Stakeholders Conference

"**Best Practices in Science, Technology and Innovation Policies**"

Moscow, 7-8 April, 2010

Conclusions

The close cooperation between the European Union, its Member States, the countries associated to the EU RTD Framework Programme and the countries of Eastern Europe and Central Asia (EECA) is considered of utmost political and economic importance for both sides. Apart from traditional and further deepening relations between individual countries and their institutions this is reflected by the policy umbrellas of the European Neighbourhood Policy and the recently launched Eastern Partnership, the Four Common Spaces with Russia and the Central Asian Strategy of the EU.

Science and technological development (S&T) are considered a backbone of any knowledge based economy and an asset for responding to the recent global challenges. Therefore strong links between the S&T communities of both regions are a key pillar of the bi-regional relations and of major concern of the respective policy stakeholders.

In order to foster bi-regional S&T partnership, a consortium representing organisations from 21 European and Central Asian countries was formed in 2008 to launch the "S&T International Cooperation Network for Eastern European and Central Asian Countries" (IncoNet EECA project). This initiative is funded within the 7th European R&D Framework Programme. One of the core activities is to provide a platform for bi-regional dialogue process among relevant stakeholders representing the science communities, S&T policy bodies, innovative industries and civil society in order to increase the mutual understanding and to develop joint scenarios to enhance cooperation between EU-Member States, Associated Countries and the EECA countries.

Against this background the **IncoNet EECA** organises a series of **Policy Stakeholder's Conferences** allowing scientists and policy makers from both regions to exchange experiences and views on the current state of the S&T cooperation. The 2nd conference of this series "**Best Practices in Science, Technology and Innovation Policies**" was held in Moscow on April 7th and 8th, 2010**.**

The conference participants consider and discussed the following wide range of issues:

- Present challenges in science, technology and innovation (STI) policies;
- Setting priorities for STI policies;
- Institutional reforms in the public S&T sector;
- New approaches to innovation policies: forward-looking strategies;
- New approaches to innovation policies: knowledge based exploitation of new markets;
- Internationalisation strategies as an integral part of STI policies;
- Critical analysis of the EU-EECA S&T cooperation framework and the way forward.

A round table discussion of policy makers "The way forward: a shared vision for enhanced EU-EECA cooperation" has been carried out at the conference.

The conference has been accomplished by the conclusions that are presented in this document.

The **present challenges in science, technology and innovation (STI) policies** are stipulated by the fact that ***the world becomes more global and complicated and this reflects on science, technology and innovation (STI) areas***. The present challenges in STI policies against the background of financial crisis are revealed with:

- Significant slowdown in productivity growth since 1995 widespread across countries and industries;
- Stagnating or in some cases already shrinking labour force especially in areas of high skills;
- Dependency upon scarce imported natural resources and in particular energy.

Being situated in the face of the challenges many countries realised that created long-term debt can only be offset by ***productivity growth and innovation-based development is only realistic route to sustainable recovery***. In this context pressing ***need for smart innovation policies and governance to support them considering much wider set of links between research and innovation has been emerged***. By now ***six channels of knowledge flows between research and the economy are emphasized***: scientific discovery and publication; production of trained people; development of instrumentation and methods; cumulative expertise available for problem-solving; entry ticket to networks and access to external knowledge; commercialisation and spin-offs. Under economic progress the new views on innovation have been shaped including growing understanding of importance of demand side and user innovation, recognition that ***innovation not necessarily R&D based but can come from new configurations of existing technologies and from service***, social and organisational innovation, and absorption of open innovation idea into wider concept of innovation ecosystem. ***The flows of money, knowledge, services and people constitute the knowledge ecology***. Flow of money involves such means of innovation financing as support from banks for growth companies, seed capital, venture funding, enabling investment in infrastructure. Services comprise infrastructure and associated activities for innovation including incubators, science parks, digital connectivity, business support, access to equipment for testing etc. People create a critical mass of knowledge. Knowledge flow is a flow of ideas, IPR and opportunities emerging interactively from universities, hospitals, business R&D, creative sector.

Globalisation, changes in demographic structures and in cultural practices, and environmental affairs lead to recognition of the close relationship between STI and society and shift from 'government' to 'governance' and thus a new 'regulatory' state with ***necessity of reform of international regulations and standards on trade, quality, labour, environment, intellectual property rights.***

Therefore the grand ***challenges*** may be divided into 3 main types:

1. ***Economic challenges*** are based on the need to engage business through a combination of supply-side measures for promotion of RTD and demand-side measures to create innovation-friendly markets.

2. ***Social and environmental challenges*** involve causes and consequences of issues such as climate change, food and energy security and the ageing society. Initial drive for decision will have to come from governments.
3. ***Science and technology challenges*** demand decision by collective ability to respond to opportunities in frontier research.

In order to move forward the challenges overcoming the need of the following measures come into existence: ***new kind of political process combining bottom-up and top-down, targeted foresight to bring together socioeconomic demand and innovation potential, at a top-down level it is needed a capacity to mobilize resources very quickly with a dedicated fund***.

Simultaneous and synchronous actions are needed at all levels in creation of a market for innovative products and services, providing sufficient resources for R&D and innovation, improving the structural mobility of Europe, building positive attitudes and a culture favorable towards entrepreneurship and risk taking including:

- Harmonised regulatory environment;
- Ambitious use of standards-setting power;
- Intelligent use of public procurement;
- Globally competitive intellectual property rights system;
- Fostering a culture that celebrates innovation.

The implementation of innovation policies is typically linked to other policy fields and thus requires horizontal coordination between innovation and other policy areas. Development of new instruments meeting the needs of up-to-date socioeconomic status considering the challenges and corresponding solutions are necessary specifically:

- Tension between severe fiscal constraint and need for investment in research and innovation;
- Multiple policy instruments needed to foster multiple flows in the knowledge ecology;
- Societal grand challenges provide opportunity to mobilise resources for research and innovation but need new policy approaches which draw upon the combined power of supply and demand.

Setting S&T priorities is one the instruments of STI policies. Priority setting relates to a preferred activity over short/medium- to long-term and an area requiring urgent action particularly in the short-term. Priority activity is incentivised through resources allocation (funding, procurement, time, infrastructure etc.). Four types of ***priorities in STI policy*** may be identified:

1. ***Macro priorities*** determined by the political, economic and social setting;
2. ***Functional priorities*** referring to characteristics of the science and innovation system;
3. ***Mission-oriented priorities*** referring to socio-economic or technological goals;
4. ***Thematic priorities*** referring to fields of science and technology.

Priorities of developing economy are based on knowledge and innovation, promoting a more resource efficient, greener and more competitive economy and fostering a high-employment economy delivering social and territorial cohesion.

Knowledge and innovation as drivers of future growth should be strengthened using the measures of ***improving the quality of education, strengthening research performance*** (increasing research expenditures, improving the framework conditions for private sector spend and improving the outputs, impact and composition of R&D spend), ***promoting innovation and knowledge transfer***, ***making full use of ICT (Digital Society) entrepreneurship, finance, user and market driven growth***. The crucial factor in improving the framework conditions for business R&D that ***every link should be strengthened in the innovation chain, from 'blue sky' research to commercialisation***. The EU functional ***priorities for STI*** include the following instruments that ***demand implementation in cooperation with the countries over the world***:

- ***An adequate flow of competent researchers***, with high levels of mobility between institutions, disciplines, sectors and countries;
- ***World-class research infrastructures***, integrated, networked, and accessible to research teams from across Europe and the world;
- ***Excellent research institutions*** engaged in effective public-private cooperation/partnerships, forming the core of R&I 'clusters', 'virtual research communities';
- ***Effective knowledge-sharing*** notably between public research and industry, as well as with the public at large;
- ***Well-coordinated research programmes and priorities***, including a significant volume of jointly-programmed public research investment at European level involving common priorities, coordinated implementation and joint evaluation;
- ***A wide opening of the ERA to the world*** with special emphasis on neighbouring countries and a strong commitment to addressing global challenges with Europe's partners.

The special instrument – the ***Strategic Forum on International Cooperation*** has been created with the aim to develop a common policy framework for international S&T cooperation which avoids duplication of efforts.

In R&I priority-setting many countries rely on foresight activity. The current/future focus is addressed to ***improving the dynamics of the R&I ecology oriented on radical, social innovation grand challenges***.

R&D priority setting is specialized within knowledge triangle approaches: education-research-innovation.

Most of EECA countries are focused on modernisation of national economy, increasing efficiency of S&T and innovation policy and development and implementation of key programmes and projects of national importance. The instruments of S&T priority settings and definition of breakthrough technologies are applied. Such ***instruments include foresight activity, methodological approaches, statistical data evaluated by expert panels***. The evaluation criteria serve contribution into GDP growth, improving its structure, increasing competitiveness of economy, provision of national safety including technological, ecology, energy, food & information dimensions.

The illustration of good practice successfully applicable in the number of EU countries for STI policies elaboration can serve Network Analysis and Foresight. The STI context involves complex situations relating to policies for investment; science and education; risk governance; ethics; capacity building and impact assessment. These matters may look independent but are highly interlinked and interdependent, requiring appreciation of profound systemic relationships between their contexts, contents and agents. Participation and networks are a key issue in both Foresight processes and outcomes. ***Foresight and Network Analysis are methodological approaches enabling to define interaction among research, investment, risk management and production capacities, to reveal structural linkages of trends and identify emerging important trends in the future across the world regions***.

Implementation of priorities is expected to positively effect on resolving of social problems, increasing competitiveness of countries both at domestic and global markets. ***Increasing budget for R&D funding, improvement of research infrastructure, training of research personnel and international cooperation are important support measures for R&D***. ***STI policy*** is very multifaceted and complex process that ***demands integration of methodologies*** (basic research, technological approaches, etc.) among others ***regular cycles of foresight and identification of breakthrough technologies, roadmapping for promising application areas, creating technology platforms.***

The S&T forecast should integrate the four modules: international, macroeconomic, sectoral and S&T. ***At the same time creation of technology platforms and integrating efforts of government and business are very important for innovative development.***

Transition to innovation economy demands creation of modern S&T sector. When **reforms of public S&T sector** are carried out by government with strong implosion and insufficient involvement of business, the disbalance between the ever-increasing allocated resources and inadequate scientific effectiveness takes place as it is evidenced e.g. in Russia. ***For successful institutional reforms in S&T sector, development of enterprise's and university's science in respect of specific character of research and scientific work as well as relevant legislation are essential.***

By experience of Poland the following ***aims of the S&T sector reforms*** can be emphasized:

- Introducing competitive based funding mechanisms;
- Establishing transparent rules of research funding;
- Introducing research evaluation scheme;
- Increasing accountability of public research institutes;
- Shifting the public control from the means to the outcomes.

For research funding, application of different schemes depends on performance of research institutes in line with which the underperforming entities receive no public funding. ***Effectiveness of implemented reforms is based on strengthening of competitive mechanisms*** (distribution of public funding as research grants trough competitive mechanisms), supporting for commercialization and other forms of ***transferring the scientific research results to the economy, ensuring solid conditions for scientists development, particularly the participation of young scientists in research programs and implementation of international scientists mobility programmes***.

For example the reforming of research system in France introduces ***more autonomy to universities, possibility to create foundations linked with universities, raising of funds, new mechanisms for the election of administrative council and the university president, increasing competences of the president and university counsels, improving evaluation of academic staff, flexibility in teaching loads and increasing weight of universities in research performing and management tasks.***

Integration into international scientific and technological system, improvement of the policy-making and better coordination of the integrated S&T policy are the present-day priorities for ***reformation of*** Armenian ***S&T and innovation system in accordance with the requirements of the market economy and needs of economic development***. The important tasks of the reforms in S&T are ***enhancement of S&T structure, shaping of effective systems for personnel training; promotion of S&T as a crucial factor for national security assurance, economic, culture and educational evolution of society; development and realization of innovation policy.***

The strategy for S&T development should be focused on a shaping of a system providing sustainable development of science and high-tech, modernization of research infrastructure and efficient reproduction of research human resources, ensuring of the state financial support to basic and applied sciences, integration of education, science, technology and innovation systems, strengthening of international cooperation.

Evaluation of science efficiency and relevant composition of instruments used for this is recognized as a very essential measure to support S&T policy forming. In this context domestic R&D expenditures are estimated and compared with results of intellectual activity. So called ***"resources – effectiveness" method is applied***. ***Benchmarking and regular (annual or once in three years depending on country) evaluation of research effectiveness of RTD organizations and universities*** is implemented in different countries across the world (USA, Germany, Japan, France, etc.). On the base of the evaluation results, operational decisions on resources redistribution, liquidation of ineffective units or vice versa reinforcement of the most advanced RTD entities are accepted. ***In the category "resources" permanent assets, personnel and financial stability of organizations are estimated. In the category "effectiveness" number of publications, patents, contracts and grants, facts of technology commercialization, innovation partnership, cooperation with universities and networking, and existence of postgraduate education are subjects for the evaluation.*** Regarding RTD organisations institutional structure, experimental capability, innovation infrastructure, system for advanced training and skill upgrading, and spin-off companies are analyzed. In consequence of evaluation RTD entities are distributed by four clusters: national leaders, basic profile, sectoral profile and outsiders.

Therefore application of the evaluation instrument is one of the important approaches to enhance efficiency of public R&D sector by means of orientation towards resulting effects, long-term programmes development, rearrangement of research infrastructure and networks, extension of R&D organizations independency.

Improvement of a system of development institutes including seeding and venture funds, corporations and banks for development is one of the efficient instruments boosting innovation process. The development institutes impact on innovation encouraging acceleration of technology transfer, creation of new innovative companies, growth of potential for innovation. Among the problems of development institutes system e.g. in Russia are emphasized the following: lack of financial resources, low level of public awareness and

transparency of the institutes' activities and results, insufficient skilled personnel and expert evaluation. On the other hand there are obvious advantages and prospects namely grant scheme of support, wide regional cover, flexibility and initiative in designing of new programmes, opportunity to support an export of small innovative companies, wide scope of projects subjects, no restrictions for cost elements, flexibility for projects duration, trend toward capitalization of innovative companies, support to sustainable flow of business transactions and networking of venture partners, opportunity for creation of foundations in close collaboration with private companies.

Taking into account abovementioned the following ***recommendations*** may be proposed: ***an updating of sectoral markets regulation is necessary to overcome barriers in innovative technology transfer; enlargement of interaction with business associations, development of new instruments to enhance co-ordination between business, science and state for research-industry partnerships creations; promotion of national companies integration into global chains of added value; import of missing competences in innovation.***

Transition to high economic growth under crises conditions assumes a number of changes in S&T policy. It ***might be possible by means of escalation of competitive products export, energy efficiency, labour productivity and technological equipment of industry***. Engineering capability may be upgraded not only through national R&D activities (materials technology) but also by means of technology import (materials technology, ICT, smart technology). New materials technology creates conditions for technological race. ***To ensure the whole technology cycle and reduce financial risks it is necessary to shape institutes of development, to adopt tax incentives of innovation and develop instruments of private-state partnership.***

Internationalisation Strategies as an Integral Part of STI Policies

The meaning ***"Global"*** differs from international by involving institutions anywhere on the planet. ***"Governance"*** is not necessarily about Government. It is exercise of authority including control, a method or system of government or management. ***"Science"*** is a branch of knowledge or study dealing with a body of facts or truths systematically arranged and showing the operation of general laws whether it be the mathematical sciences or the social sciences. ***Among the present trends in science it was emphasized transformation from university community (invisible college) to global community; emergence of new players such as political organizations*** – African Union/NEPAD, CPA ***and more institutions of higher education. New requirements pressure science like commercialization, making better use of public data, ethical considerations for animals and people, social cohesion and equitable distribution of wealth. The public view of science has been changed from as 'good' to as 'threat' that concerns new technologies and modern discoveries such as CERN (black holes), GM foods, stem cell research, reproductive technologies***. Limited funding of science connected among others with issues of public choice questions: science or healthcare or defense or …; What do people get for the funding of science?

The public opinion on science leads to reform of public sector science and stresses need for indicators, strong, and independent, statistical base and case studies. In funding of science and priority setting government should to take into account such aspects as competitiveness, public good, prestige, regulation, commercialization and trade, standards, etc.

The science policy shaping process gets through several stages. It is initiated by government, than stakeholder consultations are undertaken. After that implementation, including governance mechanisms comes and standards are elaborated. ***Important for policy implementation phase are monitoring and evaluation, leading to adjustment and revision of policy performance, policy learning.*** Need for better indicators for monitoring and evaluation grows up.

For more studies of the problems related to governance of science new system approach is necessary to understand science and science policy, linkages between different disciplines like food, energy and water science, climate change, etc., role of more players, regions, clusters. Such methods like Foresight and study of governance mechanisms as an academic subject are applicable.

The impact of international S&T cooperation for knowledge based economies envisages not only formalized S&T cooperation but all types of international S&T cooperation by all research actors in society.

Some countries face the need to decide the policy question: ***How to reap the benefits of this international S&T cooperation and not be a victim, when you are a small country with little own national research companies and a very internationalized public research system? … and of course all this in a changing world***.

Small countries have to be much more integrated in the international research landscape if they want to be successful, otherwise they are more vulnerable. The firms in small countries are quite often foreign controlled and seek to collaborate more with non-national actors. Universities have to become international players and many of them have already the ambition to become world leaders. The universities are linked abroad. Their population comes from all over the world (staff, students). They concern about the importance given to rankings. The same goes for public research institutes - they have to go international and people have to be more mobile. In this context mobility schemes support moving: international (European) mobility; intersectoral mobility; brain circulation with return programs. But science has always been international, even in small countries.

Changing forms of innovation make knowledge flow in all directions as a part of business strategies and tax payers want of course to reap locally the benefits of their investments. The coming questions are: Do innovative firms cooperate a lot with higher education and public research institutes? Do firms in small open countries cooperate a lot internationally?

There is much more in the changing innovation landscape for policy makers to worry about: role of users (e.g. open source innovations), non-technological innovation, environmental challenges, the crisis, and much more.

The measurement challenges are also on agenda: It is not properly known how to measure knowledge (and thus knowledge based content of countries, firms, products, etc.). At present research is measured better then innovation. ***It is known little about the effects of international knowledge flows on countries' economies and this gets even more complicated for small countries.***

To policy learning in recent years the following studies and debates can be associated:

- The proper policy mix, definition of programs needed;

- Evaluations of the existing programs efficiency;
- Governance;
- Funding of public research sector;
- National instruments in comparison with other countries;
- National and regional innovation strategies (OECD: NIS → innovation strategy).

The studies result in shaping of policy decisions like:

- Greater use of quantitative targets and monitoring in (inter)national S&T strategies;
- A strengthening of institutional and governance mechanisms for S&T policy;
- Evaluation is becoming part of the STI-instruments;
- Focus on excellence in order to increase the attractiveness of national research landscape;
- More attention for investments in human resources.

Policy in public sector research is implemented through:

- Reform of governance;
- More competitive funding schemes;
- Performance based funding;
- Industry-science links;
- Improving of tech transfer mechanisms and instruments;
- Broadening from research to wider innovation policies;
- IPR and protection of knowledge;
- Cluster type policies.

An internationalised knowledge based economy is more difficult as knowledge flows. To adequate STI policy making in EECA it could be suggested to take thought on the following questions:

- What links do exist between the public research institutes (including universities) and (private) business sector?
- To what degree are research active companies integrated in the national research landscape? The world landscape?
- What mechanisms do exist to foster knowledge transfer and how effective they are?
- How important is competitive funding for the public research sector? And the state owned business sector?
- Implication of national, intersectoral as well as the international mobility of people?

Russian competence business with Finnode Network might to serve as an example of knowledge internationalisation, technology transfer and business – academic international partnership. Finnish international innovation network operates in Russia, China, Japan, California, and will be next in India. It functions as a part of the Finnish national innovation system which stakeholders are Ministry of Employment and Economy, Finnish Funding Agency for Technology and Innovation Tekes, Finpro, Technical Research Centre of Finland

VTT, Academy of Finland, Foundation Sitra. The Finnode Russia's ***mission includes the foresight activities in order to understand development trends in economy & innovations, interconnections with business and*** Finnish ***industry clusters, networking with*** Russian ***innovation suppliers, their analysis and matching with*** Finnish ***firms and R&D units***, ***commercialization of Russian innovations with Finnish partners to global markets***. Finnode Russia & Lappeenranta Innovation's implement 3 years joint program envisaged systematization of the commercialization process. Finnish members are represented by Finnode Russia, Lappeenranta Innovation, Tekes, VTT and the Finnish Science Park Association TEKEL. From Russian side the partners are Saint-Petersburg Committee of Economic Development & Trade, Moscow Government Committee of Science & Industry Policy, Rosnano, ISTC, Higher School of Economics, Innovation Centre Skolkovo. ***Innovation flow*** from Russia ***is organized via several ways, namely innovation competitions & incubators, universities*** in SPb and Moscow, ***regional innovation partners*** in Kazan, Ekaterinburg etc. ***Creation of a network with relevant finance sources*** in Finland, Russia, EU, ***including investment funds, venture capital, business angels*** is a very essential features of success. ***The benefits for both sides are obvious***: for Russian innovator ***– development of innovation with the EU patenting, networking, financing, marketing conditions to European and global business, including national market;*** for Finnish partner ***– getting of innovations to Finland, setting up new companies, jobs, widening of contacts with Russian colleagues & investors. Common for both sides benefit is making the money.***

STI policy supports the development and utilization of science and technology. This means support for research at various levels but as well as technology transfer for better use of the research results and further development of the economy. ***Technology transfer*** is one of the leading fields STI policy in developed countries ensured their accelerate growth. ***Legal and financial support of STI sphere*** is a basis for commercial success of technology transfer. Development of ***technology transfer infrastructure, its methodological support, promotion of collaboration among research, entrepreneurs and investors are the tasks of STI policy***. International cooperation between technology transfer networks of different countries is very important. The ***Enterprise Europe Network*** is a network of regional centres delivered support services to business and innovation companies. Enterprise Europe Network is active in 44 countries, including all EU27 countries, the European Economic Area (Iceland, Norway), Candidate Countries (Croatia, the Former Yugoslav Republic of Macedonia, and Turkey), Switzerland and other third countries, including China (part), ***Russia, Armenia*** and the USA. The Enterprise Europe Network supports the technology transfer schemes and commercialization of research results. It creates the significant link for the STI police to the phase concentrating mostly on the research and the market phase. The Network helps bridging the gap between science and industry.

The ***Competitiveness and Innovation Framework Programme*** (CIP) is in the perspective of its use for the EECA countries, taking as well into account the context of the STI Policy. CIP in the context of the STI policy for the EECA countries revealed that there are measures within the CIP supporting certain mechanism and enhancing the S&T potential of the countries. The interest among the EECA countries to join the Programme is significant and still growing. Some countries, such as Ukraine, Kazakhstan and Moldova, express their willingness to sign the memorandum of understanding being the first step to the full membership in the Programme. However, the procedures may prolong this process.[1]

[1] FP7 IncoNet EECA project Analytical Paper on "Better use and contribution from the CIP to S&T Policy"

Under **Critical Analysis of the EU-EECA S&T Cooperation Framework and the Way Forward** the issues for the conference consideration were the following:

- Is there room for enhancing the cooperation? The S&T potential of the EECA region versus present cooperation patterns.
- Which cooperation instruments does national S&T policy offer?
- Present state and the perspectives of EECA participation in the EU RTD Framework Programme.
- Role of S&T in the European Neighbourhood Policy and the Four EU-Russia Common Spaces.

Three major drivers of EU-EECA STI cooperation are identified relating to political, economic and cultural interactions where STI play the role of facilitating and integrating factor for neighbourhood regions.

EU and EECA benefit from enhanced S&T cooperation by joining knowledge and skills, sharing risk and resources, fostering innovation to (jointly) exploit new markets, speeding up for global challenges address.

National support instruments for internationalisation of STI suffered transformation. The profile of bilateral agreements is changing towards flexible formats and increasing role of research organisations. The major instrument for international cooperation is „mobility funding", however advanced instruments are catching-up (there is a good practice) that comprises joint funding programmes (beyond mobility), joint laboratories/infrastructures, opening-up of infrastructures.

There is lot of room for advancing ***bilateral cooperation in the innovation domain***. Germany, United Kingdom, and France are traditional partners for EECA countries. Other EU/AC "front runners" are Austria, Hungary, Romania and Turkey. Russia has concluded bilateral S&T agreements with a majority of EU MS/AC. Other EECA countries - "front runners" are Ukraine, Belarus, Uzbekistan, Azerbaijan and Moldova.

Mobility schemes as traditional ***funding instruments*** in bilateral agreements are dominating. However to a growing extend ***additional costs are becoming eligible*** (sometimes unilaterally) such as personal costs, consumables/equipment, events (workshops, conferences). Typical „customers" are universities and public research organisations – ***the innovation sector is not a dominant target*** (but there are examples considered good practice).

For bilateral funding instruments the ***opening up of infrastructures and building joint infrastructures*** and dedicated instruments are becoming issues. ***Dissemination activities of S&T results are rarely funded***.

Major present obstacles to STI cooperation are a huge lack of English-language structured up-to-date ***information on STI developments*** in EECA and ***cooperation frameworks accessible to foreigners***, difficult ***legal frameworks*** (visa, IPR regimes, customs dues and taxation of transfer of funds and equipment). The need for more advanced ***STI cooperation instruments*** such as fostering larger networking/paving the way to EU RTD Framework Programme, funding larger scale STI projects, supporting to build joint institutions/infrastructures is evidenced. Other obstacles are ***ageing of R&D personnel*** in particular in EECA. ***The need to attract young scientists and women*** to science is obvious. Lack of developed ***innovation***

sector and ***innovation culture*** in large parts of the EECA region are difficulties to approach relevant stakeholders in EECA. Shortcomings in respect to ***impact assessments of STI (cooperation) policies*** are registered.

As an outlook for strategic policy approaches and improved national / bilateral frameworks of EU-EECA Cooperation the following measures could be expressed:

- Develop ***strategic cooperation roadmaps*** building on each others strengths and interests (national as well as bilateral dimension);
- Foresee ***approaches across policy sectors:*** education/training, STI programs, national/regional development programs;
- Give the innovation sector a special focus: possibly joint strategies for fostering innovation through ***capacity building and networking of innovation stakeholders;***
- Agree on international acceptable ***legal standards for bilateral STI cooperation***: IPR, transfer of funds and equipments, foreign direct investments in STI.
- If appropriate: give (bi-) ***regional approaches*** a preference to increase critical mass of activities, increase efficiency and effectiveness of efforts – regional outreach, integrating countries with weak cooperation links;
- Exploit synergies between bilateral approaches and ***multilateral / bi-regional initiatives/programs*** (ENPI/Eastern Partnership, Central Asia Strategy of EU, etc.)
- Make optimum use of dedicated instruments of ***ENPI, DCI, and others to link up STI with national/regional development and economic cooperation;***
- ***Establish national Information Points on International Cooperation***

Advancing national/bilateral instruments built on good practice would be a boosting approach for cooperation. ***Increasing of brain-circulation*** through promoting the opportunities, advancing funding schemes and removing still existing barriers is on the agenda. Development of dedicated programs for West – East mobility, opening-up and promoting S&T infrastructures in EECA and multilateral schemes for academic exchange (academic networks) are under consideration.

Options for ***trans-national linking-up of national programs***: developing and testing joint procedures respecting national rules and regulations should be explored. Management skills and capacities of EECA program owners are necessary to be raised.

The EU MS/AC and EECA should find ways to share experiences and ***prepare a better ground*** for reliable and ***comparable impact assessment and evaluation of STI policy measures addressing international cooperation.***

Shared trans-national interest to coordination of national STI policies and instruments are motivated by the necessity in ***improving the legal framework for multilateral networking*** (***common legal standards***), increasing ***efficiency of national STI programmes and sharing risks*** through pooling activities and resources in basic research and in areas addressing global challenges (climate change, energy, health and sustainable management of natural resources), stronger ***joint standing in the international arena*** and development and promotion of ***joint standards and ethical principles for the performance of science***.

National STI policies can be ***coordinated*** better through introducing ***light dialogue fora open to interested countries of EU-EECA region*** (stakeholder conferences, workshops),

identifying STI policy issues of particular common interest and of bi-regional or global relevance, such as: ***legal framework conditions***, specifically bi-regional standards for STI cooperation to be built on national regulations (IPR, access to infrastructures, mobility framework/social aspects); dedicated ***STI priorities*** linked to bi-regional/global challenges; ***structural challenges*** of the STI communities like transfer of knowledge, joint infrastructures/institutions; developing a ***joint roadmap and implementation mechanisms.***

The optimum use of EU-instruments can be made by ***jointly use of established instruments as well as coordination and support mechanisms offered under the EU RTD Framework Program,*** by realisation of ***Strategic Forum for International Cooperation*** as high-ranking discussion and advisory body of the EU Member States and the Commission open for Associated Countries, ***enhancing the bi-regional (Policy) dialogue*** between the EU and EECA stakeholders for developing shared visions and coordinated roadmaps, ***developing*** and testing advanced ***joint funding schemes*** to facilitate joint research

EU S&T policy outlined the objectives of international cooperation as follows:

Supporting European competitiveness through strategic partnerships with third countries;

- Engaging the best third country scientists to work in and with Europe;
- Addressing specific problems, which third countries face or which have a global character.

In this context a wide range of instruments, including S&T agreements and policies for EECA are developed and implemented. International Agreements on S&T are concluded with Russia and Ukraine. Nuclear Research and Nuclear Safety agreements signed with Kazakhstan, Russia, Ukraine and Uzbekistan. Strategy for New Partnership and Development Cooperation Instrument (DCI) direct to countries of Central Asia. Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova, Ukraine are the countries in focus of ENP – Eastern Partnership (’09) & Northern Dimension – ENPI, Four Common Spaces with Russia. EU RTD Framework Programmes and Competitiveness and Innovation Framework Programme (CIP) are also open for cooperation with EECA countries. ENP six flagship initiatives envisage integrated border management programme; SME facility; regional electricity markets, improved energy efficiency and increased use of renewable energy sources; diversification of energy supplies; prevention of, preparedness for, and response to natural and man-made disasters; promotion of good environmental governance. For them implementation a substantial funding has been contributed to Eastern partners and will increase by 75% by 2013. Additional funds are also available through regional and inter-regional programmes, Cross Border Cooperation, Neighbourhood Investment Facility. S&T activities may be possible within the ENP National Indicative Programme for Russia in case of political willingness.

To enhance S&T cooperation the following measures could be proposed under consideration of the EU and EECA countries: ***possible association to the EU RTD Framework programmes and engagement with other EC programmes CIP, etc.; scientific visa facilitation agreements; regional dialogues inclusion of S&T in ENP regional initiatives – Eastern Partnership, Northern Dimension; Council of the Baltic Sea States (CBSS), Organization of Black Sea Economic Cooperation (BSEC), Barents Euro-Arctic Council (BEAC); targeted calls – focused on EECA countries; co-funding schemes - coordinated calls, twinning projects, Joint Technology Initiatives; national matching funds (i.e. Russia’s federal targeted programmes).***

Positive expectations of third countries from possible association to the EU RTD Framework programmes can be described as follows:

- Increase of shaping priority efficiency for budget financing;
- Reduce a gap between interdisciplinary links and technological cycle "basic research – applied research – industrial applications";
- Technological and social advancement from a EU developed platform;
- Benefit from using the EU experience in the area of the development and execution of national and international programmes with a particular focus on:
  - Priority setting;
  - Strategic planning;
  - Identification of tasks and priorities;
  - Support to partnership creation;
  - Promotion of competition
- Additional opportunities for integration of EU and Russian knowledge based economy into a global system;
- Increase of competitive advantage;
- Quality increase of RTD;
- Access to cutting-edge RTD for producing new products with high competitive capacity in the global market;
- Access to sophisticated research infrastructure.

Scientific potential of many EECA countries and therefore participation in the EU R&D Framework programmes is not very high. ***FP7 INCO programme became now a real capacity's programme with a good instrumental mix (INCO-NET, ERA-WIDE, ERA-NET, BILAT schemes). These instruments should be used for dialogue, structural reform support, networking, etc.***

FP7 participation cannot compensate structural deficits and lacking national funds. However, since there is need ***to tackle global issues, special targeted calls are needed.***

EECA and EU MS/AC should actively use the EU INCO offer (more top-down!). It is necessary ***to enhance capitalizing the existing INCO-NETs, e.g. for S&T policy peer reviews, evaluation of RTDI institutes and infrastructures, RTDI management capacity building etc. Chaining with Development Cooperation Instrument (DCI), European Neigbourhood Partnership Instrument (ENPI)*** must be secured from both sides.

FP7 IncoNet EECA project has produced a ***draft generic proposal on "Improvement of S&T Statistics in the EECA"*** on the basis of a DCI project fiche template (in order to guarantee best compliance with Terms of Reference (ToR) standards used in the EC). ***DCI programme*** owners might consider taking up and further elaborating these ToRs in order to publish a corresponding ***Tender Notice for statistical capacity building in EECA.***

Better use of existing ***ENPI instruments and*** investment in consistent actions, ***openness of national R&D programmes to participation of EU-based organizations, identification of possible synergies between EC assistance programmes, MS activities & national R&D programmes*** would contribute to enhancement of EU-EECA S&T cooperation.

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The conference made valuable contribution to achievement of one the main deliverables of IncoNet EECA project handled by the EC in terms of quality, integral discussion and coverage of policy issues of the interest of all participants.

It was stressed that the world becomes more global and complicated and this reflects on STI area. In the context of presentations made during the conference many different examples showed variety spheres related to STI policy which need specific approaches in designing of new instruments or reform of existing instruments of STI policies. Basic and applied research, education, industry, various branches of economy belong such spheres. As a result of up-to-date approaches application, new technology and classifications are shaping, priorities in the field of STI, several branches of economy that needs development of STI policies, a number of Foresight methods which might be used for identification of S&T priorities, several types of innovation behavior of enterprises.

At the conference the following key elements that are common for all countries concerned have mentioned: consensus of political decisions for research and innovation policy should be considered by the countries; common use of research systems that should be more open, more organized and more directive towards innovation linked to rather complexity of research and innovation processes. There are a broad variety of patterns and instruments meeting the criteria and objectives of research and innovations. These patterns are in dependence on historical background, on specificity of the economy of each country. Converging opinion on the best practices is the need of transparency, granting financing on the base of competitive mechanism, support research in the areas of excellence of the countries trying to target market niche and industry. All these elements are common for Eastern and Western Europe, Central Asia, Russia and other countries. It is necessary to analyze more deeply the problems specific for countries, sectors and fields of science.

International cooperation is stimulating knowledge exchange around the world specifically through mobility of researchers. From the political point of view international cooperation is a means of boosting competitions in research communities. Association to EU Framework programme is not the only way to cooperate with the EU Member States but gives the opportunity to open research systems of associated countries and make them more competitive, more innovative. The conference showed the necessity to perform benchmarking of STI policies, to work up common procedures for carrying out such exercise, to develop best practices on collecting statistical data and analysis. These instruments are useful for better understanding of research systems performing in different countries.

The need to develop more complex policy in STI that should be addressed to particularly issues has been concluded by the conference participants. In this respect it is relevant to consider policies composition and develop such instruments like policy platforms and others that can be integrated in STI sphere. In terms of the best world experience exchange the recent event is of great importance for policy makers, scientists, and other stakeholder in EU and EECA. Such discussions can be continued in the framework of other forthcoming events.

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