REPUBLIKA E KOSOVËS
REPUBLIKA KOSOVO
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KËSHILLI KOMBËTAR I SHKENCËS **NACIONALNI SAVET ZA NAUKU** **NATIONAL RESEARCH COUNCIL**

The National Research Programme of the Republic of Kosovo

Prishtina, March 2010

The National Research Programme of the Republic of Kosovo

National Research Council

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Contents

Acronyms

ASO	Austrian Science and Research Liaison Office
CEEPUS	Central European Exchange Program for University Studies
CIP	Competitiveness and Innovation Framework Programme
CITT	Centre for Innovation and Transfer of Technology
CoE	Centre of Excellence
COST	European Cooperation in Science and Technology
DFID	UK Department for International Development
EU	European Union
FP7	7th Framework Programme
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IT	Information Technology
K-CIRT	Kosovo Centre for International Research and Technology Cooperation
KAIP	Kosovo Austria Partnership in the field of Higher Education and Science
MEST	Ministry of Education, Science and Technology
NGO	Non-Governmental Organisation
NRC	National Research Council
PhD	Philosophiae Doctor
R&D	Research and Development
RTD	Research and Technological Development
RTDI	Research, Technological Development and Innovation
S&T	Science and Technology
SME	Small and Medium Enterprise
ToR	Terms of Reference
UNFPA	United Nation's Population Fund
UNICEF	United Nations International Children's Emergency Fund
UP	University of Prishtina
USAID	United States Agency for International Development
WHO	World Health Organisation
WINS-ICT	Western Balkan Countries Inco-Net Support in the field of ICT
WUS	World University Service

Executive Summary

Pursuant to the Law No. 2004/42 on Scientific Research Activity, the National Research Programme should aim - among other things - to work upon identified research priorities, to establish provisions for infrastructural investments, to enhance participation in international scientific research projects and to elaborate a systematic education programme for researchers. The National Research Programme should be approved for a period of five years by the Kosovo Assembly which also has to provide the funds for the realisation of the programme as proposed by the government.

Research and technological development (RTD) is still a marginal undertaking in Kosovo. Even basic science and technology statistics are lacking. A functional and intentional system of innovation does not yet exist. Major reasons for this deficiency were the imposed exclusion of academic and research community in the pre-war phase, when the nowadays academic personnel was isolated from the international scientific development, the material and immaterial destructions during the war and the difficult economic recovery process afterwards. Until recently, the general expenditure on R&D in Kosovo amounted to only approximately 0.1% of GDP. This is a ratio significantly below the European average, and even well below the average of the regional neighbourhood and many developing countries. The absorptive knowledge and technology capacities in Kosovo are severely limited in size, scope and quality. A reason for this deficit is the absence of any critical mass of research and technological development (RTD) funding for at least the last 20 years. Without sufficient RTD funding, however, the potential absorptive capacities in economy and academia in Kosovo are neither satisfactory utilised nor are they able to cope with the technological progress.

The present National Research Programme of Kosovo aims to counterbalance these deficits by providing a conceptual orientation frame for upgrading scientific capacities in Kosovo. Clearly, the research sector per se is not the only beneficiary of this approach; other policy areas, such as economic policy, health policy, environmental policy, agricultural policy, urban and rural planning, foreign policy and European integration policy do immediately benefit from an upgraded knowledge base of Kosovo's research capacities. It this sense, RTD is not an end in itself but a facilitator for evidence-based policy making in many other social, economic and ecological spheres of Kosovo.

The specific science and technology (S&T) targets which are needed to support the socio-economic development of Kosovo towards a knowledge society routed in an evidence-base interaction between sciences, citizens and business are:

Objective 1: Development of human capacity for research activities

Objective 2: Development of research infrastructure

Objective 3: Internationalization of scientific research activity

Objective 4: Strengthening the links between science and society and economy for enhancing economic and social development

Objective 5: Excellence in research and scientific activity

It goes without saying that these 5 objectives do highly correlate with each other and, thus, should not be treated in isolation but in a systematic manner. For each objective the targets and most needed activities to achieve them are outlined.

National research priorities have been identified in a participatory process to which national and international RTD funding should be channelled. The range of identified national

priorities reflects the generic thirst for catching-up in science and technology (S&T) in Kosovo across different disciplines. Through this approach critical mass can be secured to provide the absorptive and generating RTD capacities for the socio-economic development of Kosovo. The Planning Team agreed on the following six criteria for priority setting:

- Relevance to economic and social development of the country,
- Number and quality of human resources for within the country and Diaspora,
- Condition of research infrastructure,
- Contribution to preservation and promotion of national identity of Kosovo,
- Potential to achieve research results and apply them within the country and abroad,
- Existing international cooperation in a field.

Initially, 33 disciplines were analyzed and 16 potential research priorities were short-listed. Further discussion led to the following five research priorities:

1. Natural Resources, Energy and Environment
2. Agricultural Production and Food Safety
3. Medical Research
4. Social and Economic Studies
5. Linguistic, Cultural and Historic Studies

In addition, the field of Information and Communication Technologies is considered as cross-horizontal priority that may occur in any of the abovementioned fields.

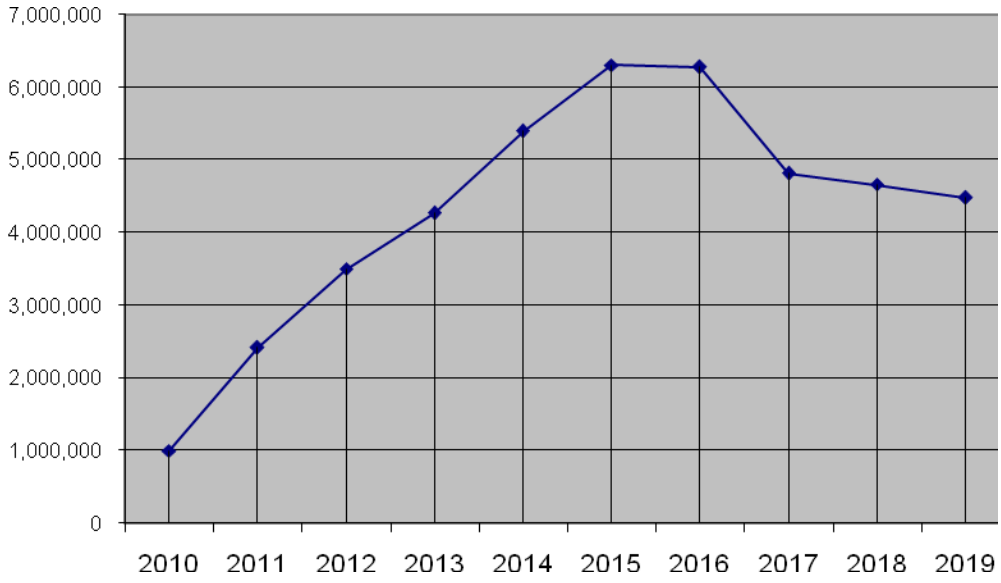
The position of the National Research Council is that disciplines that are not listed under priority fields should be able to benefit from all regular research funding programs operated by the Government, thus encouraging active research activity in those areas. However, the priority fields should receive additional support from the Government, public and private sector in the country, because research in those fields directly contributes to the development of the country.

Since the European Framework Programme for RTD has become a major funding source for many countries of Southeast Europe (subsumed under the term “Western Balkan Countries”), and hopefully also in the near future for Kosovo, it is important that the priority setting in Kosovo does not contradict with the main European and world-wide trends in RTD funding. A comparison shows that this is not the case. Evident thematic connectivity is given in research priority 1-4. Despite the theoretically given connectivity to the world’s largest RTD programme in many aspects, it should not be underestimated that the low level of research in Kosovo might hinder a stronger inclusion of Kosovar researchers in European and global research networks.

In terms of their potential to enable bilateral connectivity to research programmes of other countries, all identified national RTD priorities in Kosovo are promising. There is almost no European country, who does not put high emphasis on ICT, medical research, environment and energy or at least certain emphasise on agriculture and food safety, social sciences (especially studies tackling social change towards the so called knowledge based society) and humanities. Thus, enough common ground for the establishment of bilateral intergovernmental S&T programmes is given. The strong notion of Albanian language and culture, however, can be best tackled in close cooperation with the neighbouring countries Macedonia and Albania, with whom S&T agreements are already at hand.

The National Research Programme also contains an implementation plan indicating the responsibility, timing and the budgets for each planned activity. The necessary budget to implement the instrumental activities stipulated in the present National Research programme in order to meet the objectives of the Law on Scientific Research and to serve the identified

priorities is characterised by a steep yearly increase (see graph below). Provided that the introduced instruments, which are of structural generic value (such as awards for best Kosovar researchers, yearly short-term mobility programmes, yearly brain gain fund, yearly publication fund, yearly access to electronic libraries, yearly FP7 project preparation fund, yearly operation of the RTD information system, yearly grants for international projects, yearly budget for quality assurance and evaluation, yearly post-doc research grants), are further continued beyond 2015 (however, without any new initiatives), then the necessary budget appropriations would stabilise between 4.5 and 6.5 million Euros annually as shown in the Graph below.



1. Introduction and Acknowledgments

The legal frame of RTD in Kosovo in general, and for the Scientific Research Programme at hand in particular, is basically provided by the Law No. 2004/42 on Scientific Research Activity, which was promulgated in 2004. The Law (Assembly of Kosovo, 2004) provides two articles on the 'Kosovo Scientific Research Programme' (Article 51 and 52). The National Research Programme should aim - among other things - to work upon identified research priorities, to establish provisions for infrastructural investments, to enhance participation in international scientific research projects and to elaborate a systematic education programme for researchers. The National Research Programme should be approved for a period of five years by the Kosovo Assembly which also has to provide the funds for the realisation of the programme as proposed by the government.

The Law enables action spaces to run not only classical research funding schemes, but also schemes with more structural orientation or with international dimensions. Article 60 specifies that projects can be presented as (a) projects of scientific research, (b) developing projects and (c) projects of developing the infrastructure. General criteria for the evaluation and acceptance of the proposals are (Article 62):

a) importance for the development of Kosovo,

b) scientific value and international measures of the project,

c) scientific achievement of the project proposer,

d) competence of the applying organisation,

e) ecological adequacy of the project.

The Law foresees, that the implementation of the National Research Programme falls on one hand under the responsibility of a scientific council respectively counsels (for example, as regards project evaluations; project delivery proposals etc.) established by the government (Article 58 and 59). On the other hand, it falls under the responsibility of the MEST in terms of announcing the competition, making the final decision of financing and contracting (see Article 60, Article 63 and Article 65). The Law per se does not anticipate the establishment of a specialised agency to implement the R&D programme(s).

The National Research Council (NRC) was established based on Article 53 of the Law. The Council and its 15 members were approved in the plenary session of the Assembly of July 12, 2007, whereas it was constituted and its organs were elected on 20 and 22 October 2008. Tasks of the NRC and of its organs are prescribed in the aforementioned.

Developing the National Research Programme was one of the most important tasks of the NRC in year 2009. Given delays of administrative nature and the fact that this is the first programme of that type ever developed in Kosovo, the Council managed to come up with a document that points out the way for consolidating research activity in Kosovo, and linking it to the development needs of the country. It would have been impossible to accomplish this task without support from Kosovo institutions, development partners, as well as local and international experts. The Council wishes to specifically thank:

- Ministry of Education, Science and Technology (MEST) and the Minister, Dr. Enver Hoxhaj, for continuous support to the process, precious advice, and coordination with the Council;

- Kosovo-Austria Partnership Project in the field of Higher Education and Research (KAIP) and the Project Director, Dr. Johann Guenther, for providing international expertise and generous funding for the planning and consultation process;
- Dr. Klaus Schuch, Research Policy Expert for his invaluable contribution to the development and writing process;
- All international and Kosovan experts who contributed in any way in developing and discussing the National Research Programme;
- MEST and KAIP staff who provided logistical support for activities related to the development of the Programme.

2. State of Art of Research and Development in Kosovo

Research and technological development (RTD) is still a marginal undertaking in Kosovo. Even basic science and technology statistics are lacking. A functional and intentional system of innovation does not yet exist[1]. Major reasons for this deficiency were the imposed exclusion of academic and research community in the pre-war phase, when the nowadays academic personnel was isolated from the international scientific development, the material and immaterial destructions during the war and the difficult economic recovery process afterwards. In the Higher Education Strategy (2005-2015), research found its place as a subsequent priority in timing and scope. Until recently, however, the general expenditure on R&D in Kosovo amounted to only approximately 0.1% of GDP. This is a ratio significantly below the European average, and even well below the average of the regional neighbourhood and many developing countries. However, the MEST and the universities as well as non-university research organisations are aware that RTD has to become soon an integral part of the higher education system (as outlined in the Higher Education Strategy) and, beyond that, should be of vital instrumental importance for the economic and social development of Kosovo. There is hardly any doubt in international policy discourses, that the access to knowledge and the capacity to transform knowledge into social and economic profit is a major dividing line between the countries who have and the have-nots. Therefore, RTD (and additionally more and more the notion of innovation) are increasingly on the political agenda. The identified RTD priorities in this National Research Programme provide the necessary structural signposts to direct, coordinate and control the direction of research funding, or, at least, to prevent under critical and ineffective allocations with low societal or economic relevance.

In both the Law on Scientific Research Activity (Assembly of Kosovo, 2004) and the development strategy for higher education of the MEST (MEST, 2004), the public university sector receives special attention and responsibility for the conduct of research. Among other objectives, the Law on Higher Education postulates the goal to establish, develop, protect, and transmit knowledge trough teaching and scientific work and research (Article 2.1.) (Assembly of Kosovo, 2002). MEST (MEST, 2004) clarifies the vision for higher education for Kosovo, *"where knowledge and scientific research are in function of a sustainable cultural, social, and economic development"* (p. 6). The Statute of the University of Prishtina (UP) reflects this vision by stating that it aims to be a leading centre in the advancement of knowledge, ideas and science in higher education. This intention is confirmed by the recently published 'Strategy 2009-2013' of the UP (2009).

In general, however, the higher education system in Kosovo is pre-Humboldtian, characterised by a marginalisation of scientific research. This diagnosis holds true for the entire sector, including the University of Mitrovica and the University of Prishtina, which is the largest research oriented institution in Kosovo (see Tahirsvlaj, citing Mustafa et all; both 2004; the self-evaluation report of the UP, 2008; and evidenced in the bibliometric analysis carried out under a consultancy project commissioned by the OSCE in 2008). In Articles 171 to 175 of the Statute of the University of Prishtina, the university's relation to scientific research and scholarship is briefly described. An obvious directed instrumental character of research for the benefit of teaching and training is postulated. It says in Article 171 that the university shall conduct scientific research and artistic work with the objectives to further

[1] This text is based on the Thematic Report "Science and Technology in Kosovo/UNMIK" authored by Klaus Schuch and published by the Information Office of the Steering Platform on Research for the Western Balkan Countries, edited by Elke Dall (2008): Science and Technology in the Western Balkans. Barrister & Principal, Brno.

develop educational processes, to introduce students into scientific research and artistic work, to develop scientific and artistic young professionals, to establish an international network of researchers and artists and to prepare and perform interdisciplinary oriented competitive research and arts projects (University of Prishtina, 2004).

In Article 171 it further refers to basic research without immediate practical use und applied research in close connection with public interest and needs, both either funded through public funds provided by the university or through private funds from individual contracts with third persons. In Article 172 the university obliges herself to provide appropriate conditions for scientific research to achieve competitive results on the international level, but it also demands the academic staff to perform scientific research and that the individual performance regarding scientific research shall be taken into account for professional assessment and career development. In compliance with modern university statutes it is confirmed in Article 173 that scientific research shall be performed within the facilities of the university and that the Rector may give permission to academic staff to perform research in defined locations outside the university and to participate in cooperative projects with other institutions (University of Prishtina, 2004). The latter is especially relevant for participation in the European Framework Programmes for RTD and in other international RTD programmes. Article 174 finally deals with performance reporting on scientific research and Article 175 with sabbatical leave.

In order to overcome the pre-Humboldtian level of higher education and to bridge between vision and reality, the UP has established a roadmap and a new strategy, both emphasising the value of scientific research. To improve the situation systematically, it is, however, considered essential to establish a national institution, where motivated academic staff to engage in scientific research can apply for research money.

Based upon specific requirements of the Law on Scientific Research Activity (Article 21) also private organisations are entitled to carry out research work and can obtain funding to do this (Assembly of Kosovo, 2002). The National Research Council has been put in charge of providing an opinion regarding the fulfilment of the standards for organising and developing scientific research in private scientific organisations (Article 21.2) and the MEST has the competence to give the license (after a positive opinion) and to register private scientific organisations into the Register of Scientific-Research Institutes (Article 23). They must then attach the mark "with public right" on their name (Article 24).

As public scientific-research entities, however, only three are explicitly listed in the Law on Scientific Research Activity (Assembly of Kosovo, 2004a), namely (Article 69.2):

a) the Kosovo Academy of Science and Arts,

b) the Albanological Institute and the History Institute as scientific research institutes,

c) Universities (specifying in Article 13 that scientific research institutes established within the institutions of higher education are part of the founding institutions in question).

The main purpose (Article 6) of the Academy of Science and Arts is to promote scientific thinking and artistic creativity by means of

- being a suggestive and consultative institution for the development of science and art complying with the needs of Kosovo's development,
- evaluating existing circumstances and proposing measures to advance scientific thinking and to improve the quality of artistic creativity,
- reviewing general problems in the areas of scientific activity and artistic creativity,

- participating in creating scientific activity and artistic creativity policies,
- organising scientific and cultural events,
- publishing its own regular and periodical publications,
- conducting internal and international cooperation,
- creating conditions for exchange of scientific thinking and artistic creativity with abroad and
- improving the working conditions for the Academy members.

Next to the Academy of Sciences, the Institute of Albanology in Prishtina, gains the highest reputation as a non-university scientific research organisation in Kosovo. It is an independent public research institute to study "*the spiritual and material culture of the Albanian nation"*(Institute of Albanology, 2007a). History Institute is also an independent research institution of great importance for research in its field of study.

Further important issues addressed by the Law on Scientific Research Activity (Assembly of Kosovo, 2004) include a dedicated propensity to use scientific research activities for the development of economic prosperity (Article 2) by addressing all major three differentiation schemes of scientific research, namely fundamental, applicative and developmental research (Article 3). It is noteworthy, that in Article 6, scientific research refers to among other common issues such as freedom of scientific research and creativity or international inclusiveness - the principle of public work (with a provision of the researcher's status as civil servant in Article 48), competitive funding (at least partially) and the correlation of scientific research and higher education, which is another clear hint on the assigned importance of universities for delivering scientific research.

The Law also states that up to 0.7% shall be allocated from the budget of Kosovo for the purpose of fulfilling the necessary conditions for scientific research and for providing the means to undertake scientific research. In addition, it states that the budget may also be used to cover expenses related to knowledge utilisation and knowledge diffusion processes, which characterise comprehensive research systems (Borsi, 2004).

It is also noteworthy, that the Law promotes the advance and training of new R&D personnel (for example, Article 19 and Article 50), which is of utmost importance, due to the lack of up-to-date scientific research capacities. In addition to public funds, scientific research institutes are also entitled to receive finances from other funds, foundations and donations, from other legal sources (assuming that also enterprises fall under this category) and from other means realised by the scientific research institution (for example, licensing of protected knowledge) (Article 66). In the Law on the Higher Education in Kosovo (Assembly of Kosovo, 2002), it is specified that a public university is in principle also free to take any measure to promote and exploit its research activities commercially for its benefit (Article 21.1). However, where such commercial activity includes, or could potentially include, the exploitation of any significant intellectual property right in any literary, artistic or scientific works, scientific discoveries, designs, inventions, materials, goods or services provided wholly or partially, or directly or indirectly out of public funds, the provider shall seek the prior approval of the Ministry (Article 21.2). Article 23.1 proves that accredited private providers of higher education may also receive funding allocations from the Ministry for teaching or research in the public interest.

In addition to the Law on Scientific Research Activity, the Law No. 2004/19 on Academy of Science and Arts of Kosovo approved in 2004 and the Law No. 2002/3 on Higher Education

approved in 2002 with promulgation in May 2003, a series of other laws are more or less impacting scientific research undertakings, notably such as

- The Law on Medical Products and Medical Devices (No. 2003/26 from 4th December 2003 with a promulgation on 7th July 2004)
- The Law on Copyrights and Related Rights (No. 2004/45 from 29th June 2006 promulgated on 24th August 2006)
- The Patent Law (No. 2004/49 from 27th September 2004 promulgated on 21st December 2004) and amended by Law 02/L-100 on 18th December 2006 and promulgated on 6th February 2007)
- Law on Support to Small and Medium Enterprises (No. 2005/44 from 23d March 2005 promulgated on 8th September 2005)
- The Law of Technical Demands for Products and Valuation of Confirmation (No. 02/L-20 from 24th June 2005 promulgated on 21st July 2005)
- The Law for Accreditation (No. 02/L-43 from 21st November 2005 promulgated on 21st April 2006)
- The Law on Metrology (No. 02/L-61 from 19th January 2006 promulgated on 22nd April 2006)
- The Law on Publishing Activities and Books (No. 02/L-51 from 16th March 2006 promulgated on 21st April 2006)
- The Law on Environmental Impact Assessment (No. DL-006/2009 from 26th February 2009 and promulgated on 19th March 2009) etc.

At the time of writing, some other relevant Laws were not yet adopted, such as the 'Law on Genetically Modified Organisms' or the 'Law on Protection from Non-Ionized, Ionized Radiation and Nuclear Security'. In addition there are several relevant administrative instructions issued by the MEST, such as the one on the 'Central Scientific Council' (no. 19/2006, 31st May 2006) and on the 'Appointment of Standards in Science' (no. 20/2006, 31st May 2006). The former elaborates legal provisions on operation of the National Research Council, whereas the latter sets criteria for appointment in research titles.

Despite the many positive developments in recent years and months, Kosovo is just at the beginning to establish a full-fledged system of research. Thus, a focus on certain starting points is essential and should be taken with great care. Instead of proposing an unrealistic "broadband policy" in science and technology, this National Research Programme emphasises right from the beginning a strong interaction with social and economic objectives and concentrates on a few thematic priorities. If the beginnings of scientific research are capable to respond to economic and social demands, then the sector will gain importance and recognition and the seeds for more economically and social distant scientific endeavours can be spread. Firstly, however, research should contribute to economic growth and social well-being before it becomes a beneficiary of economic growth and social well-being. From the very beginning, an international dimension should be taken into account. Internationalisation of RTD in Kosovo should not be confined to the issue of technology transfer, despite its immanent potential importance for radical economic jumps. Examples of other countries in the region of Southeast Europe have shown how important the participation in the European Framework Programme for RTD is for the transfer of modern scientific methods and knowledge in order to create connectivity points for further state-driven excellence developments. But also the transfer of structural issues, for example, through the

establishment of transparent processes in terms of calls for proposals and the introduction of evaluation standards, as well as the transfer of research management standards can be regarded as essential elements for self-help and continuous performance improvements (so called *'behavioural additionality'* of international research cooperation). These aspects, however, are not limited to the European Framework Programme for RTD, but are also relevant for other multi-lateral programmes and initiatives such as CEEPUS, CIP or COST as well as for bilateral research cooperation.

The efforts proposed by this National Research Programme should be carefully monitored and evaluated along with a longitudinal international benchmarking procedure, in order to build up capacities, to learn from best practices and to have enough evidence to make the right decisions to steer the developments, not at least in terms of budget allocations. International advice and international cooperation should be identified for such a purpose and an early integration in international networks established.

3. Policy Objective, Purpose and Targets

Evolutionary economics in general and innovation economics in particular have provided evidence that the development of a society and its economic economy depend to a large extent on the capacity to absorb and to produce new knowledge which can be managed and transformed in a way to satisfy the cognitive and technological needs of society's economic and social stakeholders (enterprises, non-governmental organisations, social-service providers, public organisations and the public as such). The contribution of new technologies and methods as well as new forms of social organisation towards the economic well-being of nations is undisputed. Since the industrial revolution, virtually no influential author has questioned the importance of technological change (Martin and Nightingale, 2000). Access to scientific and technological knowledge is not only considered an important advantageous location factor for attracting new industries and services from abroad and to nurse domestic ones, it is – in fact – the dividing line between the 'haves' and the 'have-nots'.

However, knowledge and technologies cannot be simply transferred from one location to another. Even if knowledge would be comprehensively codified (e.g. in scientific books, papers and machinery), there are certainly also tacit elements and the knowing of know-how does not necessarily constitute the knowing of know-why. Thus, for a successful knowledge transfer, absorptive capacities have to be provided by the society. These absorptive capacities have to be trained to absorb externally produced knowledge and technologies, have to be put in the position to adopt and to adapt new knowledge and technologies to the needs and demands of the national society and economy and to develop it further through own genuine research activities. Moreover, the absorptive capacities that are capable of adopting, adapting, transforming and developing knowledge and technologies, have also to take care to diffuse their knowledge to others (e.g. enterprises), not at least to a following young generation of researchers from science and industry. That is why higher education is so central to a society.

The absorptive knowledge and technology capacities in Kosovo are severely limited in size, scope and quality. A reason for this deficit is the absence of any critical mass of research and technological development (RTD) funding for at least the last 20 years. Without sufficient RTD funding, however, the potential absorptive capacities in economy and academia in Kosovo are neither satisfactory utilised nor are they able to cope with the technological progress. Thus, their absorption function is limited already in terms of adoption and even more in terms of adaptation and further development of knowledge and technology through own creative and scientific activities.

The present National Research Programme of Kosovo aims to counterbalance these deficits by providing a conceptual orientation frame for upgrading scientific capacities in Kosovo. National research priorities have been identified in a participatory process to which national and international RTD funding should be channelled. The range of identified national priorities reflects the generic thirst for catching-up in science and technology (S&T) in Kosovo across different disciplines. Due to the general low starting levels, a narrowly targeted specialisation approach towards a few important enabling technologies (e.g. nano-technology) has had to be rejected. A robust fundament for such an approach was simply not available. The identified national priorities are, however, specific and targeted enough to focus efforts and concentrate funding on a few selected RTD fields which are considered critical for the sustainable economic growth and social development of the Republic of Kosovo. Through this approach critical mass can be secured to provide the absorptive and generating RTD capacities for the socio-economic development of Kosovo. It goes without saying, that the research sector per se is not the only beneficiary of this approach; other policy areas, such as economic policy, health policy, environmental policy, agricultural policy, urban

and rural planning, foreign policy and European integration policy do immediately benefit from an upgraded knowledge base of Kosovo's research capacities. It this sense, RTD is not an end in itself but a facilitator for evidence-based policy making in many other social, economic and ecological spheres of Kosovo.

The specific science and technology (S&T) targets which are needed to support the socio-economic development of Kosovo towards a knowledge society routed in an evidence-base interaction between sciences, citizens and business are:

Objective 1: Development of human capacity for research activities

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Objective 5: Excellence in research and scientific activity

It goes without saying that these 5 objectives do highly correlate with each other and, thus, should not be treated in isolation but in a systematic manner.

The targets for each objective and most needed activities to achieve them are outlined below:

Objective 1	Development of human capacity for research activities
Targets	1.1. Promoting development of doctoral programs in higher education institutions 1.2. By 2015 at least 50 candidates will receive support to pursue post-doctoral studies through joint programs with full or partial financing from the Kosovo Budget 1.3. By 2015 at least 100 candidates from Kosovo will pursue PhD studies in top 500 world universities with full or partial financing from the Kosovo Budget. 1.4. 100 short-term mobility grants for active researchers
Action	1.1. Develop high quality doctoral programs in Kosovo, preferably in cooperation with well established higher education and research institutions from other countries. Programs leading to double degree will have absolute priority. In general, the existing doctoral programmes can also benefit from this opportunity. 1.2. Facilitate participation in post-doctoral programs in centres of excellence all over the world. Preference should be given to candidates who intend to carry out research leading to publications in referenced international journals. 1.3. Support completion of PhD studies in priority fields or fields with shortage of researchers in top level world universities. Support should target young people who are committed to contribute to further development of research capacity in Kosovo. 1.4. Provide support for short-term mobility of Kosovar researchers to institutions in other countries. Such mobility should lead to publications

	and/or establishing and further strengthening of cooperation between home and host institution.

Objective 2	Development of research infrastructure
Targets	2.1. By 2012 the legal infrastructure (framework) is reviewed and updated. 2.2. Laboratories and equipment to meet optimal needs of researchers are provided with full or partial support from the Kosovo Budget. The target until 2015 is the establishment of at least 10 laboratories (each more than€ 250,000) which should be accredited, and additionally scientific equipment at a total amount of € 1 mil. awarded in an institutionalised way based on competitive calls for proposals. 2,3. RTD Information System is build by 2012. 2.4. Access to relevant electronic libraries is granted by 2011.
Action	2.1. Review the current Law on Scientific Research and make necessary adjustments to meet the needs of the society and approximate legislation to the one applied in EU countries. Also, it is important to develop bylaws addressing the issues of access to governmental funding for research. Likewise, fiscal laws should be reviewed to explore the possibility for applying tax preferences for research activities. 2.2. Establish the National Research Infrastructure Program to channel governmental funding for research laboratories and equipment on justified need and national research priorities. The funding should be accessible to all research institutions from Kosovo demonstrating potential for development of sustainable research programs. Inter-disciplinary laboratories will be given priority, whereas links between the Infrastructure Programme and research fund supported doctoral programs will be encouraged. 2.3. Develop the RTD information system. The first step is to set up and inter-disciplinary expert group to develop ToRs for the system including the type of information needed, flexibility, language policy, etc. This activity should be coordinated with the Statistical Office of Kosovo. 2.4. Provide/purchase access to relevant electronic libraries following need assessment which involves all relevant institutions in Kosovo. It is expected that the beneficiary institutions will contribute towards the cost.

Objective 3	Internationalization of scientific research activity
Targets	3.1. Support for the publication of a considerable number of scientific publications in international journals 3.2. Total annual value of joint research projects with foreign institutions is at least 2 million EUR starting with 2012 3.3. Enhanced participation in international research networks 3.4. Improved cooperation with our researchers working abroad.
Action	3.1. Establish a Publication Support Program as funding conduit for

	Kosovar scientists to cover expenses for publishing in international journals. Funding should be made available on competitive basis and transparency fully ensured. 3.2. Provide support for developing joint research projects and co-funding for their implementation. In that way, the Government will encourage participation of Kosovar institutions in international research projects, notably based on intergovernmental S&T agreements and other bi- and multilateral schemes. 3.3. Provide support for participation in international research networks, notably in the European Framework Programme for RTD and COST. Researchers and institutions from Kosovo will develop cooperation with those from other countries. 3.4. Develop a Brain-Gain Program. A special fund will be made available to Kosovo institutions to host researchers from Kosovo who reside in other countries.

Objective 4	Strengthening the links between science and society and economy for enhancing economic and social development
Targets	4.1. Establishment of an applied research and technological development (RTD) programme for supporting science-industry relations to upgrade collaborative technological capacities until 2013 to be implemented with sufficient funding in 2014 4.2. Establishment of an innovation programme to meet the economic and social innovation needs of the private sector (business, NGO) until 2015 to be implemented with sufficient funding in 2016
Action	4.1. Establishment of a working group in 2012 involving representatives from science and business to prepare until 2013 the rules and regulations of a systemic applied RTD programme oriented towards technology transfer between science and industry and cluster creation (involving both science and business). 4.2. Launch a first calls for proposal under this applied RTD programme in 2014. 4.3. Establishment of a working group in 2014 involving representatives from science, business and civil society to prepare until 2015 the rules and regulations for an innovation programme oriented towards the technological, organizational and social innovation needs of the private sector (business, NGO). This programme should primarily target SMEs, large industry, the social sector and the service sector. 4.4. Make everything ready to launch a first calls for proposals under this innovation programme in 2016.

Objective 5	Excellence in research and scientific activity
Targets	5.1. Centres of scientific excellence established 5.2. Fundamental disciplines supported

	5.3. Awards for extraordinary achievements applied 5.4. Research institutions build quality assurance mechanisms in the field of research
Action	5.1. Establish centres of scientific excellence based on existing research capacity and national research priorities. Experts of Kosovar origin from other countries should also be involved. The target is to establish five Centres of Excellence (CoE) in future-oriented fields (e.g. enabling technologies, bio-medical research, etc.) between 2013 and 2014. 5.2. Provide rules and regulations and funding for fundamental disciplines. Minimum proportion of available research funding to support research in fundamental disciplines should be defined. A dedicated funds for running a competitive fundamental research programme until 2015 should be earmarked. 5.3. Establish a fund for yearly awards for extraordinary achievements with the aim to promote scientific excellence until 2011. The awards should be given to the "Kosovar researchers of the Year" and the "Best newcomer researchers of the Year in Kosovo". 5.4. Develop quality assurance mechanisms in the field of research, like manuals for indexing of publications, etc.

4. Research and Development Priority Setting in Kosovo

4.1. Rationale for Priority Setting

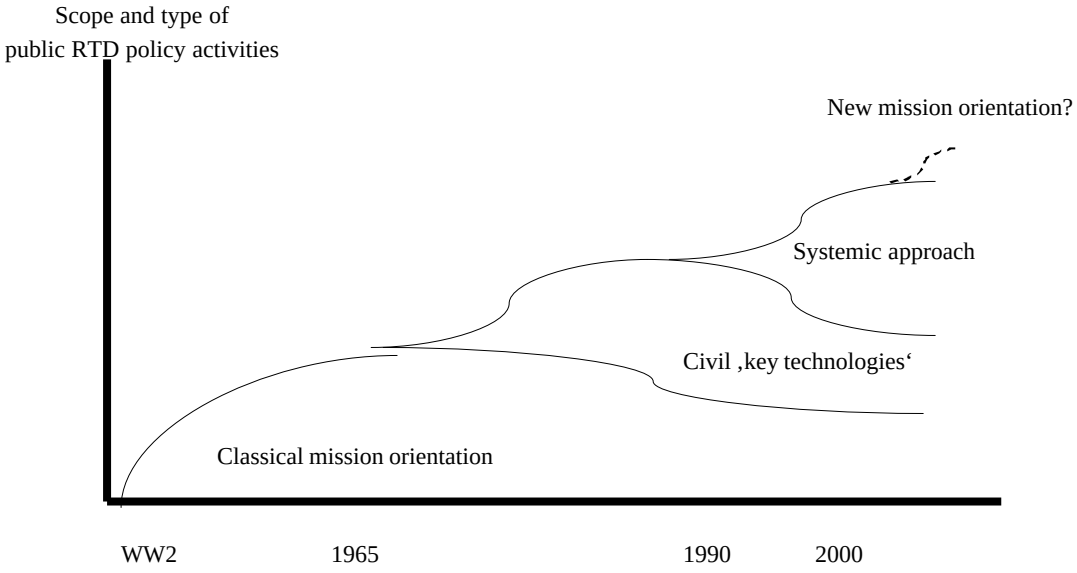
The rationale to identify and set priorities in science and technology in Kosovo is to channel the scarce funding to those areas which seem to be the most suited ones for the further social development and economic growth of the Republic of Kosovo. If no priorities are set, the available limited budgets would disperse across too many disciplines, sub-fields and topics. They would simply evaporate without contributing to the creation of any critical mass to develop the needed absorptive RTD capacities in Kosovo.

The history of the last 50 years in priority setting in science and technology shows the emergence of up to four different paradigms, which are (according to Gassler et al., 2006)

1) The 'classical' mission orientation rooted in 'big science' endeavours after World War II
2) The 'civilian key technologies' approach
3) The 'system' oriented approaches and
4) The 'thematic' priorities approach along socio-economic problems

While the paradigmatic strength of the fourth one, which is the most recent one, is still disputed, the development of the older paradigms shows that priorities which have been identified previously under an older paradigm are not simply exchanged by new priorities developed under the newer paradigm but rather added to the previous ones (see Fig. 1)

Fig. 1: Trends in priority setting in science and technology



Source: Gassler, Polt, Rammer (2006)

The "classical mission-orientation" in S&T priority setting is not relevant for Kosovo. It is put on a level with "big sciences", focusing on war relevant technologies (e.g. atomic technologies, material sciences, air and space technologies). It was originally a science-push, public need driven approach requesting a highly centralized science governance system with

comprehensible budget appropriations. It is still highly significant in the USA, but to a lesser extent also in France and UK.

The civil "key technologies" approach focuses on technologies with large commercial application potentials. It is legitimized by the market failure argument and often motivated by "catching-up" policies. In general, the S&T priorities with the highest application potentials are said to be information and communication technologies (ICT), production technologies, biotechnology, environmental technology, materials, energy, medical devices and nanotechnology. Especially in emerging countries they are completed by "older" technological priorities (e.g. agro-food, geology, vaccination etc.). The civil "key technologies" concept seems highly relevant for Kosovo, although there are some limitations for a full exploitation.

- First, the technological and scientific basis is highly limited in a number of promising S&T priorities (e.g. nanotechnology, biotechnology), which makes it almost impossible to start a catching-up strategy without investing huge sums of money in these priorities.
- Secondly, the remaining national priorities are usually implemented in dedicated RTD programmes. By now, there is only very limited experience in Kosovo in establishing and implementing RTD programmes in an organized, impartial and transparent way. Thus, capacities for RTD programme management need to be urgently established!
- Thirdly, an inclusion of the most important stakeholders (not only from science but also from industry and the social sector) in RTD programming has to be secured in order to channel the funding in the sectors with the highest potential leverage effect. However, the participation of interest groups can lead to preferential treatment (i.e. not the most promising key technologies, but the loudest lobbying groups are selected).
- Fourth, the "key-technology" concept is basically industry and application oriented. Thus, absorptive capacities in industry and the social sector need to be developed at the very same time.
- A too narrow definition of key technologies and S&T priorities could lead to path-dependency (lock-ins) and distort the competition between alternative technologies. The definition of S&T priorities in the present concept, however, has taken this danger into account and decided not to set too narrow priorities.

Although, the civil "key technologies" concept is of relevance for Kosovo, and was therefore also partially decisive for the present National Research Programme, it has to be completed by a "system's oriented approach". This "system's oriented approach" focuses on functional priorities (e.g. support for establishing science-industry relations and technology transfer; leverage of private funding; establishment of scientific qualification schemes; access to international RTD programmes; access to foreign knowledge etc.). This approach is legitimized by the RTDI system failure argument (i.e. overcome fragmentation of innovation system), which is highly relevant in Kosovo. And it is motivated by a modern innovation system understanding with an emphasis on vertical and, also, horizontal collaboration which should be supported by innovation friendly frameworks (taxation, labour laws, regional policy etc.).

Despite the importance of this "system's oriented approach" for Kosovo, there are still some institutional shortcomings that have to be solved in order to make full use of it:

- Firstly, this concept is usually implemented through specialized and decentralized RTD programmes. As mentioned above, RTD programme management capacities have to be

urgently developed in Kosovo to guarantee an efficient, effective and transparent implementation of the programmes and their financial allocation.

- Secondly, the "system's oriented approach" focuses on the improvement of links between science, industry and links. In the case of Kosovo, however, not only the linkages have to be improved, but the subsystems per se (e.g. university sector; SME sector; taxation policy etc.) need substantial upgrading. Therefore, the focus of this "National Research Programme" is for upgrading the scientific capacity during the first 3 to 4 years, before starting to foster the linkages with industry and the social sector (as of 2014).

Finally, also elements of the so-called "new mission orientation paradigm", which explicitly focuses on socio-economic problems are explicitly taken into account in the present concept paper. Specifically, this new emerging paradigm focuses on problems, which usually fall under the competence of related policy areas, such as environment and health. In the present "National Research Programme" a strong emphasis is on environment, health, the economic fabric of the country and on supporting unbiased scientific research focusing on the issue of national identity in an emerging globalised world. Funding for RTD is primarily motivated to solve problems and not because of technological risk. Incremental innovations, technology adaptation and diffusion and user orientation are in the centre of this approach, which complements the rationale behind the S&T priority setting in Kosovo.

4.2. The Process of Priority Setting

The S&T priority setting process is legitimized by the Law on Scientific Research Activity, where is stated in Article 51, that the National Research Programme has to take care about

- certain scientific fields with special consideration (Art. 51, a and b)
- advances in scientific-research activity (Art. 51, c)
- advancement of investments of juridical scientific research persons (Art. 51, d)
- programme of participation in international scientific-research projects (Art. 51, e)
- programme of purchasing and usage of equipment (Art. 51, f)
- systematic education programme of the scientific and research workers (Art. 51, g)
- programme of scientific information development and of publishing of achieved scientific-research work results (Art. 51, h)
- necessary means for fulfilment of the National Scientific Programme (Art. 51, i).

All these areas are taken into consideration in the present "National Research Programme", which is - again according to the Law – planned for the approval of a five years period of time (Art. 52.2).

Art. 54 of the Law states explicitly that the National Research Council has to present the proposal of a National Research Programme to the Government of Kosovo. Thus, the National Research Council (NRC) aimed to fulfil its legal obligation and started a process to satisfy the legal requirement. Support for this process was given by the Austrian-Kosovo KAIP project. A first meeting of the NRC with experts in Austria was held in December 2008 in Vienna. After that, a first process document was prepared and subsequently refined.

In order to ensure a participative approach, two dedicated two-days working meetings with a high number of representatives from the research sector were organized. The first one was

held in Mavrovo in September 2009 and the second was held in Thessaloniki in November 2009. In between and afterwards several smaller consultation workshops were organized. The list of contributors to the document preparation process is provided in the Annex 1.

Draft of the National Research Programme was approved by the NRC on 11 February 2010 and was authorised for public discussion. On 3 March 2010 a National Conference was organised in Prishtina with the aim to discuss the draft Programme, with participation of over 100 researchers from Kosovo. Suggestions from public discussion had a significant impact in shaping the final version of the Programme.

4.3. Expected Instrumental Uptake in S&T Policy

In contemporary policy-delivery an abundance of different approaches and instruments to fulfil the objectives of modern science and technology policy and to realise a functioning system of research and innovation can be observed. This variety has been developed in correspondence with the science and technology priority paradigms highlighted in section 4.1. Relevant for this National Research Programme are a couple of approaches and instruments which can be attributed to international standards in modern science and technology policy-delivery. A common feature is the competitive distribution of the available funds through calls for proposals, which are independently reviewed either directly by the scientific community (peer reviews) or by independent knowledgeable expert groups (expert reviews). The tendering procedure is usually implemented by a body operationally separated from the ministry (e.g. "National Science Foundation", "Research Promotion Agency", "Research Promotion Funds" etc.), who, however, is directly responsibly vis-a-vis the ministry in charge of science and technology. Often these operations are built on a separate law on research funding which stipulates the major guiding principles and institutional regulations. It is recommended to update the existing Law on Scientific Research Activity in this respect and/or to complement it with a separate law or regulation on research funding, which puts more focus and details on the implementation of the National Research Programme.

Among the main instruments to be employed in the operational delivery of this National Research Programme are

1) Doctoral programmes to educate young scientists in outstanding institutional settings (e.g. within international joint programmes leading to double degrees or dedicated Centres of Excellence at the universities).
2) Individual post-doc researcher's grants for the promotion of scientific careers in priority fields both at home and abroad.
3) Individual PhD researcher's grants for the promotion of scientific careers in priority fields both at home and abroad.
4) Short-term mobility grants to further strengthening the cooperation between home and host institutions for the collaborative advancement of sciences.
5) The competitive funding of national research-infrastructure networks and national central laboratories in priority research areas.
6) The funding of stand-alone projects equipment procurement projects based on scientific development plans and competitive tendering procedures.
7) The procurement or development and implementation of a RTD information system which also serves the requirement of national S&T statistics.
8) Procuring the access of Kosovar researchers to relevant electronic libraries (e.g. Thomson Web of Knowledge; SCOPUS etc.)

9) Establishment of a funds to support scientific publications and science communications (e.g. for stand-alone publications like monographs; translation of stand-alone publications; to tackle the international dimension priority should be given to publish in international journals)
10) Provision of competitive grants for joint projects with a foreign partner institution funded under bilateral intergovernmental RTD programmes signed between Kosovo and other countries or other uni-, bi- and multilateral schemes.
11) Competitive distribution of project preparation grants to apply in international consortium for European funding under COST and especially the European Framework Programme for RTD.
12) Establishment of a brain-gain fund to attract foreign researchers and especially Kosovar researchers working abroad.
13) Implementation of a competitive applied RTD programme to mitigate the science-economy bottlenecks. The individual applied RTD projects include a strong technology and knowledge transfer component. RTD should clearly reflect the economic needs. Although research is (mainly) conducted by public research organisations, the beneficiaries are to be found in the business sector.
14) Establishment of an innovation programme oriented towards the technological, organisational and social innovation needs of the private sector (business, NGO). The implementation is based on competitive funding of individual cooperative projects (actively involving partners from business, society and academia) to generate concrete new economic, societal or cultural applications.
15) The competitive funding of five national Centres of Excellence in priority research areas (especially in enabling technologies) based upon sound individual RTD programmes, transparent, realistic and enabling outreach activities, advanced educational tasks and international inclusiveness.
16) Establishment of a competitive fund for basic research open towards all scientific disciplines.
17) Implementation of individual yearly awards for the most outstanding Kosovar researcher and newcomer researcher.
18) Development of a comprehensive quality assurance and evaluation process focusing on scientific research activities, subsuming also precautions for programme, policy and institution evaluations (including the benchmarking of scientific research organizations and policy-delivery institutions).

The instruments 1 to 4 address objective 1 (“Development of Human Capacity for Research Activities”) of the present National Research Programme of Kosovo.

The instruments 5 to 8 address objective 2 (“Development of Research Infrastructure”).

The instruments 9 to 12 address objective 3 (“Internationalization of Scientific Research Activity”).

The instruments 13 and 14 address objective 4 (“Strengthening the Links between Science and Economy for enhancing Economic and Social Development”).

The instruments 15 to 18 finally address objective 5 (“Excellence in Research and Scientific Activity”) of the present National Research Programme of Kosovo.

Although the number of 18 different implementation instruments for scientific research funding in Kosovo might seem high at first glance, the proposed instruments are considered necessary to meet not only the requirements stipulated by the law, but also to prepare the ground for a future full-fledged, but still targeted, research and innovation system in Kosovo. Most of the proposed instruments share to a certain extent logistical and operational similarities. Thus, many synergies in implementation and a speedy learning-curve can be expected. However, it is strongly recommended to start immediately with the establishment of professional capacities in research programme management, institutional precautions and rules and regulations to translate the objectives laid down in this National Research Programme into operational activities following the principles of good governance and modern public management and administration.

Major instruments which are not tackled in the first phase of the implementation of this National Research programme, but which are usually regularly applied in advanced systems of innovation are:

- Further so called structural programmes to mitigate structural problems and bottlenecks through cooperative projects (science-industry). Such schemes may focus on the establishment of start-up programmes for academia, infrastructure support for technology transfer and innovation centres, raising interest for technological research among young people etc. Furthermore, dedicated SME or large industries related innovation programmes could be further advanced (e.g. attraction of foreign direct investment in RTDI; implementation of indirect measures such as innovation-friendly taxation regimes etc.). This, however, is very often done by the Ministry of Economy (and the Ministry of Finance) rather than emerging from the Ministry of Science.
- Targeted thematic programmes to create critical mass in areas which are strategically important for economic and technological development. Such themes could be generic technologies with broad application potentials (such as electronic networks, ambient assisted living, nano programmes, genetic research programmes etc.) or with a high given industrial absorption capacity (such as intelligent transportation systems in countries with large automotive industries). The latter, however, is not (yet) given in Kosovo. Although the priorities in the present National Research Programme are thematically defined, it is not recommended to institutionalize separate targeted programmes for these themes, but rather to address them with the broad set of instruments which are of relevance for all these themes (as indicated above).

5. The Five plus One National Research and Development Priorities in Kosovo

5.1. Introduction

In last two decades Kosovo has lacked a fully fledged research system, so there is a huge need to revive research activity in virtually all disciplines. On the other hand, it is important for research to contribute to the development of the country and to facilitate its integration to the Knowledge Society. It would have been much easier to identify national priorities based on an agreed National Development Strategy, but the reality is that Kosovo does not have such a document. Therefore, the Planning Team agreed on the following six criteria for priority setting:

- Relevance to economic and social development of the country,
- Number and quality of human resources for within the country and Diaspora,
- Condition of research infrastructure,
- Contribution to preservation and promotion of national identity of Kosovo,
- Potential to achieve research results and apply them within the country and abroad,
- Existing international cooperation in a field.

Six fields of science and technology according to the Frascati Manual[2] were considered:

1) Natural Sciences
2) Engineering and Technology
3) Medical Sciences
4) Agricultural Sciences
5) Social sciences
6) Humanities

Initially, 33 disciplines were analyzed and 16 potential research priorities were short-listed. Further discussion led to the following five research priorities:

1. Natural Resources, Energy and Environment
2. Agricultural Production and Food Safety
3. Medical Research
4. Social and Economic Studies
5. Linguistic, Cultural and Historic Studies

In addition, the field of Information and Communication Technologies is considered as cross-horizontal priority that may occur in any of the abovementioned fields.

The position of the National Research Council is that disciplines that are not listed under priority fields should be able to benefit from all regular research funding programs operated by the Government, thus encouraging active research activity in those areas. However, the priority fields should receive additional support from the Government, public and private sector in the country, because research in those fields directly contributes to the development of the country.

[2] Frascati Manual - Proposed standard practice for surveys on research and experimental development, OECD, 2002.

5.2. Priority 1: Natural Resources, Energy and Environment

5.2.1. Relevance for the Development of the Country

Kosovo, is currently facing a number of problems related to Natural Resources, Energy and Environment, accumulated for decades as a consequence of uncontrolled use of natural and mineral resources, high density of the population, and the presence of economic activities with a strong environmental impact, such as agriculture, electricity production and mining, and urban dwelling coupled with high level of pollution. Today Kosovo uses the fossil fuel duo of coal and petrol that provides all the energy. Due to the lack of research at national level there is not still any apparent concern about the adverse environmental and social consequence of fossil use such as air, soil and water pollution. Therefore, research in the fields related to climate changes, pollution and risks, sustainable management of natural resources and environmental technology is a must to ensure a better quality of life, clean environment and ecological sustainability in Kosovo and the Region.

Global climate changes have negative effects on ecosystem structure and function in Kosovo. Therefore, prevention of these changes at the local level and sustainable management of natural and artificial resources are necessary conditions for sustainable economic and social development.

Kosovo must also at least create basis for the use of the renewable energies (e.g. solar, hydro electrical and wind energy).

Research activities in all above mentioned fields are also a factor of integration of Kosovo in international environmental organizations that deal with prevention and consequences of global climate change. Improvements in this field are also relevant to facilitate future accession of the country to the European Union.

5.2.2. State of Human Resources in Research and Development

In general, the research capacities do not cover all research disciplines within the environmental sector.

Furthermore, the research activities which exist are also of basic character and in many cases are characterized by individual initiatives, although currently there are about 90 academic and research staff involved in University of Prishtina and other research institutes in Kosovo.

In order to complete research activities in all fields of Natural Resources, Energy and Environment further action directed towards human capacity development is needed, especially for applied research and design of development programs, which implementation which may also require forms of public-private partnership.

However, there is a solid base of cooperation with international research institutions, mostly base on individual initiatives and this has resulted in a number of joint projects and publications in international journals.

5.2.3. State of Research Infrastructure

Research infrastructure does not meet the criteria of quality compared to world standards of research being conducted in this field. Given the nature of the research field is multidisciplinary, it creates opportunities for integrated access to research and sharing of

infrastructure and laboratory space by various research institutions in the field. Existing staff is prepared only for the use and maintenance of existing research infrastructure, so the new infrastructure would also require some capacity building action.

5.2.4. Topics to be tackled under this Research Priority

- Use of natural resources,
- Capacity building for implementation of the ecosystem approach to management of nature,
- Management of drinking water and treatment systems of contaminated water,
- Treatment of groundwater as drinkable water source in rural areas,
- Treatment of polluted water in urban and industrial sector,
- Inventory of flora, fauna and fungus in Kosovo,
- Study of land degradation (construction, conversion, fragmentation, pollutants, erosion) and land consolidation,
- Application of geographic information system (GIS) in preparing the map for degraded and endangered ecosystems,
- Sources of pollution (radiations, heavy metals, pesticides and herbicides) and their effects on living beings,
- Urban design and environmental problems,
- Energy as an Instrument for Socio-Economic Development,
- Energy system, from extraction of primary energy to energy system,
- Energy and Sustainable Development,
- Energy End-Use Efficiency Improvements,
- Integrated Demand and Supply Opportunities,
- Renewable energies (solar, hydro electric and wind energy),
- Energy Consumption and Population,
- Monitoring of Emission of polluting substances during the production of energy as well as from industry and transport,
- Establish early warning systems due to the dangerous effects of climate change on human health,
- Environmental pollution and human health, and ecosystem condition from microscopic (molecular) to the macroscopic level,
- Indoor air pollution and human health effects.

5.3. Priority 2: Agricultural Production and Food Safety

5.3.1. Relevance for the Development of the Country

Agriculture production and food security is considered strategic sector of Kosovo ensuring: security and high quality food based on international standards, further development of agricultural production and processing capacities, improvement of the food chain in the country, fulfilment of the local food demand, providing employment, reducing agriculture product imports and increasing the export capacities, integration to international organizations, improving rural livelihood, sustainable development and economic growth in Kosovo.

Although, agriculture is an important economic sector in Kosovo, the research activity in the industry remains still at low level.

The agriculture production in Kosovo is characterized by traditional system of producing, thus without research activities and scientific results it is not possible to manage successfully transition of the Kosovo agriculture to modern production, be competitive in the market, and contribute to sustainable development of the sector. Innovative research results would mainly be locally applied but it is not impossible that some of them are found useful in other countries.

5.3.2. State of Human Resources in Research and Development

In general, in Kosovo the number of researchers in the agriculture production and food security sector is estimated to be relatively small, most of them employed by state-owned institutions (Universities of Prishtina and public research institutions). Research activities remain sporadic and marginal, based mainly on individual initiatives in the university sector. In recent years, there has been good experience of cooperation with several universities, regional and international institutes. Various research projects with international universities and institutions (ASO, SEEDNET, USAID, KAIP, and EU funded projects) have been implemented.

Noticeable positive aspect is that many young Kosovo researchers are pursuing studies and/or have been trained in many prestigious European universities and scientific institutions in the EU countries and in the region. However, in order to create an efficient agriculture production and food security system that operates with the resources available, there is a need for new human capacity in the research sector that will upgrade the current picture.

5.3.3. State of Research Infrastructure

The actual research infrastructure does not comply with the quality criteria of world agriculture and food standards. It is obsolete, uncompleted, scattered to different institutions, and outdated to perform proper research innovative techniques. Innovative approaches highly depend on laboratory conditions and adequate personnel.

Existing research staff has been mainly trained for the use and maintenance of existing research infrastructure. Development of new research activities would require improved infrastructure and capacity building action. The efficient use, integrated access to research and sharing of infrastructure and laboratory space by various research institutions/researchers should be taken into consideration.

5.3.4. Topics to be Tackled under this Research Priority

- Food security, quality and implementation of safety standards at farming and processing level,
- New technologies to increase agricultural production,
- Agriculture sustainable development (land, animals, plants, irrigation, etc),
- Animal production, improvement and health,
- Plant production, protection and improvement,
- Control of Zoonosis,
- Impact of global changes on agricultural production,
- Added value to agriculture products by improved processing and marketing activities,
- Improve competitiveness of the agricultural production and substitute imports and export to other markets,
- Support sustainable development and improve the quality of life through promotion of farming and other non farming activities without causing any damage to the environmental resources,
- Support to agriculture production and rural diversification,
- Preservation of diversity of agricultural (animals and plants) genetic resources,
- Increasing the production and use of forestry,
- Aligning Kosovo's agriculture policies with that of the EU.

5.4. Priority 3: Medical Research

5.4.1. Relevance for the Development of the Country

Due to numerous factors, a rapid increase of the incidence of many human health problems all over the word is seen in recent years. Kosovo has a health system that has undergone reforms in all levels.

Like every country, Kosovo is obliged to support medical research activities for diagnostic, therapeutic and educational purposes. This influences the provision of efficient medical services, determining of specific etiologic factors and prevention, diagnosis and rational therapy of diseases; reducing the prevalence and incidence of diseases with socio-economic importance; reducing health risk factors for the country and region; determining of proper health policies compatible with international standards. Supporting medical research is also prerequisite for accreditation of institutions of higher medical education.
In general, development of medical research activities is also relevant to providing high quality health services to the people by applying research results in local clinical practices (public and private), and, possibly, abroad.

5.4.2. State of Human Resources in Research and Development

Although, the existing staffs are dedicated to offer creative and innovative services in the field of medicine, the research capacities do not cover all research disciplines.

Development of new technologies, application of new treatments for both safety and efficacy, and all other research that contributes to the development of new treatments, imposes the need for increase and further development of human capacities in the field of medicine.

During the last decade, many young Kosovo researchers from different fields of medicine have performed studies and specializations in many prestigious world universities, thus, there is a solid expertise to perform comprehensive research.

Though research activities remain sporadic and marginal, based mainly on individual initiatives in the university sector, there is increased evidence of cooperation with international research institutions. Important support in health research in Kosovo was given by the international organizations as: WHO, UNICEF, USAID, WUS, UNFPA, DFID, etc. Intensification of international cooperation will strengthen scientific thinking and scientific-research activities in basic and applied medicine.

5.4.3. State of Research Infrastructure

The existing scientific research activities in Kosovo in the field of medicine are spread among many institutions.

In general, the international collaboration is at the level of human capacity building and much less in providing and updating the research infrastructure. The physical space for research exists, but, better laboratory and equipment facilities are required in Kosovo. Existing staff is prepared only for the use and maintenance of existing research infrastructure, so the new infrastructure would also require some capacity building action.

The legal experimental research framework must also be completed and adapted in accordance with international Convention.

5.4.4. Topics to be tackled under this Research Priority

Focus should be on research to ensure that effective measures, policies, and interventions are in accordance to EU standards. Inter disciplinary partnerships involving Basic science, Clinical research, Epidemiology, Biostatistics, Bioinformatics, as well as multi-professional partnerships should be developed.

The following are the priority topics in the field of medical research:

- Development of basic medical research (genetics, immunology and pharmacotherapeutics),
- Development of clinical research (cardiovascular and oncological diseases),
- Development of research in the field of public health (prevention and control of infectious diseases, mental health, mother and child health, and substance addiction)

5.5. Priority 4: Social and Economic Studies

5.5.1. Relevance for the development of the country

During the repression of Kosovo in the 1990s, there was a devastation of production capacities in which the economy of Kosovo was based on until 1990. During the past decade, the country was also subjected to prolonged economic isolation. As a result, there is a break-down of relationships between business entities in Kosovo with their partners in other republics of the former Yugoslav Federation and internationally. This has left policy makers in Kosovo with virtually no significant industrial base that would lead to the future development of the country. Three attempts undertaken to develop the strategy for future economic and social development of the country, not preceded by serious research projects, have failed.

Economic development, employment and the increase of competitiveness is the most important challenge facing Kosovar society in the future. Research should provide the main answers that policy makers would need for their strategic decisions on the future economic structure, strategy of education, legal framework and institutions of security that provide an environment for prosperous economic and social development. Research should develop new knowledge on the most effective use of all human, natural and financial resources of Kosovo toward developing a new knowledge based society; enabling integration into international markets through the development of an appropriate economic structure and adequate labour skills; and attracting foreign investment by providing institutional stability and rule of law and public security.

5.5.2. State of human resources in research

While there is a number of active researchers in the field of economics, law, education and in other social sciences, the capacities of Kosovar researchers to design qualitative and quantitative research are limited. Currently, The University of Prishtina does not offer any courses on research design, and research institutions are dependent on foreign researchers in the cases that research requires experimental, quasi-experimental or cross-sectional research design.

Lack of experience in scale development and multivariate analysis limits local research to descriptive research. Significant effort is required to primarily promote awareness that these research skills are needed for researchers. These should be considered as a precondition of their motivation for undertaking serious effort for upgrading the design and analytical skills required to conduct demanding research tasks, which are imposed by complex research designs applied today in economics, law, education and other fields of social sciences.

Due to the lack of research design capabilities to conduct seed research in the field of social sciences, publications of Kosovar authors in reputable journals are rare, and mainly result from affiliations of Kosovar authors in international institutions or as a result of joint research of Kosovar authors during their visits in foreign research institutions. The lack of incentives for research in Kosovo has depleted research activities of returnees, and, as a result, they become research passive; pushed to other activities such as teaching or non-scientific consultancy. While there are calls for the return of experts in the form of “brain gain” programs, serious incentives are required to make their return effective, including significant funding for their research and schemes for development research skills of early research career candidates.

5.5.2. State of research infrastructure

Social sciences are not very dependent on laboratories. Some office space and basic computing facilities are available at social research institutions. The main problem for research of social science in Kosovo is the lack of official statistical data on economic and social developments. Although it should be expected that it is difficult to have reliable data in a country with a high level of informal economy, government and governmental agencies however, have not developed a reliable data base related to major economic and social processes. One of the biggest concerns for future research is poor libraries and a lack of international journals in Kosovo libraries.

Research and education institutions should be developed within the integrated framework of the effective triangle (education-research-innovation), nurturing long-life learning of researchers and cooperation with important international research centres.

5.5.3. Topics to be Tackled under this Research Priority

1. Studies on the identification of factors that impact the most effective use of all human, natural and financial resources of Kosovo toward developing a new knowledge based society, including but not limited to the following:
    - Research on promoting value chains (from primary production, processing, and marketing of domestic products) that includes studies in the field of production and consumption
    - Research on factors impacting the integration of Kosovo into international markets
    - Research on incentives that attract foreign investment
    - Research of factors that impact the development and nurture of relationships with foreign partners Research on the impact of institutional stability and the rule of law in economic development and European integration
2. Studies on the development of education and research institutions that provide an integrated framework of the effective education-research- innovation triangle
3. Studies on governance, that includes the following:
    - Research on economic governance, both at a macro and micro level
    - Research on the rule of law within the framework of European integration
    - Research on public security, both for institutions and individuals
    - Research on electronic governance and electronic services to the public
    - Research on financial governance and reduction of informalities
    - Research on resolving social problems such as poverty and unemployment, as well as studies for development of labour market, production and services,
    - Research on the development of social cohesion, solidarity and inclusion.
4. Studies on the trends of social norms and behaviour to facilitate integration in the European Union.

5.6. Priority 5: Linguistic, Cultural and Historic Studies

5.6.1. Relevance for the development of the country

Linguistic studies directly affect development of communication and transfer of knowledge, symbols and values, which in turn influence economic, social and cultural development of the country. Cultural studies are important to understand relationships between social categories and groups and to comprehend overall social practices and processes, basic cultural patterns, as well as processes of change and interaction between cultures. Culture studies, too, directly influence the social, cultural and economic development of the country. History studies contribute to the development and emancipation of the Kosovar society, by increasing awareness and enhancing knowledge about historic events and process of the country. These studies also contribute to the preservation of museum, archive, heritage and historical values of the country.

5.6.2. State of human resources in research

In Kosovo, there are a considerable number of researchers in the field of linguistics. However, the number of researchers in subfields such as sociolinguistics, psycholinguistics, stylistics and applied linguistics is limited. There are a significant number of experts with international experience in conducting research in cultural studies, but the engagement of new young researchers is a necessity. In Kosovo and Diaspora there are researchers in all periods of historic studies.

5.6.3. State of research infrastructure

The state of infrastructure for research in the field of linguistics in Kosovo does not differ from the existing one in other fields of research. Generally, conditions for research in the linguistic research do not fit with contemporary standards. At the institutional level, research infrastructure that would assure sustainability and continuity of cultural studies in Kosovo is insufficient. The situation with historic studies is better, as the existing research infrastructure supports the completion of research projects at a satisfactory level. Nevertheless, there is no infrastructure for archaeological expeditions, restorations and revitalisations, archiving of documents and museum materials.

5.6.4. Topics to be Tackled under this Research Priority

1. Studies on the practical aspect of effective communication at all levels and political and social structures, as a strategic function of all other fields, including but not limited to the following:
    - Creation of data base for the large electronic Corpus of Albanian as necessary ground for research and solution of different problems in the field of lexicography, structural research and many other practical needs (including human resources, infrastructure, hardware and adoption-developing of software's, etc.).
    - Research on language use in media and public relations, education, culture, politics, science, business in the view of existing standards, strata and varieties, and with regards of further developments in the frame of new horizons of European Kosovar society.

- Language variation and identity: the relationship between our identity as members of groups and the language varieties important to each group.
- Research on structural, lexical and other resources of Albanian, especially with regard to the new horizons within the frame of European and western societies (terminology in economics, finance, law, society and in other fields of importance for economic and social development).
- Research on relations between Albanian and other Southeast European languages with special regard to aimed closer contacts between respective societies in the region (research and language learning).
- Language use and language learning in educational settings.
- Learning of languages for children of Diaspora.
- Linguistic studies among Arberesh and Albanians in countries such as Turkey, Greece, Italy, Egypt, Romania, etc.
- Linguistic studies in the field of information and technology.
- Studies in the filed of scientific terminology and standardization of terminology in Albanian.
- Linguistic studies in the field of history of the language and classical philology.

2. Multidisciplinary studies of Kosovar society from the cultural, literary, artistic and folkloric perspectives:

- Research of values, attitudes, perspectives and changes in the lifestyle and in thinking.
- Research of social, cultural, sub-cultural and multicultural identities in the era of integration and globalization.
- Research in the field of gender and social representation.
- Research in the field of arts (music, visual arts, literature, theatre, film, etc), popular culture, tradition and folklore.
- Studies in literature from a historical, critical and theoretical perspective.
- Philology studies and publication of heritage works and comparative studies in literature.
- Research in the field of sports and games.
- Research in the field of environment, urbanization and urban planning.
- Research in the field of media, public communication and social representation.

3. Historic studies that will promote the national identity and the history of Kosovo.

- Research in the pre-historic periods.
- Research in ancient and middle ages.
- Research in modernity, national movements, statehood and democracy.
- Research in Auxiliary sciences of history (Archaeology, archival research, etc.).
- Studies in the field of socio-economic, spiritual and oral history.

5.7. Cross-horizontal Research in Information and Communication Technologies

5.7.1. Relevance for the Development of the Country

According to "Kosovo IT Market 2008-2012 Forecast and 2007 Vendor Shares" by the research company IDC Adriatics[3], the IT market in Kosovo in 2007 reached $85.17 million having expanded approximately 30% year on year in 2007. Overall IT expenditure in Kosovo in 2007 by sector is as follows:

- Spending on hardware resell captured 74%
- Spending on software captured 13.1%, and
- IT services captured 12.9%

of total IT spending in the country in 2007. Posting $40 in IT spending per capita in 2007, Kosovo stood at 4.5% of the EU27 average ($886 per capita). Kosovo lagged behind average IT spending in the Adriatic region, as well, especially which of Slovenia ($455) and Croatia ($276), but it stood near the IT spending level of Bosnia and Herzegovina ($42) and was ahead of neighbouring Albania ($25).

Moreover, following the same IDC study, IT expenditure in Kosovo is expected to increase at compound annual growth rate of 9.9% during the five-year forecast period to reach $136.73 million in 2012. Given this trend and the importance of ICT for development of any kind of research, this field is considered to be of high relevance for the Kosovo context.

5.7.2. State of Human Resources in Research and Development

Recent stocktaking research[4] on ICT in Kosovo shows there are 114 employees in the field of ICT Research and Development, out of whom 17 with PhD degree or higher on full-time employment basis. Nevertheless, lack of research funding has inevitably affected the development of new capacities in this field, so the number of researchers aged 35 and below still does not constitute one third of the overall population. On the other hand, there is some potential with Kosovan Diaspora in Europe and already ongoing academic cooperation between ICT experts of Kosovan origin working in Europe and research institutions in Kosovo. A few Kosovar ICT researchers have also been trained under the KAIP and WINS-ICT project to participate in the European Framework Programme for RTD.

5.7.3. State of Research Infrastructure

The state of ICT infrastructure in Kosovo is considered to be within acceptable limits, as compared to poor and outdated infrastructure in many other fields of research. However, poor maintenance and fragmentation of the infrastructure often make it useless for serious research projects. On the other hand, compared to research infrastructure in developed countries, the existing one in Kosovo is rather obsolete and does not help participation of Kosovo research institutions in international research projects. The main ICT research facilities in Kosovo are:

[3] http://www.newKosovoreport.com/200812221508/Business-and-Economy/IT-market-in-Kosovo-small-but-growing.html

[4] Ahmedi L, Sylemani K: National Background Report on ICT Research in Kosovo, WBC-INCO.net, Prishtina, November 2009

1. Laboratories of Faculty of Electrical And Computer Engineering, University of Prishtina,
2. Post and Telecom of Kosovo,
3. All facilities of higher education institutions and other public and private institutions active in the field.

5.7.4. Topics to be Tackled under this Research Priority

- ICT innovations focusing to solve environmental and social issues, providing the data and analysis to answer these questions.
- ICT contribution to sustainable economic growth and social well-being and its role in the shift toward knowledge-based society.
- Application of new innovations such as smart electrical grids, tele-medicine, intelligent transportation networks, interactive learning and computing as tools for efficient operation and fast communication networks.
- The role of ICTs for climate changes (future perspective).
- Use of ICT from official sources to develop a conceptual framework on different field (in economy, in environment, in the education system, in the health system, in public administration etc).
- Promotion of relevant information content, trust, freedom of opinion and the other potential for innovation in society.
- Development of the future content networks.

5.8. The International Framework for the National Research and Development Priorities of Kosovo

Many economically advanced countries have prepared national S&T strategies including priority settings during the last 20 years. The list of countries is constantly growing and subsumes also more and more emerging economies. It is worthwhile to note, that in some countries a variety of research funding programmes already existed before the strategic framework ("Überbau") for S&T (and consequently also for research programmes) has been made explicit and codified. In this respect, Kosovo - so to say - is not alone. In fact, a comprehensive research, technological development and innovation strategy is still missing in Kosovo, but the present National Research Programme incorporates already many strategic elements, which can be taken for granted as necessary standards and mainstreamed approaches in international comparison.

A strong element in Europe in terms of research priority setting has been the European Framework Programme for Research and Technological Development. For many European countries these Framework Programmes, which exist since the early 1980's, are signpost or even bonfires of orientation in S&T policy priority setting. The Framework Programmes are the world largest RTD programmes and subsume elements of S&T priority setting stemming from the civil key technologies paradigm (recently with a strong focus on enabling technologies such as ICT, biotechnology, nano-technology and cognitive sciences) but also from systemic approaches (e.g. notion of collaborative projects; comprehensive understanding of RTDI; inclusiveness etc.). Actually, they are also orienting themselves towards new missions described as the "big challenges" of our future (e.g. climate change; aging society; post-carbon energy regimes etc.).

Since the European Framework Programme for RTD has become a major funding source for many countries of Southeast Europe (subsumed under the term "Western Balkan Countries"), and hopefully also in the near future for Kosovo, it is important that the priority setting in Kosovo does not contradict with the main European and world-wide trends in RTD funding. A comparison shows that this is not the case. Evident thematic connectivity is given in research priority 1 ("Natural Resources, Energy and Environment"), research priority 2 ("Agricultural Production and Food Safety"), and in the cross-horizontal research priority ("Information and Communication Technologies"). Also in research priority 3 ("Medical Research") and research priority 4 ("Social and Economic Studies") connectivity is given, although some of the research fields in these two priorities are more specific to the challenges in Kosovo. Only the thematic connectivity of research priority 5 ("Linguistic, Cultural and Historic Studies") is rather limited due to the strong national element in this research priority. Despite the theoretically given connectivity to the world's largest RTD programme in many aspects, it should not be underestimated that the low level of research in Kosovo might hinder a stronger inclusion of Kosovar researchers in European and global research networks. Especially, in new enabling technologies (e.g. nano-technologies) and other emerging generic scientific fields (e.g. cognitive sciences) a strong deficit can be observed, which cannot be easily mitigated by the present National Research Programme.

In terms of their potential to enable bilateral connectivity to research programmes of other countries, all identified national RTD priorities in Kosovo are promising. There is almost no European country, who does not put high emphasis on ICT, medical research, environment and energy or at least certain emphasise on agriculture and food safety, social sciences (especially studies tackling social change towards the so called knowledge based society) and humanities. Thus, enough common ground for the establishment of bilateral intergovernmental S&T programmes is given. The strong notion of Albanian language and culture, however, can be best tackled in close cooperation with the neighbouring countries Macedonia and Albania, with whom S&T agreements are already at hand. Also, balcanistic aspects should be emphasized as an important dimension of interrelation and openness to other traditions.

6. Implementation Plan

6.1. Activity Plan including Timing

The following table summarises the timing of the main instrumental steps to implement the present National Research Programme for the research priorities identified. It assigns each activity to the overall objective and indicates the responsibility, the duration and the necessary resources and budgets.

Objective 1: Development of human capacity for research activities

Code	Activity	Start date	Duration	Resources and budget	Responsibility
1.1	Establishment of Doctoral Programmes to educate young scientists in outstanding institutional settings (e.g. within international joint programmes leading to double degrees	2011 first half First call - 2011 Second call - 2014	5 Doctoral Programmes for the duration of 3 + 3 years	€ 100,000.00 for each Doctoral Programme; In total € 500,000.00 annually	MEST (or National Research Promotion Agency)
1.2	Individual post-doc researcher's grants for the promotion of scientific careers in priority fields	2012 second half	Award of 10 to 15 grants annually	€ 20,000 for each grant (each lasting up to 10 months); In total around € 250,000.00 annually	MEST (or National Research Promotion Agency)
1.3	Individual PhD grants for the promotion of scientific careers in priority fields (both at home and abroad)	2010 second half	Yearly award of 20 grants	€ 28,000.00 for each grant per year (3 years per grant should be earmarked); in total € 280,000.00 annually First disbursements in 2011	MEST (or National Research Promotion Agency)
1.4	Short-term mobility grants to further strengthening the cooperation between home and host institutions for the collaborative advancement of sciences.	2010 second half	Yearly award of 20 grants	€ 1,500.00 for each grant; in total € 30,000.00 annually	MEST (or National Research Promotion Agency)

Objective 2: Development of research infrastructure

Code	Activity	Start date	Duration	Resources and budget	Responsibility
2	Adoption of the National Research Programme	2010 first half	Long-term for a period of 5 years for next review	Internal resources (foreign expertise funded under the Austrian-Kosovo KAIP project)	Assembly of Kosovo
2.1	Development of the legal infrastructure by reviewing the existing Law on Scientific Research, eventually drafting a Law on Research Funding	2010 second half	Long-term (until next review)	Internal resources (eventually foreign expertise funded through the Austrian-Kosovo KAIP project)	MEST, Assembly of Kosovo
2.2.1	Development of Research Programme Management Capacities	2010 second half	Long-term (continuous reporting and review)	Professionalization of K-CIRT and CITT and eventually inclusion in a National Research Promotion Agency; 5 trained full-time research programme managers available (eventually trained under the Austrian-Kosovo KAIP project)	MEST
2.2.2	The competitive funding of national research-infrastructure networks and national central laboratories in priority research areas.	2010 second half	5 national research-infrastructure networks (or national central laboratories) are funded for a functional set up within 2 years	€ 250,000.00 for each project; € 1,250,000.00 in total	MEST (or National Research Promotion Agency)
2.2.3	Funding of stand-alone equipment procurement projects based on scientific development plans and competitive tendering procedures	2012 first half	Unique with long-term impact	€ 1,000,000.00 disbursed among at least 20 projects	MEST (or National Research Promotion Agency)

Code	Activity	Start date	Duration	Resources and budget	Responsibility
2.3	The procurement or development and implementation of a RTD information system which also serves the requirement of national S&T statistics	2011 first half	Long-term operation of the system	€ 100,000.00 in the first year; € 50,000.00 in each of the following years (establishment of ToR etc. eventually supported by the Austria-Kosovo KAIP project)	MEST (or National Research Promotion Agency)
2.4	Procuring the access of Kosovar researchers to relevant electronic libraries (e.g. Thomson Web of Knowledge; SCOPUS etc.)	2011 first half	Subscription and annual license	€ 200,000.00	MEST (or National Research Promotion Agency)

Objective 3: Internationalization of scientific research activity

Code	Activity	Start date	Duration	Resources and budget	Responsibility
3.1	Establishment an operation of a fund to support scientific publications and science communications	2010 second half	Continuously	€ 50,000.00 annually	MEST (or National Research Promotion Agency)
3.2	Project preparation grants to apply in international consortium for European funding under COST and especially the European Framework Programme for RTD	2011 first half	Continuously	€ 50,000.00 annually	MEST (or National Research Promotion Agency)
3.3	Provision of competitive grants for joint projects with a foreign partner institution funded under bilateral intergovernmental RTD programmes signed between Kosovo and other countries or other uni-, bi- and multilateral schemes	2011 second half	Aligned with the partners	€ 5,000.00 for each granted project; Maximum of 30 granted projects per year; In total maximum of € 150,000.00 annually	MEST

Code	Activity	Start date	Duration	Resources and budget	Responsibility
3.4	Establishment and operation of a brain-gain fund to attract foreign researchers and especially Kosovar researchers working abroad.	2010 second half	Continuously	€ 250,000.00 annually	MEST (or National Research Promotion Agency)

Objective 4: Strengthening the links between science and society and economy for enhancing economic and social development

Code	Activity	Start date	Duration	Resources and budget	Responsibility
4.1	Establishment of a working group to prepare an applied RTD programme	2012 first half	Long-term (until next review)	Internal resources (eventually foreign expertise funded through the Austrian-Kosovo KAIP project)	MEST
4.2	Launching of the applied RTD programme	2014 first half	Call should be bi-annually	€ 500,000.00 for a minimum of 10 funded projects in total disbursed over 2 years	MEST (or National Research Promotion Agency)
4.3	Establishment of a working group to prepare a collaborative innovation programme	2014 first half	Long-term (until next review); an innovation call should be launched in 2016 but with money from different sources (including Ministry of Economy and Finances)	Internal resources (eventually foreign expertise funded through the Austrian-Kosovo KAIP project)	MEST

Objective 5: Excellence in research and scientific activity

Code	Activity	Start date	Duration	Resources and budget	Responsibility
5.1	Competitive funding of five national Centres of Excellence in priority research areas (especially in enabling technologies) based upon sound individual RTD programmes, transparent, realistic and enabling outreach activities, advanced educational tasks and international inclusiveness	2013 first half	Unique with long-term impact (5 years + 2)	€ 1,250,000.00 disbursed among 5 CoE (yearly)	MEST (or National Research Promotion Agency)
5.2.1	Establishment of a working group to prepare a basic research funding programme open for all disciplines	2014 first half	Long-term (until next review)	Internal resources (eventually foreign expertise funded through the Austrian-Kosovo KAIP project)	MEST
5.2.2	Launching of the basic research funding programme open for all disciplines	2015 first half	Call should be bi-annually	€ 1,000,000.00 for a minimum of 20 funded projects in total disbursed over 2 years	MEST (or National Research Promotion Agency)
5.3	Implementation of individual yearly awards for the most outstanding Kosovar researchers and best newcomer researchers	2010 second half	Continuously	€ 30,000.00 for the five most outstanding Kosovar researcher s annually and € 10,000.00 for the best five newcomer researchers annually	MEST (or National Research Promotion Agency)

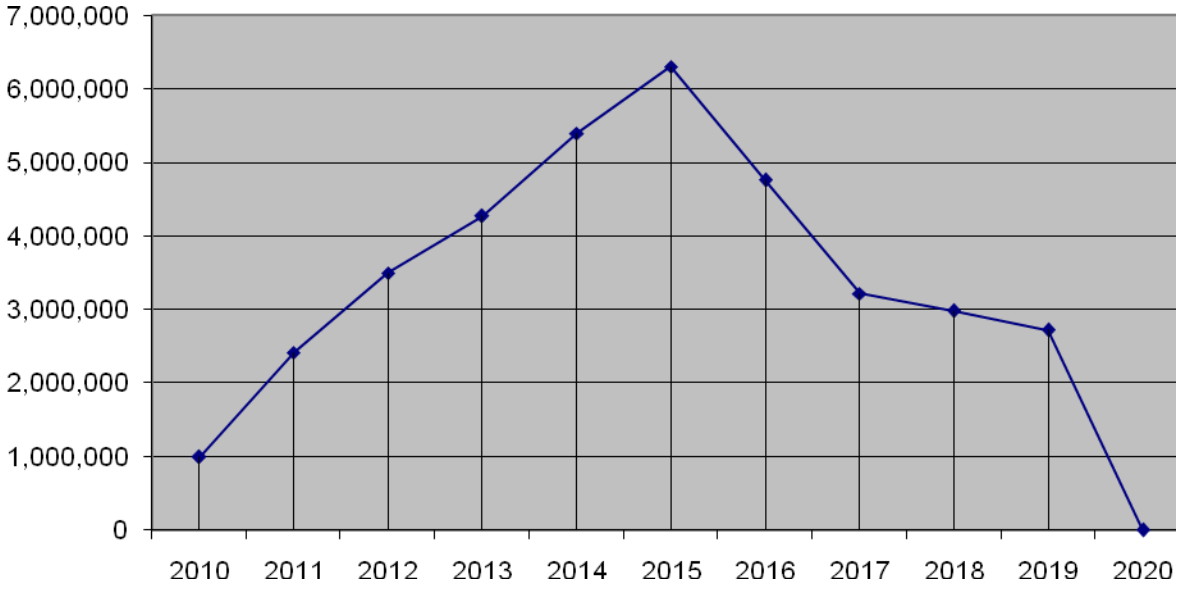
Code	Activity	Start date	Duration	Resources and budget	Responsibility
5.4.1	Development of a comprehensive quality assurance and evaluation process focusing on scientific research activities, subsuming also precautions for programme, policy and institution evaluations (including the benchmarking of scientific research organisations and policy-delivery institutions).	2011 second half	After establishment, continuous implementation	€ 70,000.00 annually (establishment of guidelines, trainings etc. eventually supported by the Austria-Kosovo KAIP project)	MEST
5.4.2	Implementation of quality assurance and evaluation processes focusing on scientific research activities, subsuming also programme, policy and institution evaluations	2012 second half	Continuously	€ 70,000.00 annually	MEST

Note: all budget indications are based on nominal value of 2010 and have to be valorised on yearly basis according to inflation indices.

6.2. Budget

The necessary budget to implement the instrumental activities stipulated in the present National Research programme in order to meet the objectives of the Law on Scientific Research and to serve the identified priorities is characterised by a steep yearly increase (see Fig. 2). It is worthwhile to note, that the indicated decline in the year 2016 would only take place if all activities, which will have been implemented until 2015 inclusively, would not be prolonged beyond the year 2015. Nevertheless, even in this unlikely case of abolition of major RTD instruments, there would be still budget liabilities for the already introduced activities until the year 2019 as shown in Fig. 2.

Fig. 2: Yearly budget appropriations in€ to implement the National Research Programme until 2015



Under the assumption of termination of all activities implemented between 2010 and 2015 as of 2016, Table 1 provides a detail budget overview on the next page. Please notice, that all budget indications provided are based on nominal value of 2010 and have been valorised on a yearly rate of 5 %.

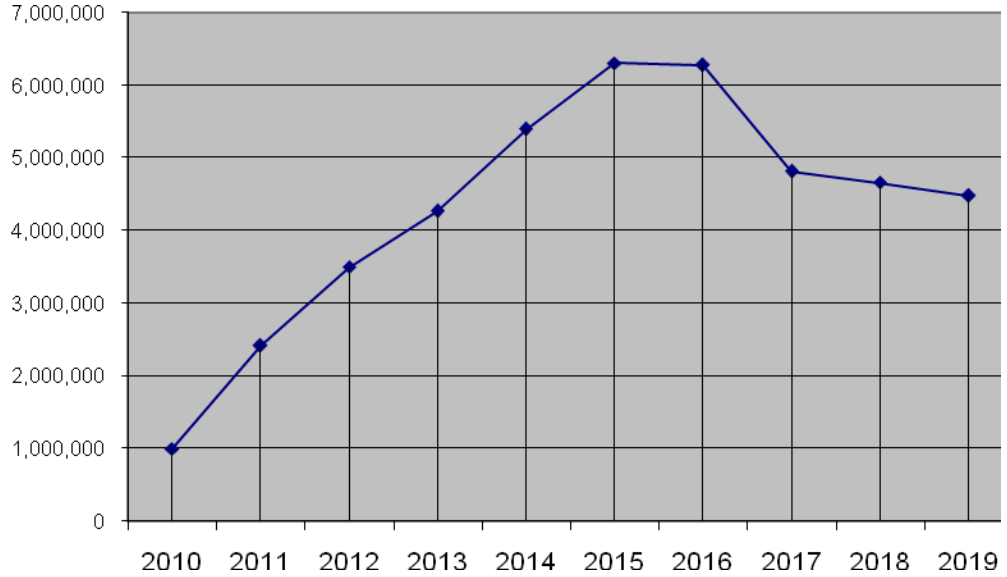
Tab. 1: Yearly budget appropriations for activities from 2010 until 2015 (with budget liabilities beyond 2015)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Budget	**995,000.00**	**2,417,000.00**	**3,495,975.00**	**4,268,880.00**	**5,393,953.69**	**6,301,792.16**	**4,757,339.53**	**3,212,879.30**	**2,979,535.15**	**2,714,824.38**	**0.00**
Awards for best Kosovar researchers	40,000.00	42,000.00	44,100.00	46,305.00	48,620.25	51,051.26	0.00	0.00	0.00	0.00	0.00
PhD grants (1st call)	0.00	280,000.00	294,000.00	308,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
Yearly Short-term mobility grants	30,000.00	31,500.00	33,075.00	34,728.75	36,465.19	38,288.45	0.00	0.00	0.00	0.00	
Research infrastructure networks and labs	625,000.00	625,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yearly Brain Gain Fund	250,000.00	262,500.00	275,625.00	289,406.25	303,876.56	319,070.39	0.00	0.00	0.00	0.00	0.00
Yearly Publication Funds	50,000.00	52,500.00	55,125.00	57,881.25	60,775.31	63,814.08	0.00	0.00	0.00	0.00	0.00
PhD grants (2nd call)	0.00	0.00	294,000.00	308,700.00	324,135.00	0.00	0.00	0.00	0.00	0.00	0.00
Yearly Access to electronic libraries	0.00	210,000.00	220,500.00	231,525.00	243,101.25	255,256.31	0.00	0.00	0.00	0.00	0.00
Yearly FP7 project preparation fund	0.00	52,500.00	55,125.00	57,881.25	60,775.31	63,814.08	0.00	0.00	0.00	0.00	0.00
RTD information system	0.00	105,000.00	52,500.00	55,125.00	57,881.25	60,775.31	0.00	0.00	0.00	0.00	0.00
Doctoral Programmes (1st call)	0.00	525,000.00	551,250.00	578,812.50	607,753.13	638,140.78	670,047.82	0.00	0.00	0.00	0.00
International RTD projects	0.00	157,500.00	165,375.00	173,643.75	182,325.94	191,442.23	0.00	0.00	0.00	0.00	0.00
Quality Assurance and Evaluation	0.00	73,500.00	77,175.00	81,033.75	85,085.44	89,339.71	0.00	0.00	0.00	0.00	0.00
Equipment procurement projects	0.00	0.00	1,102,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PhD grants (3rd call)	0.00	0.00	0.00	308,700.00	324,135.00	340,341.75	0.00	0.00	0.00	0.00	0.00
Yearly Post Doc Research Grants	0.00	0.00	275,625.00	289,406.25	303,876.56	319,070.39	0.00	0.00	0.00	0.00	0.00
Centres of Excellence	0.00	0.00	0.00	1,447,031.25	1,519,382.81	1,595,351.95	1,675,119.55	1,758,875.53	1,846,819.30	1,939,160.27	0.00
PhD grants (4th call)	0.00	0.00	0.00	0.00	324,135.00	340,341.75	357,358.84	0.00	0.00	0.00	0.00

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Applied RTD programme (1st call)	0.00	0.00	0.00	0.00	303,876.56	319,070.39	0.00	0.00	0.00	0.00	0.00
Doctoral Programmes (2nd call)	0.00	0.00	0.00	0.00	607,753.13	638,140.79	670,047.83	703,550.22	738,727.73	775,664.11	0.00
PhD grants (5th call)	0.00	0.00	0.00	0.00	0.00	340,341.75	357,358.84	375,226.78	0.00	0.00	0.00
Basic Research programme (1st call)	0.00	0.00	0.00	0.00	0.00	638,140.78	670,047.82	0.00	0.00	0.00	0.00
PhD grants (6th call)	0.00	0.00	0.00	0.00	0.00	0.00	357,358.84	375,226.78	393,988.12	0.00	0.00

Provided that the introduced instruments, which are of structural generic value (such as awards for best Kosovar researchers, yearly short-term mobility programmes, yearly brain gain fund, yearly publication fund, yearly access to electronic libraries, yearly FP7 project preparation fund, yearly operation of the RTD information system, yearly grants for international projects, yearly budget for quality assurance and evaluation, yearly post-doc research grants), are further continued beyond 2015 (however, without any new initiatives), then the necessary budget appropriations would stabilise between 4.5 and 6.5 million Euros annually as shown in Fig. 3 and table 2 below.

Fig. 3: Yearly budget appropriations in € to implement the National Research Programme with a continuation of basic activities until 2019



Tab. 2: Yearly budget appropriations for activities from 2010 until 2015 and continuation of basic activities beyond 2015 until 2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Budget	**995,000.00**	**2,417,000.00**	**3,495,975.00**	**4,268,880.00**	**5,393,953.69**	**6,301,792.16**	**6,281,857.86**	**4,813,623.55**	**4,660,316.61**	**4,479,644.91**
Awards for best Kosovar researchers	40,000.00	42,000.00	44,100.00	46,305.00	48,620.25	51,051.26	53,603.83	56,284.02	59,098.22	62,053.13
PhD grants (1st call)	0.00	280,000.00	294,000.00	308,700.00	0.00	0.00	0.00	0.00	0.00	0.00
Yearly Short-term mobility grants	30,000.00	31,500.00	33,075.00	34,728.75	36,465.19	38,288.45	40,202.87	42,213.01	44,323.66	46,539.85
Research infrastructure networks and labs	625,000.00	625,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yearly Brain Gain Fund	250,000.00	262,500.00	275,625.00	289,406.25	303,876.56	319,070.39	335,023.91	351,775.11	369,363.86	387,832.05
Yearly Publication Funds	50,000.00	52,500.00	55,125.00	57,881.25	60,775.31	63,814.08	67,004.78	70,355.02	73,872.77	77,566.41
PhD grants (2nd call)	0.00	0.00	294,000.00	308,700.00	324,135.00	0.00	0.00	0.00	0.00	0.00
Yearly Access to electronic libraries	0.00	210,000.00	220,500.00	231,525.00	243,101.25	255,256.31	268,019.13	281,420.08	295,491.09	310,265.64
Yearly FP7 project preparation fund	0.00	52,500.00	55,125.00	57,881.25	60,775.31	63,814.08	67,004.78	70,355.02	73,872.77	77,566.41
RTD information system	0.00	105,000.00	52,500.00	55,125.00	57,881.25	60,775.31	63,814.08	67,004.78	70,355.02	73,872.77
Doctoral Programmes (1st call)	0.00	525,000.00	551,250.00	578,812.50	607,753.13	638,140.78	670,047.82	0.00	0.00	0.00

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	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
International RTD projects	0.00	157,500.00	165,375.00	173,643.75	182,325.94	191,442.23	201,014.35	211,065.06	221,618.32	232,699.23
Quality Assurance and Evaluation	0.00	73,500.00	77,175.00	81,033.75	85,085.44	89,339.71	93,806.69	98,497.03	103,421.88	108,592.98
Equipment procurement projects	0.00	0.00	1,102,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PhD grants (3rd call)	0.00	0.00	0.00	308,700.00	324,135.00	340,341.75	0.00	0.00	0.00	0.00
Yearly Post Doc Research Grants	0.00	0.00	275,625.00	289,406.25	303,876.56	319,070.39	335,023.91	351,775.11	369,363.86	387,832.05
Centres of Excellence	0.00	0.00	0.00	1,447,031.25	1,519,382.81	1,595,351.95	1,675,119.55	1,758,875.53	1,846,819.30	1,939,160.27
PhD grants (4th call)	0.00	0.00	0.00	0.00	324,135.00	340,341.75	357,358.84	0.00	0.00	0.00
Applied RTD programme (1st call)	0.00	0.00	0.00	0.00	303,876.56	319,070.39	0.00	0.00	0.00	0.00
Doctoral Programmes (2nd call)	0.00	0.00	0.00	0.00	607,753.13	638,140.79	670,047.83	703,550.22	738,727.73	775,664.11
PhD grants (5th call)	0.00	0.00	0.00	0.00	0.00	340,341.75	357,358.84	375,226.78	0.00	0.00
Basic Research programme (1st call)	0.00	0.00	0.00	0.00	0.00	638,140.78	670,047.82	0.00	0.00	0.00
PhD grants (6th call)	0.00	0.00	0.00	0.00	0.00	0.00	357,358.84	375,226.78	393,988.12	0.00

6.3. Main Operative Challenges

The main operative challenges to forward and implement the present National Research Programme are:

1) Timely discussion and adoption of the National Research Programme by the National Assembly during the first half of 2010.
2) Implementation of a working group at the MEST to prepare the legal amendments to implement the different programmes and instruments foreseen under the National Research Programme; eventually updating the Law on Scientific Research and/or complement the Law with a more detailed Law on Research Funding taking into account good practices and European standards. This is a rather complex, but urgent undertaking in order to be ready to operationally launch the first calls in the second half of 2010.
3) In addition, it is necessary to plan and programme in detail the different programmes and instruments outlined in the National Research Programme and to make them operational for a smooth implementation. For this purpose, clear, accurate and transparent rules and regulations have to be prepared. Moreover, statistical requirements have to be anticipated in the planning processes.
4) Decisive for the success or failure of the implementation of the National Research Programme is the preparedness of the MEST in terms of launching and operationally implementing the calls for proposals and the introduction of transparent evaluation schemes. For the time being, the operational capacities at the MEST are nor yet fully professionalised and trained along European standards in this respect. Principles, rules and regulations, processes and work flows of modern research programme management, differentiated according to the requirements of the different programmes and instruments proposed under the National Research Programme, have to be introduced, trained and experienced in due time. Assistance from foreign partners is strongly recommended. Eventually, the MEST should combine the already partly trained forces from the K-CIRT (Kosovo Centre for International, Education, Research and Technology Cooperation) and the CITT (Centre for Innovation and Technology Transfer), which have been established under the Austrian-Kosovo KAIP project, into one National Research Promotion Agency and staff it with a minimum of 5 full-time equivalents.
5) The evaluations of the submitted project proposals should be made in a very transparent manner to avoid wrong optic and mistrust from the very beginning. The evaluation boards should represent a strong ownership of the scientific community in Kosovo itself, but it is recommended to establish a strategic partnership with a foreign research promotion agency in order to engage foreign evaluators, who are not integrated in the social networks of Kosovo researchers. From the very beginning, the project proposals should be written in English, the lingua franca of science and technology.
6) Each of the main programmes and instruments stipulated in the National Research Programme needs to be carefully monitored and evaluated. Thus, evaluation requirements should be anticipated in the drafting of the detailed rules and regulations of the programmes and instruments to be implemented. A professional, reflective RTDI evaluation culture along good European practice shall be introduced from the

very beginning and evaluation experts trained by foreign fellows (e.g. under the Austrian-Kosovo KAIP programme).

7) Although the budget requirements across the next 5 years look challenging at first sight, it is a legal requirement to earmark up to 0.7 % of the national budget for scientific research. Nevertheless, a sharp increase of budget appropriations and liabilities has to be expected and anticipated as shown in the previous section. The MEST has the authority and responsibility to plan ahead to guarantee a smooth implementation without still stand and breaks by ensuring some flexibility in budget appropriations to tackle new upcoming issues, which are not yet at stake at the time being.

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Annex 2: Literature

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