<u>**Standard Summary Project Fiche – IPA centralised programmes**</u>

Project Number 10 : Support Human Capital Development and Research

1. **BASIC INFORMATION**

1.1	**CRIS Number**	**2011/022-585**
1.2	**Title**	Support Human Capital Development and Research
1.3	**ELARG statcode**	**03.26** European standards. Education and culture, science and research
1.4.	**Location**	Republic of Serbia

<u>**Implementing arrangements:**</u>

1.5	**Contracting Authority:**	EU Delegation (EUD) to Serbia
1.6	**Implementing Agency:**	For component 1-EUD
		For component 2-World Bank

1.7 Beneficiary (including details of project manager)

Component 1:

Ministry:	Ministry of Education
Name:	Tüende Kovacs Cerovic, State Secretary in the Ministry of Education
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Component 2:

Ministry:	Ministry of Science and Technological Development
Name:	Ljiljana Kundakovic
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Steering committee for component 1: The Steering committee will consist of representatives from following institutions – Ministry of Education, National Educational Council, Institute for the Improvement of Education, Institute for Education Quality and Evaluation, Provincial Secretariat of Education, University of Belgrade. Members of Steering committee will have four regular meetings per year and special meetings if will be necessary.

A Project Implementation Unit for component 1 will be established including the necessary number of Ministry staff to enable effective and efficient project implementation.

Steering committee for component 2: The Steering committee will consist of representatives from following institutions – Ministry of Science and Technological Development, National Council. Members of Steering committee will have four regular meetings per year and special meetings if necessary.

Finance:

1.8 **Overall cost (VAT Excluded):**	**EUR** 18.1 million
1.9 **EU contribution:**	**EUR** 16.9 million
	(Component 1 – EUR 8.5 million, Component 2 – EUR 8.4 million)
1.10 **Final date for contracting:**	2 years after the signature of the Financing Agreement (FA)
1.11 **Final date for execution of contracts:**	4 years after the signature of the FA
1.12 **Final date for disbursements:**	5 years after the signature of the FA

2. OVERALL OBJECTIVE AND PROJECT PURPOSE

2.1 Overall Objective:

To contribute to improving the qualities of human capital based on strengthening of the "knowledge triangle": education – research – innovation, as well as to enhance the effectiveness of the educational system and to assist in implementation of the Strategy of scientific and technological development of Serbia, thus contributing to the increase of innovation in line with EU standards as well as achieving a better overall level of knowledge in the society.

2.2   Project purpose:

Component 1: *Education*

To improve primary and general secondary educational reform and the teacher training system as a way of contributing to economic and social development:

1. Development of a National Curriculum Framework in primary and general secondary education.

2. Further development of professional teachers' training focused on building the functional and multidisciplinary competency of teachers.

3. Building on the relationship between research, policy and practice, aiming to monitor education reforms and continuously improve education policies.

4. Establishment and equipping of practice classrooms as teaching bases for professional development of teachers.

Component 2: *Research*

The purpose is to foster the competitiveness of the Serbian economy by improving the link between R&D and economic development. The project intends to rationalise and enhance the R&D sector by supporting research programmes in innovative enterprises, thus paving the way to high quality projects pipeline, planning reorganisation and adjustments of pilot R&D Institutes, ensuring staff skills development, increasing availability and coordination of funds also through the definition and implementation of a financial instruments, e.g. Grant scheme.

2.3   Link with AP/NPAA / EP/ SAA

Some progress has been made in the field of **education.** Several laws in the field of education and training were adopted in 2010. Primary and secondary school curricula have been revised and were implemented in September 2010 in the first year of secondary level. As regard higher education, the European Credit Transfer and Accumulation System (ECTS) has been fully implemented in all higher education institutions. The three-cycle system is in place and preparation of doctoral studies under Bologna guidelines is starting. In the vocational education and training (VET) sector, the Council for Vocational Education and Adult Education has been established; it is a tripartite body with key functions including links with business, national qualification framework and curricula. However, an overall strategy covering all levels of education, including lifelong learning, needs to be developed. A national qualification framework remains to be adopted. Adult education is weak and needs a reform of contents, methods and infrastructure. The process of accreditation of universities and programmes has not been completed. Adjusting the education system to the labour market needs further improvement.

Expected project results will contribute to achievement of the following priorities of the *European Partnership 2008*:

In accordance with the short-term priority under European Standards, Education and Research, by "Continue efforts to improve the education system; establish better links between vocational and higher education and the labour market and economic needs; strengthen administrative capacity and improve coordination among relevant bodies," the project will aim to improve the education system and help prepare pupils at the primary and general secondary education levels for new labour market demands.

With respect to the medium-term priority under the same heading, "Adopt an integrated research policy," the project will endeavour to build educational research capacity, which will support the development and monitoring of improved educational programmes. It will help promote a knowledge-based economy and contribute to establishing evidence-based policy making.

Development of curriculum and standards of achievement, as well as research in education, will considerably contribute to achievement of the following short-term priorities in the field of education within the *National Programme for Integration with the European Union*: "Development of new educational programmes and improvement of existing programmes in the aim of achieving quality results and higher education standards"(paragraph 3.26.1.4, page 695) and "Develop procedures and techniques for monitoring and evaluation of the progress and achievements of students" (paragraph 3.26.1.4, page 695). The project will aim to improve teaching standards through curriculum development and the continuous education of teachers, while it will also institute a monitoring and evaluation system for the achievement of educational standards and the continual professional development of teachers.

Improving the qualities of human capital by strengthening the "knowledge triangle", education – research – innovation, and enhancing the effectiveness of the educational system are two goals related to the following part of the Draft 2010 joint progress report of the Council and the Commission on the implementation of the *Education & Training 2010 Work Programme*: "High quality education and training systems which are both efficient and equitable are crucial for Europe's success and for enhancing employability" (page 3). The project will also strive to promote professional development of teachers and to ensure the acquisition of multidisciplinary key competences by both pupils and teachers, which is also described as necessary in this report.

The expected project results and activities will adequately address problems and contribute to achievement of priorities defined in the 2009 EU document, *Key competences for a changing world*. This is particularly notable in the project's commitment to advancing competence-based teaching and learning, while instituting a learning outcomes approach, adapting school curricula and supporting the professional development of teachers in line with the challenges that Europe has foreseen in the field of teaching. Moreover, through its teacher training component, the project will help to harmonize the education system in Serbia with EU standards, particularly with regard to strengthening the principles of LLL through the continuing education of teachers.

The R&D sector has a prominent place in the official documents Serbia has signed with the EU.

Link with European Partnership:

The EP clearly includes among its objectives the following:

Need of adopting an integrated research policy

Need to start developing a policy conducive to research.

Link with Stabilisation and Association Agreement:

Article 112, Cooperation in Research and Technological Development (pages 105-106) states that: the Parties shall encourage cooperation in civil scientific research and technological development (RTD) on the basis of mutual benefit and, taking into account the availability of resources, adequate access to their respective programmes, subject to appropriate levels of effective protection of intellectual, industrial and commercial property rights (IPR).

Cooperation shall take due account of the priority areas related to the EU *acquis* in the field of research and technical development.

Link with the National Programme for Serbia's Integration into the EU (NPI)

This document dedicates an entire chapter to science and research describing the following priorities:

To formulate integrated policies related to research, taking into consideration regional needs and capacities

To determine dynamics of the growth of budget research allocations

To define complementary measures for increasing investment of industry and the private research (e.g. tax incentives)

To define incentives for innovative research work

To define measures for increase in the number and mobility of researchers

To determine the procedure for mutual recognition of research titles, both in countries within the region and throughout the whole European research area

To develop a network of national contact persons with the view of providing support to researchers and greater participation in the 7FP of the EU

To create databases of researchers and research institutions, as a kind of support to the process

To increase networking of researchers with European partners and the establishment of business connections between sectors of research and economy

To organize a larger number of centres of excellence within the critical mass of researchers

NPI also envisages dissemination of information on FP7, and other possibilities of including Serbia in European Research Area.

2.4 Link with 2011-2013 MIPD for Serbia

Support for Human Capital and Development falls under the Employment and Social Inclusion sector. The main goal is to align social policies in Serbia with EU standards, supporting the country's efforts to adhere to the targets of Europe 2020 in poverty and social exclusion and, in particular to the objectives and actions of the European Platform against Poverty and Social Exclusion.

The proposed project will directly address outlined issues such as:

Development of national institutional capacities for the competitive Serbian business environment and industry capable of sustaining the competitive pressure of the European market

Development of Serbia's capacity to benefit from the knowledge based society

Further development of local/regional business support structures in order to promote business, research and innovation related activities and public services

Development and implementation of Serbia's innovation strategy and action plan.

2.5 Link with National Development Plan (where applicable)

N/A

2.6   Link with national / sectoral plans

Improvement of the primary and general secondary educational reforms and the training system, which contributes to economic development; matching labour market demands and supply, conditions and standards of economic and social development will address the problems mentioned in the *National employment strategy and AP (2005)*: "Enrolment of students in general secondary education is low in comparison to other countries in transition, and a consequence of that is the high percent of students that enrol in vocational and technical schools" (paragraph 4.1, page 42). This would also contribute to achievement of the priorities of the *Development strategy of the informational society*: "To support market influence, promote social changes, give the possibility for local changes, assure joint learning and exchange of good solutions" (paragraph 1.1, page 1) and "Effective integration of ICT into the education system is one of the catalysts for the development of a knowledge-based society" (paragraph 7.1, page 39). Additionally, teacher training for ICT will contribute to further development of teachers' knowledge and skills to use ICT in the process of preparation of lessons, as well as to build pupils` knowledge and skills.

Research in education will support achievement of the following short term priority in the field of education of the Poverty Reduction Strategy Paper, Second report: "To analyze drop out reasons, especially among children from vulnerable groups" (paragraph 4.4.62, page 98).

The *Sustainable development strategy (2008)* indicates as important: "Investment in knowledge and skills of people through quality, efficient and practically applicable education and permanent training of representatives of all social groups based on the principle of equal chances is important" (paragraph 2, page 13). Building the capacities of key education institutions for research in education will support the development and implementation of LLL policies and evidence-based policy making. This is also in accordance with the priority of the *National strategy of development of science and technology, 2010-2015*: "Support to science, research, development and innovation is the basis of the strategy that has been adopted by the Council of Europe in Lisbon in March 2000, which should contribute to achievement of the goal that the EU should become, by 2010, a dynamic knowledge based economy, the most competitive in the world, with sustainable economic development, higher numbers of better work places and better social cohesion – *Lisbon Strategy*. The Republic of Serbia must define its role in that movement of our continent" (paragraph 2.2, page 22)

Project results will contribute to achievement of the following specific goals of the *Strategy for youth (2008)*:

"Quality assurance in formal and informal education of young people by the definition of standards" (paragraph 4.7.3, page 54); and "Continuous adaptation of systems of education and training to current and forecasted labour market needs" (paragraph 4.7.5, page 56).

The **Strategy of Scientific and Technological Development of the Republic of Serbia for the period from 2010 to 2015** reflects intentions to restructure the Serbian R&D sector and stimulate urgently needed measures with this purpose. The Strategy envisages investing in science and technology as the only way for Serbia to create a sustainable economy and society. Preconditions for the success of this strategy are increasing and diversifying R&D expenditures, as well as investing 400 million euro in infrastructure. A strict implementation tracking system will be established.

The implementation of the strategy requires definition and planning of the following actions:

Integrated R&D programs;

Program of technological development;

Program of incentives for development of innovations;

Program of knowledge transfer;

Program of establishment of risk capital funds;

Programmes 3 through 6 will be defined and implemented through this project.

To play a key role in science and technology sectors, thus becoming an innovative country, Serbia needs to:

Invest in people and infrastructure;

Maintain the existing level of basic research in all disciplines;

Increase investment in applied and development research with a clear and measurable goal;

Define national priorities;

Build a national innovation system;

Improve connections with domestic and foreign partners, public and private sector.

3. DESCRIPTION OF PROJECT

3.1 Background and justification:

Component 1: Education

The Republic of Serbia has entered the new Millennium with numerous problems, among which: low educational level of the population, outdated technologies, a non-competitive economy and high unemployment. According to the census 2002, almost half of the population has only the educational minimum or less, i.e. 46% of the population older than 15 has not completed primary education or has only primary education. According to the Household budget survey 2009, a total of 6,9% of the population lives below the absolute poverty line.

Among the efforts to overcome these problems, education has been recognized as one of the key pillars in the process of restructuring of society and the economy. This is why Serbia is striving towards building a modern educational system, capable of contributing more efficiently to economic recovery in accordance with EU policy (*Lisbon Strategy*),

Although Serbia since 1958 has a tradition of universal, compulsory, free-of-charge primary education and free-of-charge secondary education, all educational indicators point to the conclusion that these possibilities have remained at least partly unrealized. According to the national census of 2002, the educational level of the whole population is low: 22% of the population over 15 has not completed primary education, 24% has completed just primary education, only 41% has completed secondary education, and only 11% has finished a higher vocational school (4,5%) or a faculty (6,5%). The illiteracy rate is even greater, since the Census does not cover all members of marginalized groups that are of the lowest educational level (such as the Roma population).

Comprehensive education reform in Serbia started in 2001 but was sowed down from 2004. In mid-2008 it restarted, with substantial positive developments in the field.

The new Law on the Foundations of the Education System adopted in 2009 (Official Gazette 72/09) introduces the following changes: a new financing system which is based on a capitation formula (per pupil financing), preparatory preschool is increased in duration to nine months and anti-discrimination and social inclusion policies are introduced. Numerous measures for improving the system of vocational and adult education are put in place, setting the path for life long learning (LLL). Principles, outcomes and standards in education are introduced. Standards for the teaching profession will be raised, and teachers' initial education is upgraded. Teachers are obliged to implement supplementary teaching and directors are obliged to attend trainings and pass exams. Also, the law defines the goals of education, including the acquisition of high-quality knowledge and skills necessary to live and work in a modern society, among which is the attainment of computer literacy.

Changes in and modernisation of the education system have so far been primarily focused on aligning the higher education system with Bologna demands, reform of VET at secondary school level, and solving current problems in education (such as violence and discrimination). The changes have not addressed some of the crucial segments of the education system, such as general education (primary and general secondary education) representing the preconditions necessary for acquiring key competences. Nor have educational reforms devoted attention to developing mechanisms for evidence-based policy making.

Since thorough curriculum reform has not taken place in Serbia, curricula are still based on content and inputs rather than learning outcomes. Reforms in elementary education did not focus on learning results, but rather on the realization of contents. General secondary education was not included in the reform processes, unlike elementary and secondary vocational education.

As a result, 61% of current secondary school students are uninterested in learning (*Academic motivation of secondary education students in Serbia,* Institute for the Evaluation of the Quality of Education 2009), the achievements of Serbia on PISA testing (reflecting the literacy and functional competences acquired during elementary education) are among the worst of all countries covered and 40-50% of 15 year olds would be considered functionally illiterate in the EU (*Quality and Equity of Education in Serbia, PISA 2003-2006*, A. Baucal and D. Pavlovic). Teachers are not adequately prepared for the teaching profession (scarcity of knowledge from pedagogy, psychology and didactics is especially noticeable); standards for quality of teachers' work do not exist; there is a shortage of professional improvement programmes linked with learning standards and teachers' competences; lack of a teachers' professional development follow-up system, or little usage of what has been learned; absence of appropriate handbooks and guides for teachers; and teacher support systems and networks are not developed. Teachers are not equipped with the knowledge and skills needed for building pupil competences (as opposed to merely requesting the reproduction of memorised facts). Professional education for teachers is offered through seminars accredited by the Institute for the development of education, but teachers from poorer municipalities have no financial support for attending seminars.

Education and training have a critical impact on economic and social outcomes. Ineffective, misdirected or wasteful education policies incur substantial financial and human costs. It is therefore essential that investment in education, which amounts to 3.8% of GDP, is as efficient and effective as possible. Education policy in Serbia is often created on the basis of impressions, rather than on evidence, facts or research results. Serbian education authorities need to use evidence-based policy and practice, including evaluation instruments and

dedicated research programmes, to identify which pilot projects, reforms and practices are the most effective, and to implement them most successfully.

To modernize the system of education it is necessary to conduct research with the purpose of developing and implementing effective LLL policies, connecting research in the field of education with development of educational policies and to support the exchange of good practice. The first step is to determine a baseline and to formulate new directions in the field of education based on evidence, in order to develop the system towards accessibility, fairness and quality, and to align it with recommendations and documents of the EU (i.e. Key competences for LLL, Schools for the XXI century, ET2020, etc.)

In order to overcome these problems, Component 1 of this project has the goal of reforming the curricula of compulsory (elementary) and general secondary education including the general subjects in VET schools (curricula based on aims, outcomes and standards) and teacher training (which includes teachers from elementary schools, gymnasiums and also teachers for general subjects in VET schools).. New curricula need to contribute to the development of key competences of pupils in Serbia. During the project lifetime, teachers will be trained to implement new curricula and will adopt knowledge and skills for building the competences of pupils. Educational research currently appears to have a lower impact on policy and practice than research in other policy fields, such as social protection or employment policy. In order to enhance knowledge production in education, there is a need to increase the relevance of educational research (through already existing institutes, research synthesis, and the development of statistical and analytical infrastructures); to broaden involvement (user engagement, practitioner research, policy research); and to improve quality (methodological developments, capacity building, quality assurance, and more comparative analyses at international and EU levels). However, there is also a need for further improvement, notably by developing multi-annual research programmes and increasing investment in research and its effectiveness. Enhancing the use and impact of educational research results for developing policy and practice at the national level would help to improve the quality and governance of the education system.

The aim of teacher training is to contribute to developing teachers' multidisciplinary competences (competences such as learning to learn, motivation for LLL, creative and critical thinking, etc.). Motivation for LLL refers to stimulating continuous learning, and it is important for the further development of education in the Republic of Serbia, since it is a precondition for building a knowledgeable society. Teacher training will contribute to strengthening teachers' motivation for LLL, by continuously upgrading their professional development…

Monitoring and evaluation has been included as an important part of this project. Standards of achievement will be developed to monitor the effectiveness of newly established curricula and a monitoring system for measuring the outcomes of the training programme for the professional development of teachers will also be designed and utilized. Results from the monitoring of the pilot phase envisioned in this project will help to inform the systematic incorporation of these activities into the regular education system. Project outcomes will be assessed through the monitoring and evaluation activities and will be adapted to enable the effective implementation of future cycles of curriculum development and teacher training programmes. Educational advisors will be responsible for carrying out the monitoring and evaluation process.

Following the Lisbon Agenda and the EU Strategy for 2020, education and training will be playing a central role, particularly with regard to the anticipated increase in employment projected for 2020. Education and training are a prerequisite for the development of a fully

functioning "knowledge triangle" of education – research – innovation, and this is pivotal to the harmonization of domestic policies with those of the EU.

Component 2: Research

According to the most recent Global Competitiveness Report 2009-2010, Serbia currently ranks 93rd out of 133 nations, which is a slight drop in its relative position over the last year (85th).

To achieve a sustainable future, the EU has launched Europe 2020, a European strategy for smart, sustainable and inclusive growth. Europe 2020 seeks from member states that 3% of the EU's GDP should be invested in R&D. Europe needs to focus on the impact and composition of research spending and to improve the conditions for private sector R&D in the EU. The Europe 2020 strategy is not only relevant inside the EU, it can also offer considerable potential to candidate countries and our neighbourhood and better help anchor their own reform efforts.

Serbia has a strong **academic infrastructure** of five state universities - Universities of Belgrade, Nis, Kragujevac, Novi Pazar and Novi Sad. The total student body is approximately 220,000 students (a doubling of numbers since the 1990s) with over 10,000 University teaching staff. There are also a number of private universities but the majority of students go to public universities. Currently in Serbia there are about 8,500 post-graduates engaged in research work in around 100 registered science and research organisations (SRO) and at about 80 faculties: the majority of the research institutes are part of the public universities.

In contrast to the period from 2000-2003, when Serbia was at the bottom of the list in Europe according to the number of published papers and according to the number of citations, in the recent period - 2006, 2007, and 2008 situation is slightly better.,.

By the end of 2003 the Government of the Republic of Serbia adopted a conclusion which incorporates the Lisbon recommendations from 2000. The recommendations include "the 3% objective" related to the budget allocations for research and development by 2010. This conclusion envisaged budget allocations for scientific and research activity to the amount of 1% of GDP in 2007. Due to the insufficiently rapid economic development the current government budget allocation is 0.3% of GDP and private investments in R&D are still not significant, but show certain improvement in comparison to year 2001.

Due to political, economic and social circumstances in the country during the last two decades, extremely low budget allocations, lack of planning and implementation of Scientific & Technological (S&T) policy, isolation and fragmentation, the Research and Development (R&D) sector in Serbia has suffered radically. Some recent analysis of the R&D sector in Serbia emphasise its obsolete scientific and technological infrastructure, disproportionately high concentration of R&D resources in basic research compared to applied and development research, poor financing of all R&D activities and a large deficit in the industrial demand for applied R&D. This is also combined with a minimum integration of R&D into EU projects, relatively ageing human resources in the R&D sector and negative effects of "brain drain".

In order to support the development of a knowledge based economy in Serbia that responds to future labour market demands in line with the Lisbon Strategy Purpose, in March 2010 Serbia has signed a loan with the EIB "Public Sector Research and Development", of 200 million euro, which will finance a series of investments aimed at revitalizing public R&D in Serbia. Implementation of projects within this envelope will start in the second half of 2010.

Research activities in Serbia are financed in accordance with the Law on Scientific and Research Activity (Official Gazette RS, no 110/05 and 50/06 – correction) The Ministry of Science and Technological Development is in charge of its enforcement.

The Ministry is also in charge of planning and financing of public R&D activities and payment procedures.

Its primary task is coordination of science and development in Serbia and it is responsible for fulfilment of the country's obligations in this area. The Ministry also monitors and encourages R&D activity in Serbia, allocates budget resources to R&D organisations for the programmes defined by the Law on Research Activity and monitors the implementation. Another parallel body at the governmental level is the **National Council for Science and Technological Development** whose role is to design and propose to the government a strategy for scientific and technological development and to monitor its implementation. Serbia is advancing in the development of a legislative framework for research. However, substantial efforts are still needed to develop this sector and to link it to the economic context.

This Strategy includes actions through which the Ministry of Science and Technological Development intends to integrate Serbian Science into European Research Area. By signing the Memorandum of Understanding with the EU on Association to Seventh Framework Programme for Research and Development (FP7 2007-2013) in June 2007, Serbia was granted the right to take part in FP7 activities. Capacities for the implementation of EU norms relate to efficient participation in Framework Programme for Research, Euratom research Programme and the best possible integration within European Research Area (ERA).

The Strategy vision is Serbia as an innovative country where scientists have attained European standards, contributing to the overall level of knowledge of the society and promoting the technological development of the economy. The Strategy defines national priorities, partnership arrangements, its implementation and key benchmarks etc.

3.2 Assessment of project impact, catalytic effect, sustainability and cross border impact (where applicable)

Component 1 - Education

The long-term impact of general education reform will be reflected through the development of socially responsible and active citizens, through the building of society's knowledge base, development of a stronger economy, as well as through this country's active participation in social and economic trends in the EU.

Improving Serbia's ability to contribute to the EU economy is a cornerstone of EU integration. The workforce in Serbia will eventually have greater mobility within the EU system, necessitating the strengthening of its human resources capacities and key competences. This project will endeavour to address these issues and help to build a knowledge-based society.

The National Curriculum framework, under which schools will prepare their own school curriculum programmes and general and specific standards of student achievement after the piloting process, will be disseminated throughout the whole education system after project completion.

The building of multidisciplinary competences of teachers during the process of piloting in this project will serve as a catalyst for the system-wide training of teachers. The overall aim is

to develop core competences in students and prepare them for life in a world of rapid and frequent changes, where they will be expected to contribute to the development of economy and society as a whole. Teacher training in this project will be designed to build multidisciplinary competences which will be accredited by the Ministry of Education and posted on the web portal of the Ministry of Education in order to be available to all teachers.

Project's sustainability through Component 1 will be reflected through:

- National Curriculum Framework delivered to the National Educational Council, as a prerequisite for its implementation throughout the whole education system;

- Continuous support from educational advisors to schools and teachers to enable the development and implementation of outcome-based school curriculum and competence-based teaching and learning;

- Contribution to economic growth and employability in Serbia and eventually, the EU;

- Development of human capital.

Component 2 – Research

The scientific and technological development strategy of the Republic of Serbia is the basic national document defining further development in the area of research and development. Among the primary goals that the project tries to achieve is to pilot reorganisation of selected R&D institutes, to ensure application of knowledge based innovations into production process and establish financial instruments, e.g. grant schemes for R&D projects in enterprises, which will enhance Serbian knowledge based economy and its competitiveness (graph 2.). The project also contributes to the stimulation of a project pipeline for future investments in R&D sector. This will ensure the sustainability of the implementation of the strategy after the project is finished. The capacity to absorb international sources of financing is also expected to increase. With regards to that, training will be organised for public institutes and R&D organisations and universities on technology transfer, best practices in research commercialisation, and preparation of joint projects with private sector, preparation of international projects in consortium with foreign partners, project management, and management of international projects. Organisation of study tours or training programs to EU countries and countries of the region is also envisaged, as this will act as a continuous support in implementation of the project goals.

The legal framework for the formation of National Innovation System in Serbia was established through the Innovation Law. The law enables the formation of organizations for support of innovation activities and technology transfer centres, defines intellectual property rights, and establishes Innovation Fund.

The Serbia Innovation Fund is founded under the innovation law to provide support for innovation and to manage financing activities related to organization, realization and development of programs, projects and other innovation activities defined by 2010 - 2015 Strategy of scientific and technological development. The Fund will provide financial support for market oriented innovative technologies and services, facilitate collaboration between public and private sector R&D, and promote entrepreneurship in priority science and technology fields. Fund will participate in co-financing of programs, projects and other activities organized by international organizations, financial institutions and domestic and foreign individuals and businesses.

The financing of the Fund will come from the budget, international financial institutions, donor community, industry partners and other sources.

Generally speaking the project will contribute to the increase of the overall level of knowledge of the society promoting the technological development of the economy and improving the absorption capacity for EU funds.

The project focuses on a key area for the future development of a knowledge based economy and society. Therefore its implementation will be granted trough the collaboration of other relevant institutions such as the Ministry of Education, the Ministry of Economy and Regional Development and other ministries, the National Council of Science and Technology, the National Council of Higher Education, Serbian Academy of Arts and Sciences, other advisory bodies and representatives of local and international companies.

Financially speaking the MoSTD will ensure the continuation of project activities through its staff and its premises, including innovation finance scheme implementation and follow up.
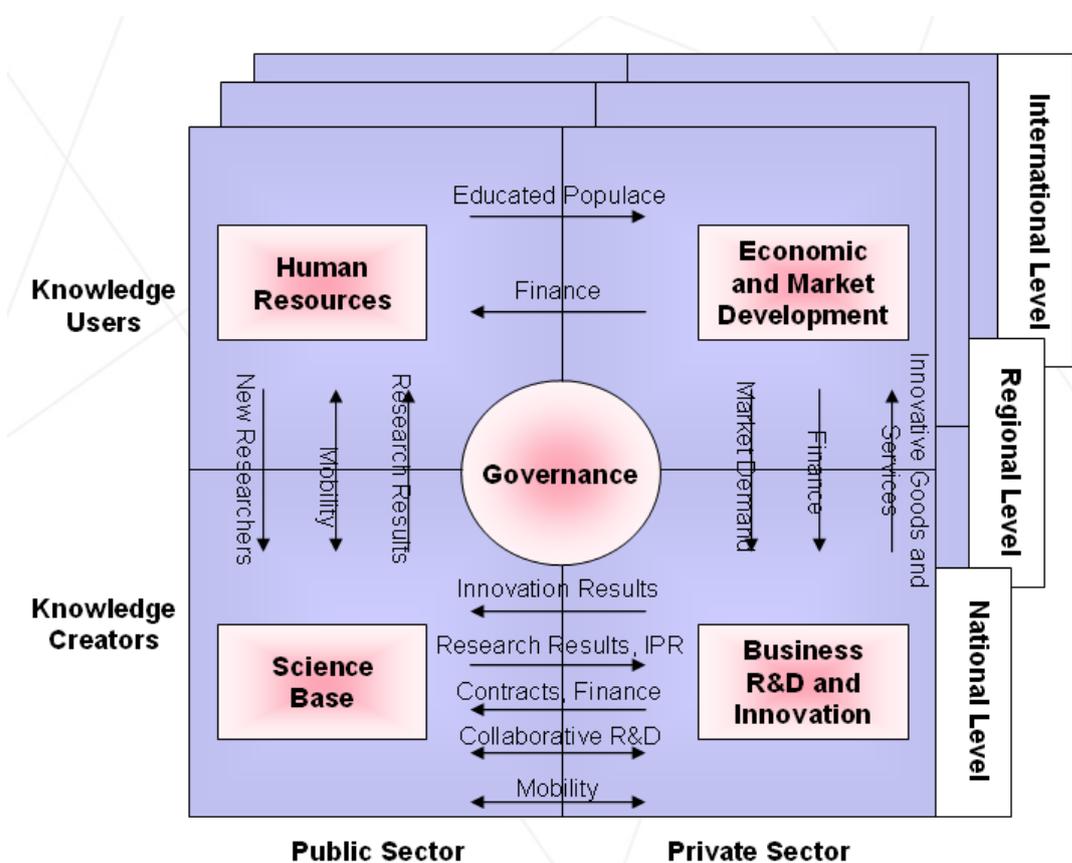
3.3 Results and measurable indicators

Component 1: Education

Results related to Sub-Component 1 – Development of a National Curriculum Framework in primary and general secondary education:

Result 1.1 National curriculum framework for general education developed based on standards and focused on the building of key competences in accordance with the Law on the foundations of the education system and key competences defined in relevant EU documents.

Measurable indicators:

- In 10% of primary schools and 10% of gymnasiums (pilot schools), school programmes based on the National Curricula Framework completed and its implementation started (as a pilot)

- In the pilot schools, teachers use teaching methods, which contribute to building the key competences of students in the implementation of the school programme

Result 1.2 Procedures established for drafting, monitoring and improving general and specific standards of achievement for the end of compulsory education, which are in accordance with the Law on foundations of the education system (2009) and contemporary trends in the EU.

Measurable indicators**:**

- Instrument for assessing pupils' achievement of key competences established by the end of the first year of project implementation

- Check/testing (twice) of pupils' achievements at the beginning and at the end of the first year of implementation of new curricula (related to the pilot schools)

- Control testing done in 10% of primary schools and 10% of gymnasiums which are not included in the pilot

Result 1.3 General standards of achievement for general primary and secondary education developed, discussed, assessed and defined in accordance with the Law on the foundations of the education system (2009) and the contemporary trends in the EU.

Measurable indicators:

- General standards of achievement for general education (primary and general secondary education) submitted for adoption to the National education council at the end of project implementation.

Results related to Sub-Component 2 – Further development of professional teachers' training focused on building the functional and transversal competency of teachers.

Result 2.1 In accordance with the transversal competences acquired through the training programme, teachers are enabled to implement curricula based on learning outcomes, general and specific standards of knowledge and achievements of pupils.

Measurable indicators**:**

- Trained team of trainers (130 trainers)

- At least 13.000 teachers (this number of teachers includes the number of teachers for general subjects in VET schools) trained in accordance with transversal competences and new curricula

Result 2.2 Teachers are trained and they apply modern information and digital educational technologies, and they develop these competences in their pupils

Measurable indicators:

- At least 40 trainers trained

- At least 2500 teachers trained to implement informational and digital technologies

- Use of ICT and multimedia in the planning and carrying out of pupils' project activities and the processing and publication of their results increased by 50%

Result 2.3 System established for monitoring and evaluation of the effects of professional training of teachers

Measurable indicators:

- List of indicators for professional competences of teachers will be completed by the end of the first pilot year

- In 10% of pilot schools (both primary schools and gymnasiums) that apply the new curriculum, effects of professional training are monitored and evaluated by the training leaders and education advisers

Result 2.4 Cooperation and continuous learning among education practitioners is advanced, enabling the systematic sharing of best practices

Measurable indicators:

- Web portals installed

- A network of innovative schools and teachers will be created by the end of the first year of project implementation

- At least 250 teachers has participated in study visits

- 50% of schools in the pilot have a Web portal set up with teaching materials

Results related to Sub-Component 3 – Building the relationship between research, policy and practice with an aim to monitor education reforms and continuously improve education policies.

Result 3.1 Improved relevance, quality of education research and capacity of educational research institutions to inform policy and practice.

Measurable indicators:

- At least 5 education researches conducted on issues of priority for national educational development

Result 3.2 Increased usage of the research findings by policy makers.

Measurable indicators:

- Number of policy papers/bylaws drafted based on research findings

- Educational research programme which is relevant for policy making has been defined

Result 3.3 Capacity and readiness strengthened among educational professionals to contribute to the generation of evidence and to act on its results

Measurable indicators:

- Capacity building network created and connected with the EU peers

Result 3.4 Improved accessibility of research results.

Measurable indicators:

- 50% of teachers trained to use research and/or an evidence-based approach in their practice

Results related to Sub-Component 4 – Establishment and equipping of practice classrooms as teaching bases for professional development of teachers.

Result 4.1 Practice classrooms established and equipped as a teaching base for professional development of teachers at the local level.

Measurable indicators:

- Number of classrooms established and equipped
- Number of classrooms that are equipped with ICT supplies and modern equipment
- At least 100 teachers are using practice classroom each month

Component 2: Research

Result 1: Improved national resource planning and allocation of funds for innovative research and technology transfer through Innovation Fund

1.1.   New mechanism of Governments' direct support to technology transfer and innovative R&D is in place

Measurable Indicators: Financial instruments for support to technology transfer and development of market oriented innovative technologies established through Innovation Fund. Innovation Fund infrastructure is established and operating; Independent business and scientific advisors are engaged; the number of project managers are trained in due diligence process, IP evaluation and protection, and innovation finance including venture capital transactions; the number of project managers are trained in financial management.

1.2**:** Enhanced institutional capacity for efficient support to technology transfer and innovative high-tech start-ups.

Measurable Indicators: Programs for promotion of entrepreneurship through Serbian Innovation Fund in place. Mechanism to support, educate and coach new innovative start-ups established; the number of networking and educational events organized; the number of start-ups coached

Result 2: Establishment and implementation of innovation finance instruments, e.g. grant schemes and /or seed capital, for funding market oriented innovative technologies and their commercialization through Innovation Fund.

Measurable Indicators: Completed operations manual for programs to finance market oriented innovative technologies and their commercialization; number of evaluated and funded projects; number of internationally and nationally filed patents (as well as percent of commercialisation) resulting from these projects,; number of technologies successfully commercialised.

Result 3: Assessment of pilot R&D institutions and their innovation potential by international experts with recommendations for future reorganization and support in the reorganisation process.

Measurable Indicators: Number of R&D institutes assessed by international expert panel. Number of institutes identified for optimisation during pilot phase.

3.3 Activities:

Component 1: Education

Activities related to Sub-Component 1 – Development of a National Curriculum Framework in primary and general secondary education:

Result 1.1

1.1.1 Develop and pilot in 10% of elementary schools and 10% of gymnasiums the National Curriculum Framework for general education

Result 1.2

1.2.1 Develop full-scale achievement standards in compulsory education

1.2.2 Prepare and disseminate the document "Standards of achievements in compulsory (elementary) education"

Result 1.3

1.3.1 Develop full-scale achievement standards in general secondary education

1.3.2 Research the developed general standards and correct in accordance with the research results

1.3.3 Prepare the document "Standards of achievement in general secondary education"

Activities related to Sub-Component 2 – Further development of professional teachers' training focused on building the functional and transversal competency of teachers.

Result 2.1

2.1.1. Develop programmes and train teachers and other professionals for implementation of the standard-based National Curriculum

Result 2.2

2.2.1 Train teachers and other professionals to use digital information and digital educational technologies

Result 2.3

2.3.1 Monitor and evaluate teaching practice in pilot schools

Result 2.4

2.4.1 Peer learning study visits to EU countries (Finland, Great Britain, Portugal, Ireland, Czech Republic)

2.4.2. Set up an electronic database of well thought-out classes in accordance with the new curricula (Web portal of Ministry of Education and schools)

Activities related to Sub-Component 3 – Building of the relationship between research, policy and practice with an aim to monitor education reforms and continuously improve education policies.

Result 3.1

3.1.1 Analyse major weaknesses and difficulties in applying research and evidence-based knowledge in education

3.1.2. Define national education research programme priorities

Result 3.2

3.2.1. Organise trainings, seminars, study tours and mentoring for capacity development of the MoE and other key education institutions

3.2.2. Link databases of relevant institutions and improve the system of data collecting and coordination of education research

3.2.3. Establish secondment programmes in both directions between staff in research organisations and those in government

3.2.4. Establish a capacity building network and link with EU peers

Result 3.3

3.3.1. Train educational practitioners on the use of research and/or evidence-based approaches in their practice

3.3.2. Develop user-friendly tools for educational practitioners with the new research findings (guides and manuals)

Result 3.4

3.4.1. Develop promotion and dissemination mechanisms of relevant education research findings (portals, electronic summaries, literature reviews, training, conferences, media involvement).

Activities related to Sub-Component 4 – Establishment and equipping of practice classrooms as teaching bases for professional development of teachers.

Result 4.1

4.1.1 Establish practice classrooms

4.1.2 Procure and distribute equipment and teaching tools

Component 2: Research

Activities related to result 1.1:

Planning of Innovation Fund financing and allocation of funds.

Capacity and institution building leading to operational efficiency of the Innovation Fund assisting in implementation of the Strategy of Scientific and Technological Development of the Republic of Serbia

Organization of training for Innovation Fund personnel to achieve better support for technology transfer and project management

Activities related to result 1.2:

Organization of a coaching program for innovative start-ups and promotional activities targeting university and academia population with high potential for initiating new technology based start-up companies including raising awareness about EU research training activities and initiatives (e.g. FP7 awareness events, European Mobility Portal EURAXESS).

Organization of networking events to enable interaction between entrepreneurs, scientists and private sector R&D Organization of educational and training programs in innovation, entrepreneurship and technology transfer to public sector R&D institutions.

Activities related to result 2:

Preparation of operational manuals, working procedures and guidelines for grant schemes for funding market oriented innovative technologies and their commercialization.

Design and implementation of the Innovation Fund financing instruments

Definition of project selection and evaluation criteria, financing mechanisms and monitoring methodology

Organizing calls for proposal

Organizing information seminars for interested parties

Organizing international evaluation of proposals received

Establishing project monitoring system

Monitoring progress of project implementation and strengthening capacity of the Innovation Fund to monitor project implementation

Activities related to result 3:

Assessment of pilot R&D institutions and their innovative potential by international expert panel with the objective to identify relevant restructuring strategy

Identification of the pilot institutes and technical assistance in their organizational restructuring

Preparation for organisational adjustments, method of funding and work flow suited to their mission, type and program of research.

3.5 Contracting arrangements:

Component 1: Education

Sub-Components 1, 2 and 3 will be implemented through a Service contract for Technical Assistance. This will cover the activities related to curriculum development, trainings for teachers and other education professionals (with the exception of the training programme in modern information and digital technologies) monitoring and the development of evidence-based professional tools for educational practitioners.

Sub-Component 4 will be implemented through a Supply contract for procurement of the equipment necessary for the establishment of practice classrooms.

National co-financing will cover all costs related to the training programme in modern information and digital technologies.

Component 2: Research

This project will be implemented through a contribution agreement with the World Bank. The WB will supervise implementation of the innovation financial instruments, e.g. grant scheme that will be organised through at least one call for proposals. Applicants are obliged to co-finance their project with up to 50% of the project value. Maximum value of projects will be 300.000,00 Euro. Component 2.3 will be executed by the World Bank.

3.6   Conditionality and sequencing:

Conditionality:

One conditionality is the preparation of the Ministry of Education to ensure that awareness in the National Education Council is raised about the necessity for efficiently adopting the NCF once it has been developed. This will enable the teacher training programme to be formally accredited. The Ministry also has the required capacities for project implementation, including sufficient human resources within the relevant sectors of the Ministry – Department for EU integration, programs and projects in education, Sector for Preschool and Primary Education, Sector for Secondary Education and the Sector for International Cooperation and development of education; as well as the capacities in the institutions established by the government at the national and provincial level – Institute for the Improvement of Education, Institute for Education Quality and Evaluation, Provincial Department of Education and the Pedagogical Institute of Vojvodina.

Before the start of the project the Ministry of Education will: develop a list of criteria for the selection of schools that will be included in the pilot programme, carry out a selection of schools (primary and secondary), that will have school-based practice rooms, for which they will make a list of the needed equipment. .

As for the Research component, one of the preconditions for the activities foreseen in this project is to have the Innovation Fund fully operational by the time the project realisation starts. The Fund has already started with its operations. The Fund supports the implementation of annual and multiannual development programmes, projects and other activities.

Also, this project implies a dedicated IPA staff within MoSTD and the Serbia Innovation Fund in order to run project action plan and successively the grant scheme, the availability of R&D Institutes to undergo the reorganisation and rationalisation process, the active participation of all targeted beneficiaries for training, call for proposals, meeting and events, study tours and other relevant project activities.

Sequencing:

For the Component 1, at the project start, a team will be created to draft the National Curriculum Framework and a team will be formed to develop the training programme for building the transversal competences of teachers. Curriculum will be developed and the teacher training programme will be implemented in parallel.

After the development of the National Curriculum Framework, the team will organize expert discussions concerning the document and training for the implementation of the National Curriculum Framework. Educational advisors will be responsible for monitoring and evaluation, and for completing the appropriate reports. Based on their reports, a final version of the National Curriculum Framework will be submitted to the National Education Council to be endorsed and published in the official gazette.

With regard to the procurement of equipment for establishing the practice classrooms, technical specifications of the priority materials will be prepared by the Ministry of Education by the start of the project to ensure timely procurement and delivery of the equipment during the project duration.

For the component 2 the innovation financial instruments, e.g. grant scheme is to become the remit of this project only when the ground for its implementation is prepared (i.e. preparation of grant application, training of potential applicants, information campaigns etc.).

3.7   Linked activities

Component 1 – Education

3.7.1   Links to other IPA programmes

- IPA 2007 VET project (4 MEUR)– QA system will be set up in this project and NQF system will be designed. At least two sectors will be selected in this IPA 2007 project and these two sectors will be covered by IPA 2008 QA project, where three kinds of national exams will be developed and descriptors for NQF at these levels will be defined. In addition, teachers of general subjects from vocational schools will be also trained for work in secondary general education institutions through IPA 2007 project. New vocational profiles will be introduced on a basis of outcomes. General education profiles will be also defined on a basis of outcomes.

- IPA 2008 QA project (4 MEUR) – Expected project results are: 1. Developed and adopted model of Final exam at the end of elementary education; 2. Developed and adopted model of general matura; 3.Adopted model of FE VET; 4. Defined qualifications in at least 2 sectors relevant for the country's economic development selected NQF. Achievement of these results will be useful for further development of general education through this IPA 2011 project by development of the National Curriculum Framework in primary and general secondary education and further development of professional teachers' training focused on building the functional and transversal competences of teachers.

3.7.2   Links to other programmes

- Swiss Agency for Development and Cooperation (SDC): Professional Development for Education Personnel. Project aims are development of teacher training system in Serbia and establishing of new Regional Teacher Training Centres. Results of project will directly contribute to the second component of this IPA 2011 project regarding professional teachers' training. Two Regional Centres have already been established with SDC support. Through the ongoing third phase of SDC project will be established five additional Regional Centres. Regional Centres for teacher training will support implementation of activities foreseen in this IPA project.

- Norwegian Government: Establishing the Teacher Training Centre in Nis. Regional Centre that has been established through the Norwegian project will also support implementation of activities of this IPA 2011 project regarding the professional teachers' development. Teacher trainings will be organized in Regional Centres that have been established with Norwegian and SDC support.

- World Bank: "Delivery of Improved Local Services (DILS)" project aimed at modernising the education system (and including the development of an IT system). – Database on schools, students, teachers, profiles that will be developed will be used in this IPA project. That will be integrated information system in education that will support all activities in the field of education, as well as research in education that is important for its overall further development. DILS project will also support development of programs and teacher training for individual work with children.

Component 2: Research

In the MoSTD three types of activities are financed through the national budget, namely: basic research (for R&D institutions), technological development research (for R&D institutions with participation of SMEs) and innovative projects (technology transfer from R&D to SMEs). Budgetary allocations for science (excluding National Investment Plan-NIP) were 68.5 M EUR in 2006, 86.3 MEUR in 2007 and 100 MEUR in 2008.

The Department for International Cooperation and European Integration within the Ministry administers activities linked to RTD activities on EU and international levels and manages the FP6/FP7 NCP network. The Ministry participates(d) in 10 FP6/FP7 projects and supported activities in several other FP6 projects as an advisor and data provider.

International projects:

- **BIO-NET -** Duration: 1. 9. 2008. - 31. 8. 2012. AIM: The main objective of the "BIO-NET" project is to offer advice and support to organisations that are interested in EU-funded research projects in the Knowledge Based Bio-Economy thematic priority of the Seventh Framework Programme (FP7). MoSTD was observer.

- **ResPot-Net -** Duration: 1. 1. 2008. - 31. 12. 2011**;** Budget: 7.383,00 euro**;** Aim: The objective of the project is to support research and industrial communities in the European Union's convergence and outermost regions to fully utilise their research potential and strengthen their capacities, through their participation in the Framework Programmes.

- **EuroRis-NET -** Duration: 1. 11. 2007. - 31. 10. 2011**;** Budget: 14.717,00 euro**;** Aim: The overall objective of the project is to provide support through the Research Infrastructures (RIs) NCPs network for the efficient implementation of the RIs Programme and to promote the best possible utilization of RIs, so that "economies of scale" at European level can be achieved, capabilities increased and European Research Area and the EU competitiveness, strengthened.

- **WBC INCO NET -** Duration: 1. 1. 2008. - 31.12. 2011 **;** Budget: 68.825,00 euro **;** Aim: to support the bi-regional dialogue on science and technology (S&T) by benefiting from and interacting with the Steering Platform on Research for the Western Balkan countries which was launched under the Austrian EU Presidency in 2006; to identify RTD potentials and priorities for take-up in FP7 and other European programmes in a transparent and methodologically sound way; to enhance participation of researchers from the region in European projects of mutual interest and benefit by implementing capacity building measures on a structural and individual level and by accompanying networking activities.

- **EURSIS -** Duration: 2008 – 2010; Budget: 13.375 euro; Aim: to improve the operation of each SiS NCP in order to provide more effective and quality services to organizations in the EU as well as in the associated countries.

- **NET4SOCIETY-** Duration: 10.1.2008 – 10.1.2011; Budget: 15.836,00 euro; Aim: to promote trans-national cooperation by means of a structured and user-friendly network is the primary goal of the SSH-NCP-network NET4SOCIETY; to ensure that all SSH NCPs have full and easy access to all tools of their trade, e.g. all relevant information from all relevant sources, trainings, workshops, best-practices, etc; giving all SSH NCPs the opportunity to be part of a learning network; Communication and networking with the Commission and other NCP-Networks and relevant stakeholders, Improving communication lines between SSH NCPs and the Commission.

- **ERA-WESTBALKAN+ -** Duration: 1.1.2007 – 31.12.2007; Budget: 40.843,80 euro; Aim: to intensify the opening up of the European Research Area to the Western Balkan Countries (WBC) of Serbia, Montenegro, fYR of Macedonia, Bosnia and Herzegovina, Albania and Croatia as an ACC through trans-regional network building of research centres in WBC with their counterparts in Austria, Slovenia and Greece. This is achieved through a series of visits to European colleagues and through so-called "Get in Touch Meetings", with the aim of supporting the development of joint project proposals.

- **SEE-ERA.NET PLUS -** Duration: 2008-2012; Budget: 0 euro; Aim: to enhance the coordination of bilateral R&D cooperation with WBC and lift it up to an activity at European level. By joining forces and by pooling financial resources, the SEE-ERA.NET PLUS consortium will bring critical mass to bear. The main objective of SEE-ERA.NET PLUS is to launch and implement one joint call for trans-national research proposals, thereby supporting the implementation of the first pillar of ReP-SEE. With a call budget of currently approximately EURO 3.5 Mio, it is planned to fund around 20 transnational research projects in the SEE-region.

- **SEE-ERA.NET -** Duration: 1.3.2006 – 1.9.2009; Budget: 84.497.40 euro; Aim: to enhance the coordination of bilateral R&D cooperation with WBC and lift it up to an activity at European level. By joining forces and by pooling financial resources, the SEE-ERA.NET PLUS consortium will bring critical mass to bear.

- **C-ENERGY -** Duration: 1 year, May 2009. - May 2010; Budget: 2.900 euro; Aim: reinforce the network of National Contact Points for the 7 Framework Programme of the Energy Theme (Energy NCPs). Identifying and sharing good practices and promoting trans-national cooperation.

- **HETIP 2010, IPA I** - Duration: 3 years; Budget: 23 MEUR; Aim: To build a modern education system in Serbia which will contribute more efficiently to the economic recovery and will be in line with EU policies as exposed in the Lisbon Strategy, while supporting the development of democracy and contributing to the European integration process of the country.

The EIB 200 million euro loan includes projects throughout Serbia and contains a mix of hard and soft loan components:

- Building the Belgrade Science and Technology campus (using the existing infrastructure at the Institute of Physics in Belgrade)

- New capital equipment for research

- Upgrade of the Academic Computer Network and infrastructure for the Supercomputing initiative

- Capacity and space upgrade for the Science and Technology park in Niš

- New apartment buildings for young researchers (in Belgrade, Niš, Novi Sad and Kragujevac)

- Human resources program (bringing around 1400 Serbian scientists working abroad back to Serbia)

- Infrastructure for the Ministry of Science and Technological Development

- The Petnica Science Centre

- The Mathematical High School Campus

- New Science Centre in Belgrade

3.8   Lessons learned

Component 1 - Education

The Ministry of Education implemented two projects on VET reform funded by the EU within the CARDS programme. Policy and strategy of VET and adult education was designed in these projects by the support of technical assistance. Respective action plans for the implementation of the strategies have been designed. Curricula in pilot profiles were modernised based on competences and outcomes, and curricula were developed by VET teachers trained for curriculum development. Teachers were trained in new methodologies and assessment techniques. Equipment for the implementation of the new curricula was procured. School buildings were rehabilitated. Teachers and directors completed study visits to related VET schools in EU member states in order to exchange experiences and establish partnerships. An Innovation Fund enabled schools to realise innovations in VET through projects designed and implemented according to EU rules; this was guided by the MoE within a grant scheme. Five VET schools were supported to function as regional training centres for CVET. These two projects were using results of a previous CARDS project related to employment concerning retraining of redundant workers in the Sumadija region, two other projects supporting the National Employment Service modernisation, SME development and regional development.

Therefore, the MoE has learned how to develop strategic documents, how to implement them, how to train teachers and directors for the implementation of the reforms, how to make procurement of services and works under projects funded by the EU. At the same time, it was a good experience in managing EU funded projects.

In addition to the above mentioned projects the Ministry has learned and developed their capacities on the basis of other projects such as *Development of educational standards for the end of compulsory education* financed by the World Bank, *Functional Education of Adult Roma People* financed by the Roma Education Fund, *Professional Development for Education Personnel*, funded by the Swiss Agency for Development and Cooperation (SDC). From these projects, the Ministry of Education has learned that it is important to inform the educational public of changes in projects planned, to include teachers and respect their experience from practices to date and to include educational advisors as important stakeholders in these processes.

Also, projects have shown an interest and willingness among teachers to participate in them and this has demonstrated the need to accredit teacher training programmes and develop a network of coaches who have coaching skills.

Component 2 - Research

The Seventh Framework Programme of the European Union spans the period from 2007 to 2013, with a budget of EUR 50.5 billion. Funding and implementation of research activities is carried out via the four basic programmes, namely **Cooperation, Ideas, People** and **Capacities.** The first results of the participation in 2007 were encouraging, especially those achieved at the regional level. Thus, Serbian science institutions took part as coordinators in 7 of the 11 projects funded under the regional call for tenders referring to research

infrastructural enhancement, TegPot-3, as well as participating in the realization of 3 of the 4 remaining projects. On the basis of statistical data for the first two years of the programme (by the end of January 2009) 628 researcher groups / partner organizations from Serbia participated in the preparation of 499 draft projects applied for. Of that number, 63 projects involving 79 research groups/organizations from our country were granted funding, making a success rate of 12.6%. The success rate within the framework of the Cooperation programme in certain European priority areas largely varies.

4. INDICATIVE BUDGET (AMOUNTS IN M€)

Title: Support Human Capital Development and Research			TOTAL EXP.RE	IPA EU CONTRIBUTION		NATIONAL CONTRIBUTION					PRIVATE CONTRIBUTION	
ACTIVITIES	IB	INV	M€(a) = (b) + (c) + (d)	M€(b)	%*	Total M€ (c) = (x) + (y) + (z)	%*	Central M€ (x)	Regional / Local M€(y)	IFIs M€(z)	M€ (d)	%*
Component 1: Education												
Contract 1.1 Service contract	X		**4.5**	4.5	100%							
National co-financing for teacher training programme in modern information and digital education technologies	X		**0.6**			0.6	100%	0.6				
Contract 1.2 Supplies contract		X	**4.0**	4.0	100%							
Component 2: Research												
Contract 2.1 Contribution agreement	X		**9.0**	8.4	100%	0.6					0.6	10%
TOTAL IB			**14.1**	12.9	91%	1.2	9%	0.6				
TOTAL INV			**4.0**	4.0	100%							
TOTAL PROJECT			**18.1**	**16.9**	93%	**1.2**	7%	**0.6**			**0.6**	

5. INDICATIVE IMPLEMENTATION SCHEDULE

Contracts	Start of Tendering	Signature of contract	Project Completion
Contract 1.1 (Service contract)	T+1Q	T+4Q	T+12Q
Contract 1.2 (Supplies contract)	T+1Q	T+4Q	T+12Q
Contract 2.1 (Contribution agreement)	T+1Q	T+4Q	T+12Q

6. CROSS CUTTING ISSUES

Cross cutting issues in the Component 1 will be addressed in the project so as to comply with the best EU standards and practices in the area of inclusive education. The beneficiary will make sure its objectives, policies and interventions have a positive impact on, and are in line with, the main principles of gender equality, social inclusion of marginalised groups and environmental sustainability.

6.1 Equal Opportunity

The project directly contributes to improving the access to quality education for all children in Serbia. The project will contribute to the greater social inclusion and poverty reduction of socially excluded by ensuring their participation in primary education and later. Even though the project does not target women specifically, the capacity building activities will be beneficial to all citizens, irrespective of gender, race or nationality.

The Republic of Serbia has adopted the fundamental principles of promoting equality and combating discrimination, participation in the project will be guaranteed on the basis of equal access regardless of, racial or ethnic origin, religion or belief, disability and age. Participation will be open to both: female and male personnel. Records on staff participating in training and other project activities (e.g. project progress reports) will reflect this statement.

For the Component 2, Project activities will promote and guarantee gender equality in research funding in all disciplines. Equal opportunities will be particularly taken into consideration during training activities and grant program implementation.

6.2 Environment

No activities within the Component 1 have any detrimental affect on the environment. However, all standards developed under the project must comply with the state policy on environment issues. The project will also support the implementation of environmental-friendly practices such as using recycled paper. Regarding the Component 2, project is also not directly related to environmental issues, nevertheless it has to be said that its main objective is that of improving the research system at national level in different sectors including environment.

6.3 Minorities

The project will monitor and report on participation and performance of members of national minority as well as vulnerable groups. The project will also support development of tolerance towards differences. As for the Component 2, the project will not discriminate in any way against individuals wishing to participate in the project activities on account of their race, religion or ethnicity.

ANNEXES

I   Log frame in Standard Format

II   Amounts contracted and Disbursed per Quarter over the full duration of Programme

III   Description of Institutional Framework

IV   Reference to laws, regulations and strategic documents:

              Reference list of relevant laws and regulations

              Reference to AP /NPAA / EP / SAA

              Reference to MIPD

              Reference to National Development Plan

              Reference to national / sectoral investment plans

V   Details per EU funded contract (*) where applicable:

ANNEX I: Logical framework matrix

LOGFRAME PLANNING MATRIX FOR Project Fiche		**Programme name and number:** EUD to complete	
Project title: Support Human Capital Development and Innovation Promotion		Contracting period expires two years after signature of Financing Agreement	Disbursement period expires five years after signature of Financing Agreement
		Total budget : EUR 18.1 million	**IPA budget: EUR 16.9 million**
OVERALL OBJECTIVE	**Objectively verifiable indicators**	**Sources of Verification**	
Overall objective Component 1: To contribute to improving the qualities of human capital based on strengthening of the "knowledge triangle" - education – research – innovation, as well as enhancement of the effectiveness of the educational system. Component 2: Serbia as an innovative country where scientists have attained European standards, contributing to the overall level of knowledge of the society and promoting the technological development of the economy.	Component 1 Reduced percent of early leaving of regular primary and secondary education system (10%) - Increased percent of enrolled secondary education students (10%) -Improved student achievement at international exams for 10% in comparison to 2006. -15% of teachers trained according to LLL principles Component 2 Increased number of innovative enterprises financed, increased number of patents, increased number of joint project between R&D sector and industry	Component 1 - Reports of Republic Statistical Office - Results of PISA and TIMSS exams - Annual report of the Ministry of Education Component 2 Annual reports of the Ministry of Science and Technological Development, international sources, Ministry of finance	
SPECIFIC PROJECT PURPOSE		**Sources of Verification**	**Assumptions**
Component 1			

To improve primary and general secondary educational reform and the teacher training system as a way of contributing to economic and social development: 1. Development of National Curriculum Framework in primary and general secondary education. 2. Further development of professional teachers' training focused on building the functional and transversal competences of teachers. 3. Building of the relationship between research, policy and practice with an aim to monitor education reform and continuously improve education policies. 4. Establishment and equipping of practice classrooms as teaching bases for professional development of teachers. Component 2	- National Curriculum Framework for general education (primary and general secondary) developed and piloted in 10% of schools (10% of primary school and 10% of gymnasium) - 30% of accredited programs of professional teachers development focused on functional and transversal competitions - 50% increase in the use ICT and multimedia in the planning and implementation of educational activities - Conducted at least 5 education research programs of priority for development of LLL policies - equipped practice classrooms in 10% of schools used for practice of teachers and students	- Research reports and policy papers -"School program", as a official school document, -Evaluation report of the implementation of the National Curriculum Framework in 10% of schools of the Institute for Advancement of Education - Catalogue of accredited programs of professional development of teachers - Reports of educational advisors -Evaluation reports - Reports of educational advisors	- New Law is implemented - Preparedness of relevant institutions and experts in education area for developing curriculum in primary and general secondary education - Preparedness of schools (primary and secondary) to implement new curricula - Readiness of schools to turn a part of their premises into practice classrooms
Support implementation of the Strategy of Scientific and Technological Development of the Republic of Serbia and strengthening competitiveness of the Serbian economy by improving linkages between R&D and economic development	Increased investments into R&D from 0.3% of GDP to 1% of GDP	Annual reports of the Ministry of Science and Technological Development	Increased financing of R&D activities by private sector Efficient participation of Serbian R&D institutions in FP7 programme

	Increased investments into R&D for 15% in the next 3 years		
RESULTS for Component 1	**Objectively verifiable indicators**	**Sources of Verification**	**Assumptions**
Result 1.1 – Developed National Curricula Framework for general education based on standards and focused on building of key competences in accordance with the Law on the Foundations of the Education System and Key Competences defined in the EU documents	- In 10% of primary schools and 10% of gymnasiums, School programmes based on the National Curricula Framework completed and its implementation started (as a pilot) - In 10% of primary schools and 10% of gymnasiums (pilot schools) teachers use teaching methods which contribute to building the key competences of students in the implementation of the School programme	-"School program", as a official school document,	- Readiness of elementary schools and gymnasiums to be include in these pilot, to accept and apply new curriculum and standards **-** Developed new teaching methods
Result 1.2 – Procedures established for drafting, monitoring and improving general and specific standards of achievement for the end of compulsory education which are in accordance with the Law on Foundations of the Education System (2009) and contemporary trends in the EU	-Instrument for assessing pupils' achievement of key competences established by the end of the first year of project implementation - check/testing (twice) of pupils' achievements at the beginning and at the end of the first year of implementation of new curricula (related to the pilot schools) - control testing done in 10% of primary schools and 10% of gymnasiums which are not included in the pilot	- Reports of educational advisors	- Developed system for monitoring of implementation of the new curricula - Readiness to follow the existing standards, and, based on monitoring, to improve them and prepare new ones
Result – 1.3. General standards of achievement for general primary and secondary education developed, discussed, assessed and defined in	- General standards of achievement for general education, (primary and general secondary education) submitted for adoption to the National Education Council	- Test results of pupils' achievements from schools in pilot and schools which are not in pilot	**-**Willingness to implement standards of achievements in general secondary education

RESULTS for Component 1	Objectively verifiable indicators	Sources of Verification	Assumptions
accordance with the Law on the Foundations of the Education System (2009) and the contemporary trends in the EU.	at the end of project implementation.	- Reports of Institute for Education Quality and Evaluation - Decision of National Education Council	
Result 2.1 – In accordance with the transversal competences acquired through the training programme, teachers are enabled to implement curricula based on learning outcomes, general and specific standards of knowledge and achievements of pupils	- Trained team of trainers (130 trainers) - At least 13.000 teachers (this number of teachers includes the number of teachers for general subjects in VET schools) trained in accordance with transversal competences and new curricula	- Report of trainers - Reports of educational advisers - Training programs and lists of participants - ToT report	Readiness of teachers to professionally improve and to change their teaching practice
Result 2.2 – Teachers are trained and they apply modern information and digital educational technologies, and develop these competences in their pupils	- At least 40 trainers trained - At least 2500 teachers trained to implement informational and digital technologies - Use of ICT and multimedia in the planning and carrying out of pupils' project activities and the processing and publication of their results increased by 50%	- Report of trainers - Reports of educational advisers - Training programs and lists of participants - ToT report	Readiness of teachers to professionally improve in this field and to change their teaching practice
Result – 2.3 System established for monitoring and evaluation of the effects of professional training of teachers	- List of indicators for professional competences of teachers will be completed by the end of the first pilot year - In 10% of pilot schools (both primary schools and gymnasiums) that apply the new curriculum, effects of professional training are monitored and evaluated by the	- List of professional competences of the teachers - Monitoring reports of educational advisors - Students' achievement	- Indicators implemented in practice - Readiness to implement the results from the pilot institutions in the whole system

RESULTS for Component 1	Objectively verifiable indicators	Sources of Verification	Assumptions
	training leaders and education advisers		
Result – 2.4 Cooperation and continuous learning among education practitioners is advanced enabling the systematic sharing of best practices	- Installed Web portals - A network of innovative schools and teachers will be created by the end of the first year of project implementation -At least 250 teachers has participated in study visits - 10% of schools in the pilot have a Web portal set up with teaching materials	The list of teachers who have participated in study visits Guide for successful teaching practice (teaching materials)	- Readiness to learn from colleagues - Using experiences of learning from colleagues in work
Result 3.1 – Improved relevance, quality of education research and capacity of educational research institutions to inform policy and practice.	- At least 5 education researches conducted on issues of priority for national educational development	Research reports By-laws and rulebooks Reports of MoE	Readiness of relevant institutions to make research in the selected areas
Result 3.2 – Increased usage of the research findings by policy makers	-Number of policy papers/bylaws drafted based on research findings -Educational research programme which is relevant for policy making has been defined		
Result 3.3 – Capacity and readiness strengthened among educational professionals to contribute to the generation of evidence and to act on its results	-Capacity building network created and connected with the EU peers		
Result 3.4 – Improved accessibility of research results.	-10% of teachers trained to use research and/or an evidence-based approach in their practice		

RESULTS for Component 1	Objectively verifiable indicators	Sources of Verification	Assumptions
Result 4.1 – Practice classrooms established and equipped as a teaching base for professional development of teachers at the local level	- Number of classrooms established and equipped - Number of classrooms that are equipped with ICT supplies and modern equipment -At least 100 teachers are using practice classroom each month	- Monthly Work plans for teachers and daily preparations - Scenarios for classes of teachers - Reports of educational 35counsellors	**-** Schools to act as practice classrooms and teaching base for professional development of teachers are selected prior to the start of the project - School act on establishment of practice classroom - Acquired necessary teaching tools and readiness of teachers to use them in class
RESULTS for Component 2	**Objectively verifiable indicators**	**Sources of verification**	**Assumptions**
Result 1 - Improved national resource planning and allocation of funds for innovative research and technology transfer through Innovation Fund 1.1. New mechanism of Governments' direct support to technology transfer and innovative R&D is in place 1.2. Enhanced institutional capacity for efficient support to technology transfer and innovative high-tech start-ups. **Result 2**: Establishment and implementation of innovation finance instruments, e.g. grant scheme and /or seed capital for funding market	Financial instruments for support to technology transfer and development of market oriented innovative technologies are established through Innovation Fund. Innovation Fund infrastructure is established and operating; Independent business and scientific advisors are engaged; the number of project managers are trained in due diligence process, IP evaluation and protection, and innovation finance including venture capital transactions; the number of project managers are trained in financial management. Programs for promotion of entrepreneurship through Serbian Innovation Fund in place. Mechanism to support, educate and coach new innovative start-ups established; the number of networking and educational events	Annual reports of the Innovation Fund and the Ministry of Science and Technological Development Report of the Ministry of Science and Technological Development on transformation of institutes Project reports	Ministry of Finance stays committed to reform of budget planning process Overlap of activities between grant scheme and FP7 is avoided Legislative framework supports PPP initiatives

RESULTS for Component 1	Objectively verifiable indicators	Sources of Verification	Assumptions
oriented innovative technologies and their commercialization through Innovation Fund **Result 3:** Assessment of pilot R&D institutions - and their innovation potential by international experts with recommendations for future reorganization and support in the reorganisation process.	organized; the number of start-ups coached Completed operations manual for programs to finance market oriented innovative technologies and their commercialization ; number of evaluated and funded projects; number of internationally and nationally filed patents (as well as percent of commercialization) resulting from these projects, number of technologies successfully commercialized. Number of pilot R&D institutes assessed by international expert panel. Number of institutes identified for optimization during pilot phase.		

Activities for Component 1	Means & Costs	Assumptions
Activities related to Sub-Component 1 1.1.1 Develop and pilot in 10% of elementary schools and 10% of gymnasiums the National Curriculum Framework for general education 1.2.1 Develop full-scale achievement standards in compulsory education 1.2.2 Prepare and disseminate the document "Standards of achievements in compulsory (elementary) education" 1.3.1 Develop full-scale achievement standards in general secondary education 1.3.2 Research the developed general standards and correct in accordance with the research results 1.3..3 Prepare the document "Standards of achievement in general secondary education"	A Service Contract for EUR 4.5 million will cover activities under Components 1, 2 and 3 (the activities related to curriculum development, trainings for teachers and other education professionals, monitoring and the development of evidence-based professional tools for educational practitioners).	There is suitable human resources capacity to produce the curricula Pilot schools have been selected New standards of achievement are applied The developed general standards of achievement are applied
Activities related to Sub-Component 2 2.1.1. Develop programmes and train teachers and other professionals for implementation of the standard-based National Curriculum 2.2.1 Train teachers and other professionals to use digital information and digital educational technologies 2.3.1 Monitor and evaluate teaching practice in pilot schools 2.4.1 Peer learning study visits to EU countries (Finland, Great Britain, Portugal, Ireland, Czech Republic) 2.4.2. Set up an electronic database of well thought-out classes in accordance with the new curricula (Web portal of Ministry of Education and schools)	A Service Contract funded through national co-financing in the amount of EUR 0.6 million will cover costs related to the training programme in modern information and digital technologies activities included in Component 2	Criteria for identifying innovative and reflexive teachers are in place Capacities for training design in accordance with the curricula are in place Appropriate informational and digital educational technologies are available Results of piloting of indicators of professional competence of teachers will be developed and used in practice with all teachers
Activities related to Sub-Component 3		Education research made in

Activities for Component 1	Means & Costs	Assumptions
3.1.1 Analyse major weaknesses and difficulties in applying research and evidence-based knowledge in education		areas of key importance for the development of education
3.1.2. Define national education research programme priorities		
3.2.1. Organise trainings, seminars, study tours and mentoring for capacity development of the MoE and other key education institutions		
3.2.2. Link databases of relevant institutions and improve the system of data collecting and coordination of education research		
3.2.3. Establish secondment programmes in both directions between staff in research organisations and those in government		
3.2.4. Establish a capacity building network and link with EU peers		
3.3.1. Train educational practitioners on the use of research and/or evidence-based approaches in their practice		
3.3.2. Develop user-friendly tools for educational practitioners with the new research findings (guides and manuals)		
3.4.1. Develop promotion and dissemination mechanisms of relevant education research findings (portals, electronic summaries, literature reviews, training, conferences, media involvement)		
Activities related to Component 4 4.1.1 Establish practice classrooms 4.1.2 Procure and distribute equipment and teaching tools	A Supplies Contract for EUR 4 million will cover all activities under Component 4	Schools have been selected Schools have equipment and teaching tools
Activities related to Component 2	**Means and Costs**	**Assumptions**
Activities related to result 1.1: **Planning of Innovation Fund financing and allocation of funds.** **Capacity and institution building leading to operational efficiency of the Innovation Fund assisting in implementation of the Strategy of Scientific and Technological**	Technical assistance (Result 1 and 3): EUR **1.812** million Innovation Finance	Fund for Innovation Activities is fully operational Commitment of key stakeholders to participate in

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Activities for Component 1	Means & Costs	Assumptions
Development of the Republic of Serbia **Organization of training for Innovation Fund personnel to achieve better support for technology transfer and project management.** **Activities related to result 1.2:** **Organization of a coaching program for innovative start-ups and promotional activities targeting university and academia population with high potential for initiating new technology based start-up companies including raising awareness about EU research training activities, such as FP7 awareness events, and Initiatives such as European Mobility Portal EURAXESS.** **Organization of a coaching program for innovative start-ups** **Organization of networking events to enable interaction between entrepreneurs, scientists and private sector R&D.** **Organization of educational and training programs in innovation, entrepreneurship and technology transfer at public sector R&D institutions.** **Activities related to result 2:** **Preparation of operational manuals, working procedures and guidelines for grant scheme for funding market oriented innovative technologies and their commercialization.** **Design and implementation of the Innovation Fund financing instruments. Definition of project selection and evaluation criteria, financing mechanisms and monitoring methodology.** **Organizing calls for proposal.** **Organizing information seminars for interested parties.** **Organizing international evaluation of proposals received.** **Establishing project monitoring system.**	Instruments, e.g. Grant scheme: EUR 6**.0 million** Fees: EUR **0.588** million	training events Start-ups and R&D organisations are willing to apply for grants

Activities for Component 1	Means & Costs	Assumptions
Monitoring progress of project implementation and strengthening capacity of the Innovation Fund to monitor project implementation. **Activities related to result 3:** **Assessment of pilot R&D institutions and their innovative potential by international expert panel with the objective to identify relevant restructuring strategy.** **Identification of the pilot institutes and technical assistance in their organizational restructuring.** **Preparation for organisational adjustments, method of funding and work flow suited to their mission, type and program of research.** Innovation financial instruments, e.g. grant schemes will be organised through at least one call for proposals. Applicants are obliged to co-finance their project with up to 50% of the project value. Maximum value of projects will be 300.000,00 euro.		

Preconditions for Component 1: A list of criteria for the selection of schools that will be included in the pilot programme will be developed, as will the selection of schools (primary and secondary), that will be targeted for school-based practice rooms. The latter group of schools will have made a list of the equipment that is needed before project implementation commences.

Preconditions for Component 2: Ministry of Science and Technological Development establishes the IPA Unit of minimum 5 staff

ANNEX II: amounts (in M€) Contracted and disbursed by quarter for the project (IPA contribution only)

Contracted	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Total
Contract 1.1 (TA)				4.5									**4.5**
Contract 1.2 (Supplies)				4.0									**4.0**
Contract 2.2 (Contribution agreement)				8.4									**8.4**
Cumulated				**16.9**	**16.9**	**16.9**	**16.9**	**16.9**	**16.9**	**16.9**	**16.9**	**16.9**	**16.9**
Disbursement	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Total
Contract 1.1 (TA)				0.9		1.05		1.05		1.05		0.45	**4.5**
Contract 1.2(Supplies)				2.4								1.6	**4.0**
Contract 2.2 (Contribution agreement)				3.4				3.4				1.6	**8.4**
Cumulated				**6.7**	**6.7**	**7.75**	**7.75**	**12.2**	**12.2**	**13.25**	**13.25**	**16.9**	**16.9**

ANNEX III: Institutional Framework – legal responsibilities and statutes

Component 1

Ministry of Education is in charge of implementation and monitoring of component 1 of this project. The main department is Department for EU integration, programs and projects in education. In addition to this department following sectors of the Ministry of Education will be included: Sector for International Cooperation and development of Education, Sector for Pre-School and Elementary Education, Sector for Secondary Education, Sector for Higher Education, Sector for Investments, Pupils' and Students' Standard and Public Procurements, Sector for Finance and Sector for Inspection, Monitoring and Regional School Authorities.

The other institutions that will be involved in project implementation are: National Educational Council, Institute for the Improvement of Education, Institute for Education Quality and Evaluation, Provincial Secretariat of Education, Pedagogical Institute of Vojvodina, National councils of national minorities and Professional teachers' associations.

Component 2

As stated in the Law on Ministries (Official Gazette RS, no 43/07), the "Ministry of Science is in charge of state administration affairs that refer to: the system, development, and promotion of science and research activity which proposes scientific, technological, and economic development; formulation and implementation of the policy and strategy of scientific and technological development; formulation and implementation of programmes of scientific, technological, and development research; training of staff in scientific and research work; formulation and realisation of the innovation policy; fostering of techno entrepreneurship, transfer of knowledge and technologies into economy; development and promotion of the innovation system in the Republic of Serbia; developed functioning of the system of scientific and technological information and programmes of development of scientific and technological infrastructure; research in the field of nuclear energy; security of nuclear objects; production and management of radioactive material, except in nuclear energy plants; as well as other activities stipulated by the law."

The work of the Ministry is organised in four sectors: Sector for basic research, Sector for technological development, Transfer of technologies and innovation system, Sector for international cooperation and European integrations, Sector for human resources development in science.

The Ministry of Science and Technological Development realises research in domain of technological development. The objective of these explorations is to include a research and scientific potential to find a solution to concrete problems of development in different economic activities or organisations.

The realisation of these researches must speed up the development of some economic sectors, the creation of market attractive products of high degree completion and innovation, the implementation of high quality and competitive domestic products and offices on international market, as well as the development of infrastructure systems in Serbia.

Besides above mentioned projects, MoSTD offers support for establishment of a sustainable bridge between research organisations and industry, based on knowledge such as:
- pass an innovative systems law
- stimulate the innovation within enterprises in domain of high technologies and to satisfy all conditions for a commercialisation of innovation

- favour the innovation in scientific and research organisations through the development and work promotion of incubators, innovative centers, centers for technological transfer, etc.
- encourage the development of scientific and technological parks
- define the innovative policy and also the policy of scientific and technological development

Main actors which are involved in these activities are: Serbian Innovation Fund, R&D Institutions and registered innovative organizations under the Law of Scientific and research activities and Law of Innovative activities.

ANNEX IV: Reference to laws, regulations and strategic documents

Component 1

1. The Law on the Foundations of the Education System

2. Multi-annual indicative planning document (MIPD) for Serbia 2009-2011

3. Progress Report 2009

4. Stabilisation and Association Agreement

5. European Partnership 2008

6. National Programme for Integration with the European Union

7. Draft 2010 joint progress report of the Council and the Commission on the implementation of the "Education and Training 2020":

- "Further efforts are also required to promote adult learning, to increase quality of guidance systems, and to make learning more attractive in general – including through the development of new forms of learning and the use of new teaching and learning technologies" (page 3)

- "The major challenge is to ensure the acquisition of key competences by everyone, while developing the excellence and attractiveness at all levels of education and training that will allow Europe to retain a strong global role. To achieve this on a sustainable basis skill such as literacy and numeracy, making mathematics, science and technology more attractive and to strengthen linguistic competences. At the same time, there is a need to ensure high quality teaching, to provide adequate initial teacher education, continuous professional development for teacher and trainers, and to make teaching and attractive career-choice." (page 3)

- "A first challenge is to promote the acquisition by all citizens of transversal key competences such as digital competence, learning to learn, a sense of initiative and entrepreneurship, and cultural awareness. A second challenge is to ensure a fully functioning knowledge triangle of education-research innovation" (page 4)

8. Key competences for a changing world:

- "Education and training are central to the Lisbon agenda for growth and jobs and a key element for its follow-up with the 2020 perspective. Education and training systems must therefore become much more open and relevant to the needs of citizens, and to those of the labour market and society at large" (paragraph 1, page 2)

- "A large number of countries are introducing reforms that explicitly use the Key Competences framework as a reference point. Good progress has been made in adapting school curricula. But there is still much to be done to support teachers' competence development, to update assessment methods, and to introduce new ways of organising learning" (paragraph 1, page 3)

- "There is a clear trend across the EU towards competence-based teaching and learning, and a learning outcomes approach. The European Framework of Key Competences has contributed considerably to this" (paragraph 2.1, page 3)

- "All EU countries recognize LLL "from cradle to grave" as a key factor for growth, jobs and social inclusion" (paragraph 3.1, page 8). The project will support the development of competence-based teaching and learning with an approach founded upon learning outcomes. It will adapt school curricula and build teachers` competences in direct alignment with EU standards and incorporating the principles of LLL through the continuing education of teachers.

9. National employment strategy and AP (2005)

10. Development strategy of the informational society

11. Poverty Reduction Strategy Paper, Second Report

12. Sustainable development strategy (2008)

13. National strategy for development of science and technology, 2010-2015

14. Strategy for youth

Component 2

Law on Scientific and Research Activity 110/2005 and 18/2010

The Law envisages budgetary funds for research extended exclusively through science-research and development projects, and financing of other expenditure related to the field of science – through special programmes stated in the Law. As different from other countries, budget funds intended for scientific and research activity can only be allocated to science-research organisations registered in the Ministry of Science and Technological Development provided that they meet defined requirements.

Law on Innovation Activity 110/2005, 50/2006 and 18/2010   encourages the creation of an innovative system that encompasses education, scientific and development research, and development and work of innovative companies. The national innovation system should enable the transfer of knowledge into economy and society, development of technological innovations in industry as well as development and work of new innovative companies.

Reference to AP /NPAA / EP / SAA

Link with European Partnership:

Need of adopting an integrated research policy

Need to start developing a policy conducive to research.

Link with Stabilisation and Association Agreement:

Article 112: the Parties shall encourage cooperation in civil scientific research and technological development (RTD) on the basis of mutual benefit and, taking into account the availability of resources, adequate access to their respective programmes, subject to appropriate levels of effective protection of intellectual, industrial and commercial property rights (IPR). Cooperation shall take due account of the priority areas related to the EU *acquis* in the field of research and technical development.

Link with the National Programme for Serbia's Integration into the EU (NPI)

To formulate integrated policies related to research, taking into consideration regional needs and capacities;

To determine dynamics of the growth of budget research allocations;

To define complementary measures for increasing investment of industry and the private research (e.g. tax incentives);

To define incentives for innovative research work;

To define measures for the increase in the number and mobility of researchers;

To determine the procedure for mutual recognition of research titles, both in countries within region and throughout the whole European research area;

To develop a network of national contact persons with the view of providing support to researchers and greater participation in the 7FP of the EU;

To create databases of researchers and research institutions, as a kind of support to the process;

To increase networking of researchers with European partners and establishment of business connections between sectors of research and economy;

To organize a larger number of centres of excellence **with the critical mass of researchers.**

The **Strategy of Scientific and Technological Development of the Republic of Serbia for the period from 2010 – 2015** requires definition and planning of the following actions:

Integrated R&D programs;

Program of technological development;

Program of incentives for development of innovations;

Program of knowledge transfer;

Program of establishment of risk capital funds.

ANNEX V: Details per EU-funded contract where applicable:

Component 1

Service Contract for Technical Assistance

This contract will cover activities that fall under Components 1, 2 and 3, with the exception of the teacher trainings for modern information and digital education technologies which will be financed through the National budget. The activities will comprise the following group of interventions:

- Develop a National Curriculum Framework for compulsory and general secondary education, including the development of standards of achievement for pupils;

- Professional development of teachers (training programme) and other education professionals for applying the new curriculum in their teaching;

- Build the capacity of of educational professionals to contribute to the generation of evidence-based policy- and decision-making.

Supply Contract

Through this contract the established practice classrooms will be equipped with neacessary teaching materials. The following list of items are among those that are envisaged for procurement:

- Laptops and video beams;

- Laboratory tables for biiology, chemistry and physics;

- Chemistry and physics laboratory equipment;

- Classroom furniture (tables, chairs);

- Human being models;

- Models of organs (human, animal, plant);

- Geographic learning materials (maps, models of earth structures, etc.);

- Musical instruments;

- Equipment for a foreign language learning.

Component 2

Direct agreement with the World Bank

This project will be implemented through a contribution agreement with the World Bank. The World Bank will supervise the implementation of component 2.1 and 2.2, including the

innovation finance instruments, e.g. grant scheme and /or seed capital as well as Serbia Innovation Fund capacity building. Component 2.3.will be executed by the World Bank.

Implementation will involve the following activities:

- support the creation and implementation of annual and multi-annual development programmes, projects and other activities of the Innovation Fund;

- preparation of working manuals, working procedures and guidelines for efficient work of the Fund related to the national innovation policy;

- definition of project selection methodology and procedures connecting projects with national R&D strategic priorities;

- Planning of Innovation Fund financing and allocation of funds;

- Capacity and institution building leading to operational efficiency of the Innovation Fund ensuring implementation of the Strategy of Scientific and Technological Development of the Republic of Serbia;

- Organization of training for Innovation Fund personnel to achieve better support for technology transfer and project management;

- Organization of a coaching program for innovative start-ups;

- Organization of networking events to enable interaction between entrepreneurs, scientists and private sector R&D;

- Organization of educational and training programs in innovation, entrepreneurship and technology transfer at public sector R&D institutions;

- Preparation of R&D institutes new organisational adjustments, methods of funding and work flow suited to their mission, type and program of research.

The contribution agreement will be also support the implementation of innovation finance instruments, e.g. a grant scheme especially through the following activities:

- Preparation of operational manuals, working procedures and guidelines for grant scheme for funding market oriented innovative technologies and their commercialization;

- Design and implementation of the Innovation Fund financing instruments. Definition of project selection and evaluation criteria, financing mechanisms and monitoring methodology;

- Organization of calls for proposal;

- Organization of information seminars for interested parties;

- Organization of international evaluation of proposals received;

- Establishing project monitoring system;

- Monitoring progress of project implementation and strengthening capacity of the Innovation Fund to monitor project implementation.

Direct Agreement with the World Bank will include implementation of Grants Contract (Call for proposals)

Clear criteria for the Call for Proposals will be developed by the Innovation Fund with the No Objection of the World Bank.

Innovation finance instrument, e.g. a grant schemes, will be organised through at least one call for proposals.

Procurement by grant beneficiaries will be done in accordance with procurement procedures of the WB.