some countries from the region, participation in open calls is not limited only to scientific research institutes, universities and university institutes, i.e. the open calls allow and encourage participation of independent research institutions.

An analysis of primary and secondary legislation, strategies and open calls concerning public funding for SRA shows that some countries in the region apply similar models on conceptualizing open calls for scientific research projects.

In the Republic of Serbia, the Law on SRA[16] does not recognize think-tanks as entities performing SRA. According to the bylaw on financing SRA in the Republic of Serbia,[17] right to participate in open calls is given to accredited scientific research institutions (institutes, faculties, integrated universities and institutes founded by the Serbian Academy of Science and Arts), as well as registered innovation and research-development centres (Article 2). Moreover, unemployed young researchers (PhD students) are also allowed to participate in the open calls as part of research teams. The legal regulations do not directly enlist think-tanks as entities performing SRA entities, but they do not explicitly exclude them.[18] Namely, the Law on Innovation Activity[19] and the Rulebook on Conditions for Enlistment and Deletion from the Register on Innovation Activity[20] allow for the registration

of private independent research-development centres that meet the law-stipulated criteria, which include adoption of programme on scientific research work, disposal with premises and technical equipment for performance of this activity, and at least four full-time employed staff members (two of which should hold PhD degrees and two should hold Masters degrees).

Under the Law on SRA[21] adopted in Montenegro, entities performing SRA enlist the Montenegrin Academy of Science and Arts, scientific research institutes, higher education institutions and other natural and legal entities as being in compliance with the Law. The Law on SRA does not define think-tanks as entities performing SRA, but programmes on financing or co-financing projects implemented by the Ministry of Science. This is conditional upon the approval of funding with partnership with at least one international research institution, and depending on the fact whether it is a matter of financing or co-financing, participation in open calls is allowed for partnerships with research organizations and private sector companies. More specifically, the participation of eligible entities from the country in the open call for higher education and innovation and competitiveness research[22] is conditional upon partnership with at least one international organization and one partner from the business sector. On the other hand, open calls for co-financing scientific research projects[23] award funds to co-finance projects that have been positively assessed or approved for implementation within the EU Programme *Horizon 2020*. A particularly important aspect of open calls organized by the Montenegrin Ministry of Science is the stimulation of international cooperation and exchange of experiences and skills between domestic and international research institutions and organizations.

In Croatia, state-funded open calls for scientific research projects are implemented by the Croatian Science Foundation.[24] Institutions registered in compliance with the Law on Science and High Education are entitled to participate in these open calls as project-holders.[25] This Law does not explicitly enlist think-tanks as entities performing SRA, and they are entitled to participate in state open calls for scientific research projects only if they meet legally stipulated conditions for enlistment in the Register of Scientific Organizations.[26] Depending on scientific filed for which the open call is announced, partnerships with international organizations, research agencies or private companies are encouraged, as means of securing additional funds, to finance projects beyond the anticipated budget funds.

The Slovenian Research Agency is the institution responsible for implementation of the National Research and Development Programme in Slovenia.[27] It provides support for programmes, projects, young researchers, international projects, and research infrastructure.[28] Announced calls are open for all organizations and researchers that meet application criteria defined in individual open calls, including think-tanks. Significant support is provided to international projects (*Horizon*

2020, COST, etc.[29]) where Slovenian research organizations appear as partner or leading organizations in project consortia.

With regards to the EU's most extensive programme on financing SRA - *Horizon 2020*,[30] the right to participation is granted to: research organizations (including think-tanks), multinational companies, small- and medium-sized enterprises, NGOs, public administration bodies and other entities in Europe and beyond EU's borders (associated countries in the programme) whose project-proposals meet the strict criteria on successful track records defined in individual open calls. Participation in these open calls necessitates establishment of project consortium comprised of at least three organizations from three different EU member-states or associated countries, thus stimulating international cooperation. Macedonia is an associate country to the *Horizon 2020* Programme[31], and previous open calls approved several projects[32] implying participation of several Macedonian institutions (universities and scientific institutes), think-tanks (especially in social science projects), state institutions and local self-government units (e.g. the City of Skopje), companies, etc.

4. CONCLUSION

Relevant legislation in Macedonia does not allow comprehensive coverage and inclusivity under open calls announced for financing SRA. Contrary to practices observed in some countries from the region and the EU, open calls implemented in Macedonia exclusively target public and private higher education institutions and scientific research institutes.

For this reason and contrary to the public interest (as defined in Article 5 of the Law on SRA[33]), Macedonia limits the possibility to utilize capacity and experiences of independent think-tanks that are working, in continuity, on scientific research projects. An additional problem is identified in terms of the failure to acknowledge possibilities for stimulating cooperation between state and private institutions and think-tanks. Stimulating this said cooperation leads to project-proposals of better quality; thus contributing to improved capacity of partner institutions and strengthened competitiveness for participation in international open calls for project-proposals.

A comparative overview in countries from the region and the EU shows that developed countries, allocating higher amount of funds for SRA, design their open

calls in a manner that allows submission of project applications by different entities, including think-tanks. Therefore, it is important to stress the need for increased budget funds intended for scientific research projects in the country.

5. POLICY RECOMMENDATIONS

In order to improve the quality of projects supported by the state, we recommended that think-tanks be included in the list of entities performing SRA in Macedonia. That could be attained by:

1. **Creating conditions and clearly defined frameworks and criteria that will open possibilities for research think-tanks to participate in open calls for projects announced by MES;**
2. **Establishing a register of think-tanks profiled in scientific research work that will allow, for example, an overview of their respective fields of operation, staff, implemented projects and donors;**
3. Giving greater weight to the following two criteria on assessment of project-proposals:
   - a) the **organization's capacity for project implementation** (previous experiences in implementing national, regional or international research projects);
   - **b) the research staff/team's capacity and experience** (number of researchers with PhD and Master Degrees, as well as involvement of young researchers).
4. **Programmes and open calls for financing scientific research projects should stimulate cooperation and partnership between different entities;**
5. **Co-funding and financial support should be provided to all research organizations that are part of international consortia** and whose research project-proposals have been positively assessed or approved for implementation within European and other international programmes on financing research projects such as Horizon 2020 and COST.

6. ENDNOTES

1 The World Bank, *Research and Development Expenditure (% of GDP) 1997-2013*, available at http://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?locations=MK, last accessed on 10th October 2016

2 Eurostat (2015), Gross Domestic Expenditure on Research and Development 2003–2013, available at: goo.gl/ptjr4E, last accessed on 19th July 2016.

3 Rulebook on the Method and Procedure for Financing Scientific Research Projects, i.e. Programmes (*"Official Gazette of the Republic of Macedonia"* no. 82/09, 149/09, 34/11 и 129/13).

4 Law on Scientific Research Activity (*"Official Gazette of the Republic of Macedonia"* no. 46/2008, 103/2008, 24/2011, 80/2012, 24/2013, 147/2013, 41/2014, 145/2015, 154/2015 and 30/2016)

5 Law on Scientific Research Activity (*"Official Gazette of the Republic of Macedonia"* no. 46/2008, 103/2008, 24/2011, 80/2012, 24/2013, 147/2013, 41/2014, 145/2015, 154/2015 and 30/2016)

6 European Commission, Horizon 2020, https://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020

7 Ibid.

8 Ibid.

9 Example of such cooperation are research projects implemented within the Western Balkans Regional Research Promotion Programme http://www.rrpp-westernbalkans.net/, Horizon 2020 https://ec.europa.eu/programmes/horizon2020/, COST http://www.cost.eu/, etc.

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HOW TO INVOLVE THE ACADEMIC COMMUNITY IN THE PROCESS ON ASSESSMENT OF SCIENTIFIC RESEARCH PROJECT-PROPOSALS?

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1. INTRODUCTION

For longer period of time, interest for science and financing scientific research activity in the Republic of Macedonia is decreased. This position is based on several facts. The country is on the bottom of the list in Europe according to the amount of funds allocated for science. According to the 2015 Progress Report for the Republic of Macedonia published by the European Commission, the share of funds allocated for science amounts to less than 0.3 % of GDP.[1] In that context, the last open call for financing scientific research projects with state funds was announced in 2011. In the course of its implementation successful projects were faced with reduction of initially approved budgets. Significant portion of budget funds intended for science are used to finance other priorities set by the government (for example, project for translation of textbooks, equipping laboratories). Moreover, the legal framework that regulates the procedure on financing scientific research projects is subject to frequent changes.

In parallel, the number of registered organizations that perform research and development activity is continuously increasing. According to data from the State Statistical Office, in 2014 there were 111 organizations performing research and development activity in the country.[2] Despite the high number of these organizations, it seems that the role of the academic community is broadly undermined, especially in regard to possibilities for financing scientific research projects.

Having in mind these trends, the document is focused on specific aspect related to participation of the academic community in decision-making processes. The purpose of this research is to analyse the current situation related to participation of the academic community in the assessment of scientific research project-proposals in the Republic of Macedonia and, based on comparative good practices from the region and the European Union (EU), to formulate conclusions and recommendations aimed to improve involvement of the academic community.

This policy document aims to contribute to the development of the future model for financing scientific research that should be based on local characteristics and the needs of the entities performing scientific research activity, as well as on comparative experiences from different countries. In addition to the analysis of legal regulations in effect, the document also relies on limited research of policies and practices adopted by states from East and Southeast Europe that are also members of the EU. These states were selected due to the similar level of development and similar tradition and challenges they are facing. The limitations of the research methodology concern the unavailability of necessary information, especially in regard to comparative experiences abroad. The research is mainly

based on information available on websites of competent ministries and/or state bodies in targeted states. This document also enlists proposals, suggestions and positions of participants in debates organized between February and April 2016 as part of the National Policy Dialogue of the Regional Research Promotion Programme in the Western Balkans.

2. PROBLEM DESCRIPTION
(CURRENT SITUATION, LEGAL FRAMEWORK AND POLICY)

The main thesis in this document is that there is a need for broader involvement of the academic community in the process of assessing scientific research project-proposals. This challenge is part of a wider problem related to financing of scientific research projects in the country. In order to analyse this specific challenge, it is necessary to reconsider the current situation under which scientific research activity is performed, the legal framework relevant for the involvement of the academic community in the process, and the effects from existing policies in this area.

For that purpose, as indicated above, we are facing the fact that for almost five years there have been no open calls for publically funded scientific research projects.

An additional challenge is the fact that the general framework governing scientific research activity in the country changes frequently. To illustrate, the two key laws related to the performance of scientific research activity – the Law on Higher Education and the Law on Scientific Research Activity – were subject to a large number of amendments. After its adoption in 2008, the Law on Higher Education was changed as many as 19 times, while the Law on Scientific Research Activity was changed 10 times. On one hand, it is difficult to establish which legislation is applicable for this particular issue and, on the other hand, frequent changes additionally affect the legal security.

In order to analyse the issue of the academic community's involvement we also reconsidered by-laws that regulate this area. The procedure on financing scientific research projects is regulated by means of Rulebook adopted in 2009.[3] This Rulebook regulates several aspects of financing these projects, including the procedure, criteria for assessment of project-proposals, assessment of project-proposals and evaluation of project results. This by-law, together with above enlisted laws, is the key document that could enable greater involvement of the academic community in assessment of project-proposals.

Immediately after the Rulebook was adopted, changes were made whereby project-proposals should be reconsidered by the Council on Scientific Research Activity, which will compile the list of reviewers (Article 10-a). According to Article 11 of the Law on Scientific Research Activity, this council was anticipated to be the expert and advisory body to the minister. Council members were appointed by the minister.[4] Article 10-a was in effect from 2009 to 2013, i.e. until this body ceased to exist.[5]

The 2013 amendments to the Law on Higher Education[6] anticipated the establishment of a new body – The National Council on Education, Science, Innovation and Technology. The composition, work and competences of this council were only stipulated under the Law on Higher Education, but not under the Law on Scientific Research Activity. Moreover, the Law on Scientific Research Activity did not include an article that would make reference to the fact that these competences are defined under the Law on Higher Education. An independent reading of the Law on Scientific Research Activity creates complete confusion, considering the fact that all expert bodies stipulated under this new law have been left out.

Formally, this body was envisaged as central body competent, inter alia, to take decisions on financing projects and to perform internal and external evaluation. It should be stressed that, according to the Rulebook on Amending the Rulebook on the Manner and Procedure for Financing Scientific Research Projects or Programmes from 2013, the National Council is competent to determine priority areas and programmes for scientific research as part of open calls for financing projects.

In relation to the composition of the National Council, Article 120-b of the Law on Higher Education[7] stipulates that the Government of Republic of Macedonia shall adopt a decision on the appointment of the president and members of the National Council. The National Council is comprised of 17 members, as follows: minister competent for matters in the area of higher education, president of the Macedonian Academy of Science and Arts, representative from the Rector's Conference,[8] six members appointed by the Government, one representative from each of the six science fields coming from the line of teaching and research staff at the Inter-University Conference and two representatives from the business community.[9]

As indicated above, from the establishment of the National Council open calls for financing projects have not been announced, and therefore it is impossible to assess its operation in terms of the issue that is subject of our interest. Nevertheless, the general impression remains that it is a matter of the additional centralization of this, 'expert' body; in particular due to government's competences to appoint the composition of this council. On one side, the participation of the academic community in this body is anticipated, but on the other side, it is burdened by the fact that a significant number of its members is appointed by the government. Why the composition of this expert body is anticipated in this scope and manner is unclear, especially having in mind comparative experiences from other states.

Within this legal framework and especially in regard to members appointed by the government, there are no requirements on mandatory academic experience for candidates, but their appointment is pursued according to the rank of institutions at which they have acquired their education titles. Undoubtedly the way in which the National Council is selected and composed challenges the autonomy and transparency of the decision-making process. Moreover, competences of this body are stipulated in as many as three laws (Law on Higher Education, Law on Scientific Research Activity and Law on Innovation), which renders it robust and non-functional.

It seems that three moments are of key importance in relation to the current situation concerning the possibilities for involvement of the academic community in the decision-making process.

Firstly, the current regulations indirectly ensure the involvement of representatives from the academic community in the capacity of reviewers tasked with assessment of project-proposals. What is the current profile of reviewers? Article 11 of the Rulebook anticipated that project-proposals shall be reviewed by "two or more independent reviewers from different fields". The shortcoming of this solution is identified by the fact that the profile of reviewers is broadly defined, i.e. any candidate can be a reviewer, including candidates outside the academic community and foreign nationals. In other words, according to the solution in effect, anybody can review the scientific research project-proposals.

Moreover, the second important moment related to this issue is the selection of reviewers. Namely, it should be emphasized that in the period 2008 – 2013 the Rulebook did not include a clear definition about the entity competent to select reviewers. According to changes to the Rulebook adopted in 2013 (Article 3), reviewers are selected by the Minister of Education and Science, by means of an open call.[10] This solution is another attempt for centralization and direct involvement of the government in the overall process. It should be noted that the selection and profile of reviewers play an important role in the process on assessment.

Finally, the third element in the assessment of project-proposals concerns the publication of the ranking list. In the period 2009-2013, this competence was given to the Council on Scientific Research Activity. However, in 2013, according to the amended Rulebook, the Ministry was given the competence to develop ranking lists on the basis of assessments made by independent reviewers. Again it was anticipated that the decision on financing was to be taken by the minister, based on the ranking list and available funds in the budget.[11] This unnecessarily includes the minister, thus contributing to greater centralization of the entire process.

3. COMPARATIVE EXPERIENCES: AT WHICH POINT CAN THE ACADEMIC COMMUNITY GET INVOLVED IN THE ASSESSMENT OF SCIENTIFIC RESEARCH PROJECT-PROPOSALS?

For the purpose of drafting this policy document, we conducted a short comparative research of policies in other states which concern the involvement of the academic community in the assessment of project-proposals. In that regard, we reconsidered policies in countries from East and Southeast Europe, which are also members of the EU. The countries were selected on the basis of their similar tradition, situation and challenges as those faced by Macedonia, as well as on the basis of basic development parameters. Their laws, by-laws, strategies, reports and other policy documents related to the process on assessment were analysed.

Based on this research, we identified several key points in the process on the assessment of project-proposals for the future model for financing scientific research in which the academic community could be more actively involved.

One of the main conclusions inferred from the research includes the fact that a high number of Eastern European countries that are EU members have established separate and independent bodies in the field of science, which are, inter alia, also competent for the assessment of project-proposals. Often, these bodies are comprised of relevant experts from the academic community, upon nomination from the entities performing scientific research activity, and in certain cases appointed by scientists in the country. This approach to the establishment of special and independent body and its composition allows greater participation of several different stake-holders, especially from the academic community, thereby increasing transparency and independence of the process.

For example, in Estonia the body competent to take funding decisions is the Estonian Research Council, whilst by an evaluation committee comprised of 15 renowned researchers conducts the assessment.[12] On the other hand, Latvia anticipates a broad participatory concept for involvement of the academic community in this process. The Latvian Council of Science has established 5 expert committees (10 to 13 members) comprised of scientists in the country from relevant fields (natural sciences and mathematics; engineering and computer sciences; biology and medicine; agriculture, environment and forestry; social sciences and humanities) tasked to perform assessment.[13] Latvia's method of selection enables direct and immediate involvement of the academic community in the process on assessment. In Lithuania, the Science Council has established separate research foundation, while decisions on supporting projects are taken by committees established within the council, on the basis of experts' opinion.

As regards experiences from Southeast European countries, it should be noted that the Federation of Bosnia and Herzegovina (one of the two entities in Bosnia and Herzegovina) anticipates the assessment of project-proposals to be performed by the Council of Science at the Federal Ministry of Education and Science.[14] The Council has a president and 12 members selected from a line of renowned science professionals.[15]

Establishment of the independent body will have a direct impact on other key elements in the process. First, this concerns the definition of criteria on assessing project-proposals (Article 9 of the Rulebook). In the medium and long term, participation of the academic community in the body tasked with taking decisions on financing projects enables re-assessment of adequacy of criteria and the need to adjust them to changing circumstances. For instance, Slovenia's procedure on financing projects is regulated by the Science Council within the Slovenian Research Agency. On the proposal from the Council on Science and Technology of the Republic of Slovenia,[16] members are appointed by the minister.[17]

Secondly, the involvement of the academic community is enabled in factual assessment of project-proposals (selection of reviewers and their profile). In that regard, the transparent selection of reviewers should ensure independence and impartiality within the assessment process. Moreover, the selection of experts that will be competent to select the projects will contribute to greater credibility of the overall process. Comparative analysis of state policies that were subject of our research shows that great attention is paid to this issue because it represents a key element for objective and transparent assessment of project-proposals.

What do comparative experiences show? In Croatia, the commission tasked with the assessment of project-proposals assigns 2 national or foreign reviewers to each application, from the proposed list of reviewers.[18] In Slovenia, the assessment is performed by at least 2 foreign reviewers.[19] In Serbia, the assessment of project-proposals is organized in two phases. In the first phase, projects are assessed by foreign reviewers, whilst in the second phase they are assessed by a panel from the scientific research community/discipline comprised of 5 to 7 domestic experts, followed by a formulation of average assessments for the proposal.[20] A similar approach is applied in Poland where the assessment is performed by a combination of domestic and international experts who are expected to have previous academic experience. In Montenegro, as part of the World Bank's Project on Education Development evaluation is performed according to the nature of the open call and is pursued either exclusively by international experts or by a body in which the dominant role is given to international experts.[21] This allows the academic community to be both indirectly involved in the selection process of reviewers, but also directly involved through the selection of individuals that will perform the assessment.

4. CONCLUSIONS AND RECOMMENDATIONS

Based on this analysis, it could be concluded that in Macedonia there is a continuous process of excluding the academic community from the decision-making processes related to selection of project-proposals to be financed with state funds. It can be established that current solutions are in favour of further centralization of the overall process and imply the direct involvement of the government in awarding funds to scientific research projects. In addition, the National Council is also marked by the strong centralization of the decision-making model, which prevents the participation of the academic community. Therefore the government and political actors therein have a significant influence in the decision-making process. This is not the case in other states where this competence is left in the hands of expert bodies.

The tendency of centralization of the decision-making process is also evident in the applicable by-laws. In that regard, the Rulebook on the Manner and Procedure on Financing Scientific Research Projects or Programmes from 2009 was more transparent and enabled greater participation of the academic community in this process. This is unlike the 2013 changes that promoted further centralization.

It could be established that the current legislation is not conducive to the active involvement of the academic community in this process. At the same time, it should be stressed that there are no practical experiences in terms of the current model's functionality, having in mind the fact that open calls for financing projects have not been implemented for a long period of time.

The analysis of the situation and enlisted comparative experiences are indicative of the need to formulate recommendations aimed at improved involvement of the academic community in the process on assessment of scientific research project-proposals. That will be enabled by means of:

1. A clearly defined, simple and consistent framework for financing projects and consequently, for participation of the academic community in the assessment process;
2. The establishment of an independent body tasked with the administration of open calls for financing projects, including their assessment, with broad participation of the academic community through representatives selected on the basis of their merits (for example, following the model of the Inter-University Conference or from the leading universities in the country, according to their rankings) or by the selection of representatives

by the scientists (following the example from Latvia). In that way, these bodies will ensure direct involvement of the academic community in several aspects, including assessment criteria and selection of reviewers of project-proposals;

3. The adjustment of the number of members in the independent body according to comparative experiences presented in this paper (10 to 13 members);
4. The publication of the ranking list with project-proposals assessed by the independent body;
5. The enabling members of the academic community to participate in assessment of project-proposals in the capacity of reviewers. The profile of reviewers should be clearly and precisely defined according to objective criteria (expertise, scientific results achieved, previous experience in assessment, etc.). Reviewers should come from the academic community and should be selected in transparent manner, by means of an open call announced by the independent body, not the minister;
6. The application of comparative experiences, which suggest that the assessment must mandatorily include foreign reviewers and members of the academic community. It would be desirable for foreign reviewers to have a dominant role in the initial period of application of the new model;
7. keeping a database of domestic and foreign reviewers; and
8. The promotion of culture of participation of the academic community in processes that affects it.

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8. There are two rector conferences in the country: the Rector Conference of Public Universities and the Rector Conference of Private Universities. The Law does not specify which rector conference is referred to in this provision.
9. Six members appointed by the Government of Republic of Macedonia, as well as representatives of the business community, must be persons holding PhD titles, with minimum one education cycle completed on the first 500 ranked universities according to the Shanghai List, i.e. the first 100 best ranked universities for their MBA programmes according to the Shanghai Jiao Tong University, US News and Report and Times Higher Education Supplement-World University Ranking, as well as minimum five years of working experience and excellent knowledge of English language.
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ИНСТИТУТ ЗА
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Regional Research
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Сања
Спасова


ТЕМА
ОБЕЗБЕДУВАЊЕ НА ВИСОКОКВАЛИТЕТЕН ПРОЦЕС ЗА ОЦЕНКА НА НАУЧНОИСТРАЖУВАЧКИ ПРЕДЛОГ ПРОЕКТИ
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