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CREST report

Internationalisation of R&D

Exploring synergies through coordinating
policy measures between the EU
Member States, Associated Countries
and the European Commission

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April 2009

Exploring synergies through coordinating
policy measures between the EU
Member States, Associated Countries
and the European Commission

An element of the 'New Partnership'
for ERA governance

Summary of discussions and recommendations

Prepared on behalf of the CREST OMC Working Group by
Jörn Sonnenburg and Marion Steinberger

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Preface

The report summarises a dedicated part of work addressing the coordination of policy measures between the Member States, Associated Countries and the European Commission in variable geometries undertaken in the year 2008 by the CREST OMC Working Group on '*Internationalisation of R&D - Facing the Challenge of Globalisation: Approaches to a Proactive International Policy in S&T*'.

The following 20 Member States of the European Union and countries associated to the EU Framework Programme for Research, Technological Development and Demonstration Activities participated in the OMC Working Group in 2008: Austria, Czech Republic, Cyprus, France, Germany, Greece, Iceland, Ireland, Italy, Lithuania, The Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Turkey and the United Kingdom. Contact persons in the participating countries are given in Annex 1. Eight meetings of the OMC Working Group were held between January and November 2008.

The chair of the OMC Working Group was Jörn Sonnenburg (International Bureau of the German Federal Ministry of Education and Research at the German AeroSpace Centre); the rapporteur was Marion Steinberger (International Bureau).

The OMC Working Group was supported by Ales Gnamus from the Institute for Prospective Technological Studies at the Joint Research Centre of the European Commission (JRC-IPTS) and three external experts: Manfred Spiesberger, Jan Peter Wogart and José Luis Briansó Penalva.

Continuous assistance was provided by Sigi Gruber and Heiko Prange-Gstöhl from the European Commission, DG Research, Directorate D, unit D2.

This report was prepared by Jörn Sonnenburg and Marion Steinberger on behalf of the OMC Working Group. The report sums up the results of the analytical and empirical work (analysis of responses to several short questionnaires that were sent to the members of the OMC Working Group or to national CREST delegates), mutual learning exercises and thematic discussions of the OMC Working Group. It represents experts' opinions and not official positions of individual Member States, countries associated to the EU RTD Framework Programme or the European Commission.

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1. Introduction

1.1. Background and mandate of the OMC Working Group

The present analytical report summarises results and recommendations of the second one-year long phase of the work of the CREST OMC Working Group on *'Internationalisation of R&D - Facing the Challenge of Globalisation: Approaches to a Proactive International Policy in S&T'*. Particular emphasis is given to the exploitation of potential synergies of a coordination of policy measures between the EU Member States, Associated Countries and the European Commission. With this regard the Working Group makes an attempt to follow-up the debate launched through the ERA-Green paper published by the European Commission on 4 April 2007 ⁽¹⁾ and to contribute to the Ljubljana Process towards full realisation of the ERA as it was set-up by the national Ministers for Competitiveness (Research) in Brdo, Slovenia, on 15 April 2008 ⁽²⁾.

The OMC Working Group was established at the beginning of 2007 under the framework of the third cycle of the Open Method of Coordination for the implementation of the action lines of the 2003 European Commission Communication *'Investing in Research: an Action Plan for Europe'* ⁽³⁾, also called the '3% Action Plan'.

In December 2007, the end of the first phase of the OMC Working Group's work was marked with the publication of the analytical report *'Policy Approaches towards S&T Cooperation with Third Countries'* ⁽⁴⁾. CREST adopted this report on 7 December 2007. At the same time, a prolongation of the OMC Working Group for a second phase was adopted. Following an analysis of S&T cooperation practice and the cooperation framework with China ⁽⁵⁾ in the first phase of the OMC Working Group, the mandate of its second phase was focussed on deepening mutual learning and developing in-depth joint recommendations building on the examples of S&T cooperation with Russia, India and Brazil. The mandate of the OMC Working Group covered the following tasks:

- analysing major challenges and trends (with respect to the dynamics of S&T and innovation systems in the afore mentioned countries and the activities of major competitors of the EU towards and with these countries),
- systematically developing common objectives of Member States/Associated Countries, options for respective actions and concrete measures implemented either at national level or through coordinated efforts of Member States/Associated Countries in variable geometries or at Community level,
- identifying potential synergies through coordinating measures of Member States and the European Commission to undertake and facilitate joint or complementary activities at national and European level and to share efforts based on common interest,
- identifying good cooperation practice.

⁽¹⁾ Green Paper: The European Research Area - New Perspectives, 4 April 2007, COM(2007).
http://ec.europa.eu/research/era/pdf/era_gp_final_en.pdf

⁽²⁾ Informal Meeting of Ministers for Competitiveness (Research) in Brdo, 15 April 2008, Draft summary by the Presidency.
http://www.eu2008.si/en/News_and_Documents/download_docs/April/0414_COMPET/070Summary_Research.pdf

⁽³⁾ Communication from the Commission: Investing in research - an action plan for Europe, 4 June 2003, COM(2003) 226 final/2.
<http://ec.europa.eu/invest-in-research/pdf/226/en.pdf>

⁽⁴⁾ CREST OMC Working Group on 'Internationalisation of R&D - Facing the Challenge of Globalisation: Approaches to a Proactive International Policy in S&T': Analytical Report 'Policy Approaches towards S&T Cooperation with Third Countries', December 2007.
http://ec.europa.eu/invest-in-research/pdf/download_en/concl_international.pdf

⁽⁵⁾ The report on China is featured in the Annex of the OMC Working Group's first analytical report.

In addition, the mandate also covered:

- linking national and Community efforts to gain information, and
- setting up evidence based assessment and evaluation procedures for the impact of internationalisation of the ERA including criteria and indicators.

Several tasks of the mandate were covered by three dedicated country reports⁶ including recommendations for enhancing the cooperation with Russia, India and Brazil with

- an analysis of S&T cooperation policies of Member States/Associated Countries in place with these three target countries and
- a respective summary of country specific recommendations.

These additional reports are aimed at assisting Member States and Associated States individually or jointly in variable geometries to improve their cooperation policy towards Russia, India and Brazil.

This present report of the second phase of the OMC Working Group addresses the issues of common objectives/motivations of the S&T cooperation with Third Countries and potential synergies of a coordination of S&T cooperation policy measures respecting the principle of variable geometries. Along that line, joint efforts to gain information for enhanced S&T cooperation with Third countries as well as to set-up evidence based assessment and evaluation procedures are addressed.

The report is built on an intense debate of S&T cooperation policy of Member States and Associated Countries with Russia, India and Brazil. In the discussions of the OMC Working Group it was highlighted that some Member States/Associated Countries have a long-lasting tradition of cooperation and respective advanced international cooperation instruments whereas smaller and in particular countries that only recently joined the EU are still in a phase of developing cooperation strategies. The present report complements the findings and recommendations of the first analytical report of the Working Group submitted to CREST in December 2007, which included a special annex on cooperation with China. Thereby all the BRIC countries have been covered by the work done in the two OMC cycles on international cooperation in R&D.

In its introductory part, the driving motivations for a closer coordination of S&T policy measures of Member States, Associated Countries and the European Commission towards Third Countries targeting relevant obstacles are summarised.

Section 2 provides the results of the OMC Working Group as regards three key elements which should provide input for moving towards a closer coordination of S&T policy measures in the developing ERA:

- Deepening the basis for cooperation: Information gathering on S&T in Third countries and on S&T cooperation,
- Increasing the impact of cooperation: Joint or coordinated activities undertaken on the one hand exclusively by Member States and/or Associated Countries and on the other hand in relation to Community activities,
- Learning lessons for future policy making: Assessment and evaluation of S&T cooperation policies.

Section 3 outlines the major recommendations addressed to Member States, Associated Countries and the European Commission and proposes corresponding next steps to implement the recommendations.

⁶ on Russia, prepared by Manfred Spiesberger, http://ec.europa.eu/research/iscp/pdf/crest_russia_08-12-08.pdf

on India, prepared by Jan Peter Wogart, http://ec.europa.eu/research/iscp/pdf/crest_india_06-12-08.pdf

on Brazil, prepared by José Luis Briansó Peñalva, http://ec.europa.eu/research/iscp/pdf/crest_brazil_12-19-08.pdf

1.2. Driving motivations for a coordination of S&T policies towards Third Countries

The 2007 Green Paper on the ERA states that ‘*closer coordination is necessary between the EU and Member States, for mutual benefit, as well as between S&T cooperation policy and other areas of external relations.*’ It furthermore reads: ‘*The European Research Area should therefore be open to the world, and also S&T cooperation with partner countries should be steered in a coherent and policy-driven manner. A coherent approach towards international S&T cooperation, under the banner of global sustainable development, can assist in building bridges between nations and continents.*’⁽⁷⁾

Along the line of the first report of the OMC Working Group, the policy objectives of international cooperation in S&T are manifold and are driven by a variety of scientific, economic and other interests.

However, a number of **obstacles for international S&T cooperation** are shared by all Member States and Associated Countries, in particular the following ones:

- ***Lack of knowledge in Europe on the S&T situation in Third Countries***

To improve cooperation with Third Countries more first-hand knowledge about the R&D position of a country would be necessary. Especially as regards emerging countries that might have a great potential, it is often tedious to collect enough information for establishing a solid basis for successful cooperation and for developing adequate policy measures on the EU side. This ranges, for example, from general policy aspects to programmes, rules and regulations, institutions, trends and intercultural aspects.

- ***Lack of knowledge in Third Countries on the S&T situation in Europe***

To build a fair ground for S&T cooperation and for placing the EU and its Member States and Associated Countries as key partners, it is necessary to spread information on European research and cooperation opportunities in Third Countries. This is especially important in the light of the desired increase of participation of Third Countries in the EU RTD Framework Programme and the possible opening of research programmes of Member States and Associated Countries for Third Countries. Therefore, the respective knowledge in various regions of the world should be improved. National Contact Points as well as INCO-NET and BILAT projects already serve that purpose.

- ***Missing standards for the management and the protection of intellectual property***

Significant discrepancies between national regulatory frameworks, policies and practices, as well as varying standards in the management of intellectual property hamper international cooperation. What is therefore needed are comparable rules and practices that allow equitable access to intellectual property generated through international cooperation and ensure mutual benefit for all research partners. First steps in this direction have been taken in April 2008 through the ‘Commission recommendation on the management of intellectual property in knowledge transfer activities’ and the ‘Code of practice for universities and other public research organisations’⁽⁸⁾ as well as through the corresponding Council resolution taken on the Competitiveness Council of 29-30 May 2008.⁽⁹⁾ The Commission's Strategic European Framework for International S&T Cooperation refers to IPR issues by proposing that Member

⁽⁷⁾ Green Paper: The European Research Area - New Perspectives, 4 April 2007, COM(2007) 161 final, p. 25.
http://ec.europa.eu/research/era/pdf/era_gp_final_en.pdf

⁽⁸⁾ Commission Recommendation on the management of intellectual property in knowledge transfer activities and Code of Practice for universities and other public research organisations, 10 April 2008, C(2008)1329.
http://ec.europa.eu/invest-in-research/pdf/ip_recommendation_en.pdf

⁽⁹⁾ Council Resolution on the management of intellectual property in knowledge transfer activities and on a Code of Practice for universities and other public research organisations, 4 June 2008, 10323/08.
http://ec.europa.eu/invest-in-research/pdf/download_en/st10323_en08.pdf

States and the Commission ‘promote globally, including through bilateral EC and Member State international S&T cooperation agreements, the principles set out in the Recommendation and associated Code of Practice on the management of IP. They should further develop these to guarantee fair and mutually beneficial conditions for all parties, whilst taking account of LDC needs.’⁽¹⁰⁾

- ***Insufficient visa regimes and social security arrangements for scientists and their families***

Insufficient visa regimes as well as unclear and disadvantageous social security arrangements often prevent international research cooperation with researchers from Third Countries. The scientific visa package⁽¹¹⁾ aims at solving the challenge of researcher mobility through facilitating the issuing of entry visas and residence permits for third-country researchers and family reunification in Europe. Fortunately, most of the Member States have transposed the directive into national law.⁽¹²⁾ The Commission's Strategic European Framework demanded from the Member States to improve this situation.

- ***Insufficient advanced national joint funding schemes with Third Countries***

One hindrance to research collaboration may be the non-existence of advanced competitive national funding schemes in Third Countries, especially as existing bilateral funding schemes are usually often restricted to mobility programmes only. Building on the experience of some Member States/Associated Countries even in cases where such funding opportunities exist at national level, trans-national differences between the funding systems may prevent the efficient implementation of joint projects.

- ***Difficulties with transferring scientific equipment and samples or with getting access to research sites***

This problem relates to the existing different rules and regulations for the exchange or transfer of research equipment, material and samples (marine, geological, biological etc.) across country borders and the restrictive or complicated access to respective research sites in Third Countries. International cooperation with Third Countries is often hindered by administrative legal provisions or by a lack of knowledge of the implementation of respective regulations.

- ***Incompatible legal frameworks for joint institutions and infrastructures***

When it comes to institutional cooperation, different legal frameworks (regulating, for example, the participation/accession of foreign institutions in/to legal entities of Third Countries, tax issues, money transfer, etc.) existing in the countries often prevent closer R&D cooperation or the setting up of joint institutions and infrastructures.

- ***Insufficient S&T infrastructure and expertise in Third Countries***

Finally, one obstacle for international S&T cooperation, especially as regards emerging or developing countries, is the non-existing or insufficient local S&T infrastructure in these countries as well as a lack of human resources (e.g. because of ‘brain-drain’). This comparative disadvantage is linked to the still existing deficits in the coordination of education, research and development policies at national and EU level.⁽¹³⁾

⁽¹⁰⁾ Communication from the Commission to the Council and the European Parliament: A strategic European Framework for international science and technology cooperation, 24 September 2008, COM (2008) 588 final, p. 14. http://ec.europa.eu/research/press/2008/pdf/com_2008_588_en.pdf

⁽¹¹⁾ Council Directive 2005/71/EC of 12 October 2005 on a specific procedure for admitting third-country nationals for the purposes of scientific research, 3 November 2005, L 289/15. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:289:0015:0022:EN:PDF>

⁽¹²⁾ As of November 2008, 23 Member States have implemented the Directive into national law (the UK and Denmark are exempted from applying the Directive, notifications from two Member States are still missing).

⁽¹³⁾ The Communication on a Strategic European Framework for International S&T Cooperation highlights the coherence of policies and programmes as one core principle for efficient and effective international S&T cooperation, in particular in the cooperation with developing countries.

Addressing those obstacles and deepening the discussions among Member States and Associated Countries the following major **motivations for a closer coordination of S&T policies towards thirds countries** can be identified as common ones with major impact on the future development of the ERA. It needs to be emphasised that the principle of variable geometry should be fully respected for any policy coordination within the ERA, allowing any country to proactively participate in a joint activity or abstain from it.

- ***Efficient access to R&D (policy)-related information and resources***

One basic need of international S&T cooperation is the collection and exchange of information on and knowledge of S&T systems and policies of other countries or regions. This paves the way among others

- to easily accessing international knowledge and skills in all kinds of research areas for maintaining and developing scientific excellence in Europe,
- to creating a transparent and advanced policy framework for international S&T activities, and
- to preparing a better ground for accessing large-scale research infrastructures in Third Countries.

- ***Improving the framework conditions for opening the ERA to the world***

The establishment of consistent and stimulating framework conditions for joint S&T activities of the science communities both in the ERA and in Third Countries mainly relates to the removal of existing or potential cooperation barriers at international level. This refers to rules in particular for

- the fair access and joint utilisation of intellectual property,
- the exchange of research samples,
- the access to geological, marine, polar or biological S&T sites, materials and infrastructures,
- the simplified issuing of visa for researchers as well as improved social security and career structures, especially for researchers from Third Countries.

Those elements aim at ensuring free movement of knowledge ('fifth freedom') and at making the labour market for European and Third Countries' researchers more open and competitive.

- ***Increasing efficiency and sharing risks through pooling activities and resources with Third Countries in basic research and in areas addressing global challenges***

Coherent national and European policies towards Third Countries will encourage and enable the joint financing, establishment and utilisation of S&T infrastructures and research sites (especially medium and large-scale facilities for basic research). A special advantage lies in the joint funding and use of large-scale infrastructures which could not have been established by a single country alone or where risks should be shared. Where there is a common interest in conducting research activities, joint funding schemes of interested programme owners in variable geometries including Third Countries' funding institutions - or the targeted opening of each others programmes, following the principle of reciprocity, could be envisaged. ⁽¹⁴⁾

- ***Using synergies of close S&T cooperation within the ERA for adding value to the marketing of national S&T***

The individual Member States and Associated Countries intend to demonstrate their attractiveness for international partners to either cooperate with, work in or invest in their S&T institutions. In some cases, the attractiveness could even be increased by promoting advantages of the ERA as a whole through synergies created by

⁽¹⁴⁾ The Communication on a Strategic European Framework for International S&T Cooperation prominently admits that scientific challenges need to be tackled through global research infrastructures and proposes respective action.

- close networking of institutions,
- easy access to S&T infrastructures across the ERA,
- the linkages to the European lead markets,
- the benefits of EU RTD Framework Programmes which are open to Third Countries as a common umbrella.

Against this background there is a growing interest in promotion campaigns of the ERA targeted in particular at the neighbouring regions, industrialised countries and emerging economies.

- ***Stronger European standing in the international arena***

Whenever Member States share a common interest in the area of S&T (such as regards responses to global challenges), a well-coordinated European approach could lead to Europe 'speaking with one voice' in international and multilateral fora such as the UN, G8, OECD and others. This single voice would help the EU participate more efficiently in international agenda setting and policy making and exercise its influence at global level. A coordinated European approach would thus increase the impact of Europe within these fora. The Commission's Communication on a Strategic European Framework stresses this need as one of the core principles for international S&T cooperation.

- ***Efficient responses to global challenges***

There is a common understanding that international S&T cooperation is a most appropriate and efficient way to tackle global challenges such as climate change, energy, security, health and sustainable management of natural resources. Transborder cooperation bears the promise to better face these newly emerging borderless challenges. The EU therefore should pool its considerable scientific and technological potential with those in Third Countries, if appropriate, to effectively and efficiently contribute to the solution of global challenges. The Commission's Communication on international S&T cooperation proposes that national and Community levels should together identify and agree on S&T cooperation priorities with key Third Country partners where cooperation brings a clear added value for Europe in addressing key global challenges and engage in joint initiatives.

- ***Promotion of European standards and ethical principles for the performance of science***

A further aim of S&T cooperation is the spreading of European values and standards (e.g. according to general ethical principles or the fair use of intellectual property) amongst the global scientific community. This would not only be of advantage for European research and economy, but could also prepare the ground for a stronger participation of Third Countries in Member States' or Community programmes.

This list of objectives for S&T cooperation is by no means exhaustive. Also, those objectives are related in different ways to various groups of Third Countries (highly industrialised countries, emerging economies, developing/least developed countries, neighbouring countries). For example, cooperation with industrialised and emerging countries will have to balance competitiveness and cooperation ensuring mutual benefit, while cooperation with developing countries also requires a strengthening of the basic S&T capacities of the target region or country.

2. Approaches to a closer coordination of S&T policy measures

During its second working phase in 2008, the OMC Working Group dealt with a variety of relevant issues with the help of presentations, discussions, practice examples and mutual learning exercises, including:

- S&T cooperation with Russia, India and Brazil at national and Community level;
- exchange of experience with Commission Science Counsellors stationed in India, Brazil, China, Japan and the USA (background and objectives, priorities, implementation schemes and instruments, S&T agreements);
- instruments to gain information on S&T in Third Countries and options for cooperation;
- Member States' international S&T cooperation agreements and participation in international organisations, programmes and initiatives;
- synergies between national and Community activities (core objectives and strategies, instruments and framework conditions);
- assessment and evaluation procedures of the impact of internationalisation of R&D.

Summarising the OMC Working Group's discussions, this section provides the rationale for the recommendations given in section 3.

2.1. Strengthening the basis for cooperation: Information gathering on S&T

In its first analytical report, the CREST OMC Working Group has already encouraged a better coordination of national and European information gathering instruments in general terms. It was recommended that policy stakeholders from Member States, Associated Countries and the European Commission should '*systematically extend ERAWATCH to major Third Countries as well as increase its efficiency through linking it with existing information services in EU-Member States/Associated Countries and upcoming services to be developed under the INCO-NET scheme.*'⁽¹⁵⁾

This section addresses the need and practical possibilities to coordinate the process of collecting, processing, analysing and exchanging information on the R&D situation in Third Countries and on Member States', Associated Countries' and other countries' R&D cooperation with Third Countries.

Currently, different approaches exist in Member States and Associated Countries as regards R&D information gathering. Countries such as France, the United Kingdom and Germany have well-established instruments or institutions for collecting and processing information (see Annex 2.1.). Other, smaller countries also perform active information gathering through science counsellors, technology attachés and other instruments. Some countries do however not have distinguished mechanisms to systematically collect and analyse respective information.

It is acknowledged that not all information and experiences gained at national level can be shared among Member States and Associated Countries. However, there seems to be much room for a wider exchange for mutual benefit. The identification of the areas in which a systematic cooperation in the field of information gathering is possible and desired by all Member States and Associated Countries, as well as the setting-up of effective and efficient mechanisms to combine and disseminate different information and experiences, is vital. Existing data on international S&T cooperation collected by international organisations such as the OECD should be taken into account in the process as well.

⁽¹⁵⁾ CREST OMC Working Group on 'Internationalisation of R&D - Facing the Challenge of Globalisation: Approaches to a Proactive International Policy in S&T': Analytical Report 'Policy Approaches towards S&T Cooperation with Third Countries', December 2007, p. 92.

As an example, science counsellors or attachés should be highlighted as central structural element with their mandate to report on R&D (policy) of their host country to their governments. This is true for several Member States and Associated Countries and the European Commission in selected Third Countries.

As a second example, ERAWATCH, the Community monitoring and analysis service on research systems and policies (see Annex 2.1.) already offers country profiles of nine Third Countries, i.e. Australia, Brazil, Canada, China, India, Japan, Republic of Korea, New Zealand and the United States of America. In 2009, information on further Third Countries will be made available. Moreover, NETWATCH, a project which aims at developing a central information platform on ERA-NETs closely associated with the ERAWATCH service is currently under development by JRC-IPTS and will become operational in 2009. The idea of NETWATCH is to promote a better understanding of the synergies and reciprocities of European (esp. ERA-NETs) and national R&D programmes covering Third Countries.

As a third example, the European Commission (Directorate General Research) is currently collecting information on internationalisation strategies and activities of Member States and Associated Countries. This exercise is built on the analytical work of the CREST OMC Working Group and is undertaken in close cooperation with its members. A cross analysis of commonalities and differences and the preparation of ‘country fiches’ are also planned. The CREST OMC Working Group stresses the value of such an exercise. The aim is to include such information in the ERAWATCH country profiles of Member States and Associated Countries.

It is highlighted by the OMC Working Group that common information gathering and information exchange offers a variety of benefits for all parties involved. First of all, an added value is expected through general higher effectiveness and efficiency. Moreover, a common knowledge-base for the R&D situation in and the existing cooperation with the respective target Third Countries is most relevant against the background of common agenda setting in variable geometries (consistent with bilateral activities of the Member States) at Community level.

As a conclusion, the OMC Working Group proposes to create synergies and avoid redundancies through a more intense and moderated cooperation between long-standing institutions practising information gathering at national and Community level and the science counsellors, as well as through a better coordination of monitoring activities. For example, a ‘science map’ for certain Third Countries such as Russia, India, Brazil and China could be created and updated based on the information collected by those Member States and Associated Countries that have strong cooperation links with the relevant target Third Country. The map could also build on relevant deliverables of the existing variety of coordination and support activities within the EU RTD Framework Programme (e.g. INCO-NETs and BILAT projects).

The OMC Working Group proposes the following four targets of joint information gathering:

- **R&D policy in the respective Third Country**

What are scientific strengths, weaknesses and potentials of Third Countries? Does the Third Country have an R&D strategy? What are the main policy priorities? How about links with other policies? What are major trends?

- **Cooperation between Member States/Associated Countries and Third Countries both at bilateral and Community level**

What kinds of policy approaches to R&D cooperation exist (or are in the process of being established)? How does the implementation look like? What are major trends? What are specific obstacles (framework conditions) in a respective Third Country that need to be overcome for effective cooperation? Is there good cooperation practice which can be identified?

- **Cooperation among Third Countries, especially with major competitors of the EU**

What kinds of S&T cooperation and instruments exist between prioritised Third Countries? (Here, the main interest lies in analysing certain cooperation constellations with major competitors of Europe such as the US, Japan, Russia, China or India.) What are the underlying strategies, objectives and instruments applied? Are there success stories? What are lessons learnt? What are major trends?

- **National internationalisation strategies in R&D**

Have Member States and Associated Countries formulated specific national strategies dealing with the internationalisation of R&D? What are the main policy objectives and instruments? What are major trends?

2.2. Increasing the impact of cooperation: Joint or coordinated policy measures of Member States, Associated Countries and the European Commission

Addressing the vision of a common ERA and acknowledging the importance of its openness to the world, the CREST OMC Working Group has taken note in its conclusions of the first analytical report *'that transnational (policy) coordination of Member States and Associated States towards Third Countries in the field of S&T has already been practiced and that there is a clear tendency to further enhance transnational coordination. In general, transnational coordination is perceived as a means to strengthen and to add critical mass to national efforts, to overcome segmentation of singular activities, to avoid duplication of efforts and to increase the impact of all respective measures.'*⁽¹⁶⁾

The Commission's Communication on a Strategic European Framework for International S&T Cooperation stresses that Member States and the Community need to work closer together in partnership. The Communication acknowledges that *'Member States and the EC need to define together their priority areas for research with third countries in order to draw most benefit from coordinated initiatives and actions.'*⁽¹⁷⁾

Along that line dedicated approaches to joint or coordinated policy measures towards Third Countries are presented in the following two subsections. They are supposed to add value in terms of effectiveness or efficiency to individual national or bilateral approaches and to overcome existing barriers for international cooperation with Third Countries. Usually those approaches are linked to positive experience, which is gained from already existing examples of coordination activities among Member States, Associated Countries and to some extent Third Countries on a smaller scale, which are given as a reference.

Again it is underlined that any coordination activity should respect the principle of 'variable geometries' where interested Member States and Associated Countries join the respective measure based on their individual interest. The OMC Working Group recommends paying particular attention to the coordination of Member States'/Associated Countries' activities towards the Neighbourhood Region.

The policy coordination measures are divided into those driven either primarily on the basis of existing policy instruments at national level (i.e. Member States or Associated Countries) and those which require a strong coordination of Member States'/Associated Countries' activities with activities of the European Commission.

⁽¹⁶⁾ Crest conclusions of 7 December 2007 'Internationalisation of R&D – Facing the Challenge of Globalisation: Approaches to a Proactive International Policy in S&T'.

⁽¹⁷⁾ Communication from the Commission to the Council and the European Parliament: A strategic European Framework for international science and technology cooperation, 24 September 2008, COM (2008) 588 final, p. 6. http://ec.europa.eu/research/press/2008/pdf/com_2008_588_en.pdf

2.2.1. Joint or coordinated measures building on Member States'/Associated Countries' policy instruments

- *Coordinating funding instruments for international cooperation*

The introduction of advanced joint funding instruments beyond traditional mobility programmes, being driven by the interest of the participating countries, is an example for the efficient promotion of research cooperation between Member States, Associated Countries and Third Countries. This process is based on increasingly integrating international cooperation schemes in national programme planning and implementation.

The advantage of such joint instruments is that they are highly flexible in particular in terms of participating programme owners, funding schemes, thematic priorities and administrative procedures and can be adapted to recent policy needs almost anytime.

There are a number of different options such as coordinated calls, joint calls or even joint programmes to be agreed upon by programme owners in interested Member States, Associated Countries and Third Countries.

One successful example for joint research programmes is the IBEROEKA initiative in the context of the Latin-American Programme of Science and Technology for Development (Ciencia y Tecnología para el Desarrollo, CYTED). Other examples include bilateral funding schemes between France and India (Indo-French Centre for the Promotion of Advanced Research) as well as between Germany and India or Russia (in terms of the Indo-German Science Centre implementing joint calls in dedicated areas of applied sciences or joint calls of the International Bureau of the German Federal Ministry of Education and Research with the Russian Fund for Assistance to Small Innovative Enterprises). For the integration of international cooperation in cooperation between a group of countries, the Nordic Cooperation (including Denmark, Finland, Iceland, Norway and Sweden) organised through the Nordic Council of Ministers may serve as a basis for exchange of experiences and good practice with the EU. Following a reorganisation of the Nordic cooperation in research and innovation and the launch of the vision of a Nordic Research and Innovation Area (NORIA) in 2005, many of the same elements as in the EU have been emphasized: opening up of national programmes, programme cooperation through NORIA-nets and institutional development, including "Joint Programming" in energy, climate and environmental research. The initiatives also include cooperation with Third Countries. For details see Annex 2.2.

The process of coordinating funding activities is supported through the established mechanism of ERA-NETs, which was introduced under the 6th EU RTD Framework Programme and more systematically applied to international cooperation with Third Countries under the current 7th EU RTD Framework Programme.

Experiences are also gained from the implementation of coordinated calls with Third Countries such as Russia and India within the EU RTD Framework Programme.

One example for an intergovernmental initiative of a considerable number of European countries is EUREKA which supports the competitiveness of European companies through international collaboration, in creating links and networks of innovation. EUREKA was created in 1985 and nowadays counts 38 full members.

Along the line of the CREST conclusion of 7 December 2007 to '*analyse the interest of Member States/Associated States to establish a joint programme management institution for implementing multilateral funding activities targeting Third Countries*', the OMC Working Group discussed the delivering of professional management services as one option for increasing quality and efficiency of the administration of joint funding schemes towards or with Third Countries. This issue has a particular relevance in the context of the present debate on 'Joint programming'.

As a conclusion, the OMC Working Group proposes to analyse the outcome of existing coordinated or joint funding schemes with Third Countries and to prepare a common voluntary guideline for trans-national funding instruments. Here, a respective recent guide of the Ger-

man Federal Ministry of Education and Research for its participation in trans-national funding schemes could be considered as an example, although formulated on the basis of German legislation and funding rules ⁽¹⁸⁾. Close cooperation with the 'ERANET Learning Platform' should be foreseen.

In addition, the OMC Working Group recommends to CREST to develop a common position on the general approach towards efficient management structures for multilateral funding activities targeting Third Countries in view of the present debate on 'Joint programming' and the upcoming discussion on ERA governance.

- ***Establishing joint international S&T infrastructures and institutions***

The joint planning, establishment, running and financing of S&T infrastructures provides the ground for efficient international research cooperation on a long-term basis through sharing knowledge, efforts and risks. This idea is in line with the European ESFRI process on establishing strategic research infrastructures and with the recent discussion driven by G8 and OECD on a global research agenda involving most prominently the issue of S&T infrastructure. The same is true for joint research institutions. Industrialised Third Countries like the USA or Japan and emerging economies like Russia, China and India as well as neighbourhood countries are considered as international partners for large scale investments in S&T infrastructures.

Examples are the Otto-Schmidt Laboratory (OSL) on Arctic and Antarctic Research in St. Petersburg, a joint infrastructure operated by the German Alfred-Wegener-Institute for Marine and Polar Research in Bremerhaven, the French-Italian Concordia Station in the Antarctic and the Russian Arctic and Antarctic Research Institute in St. Petersburg and the development by Norway of Svalbard in the High Arctic area as an international research platform for research on climate change, marine research and the interaction between the sun and the earth. In the latter, already more than ten nations including China, India and Japan are participating. For details see Annex 2.3.

The most recent negotiations with international partners on large scale equipments like the free electron laser XFEL and the heavy ion collider FAIR ⁽¹⁹⁾ demonstrate the need for developing structural and legal standards for joint installations and respective institutions.

As a conclusion, the OMC Working Group proposes to study present experiences and to develop common guidelines for the establishment of international S&T infrastructures and institutions. The OECD with its Global Science Forum and the Committee on Science and Technology Policy is considered an appropriate umbrella for such a discussion. Here, the EU should aim at speaking with one voice. The recent proposal for a Council regulation on a European research infrastructure of July 2008 as well as the Communication on a Strategic European Framework for International S&T Cooperation of September 2008 provide a fair ground for discussion.

- ***Advancing the policy dialogue between Member States and Associated Countries on internationalisation of S&T***

A dialogue of policy makers allows exchanging information and practical experiences to identify common interest and to agree upon joint activities. Along that line such a policy dialogue would contribute to developing the international dimension of the ERA, through a growing mutual understanding of each others internationalisation policies and through developing joint approaches of Member States and Associated Countries.

An example for a joint working group of two Member States is the Joint German-French Working Group on cooperation with Third Countries that met at ministerial level in 2004 and 2005. The work of the Working Group led to the organisation of a joint workshop and the

⁽¹⁸⁾ Guide for the participation of the BMBF in the preparation and implementation of transnational calls for proposals, German Federal Ministry of Education and Research, 2008.

⁽¹⁹⁾ For more information on XFEL see: <http://xfel.desy.de>, for FAIR see: <http://www.gsi.de/fair>.

formulation of conclusions and generally stimulated joint activities of German and French science organisations. For details see Annex 2.4.

As a conclusion, the OMC Working Group proposes to widen existing schemes of bi- and multilateral policy dialogue among Member States and Associated Countries systematically in favour of international cooperation policies. Here, flexible formats should be envisaged and the principle of variable geometry should be applied starting from bilateral dialogue schemes. Dedicated tools to promote dialogue are bilateral, trilateral or multilateral working groups or the organisation of dedicated joint conferences and workshops at the level of policy makers.

2.2.2. Coordination of policy measures of Member States with activities of the European Commission

- ***Ensuring regular strategic discussions of the international dimension of the ERA between Member States, Associated Countries and the European Community***

In the context of an advanced coordination of Member States', Associated Countries' and Community activities the OMC Working Group welcomes the CREST conclusion of 7 December 2007 to '*setting-up a strategy forum on international cooperation with high-level representatives of the Member States, Associated Countries and the European Commission in an appropriate form (i.e. by CREST) for developing, implementing and monitoring the international dimension of the ERA.*' The Communication on a Strategic European Framework states that it is essential that '*the Council identifies the appropriate institutional settings for ensuring the effective implementation of the strategic European framework for international S&T cooperation.*'⁽²⁰⁾

- ***Providing an optimum framework for S&T cooperation with Third Countries through Member States' and European Community's S&T agreements***

International S&T agreements provide a legal basis for research cooperation and policy dialogue. The agreements are in general based on the principles of equal partnership, common interest and mutual benefit. They usually define the scope and instruments for cooperation, the general framework and the establishment of appropriate steering structures. In addition, issues like the mutual access to each others national research programmes might be agreed upon through S&T agreements.

Since 1998 the EC has entered into S&T agreements with altogether 17 Third Countries⁽²¹⁾. Cooperation at national level is also promoted through numerous agreements concluded between individual Member States and Third Countries. As shown in a questionnaire survey implemented by the OMC Working Group, a high percentage of Member States and Associated Countries have signed S&T agreements with Third Countries. The BRIC countries (Brazil, Russia, India and China) are the most important target countries for bilateral S&T agreements, but this is also strongly dependent on existing historical, cultural and political ties. However, it has to be acknowledged that it is not always clear whether an existing agreement can be considered as 'active'.⁽²²⁾ Moreover, cooperation agreements are in many countries rather concluded at institutional level than governmental/ministerial level.

As a conclusion, the OMC Working Group proposes that Member States and the European Commission first analyse possible synergies of joint cooperation towards Third Countries before agreeing on a strategic approach and possibly negotiating S&T agreements at European level (see the following bullet point). In addition, it is suggested to analyse possible synergies

⁽²⁰⁾ Communication from the Commission to the Council and the European Parliament: A strategic European Framework for international science and technology cooperation, 24 September 2008, COM (2008) 588 final, p. 14. http://ec.europa.eu/research/press/2008/pdf/com_2008_588_en.pdf

⁽²¹⁾ Argentina, Australia, Brazil, Canada, Chile, China, Egypt, India, Korea, Mexico, Morocco, New Zealand, Russia, South Africa, Tunisia, Ukraine and the United States of America. The agreement with Jordan is currently in the finalisation stage; an agreement with Japan is under negotiation.

⁽²²⁾ 'Active' in this respect means that activities which were planned under the agreement are also carried out.

between agreements at national and Community level. There might be room for increasing the efficiency of the agreements by providing an umbrella for S&T cooperation of Member States with priority Third Countries through Community agreements. More specifically, it is proposed to analyse options for providing a general legal framework including issues such as reciprocity⁽²³⁾, visa regimes, working permissions and social security for each others scientists, exchange of scientific samples, cross-boarder access to research sites and transfer of scientific equipment through mixed agreements of the Community and its Member States such as partnership and cooperation agreements (PCA) or the Community S&T agreements. Due to the fact that mixed agreements need to be ratified at national level by each individual Member State, the ratification of these agreements is in general a long-lasting process. It is therefore proposed to look for a “lighter”, more flexible mechanism to simplify administrative procedures. Agreements between individual Member States and Third Countries in turn could focus on dedicated issues such as bilateral priorities and specific cooperation instruments.

- ***Coordination of activities to plan and implement strategic partnerships and regional approaches***

Strategic partnerships between the European Union and dedicated Third Countries (e.g. Russia, China, India) or regional organisations (e.g. African Union, ASEAN, MERCOSUR, Gulf Cooperation Council) are considered an instrument of particular choice for placing the EU as privileged partner. Since most S&T activities within the ERA are planned and implemented by the Member States, a strong involvement of national bilateral cooperation instruments in the implementation of EU strategies (e.g. the Four Common Spaces with Russia and the joint EU-Africa Strategy) targeted at individual Third Countries or regions seems to be most appropriate. In addition, it has to be acknowledged that national or bilateral instruments might offer more flexibility than Community instruments, e.g. as regards their thematic scope and their more flexible decision-making processes.

In addition, local science counsellor networks involving EC delegations and Member States'/Associated Countries' embassies on site in priority Third Countries should be established to allow a continuous exchange of information and experiences and a coordination of activities at national and Community level. It is proposed that those networks are to be moderated by the EC science counsellor, whenever one is established in the respective Third Country. Member States' ministries responsible for foreign affairs need to be made aware of this necessity.

- ***Promotion of the ERA as attractive S&T location***

Joint marketing of European R&D can increase the awareness of excellent European research in the world. The idea behind is to promote the critical mass of the European research potential in terms of quality and quantity of human potential, networks of institutions and S&T infrastructure in the world. In addition, the advantages of the ERA can be clearly described to researchers and investors and the value of the various Community actions can be presented: Researchers and investors not only gain easy access to European R&D know-how and infrastructures, but also to European lead markets and the EU RTD Framework Programmes. The increasingly clustered and closely interconnected European R&D landscape makes it easy for interested parties from Third Countries to address not only one competent partner, but a network of specialists with complementary expertise.

By means of joint marketing activities for the ERA, Member States will be able to further strengthen international S&T cooperation with partners outside the ERA, to win young researchers and experienced experts worldwide for joint R&D activities and finally to attract potent international investors to European markets.

As a conclusion, the OMC Working Group proposes to undertake a coordinated effort of interested Member States, Associated Countries and the European Commission to develop and

⁽²³⁾ The term ‘reciprocity’ refers to the opening of Third Countries’ programmes as response to the opening of the EU RTD Framework Programme to Third Countries.

implement a marketing concept for the ERA identifying the most interesting target countries and suggesting the most adequate marketing measures and instruments. Dedicated Community instruments (for example of Coordination and Support Activity type) might be applied to support joint marketing activities of interested Member States and Associated Countries in Third Countries. The European Commission could support the marketing of the ERA through arranging a marketing framework including dedicated campaigns abroad.

2.3. Learning lessons for future policy making: Assessment and evaluation of S&T cooperation

In its first analytical report, the CREST OMC Working Group has already proposed to *‘develop a methodology and establish an evaluation system for policy measures towards the internationalisation of R&D covering ex-ante evaluation, monitoring and impact assessment. Here, appropriate quantitative and qualitative indicators need to be developed. A European approach could be considered to allow benchmarking of national internationalisation performance.’* ⁽²⁴⁾

In the CREST questionnaire of the first phase of the OMC Working Group, it was found that 13 (Austria, Cyprus, Czech Republic, Finland, France, Germany, Greece, Netherlands, Norway, Romania, Spain, Turkey and United Kingdom) of the 22 responding countries ⁽²⁵⁾ confirmed that they monitor and/or evaluate the implementation of national policy measures supporting the internationalisation of S&T. Of those countries that did not monitor or evaluate, all but two stated that they planned to establish such activities.

However, it also became clear that usually the evaluation is focussed on the intensity of international cooperation within dedicated programmes rather than on the impact of specific policy measures. Among the most frequent indicators are the number of participants in collaborative projects, co-publications and – in the case of international programmes – national returns.

It seems that up-to-date reliable and comparable indicators for an impact assessment of policy measures addressing internationalisation of R&D are rarely applied. However, at the same time it is evident that assessment and evaluation are important parts of the policy cycle because they may help to increase the effectiveness and efficiency of policy measures.

As a conclusion, the OMC Working Group proposes to increase the efforts at Community level to identify a set of quantitative and qualitative indicators for an impact assessment of policy measures. They should be oriented towards common S&T policy objectives following scientific, economic and other interests in order to ensure comparability.

Indicators could cover:

- the scientific impact such as
 - newly generated knowledge reflected in (joint) publications including their citations,
 - synergies/financial savings through the sharing of resources and risks,
 - the intensity of joint participation in international S&T programmes;
- the economic impact such as
 - effects like (joint) patenting and respective licensing,
 - spin-offs like creating new businesses,
 - earnings from contract research delivered to institutions in Third Countries or the attraction of Third Countries’ direct investments by transnational innovation networks;

⁽²⁴⁾ CREST OMC Working Group on ‘Internationalisation of R&D - Facing the Challenge of Globalisation: Approaches to a Proactive International Policy in S&T’: Analytical Report ‘Policy Approaches towards S&T Cooperation with Third Countries’, December 2007, p. 36.

⁽²⁵⁾ The 22 countries which were covered in the first analytical report are: Austria, Belgium, Czech Republic, Cyprus, Denmark, Germany, Greece, Finland, France, Ireland, Liechtenstein, Lithuania, Malta, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Turkey and United Kingdom.

- and other impacts such as
 - contributions to the realisation of the Millennium Development Goals,
 - effects related to responding to global challenges like the sustainable management of natural resources.

It is acknowledged that the major challenge in impact assessments is related to identifying effects that correlate with the respective impact to the international cooperation dimension. The OMC Working Group proposes to consider a close interaction with the respective units of the OECD dealing with research indicators in order to build on their past and ongoing work and experiences. ⁽²⁶⁾

⁽²⁶⁾ It should be noted that DG Research has commissioned a study about the drivers of international S&T cooperation which will be published in Spring 2009. See also the conference website: <http://www.technopolis-group.com/intdrivers>.

3. Recommendations of the OMC Working Group and next steps to go

3.1. Increasing the effectiveness and efficiency of information gathering on S&T

It is recommended:

- to analyse cost-effective options to systematically expand ERAWATCH in terms of content and Third Countries covered. It should be aimed at consolidating and refining the information gathered and presented including a regular quality check of the information provided. In view of the following recommendations, ERAWATCH could thus become a 'central gateway' for EU-Third Country cooperation in the field of R&D.
- to fully use the potential of linking ERAWATCH to national information sources and other means of information gathering including the units responsible for data collection and analysis within international organisations such as the OECD. Along that line, the ways how Member States and Associated Countries can contribute to a successful implementation of ERAWATCH should be further analysed and discussed. In concrete terms, it is proposed to consider the funding of a network of respective Member States' and Associated Countries' institutions coordinated by the Institute for Prospective Technological Studies at the Joint Research Centre (JRC-IPTS) running ERAWATCH.
- to consider the outcome of relevant projects (INCO-NETs, ERA-NETs, etc.) funded within the EU RTD Framework Programmes and the data collected by international organisations such as the OECD as a rich information source for expanding ERAWATCH. It should be of common interest to include Third Countries' S&T profiles, information on S&T cooperation patterns etc. in ERAWATCH. Building on a variety of past and present coordination and support actions targeting at distinguished partner regions and through integrating their various outcomes, a valuable knowledge base for cooperation with the respective target region could be provided which should be made publicly available through ERAWATCH as 'central gateway'.
- to expand the scope of ERAWATCH to information on and analysis of internationalisation strategies of Member States and Associated Countries in order that these strategies become part of the regular national progress reports on the implementation of the Lisbon strategy.
- to enhance the on-site information gathering in Third Countries through the establishment of science counsellors' networks involving Member States, Associated Countries and the European Commission on a voluntary basis.

Next step

It is suggested to the European Commission - DG Research in cooperation with the JRC-IPTS - to organise a workshop with stakeholders from relevant national institutions, which gather, process and publish information on R&D in Third Countries. Representatives from relevant INCO-NETs and ERA-NETs as well as from international organisations dealing with information gathering on S&T such as the OECD should also participate. At this workshop an integrated concept for systematic, efficient information exchange and cooperation between national and European institutions should be developed. The potential of ERAWATCH as core activity should be discussed in view of the results of the recent evaluation of ERAWATCH and taking into consideration the cost-benefit ratio of such a networking approach.

3.2. Making optimum use of joint or coordinated measures and activities

It is recommended:

- to put particular emphasis on the coordination of activities towards the countries covered by the Neighbourhood Policy.
- to draw common conclusions and recommendations on trans-national funding instruments with Third Countries in terms of a voluntary guideline building on an analysis of the performance and the outcome of previous and ongoing coordinated or joint S&T funding activities of Member States, Associated Countries and Third Countries. Here, national, bilateral and Community funding programmes should be addressed and the experience of ERA-NETs involving public programme owners from Third Countries should be analysed. The analysis should be undertaken in close cooperation with the ‘ERANET Learning Platform’. The need for an institutional setting for implementing joint funding schemes targeting the cooperation with Third Countries and administering respective ‘common pots’ most effectively and efficiently should be reflected in the upcoming discussion on ERA governance and the present debate on ‘Joint programming’ and lessons learnt from coordination instruments such as ERA-Nets.
- to contribute to the establishment of international guidelines for research infrastructures as it is proposed by the G8 as one element of a global research agenda. In this respect the EU should aim at speaking with one voice in international fora – as already proposed in the Commission's Communication on a strategic European framework for international S&T cooperation – such as the OECD's Global Science Forum or the Committee on Science and Technological Policy whenever justified. Here, the European Strategy Forum on Research Infrastructures (ESFRI) should be used as a platform to agree on common positions building on the experiences from implementing the ESFRI roadmap. It is also proposed to analyse options to involve Third Countries in particular countries covered by the Neighbourhood Policy as well as highly industrialised countries and emerging economies in the activities of ESFRI in an appropriate manner.
- to widen existing schemes and structures of dialogues on international cooperation policies among Member States and Associated Countries in variable geometries. Here, flexible formats should be envisaged and dedicated tools should be applied like bilateral, trilateral or multilateral working groups or the organisation of dedicated joint conferences and workshops at the level of policy makers.
- to analyse the potential of international agreements of the EU with partner countries to provide a general framework for international S&T cooperation. Along that line it is proposed to coordinate national and EC S&T agreements in order to ensure complementarities and consistency. With respect to the enforcement of the reciprocity principle ⁽²⁷⁾ it is encouraged to provide reference to this principle in Member States' bilateral agreements with Third Countries.
- to the Member States and the European Commission to reconsider the present procedure for the development and implementation of joint strategies with Third Countries or regions in order to better reflect (common) interests of Member States and consider Member States' contributions to its implementation through Joint Action Plans.
- to establish local science counsellor networks on a voluntary basis as a flexible structure involving EC delegations and Member States'/Associated Countries' embassies on site in priority Third Countries with the aim to monitor and exchange information on activities at national and Community level. Those networks could be moderated by the respective EC science counsellor.

⁽²⁷⁾ The term ‘reciprocity’ refers to the opening of Third Countries’ programmes as response to the opening of the EU RTD Framework Programme to Third Countries.

- to proactively promote the ERA in Third Countries through a coordinated effort of interested Member States, Associated Countries and the European Commission. A marketing concept for the ERA should be developed and jointly implemented.

Next steps

It is suggested to the Member States, the Associated Countries and the European Commission to launch a discussion within ESFRI on a common European position on international guidelines for research infrastructures in order to drive the international debate being part of the global research agenda.

It is suggested to undertake a common effort of Member States, Associated Countries and the European Commission to establish living networks of 'science counsellors' through the respective embassies and EU delegations. It is proposed to start with the BRICS countries to gain experience and to ask the European Commission to moderate the discussions on-site.

It is suggested to foresee a coordination and support action within the international cooperation part of the Specific Programme 'Capacities' to support the coordination of marketing activities of interested Member States and Associated Countries in Third Countries.

3.3. Preparing the ground for reliable and comparable assessment and evaluation of S&T policy measures addressing international cooperation

It is recommended:

- to identify and agree on a reliable set of quantitative and qualitative indicators for an impact assessment of policy measures towards the internationalisation of S&T addressing common S&T policy objectives following scientific, economic and other interests. Later on these indicators might be included in the EUROSTAT S&T statistics as well as in selected publications (e.g. Science, Technology and Innovation in Europe, Key Figures on Science, Technology and Innovation, etc.). The respective activities of the OECD should be taken into account and a closer cooperation should be envisaged.

Next Step

It is suggested to the European Commission to develop potential reliable and comparable indicators for an impact assessment of policy measures towards the internationalisation of S&T. The results of the tender 'Drivers for International Collaboration in Research Policy' should be taken into account. Respective tools for data collection should be proposed as well. On that basis deliberations should be launched through CREST.

Annex

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2. Practice examples

The following practice examples were collected by the members of the CREST OMC Working Group. They reflect some of the existing good practice but do by no means constitute an exhaustive list and are listed on a random basis.

2.1. Information gathering on S&T

France

The mission of the **Observatoire des Sciences et des Techniques** or OST (<http://www.obs-ost.fr>) is to:

- conceive and produce quantitative indicators relevant to scientific, technological, and innovation activities and interpret them in terms of positioning in France, Europe and the world;
- develop and maintain a database;
- carry out studies;
- publish, disseminate and apply the indicators produced;
- advance the state of knowledge of methodologies of indicator production and application;
- participate in training and education efforts;
- participate in European and international initiatives in its field.

OST is an inter-institutional platform founded and overseen by the main institutional actors of the French research system. It was established in 1990 as a Public Interest Group. Members are several ministries (for higher education and research, defence, industry, infrastructure and foreign affairs), the Atomic Energy Commission (CEA), CIRAD (agriculture and development), CNES (space studies), CNRS (scientific research), INRA (agronomic research), INSERM (biomedicine), IRD (research for development) and the National Association for Research and Technology (ANRT). Relevant publications are the biennial 'OST Report on Science and Technology Indicators' (2006 edition available online) and the 'CURIE+ RESEARCH' leaflets (limited access).

United Kingdom

The **Science and Innovation Network** or SIN (<http://www.fco.gov.uk/en/fco-in-action/global-network/science>) was established in 2000 in response to the growing importance of science, technology and innovation. There are dedicated staff in 39 missions in 24 countries and territories. SIN is coordinated by the Science and Innovation Group in the Foreign and Commonwealth Office in London, in collaboration with the Government Office for Science and the Government's Chief Scientific Adviser, Professor John Beddington.

The Science and Innovation Network has four objectives:

- facilitating collaboration between UK universities and research laboratories and public and private-sector counterparts abroad; working to increase access to foreign funding for UK researchers; bilateral scientific workshops, conferences and other networking activities;
- raising awareness of the UK as a global leader in science and innovation; providing expert advice and leadership in support of R&D investment projects; working with UK Trade and Investment colleagues to help technology-intensive UK-based companies penetrate the supply chains of multi-national enterprises and global markets; providing intelligence to UK innovation networks on overseas science and technology advances; helping UK companies to access and benchmark overseas technologies;
- gathering and disseminating best practice in science and innovation policy for example how money is spent on S&I; developing international frameworks in breakthrough technologies such as stem cell research; promoting UK excellence in science with key international decision-makers;
- promoting the use of science and innovation for evidence based policy-making covering the range of the UK's international priorities, for example how to respond to climate change, poverty, infectious diseases, technologies to support counter-terrorism, new energy technologies to increase climate and energy security, innovation to boost EU competitiveness and support the Lisbon Agenda; using science and innovation to contribute to the UK's wider bilateral priorities with countries.

Germany

The internet portal **Kooperation international** (<http://www.kooperation-international.de>) is

- a guide for international cooperation in education and research and a communication platform for those seeking information and cooperation in Germany and abroad;
- a contribution to promoting the transboundary networking of research and educational establishments and to stimulating cooperation;
- an instrument for linking German governmental bodies, science, intermediary and industrial organisations concerned with international cooperation in research and education.

The internet portal offers research-related information on more than 50 countries (research projects, calendar of events, news channel, etc.), 35 country portraits with extensive information on research and education and a growing number (currently 15) of elaborate country reports (in print and as PDF). The information is collected by the desk officers of the International Bureau of the German Federal Ministry of Education and Research (BMBF) responsible for the respective countries, in close cooperation with the relevant divisions in the BMBF and the science attachés at German embassies. In addition, a newsletter (ITB Info-Service) with information on strategic developments in R&D in important partner countries is published on a monthly basis via the internet portal. On behalf of BMBF, the portal is jointly operated by the International Bureau of the BMBF and VDI Technology Centre.

European Commission

ERAWATCH (<http://cordis.europa.eu/erawatch/index.cfm>) has been created to support policy making in the research field in Europe. Its objective is to provide knowledge and a better understanding of national and regional research systems and of the environment in which they operate.

The ERAWATCH research inventory service contains a comprehensive and coherent set of information on the policy context, the structure and evolution of the R&D systems in all the Member States and Associated Countries as well as in selected Third Countries such as the USA, Japan, China, Australia, Brazil, Canada, India, Republic of Korea and New Zealand. The inventory is built on the systematic collection and classification of five main categories of information at national level: country research profiles, research policy documents, research programmes, organisations and information and data sources. In addition, the ERAWATCH Intelligence service provides regular and ongoing analyses of issues relevant to research policy-making.

ERAWATCH is a long-term initiative jointly carried out by the European Commission's Directorate-General for Research and the Institute for Prospective Technological Studies at the Joint Research Centre (JRC-IPTS) based in Seville. The ERAWATCH online service has been developed in collaboration with CORDIS. The ERAWATCH inventory service is built with the support of the ERAWATCH Network (<http://www.erawatch-network.eu>) which operates since early 2005 and is composed of national nodes in each of the Member States and beyond, gathering and analysing information relevant to research policy-making.

2.2. Transnational (bi- or multilateral) funding instruments

Indo-French Centre for the Promotion of Advanced Research

The Centre Franco-Indien pour la Promotion de la Recherche Avancée (CEFIPRA) is a bilateral programme of scientific cooperation between India and France under the Indian Department of Science and Technology and the French Ministry of Foreign Affairs. Its objectives are:

- the promotion of cooperation in advanced areas of fundamental and applied scientific research between India and France;
- the development of cooperation through identification of scientists and scientific institutions of the two countries likely to cooperate in a profitable way;
- the provision of assistance in the form of grants and equipment as well as other appropriate means of support for the pursuit of advanced research;
- the organisation of workshops/seminars and other types of fora on topics of mutual interest.

Indo-German Science and Technology Centre

As part of the Indo-German Science and Technology Centre (IGSTC) a new bilateral joint funding programme for Indo-German S&T Cooperation was established in 2008 (signature of a Memorandum of Understanding in 2007). Priority will be given to science and engineering research in cooperation between academia and industry in German and India (2+2 Projects). The idea is to fund joint 'flag ship projects' with high impact and visibility. Each side will provide up to 2 Mio. € p.a. (20 Mio. € in total, 2008-2012).

Multidisciplinary Bio

Multidisciplinary Bio is a programme for the funding of projects that entail collaboration between Swedish and Japanese researchers in the field of multidisciplinary bio. This field is defined as multidisciplinary research that combines life sciences with other scientific fields such as engineering, computer science, mathematics, physics and chemistry. The aim of the programme is to strengthen collaboration between Sweden and Japan in this field. The programme involves collaboration between VINNOVA, the Swedish Foundation for Strategic Research and Japan Science and Technology (JST) in Japan. Two calls have been issued under the programme. The most recent call period ended in February 2006; there are plans to issue one additional call.

German-Russian funding scheme for applied industry-oriented research and the cooperation of innovative SMEs

In December 2007, the International Bureau of the BMBF and the Russian Foundation for the Assistance of Small Innovative Enterprises (FASIE) have signed a Memorandum of Understanding to conduct a joint funding programme targeting German and Russian research intensive small and medium-sized enterprises. The aim of the programme is the strengthening of German-Russian cooperation in applied, industry-oriented research and the development of innovative technologies.

The call was published in spring 2008 in both Germany and Russia and has attracted a lot of interest. For this reason, more projects than initially planned will be funded (13 overall). The projects will start in autumn 2008 and will run for a maximum of 24 months. They will each be funded with a maximum sum of 50.000 Euro per side. Due to the overall positive response more rounds of programme calls are planned.

The areas that will be funded are: biotechnology, health research, medical technology, nanotechnologies, information and communication technologies, new materials and production technologies, technologies for resources, energy efficiency and sustainable environmental technologies and optical technologies.

IBEROEKA / CYTED

Iberoeka is an initiative from Spain, Portugal and their Latin-American partners in the context of the Latin-American Programme of Science and Technology for Development (Ciencia y Tecnología para el Desarrollo, CYTED).

The CYTED programme is a scheme created by a multilateral agreement between 22 countries (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Spain, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Portugal, Uruguay and Venezuela). It was first launched in 1984, and since then has been performing its activities. The first open call for proposals following a competitive scheme was launched in 2005. The first phase of the programme until year 2004 was developed following a top-down scheme. After the revision of the programme in year 1999 a new structure for funding activities started in 2004, including public calls and a peer review system for supporting the evaluation and selection process.

The activities include the funding of thematic networks for mobility and training, co-ordinated actions, consortium projects (focused on obtaining a product or service interesting for Latin-America) and the IBEROEKA Programme created in 1991 to increase industrial competitiveness promoting innovative collaborative projects between companies and research centres in the field of scientific research, technological development and innovation (similar to the European EUREKA programme).

ASEA-UNINET

ASEA-UNINET (<http://www.uibk.ac.at/asea-uninet>) started as a bilateral activity between Austrian and Thai universities and has since developed into one of the most successful European-Asian university networks, encompassing universities from 16 countries. Officially, ASEA-UNINET was founded in 1994 by the Universities of Innsbruck and Vienna, the University of Natural Resources and Applied Life Sciences (Austria), the universities of Chulalongkorn, Mahidol, Chiang Mai and Kasetsart (Thailand) and Gadjah Mada University in Yogyakarta (Indonesia).

ASEA-UNINET's main advantage is its non-bureaucratic approach, self-organisation and intensive people to people contacts via joint research projects covering natural sciences, engineering, economics, social sciences, health and humanities, short-term staff and student exchanges, graduate and postgraduate programmes as well as specialised training courses.

Funding is generally provided for by the ministries responsible for university affairs from participating countries that now encompass 16 countries: Nine EU member states (Austria, Czech Republic, Denmark, Germany, Greece, Italy, Netherlands, Spain, United Kingdom), Russia, five Southeast Asian countries (Indonesia, Malaysia, Philippines, Thailand, Vietnam) and Pakistan as an associate member. Due to the well-functioning infrastructure of the network, ASEA-UNINET now also provides support to industry, SMEs as well as for city and regional councils seeking partnerships with their counterparts either in Europe or in Southeast Asia.

Nordic cooperation

Nordic cooperation is organised through the Nordic Council of Ministers (Denmark, Finland, Iceland, Norway and Sweden). Cooperation in education and research has been an important pillar in this cooperation since it was founded in 1971. The central operative instrument is NordForsk (<http://www.nordforsk.org>), established in 2005 (after reorganisation of former instruments). The main tasks are policy advice, funding and coordination. The Nordic cooperation is firmly rooted in political decision-making and has a strong bottom-up component. Coordination is based on national priorities and active involvement of national funding agencies in R&D.

The R&D cooperation organised under the Nordic Research and Innovation Area, NORIA only has dedicated instruments for international R&D cooperation targeting the Baltic countries and Russia. The Nordic Council of Ministers is now establishing a joint Nordic-Russian programme to build knowledge and promote network-building between the Nordic countries and North-West Russia.

International cooperation is in addition an integrated part of important initiatives taken at the Nordic level:

- The Nordic Centre of Excellence (NCoE) Programme run by NordForsk is aiming at increasing the quality, efficiency, competitiveness and visibility of Nordic research through enhanced collaboration between Nordic countries. No specific Third Countries are targeted, but co-Nordic support will be allocated to full fellowships for visiting professors and for post docs from other countries.
- The NORIA-net initiative aims at enhancing co-operation between Nordic national research and innovation financiers and managers. The cooperation should include practical initiatives leading to an opening of national research funding opportunities, develop strategies for joint calls, create synergies and disseminate best practices and develop joint priorities on research policy issues. The intention is to encourage collaboration between the Nordic countries as well as cooperation with Third Countries like China, India and the Baltic states. There is one Noria-net on Nordic-Asian Research Funding Cooperation.
- The Nordic countries will invest in a joint research programme in climate, energy and environmental research for the next five years. This new 'Top Research Initiative' will include funding agencies from all the Nordic countries. The aim is to make the region a world leader in environmental technology and climate research. The initiative is also expected to serve as a platform for further international collaboration.

- Another example of Nordic cooperation that is not a formal part of the Nordic cooperation within the framework of the Nordic Council of Ministers, is the Nordic Centre that has been established at Fudan University in Shanghai. The Centre involves 23 Nordic universities with both researchers and students, as well as business interests.

EUREKA

EUREKA (<http://www.eureka.be>) aims to enhance European competitiveness through its support to businesses, research centres and universities carrying out pan-European projects to develop innovative products, processes and services. EUREKA was created as an intergovernmental initiative in 1985 and nowadays counts 38 full members. Through its flexible and decentralised network, EUREKA offers project partners access to a wealth of knowledge, skills and expertise across Europe and facilitates access to national public and private funding schemes.

2.3. Joint S&T infrastructures

Svalbard international research platform

The Norwegian government has given priority to the High North as a strategic area. It is in this regard an important aim is to consolidate and develop Svalbard as an international platform for research and higher education. Svalbard is the most accessible High Arctic area in the world with a broad range of research infrastructure and unique natural conditions for research, including research on climate change (sea currents, biodiversity and CO₂-/ozon-measurement), marine research and interaction between the sun and the earth. Already, more than ten nations have research stations at Svalbard, including several EU-countries, China, India and Japan, and researchers from around the world are represented at Svalbard. One focal point for research activities is the University Centre in Svalbard (UNIS). A number of projects have taken place in 6th EU RTD Framework Programme with relevance to Svalbard, including in energy, aeronautics, global change and ecosystems, as well as in infrastructures. Norway aims at developing Svalbard as a research platform even further through the ESFRI-process.

Otto-Schmidt Laboratory on Arctic and Antarctic Research in St. Petersburg

A joint infrastructure was established to implement joint research projects based on a cooperation agreement between the Alfred-Wegener-Institute for Marine and Polar Research in Bremerhaven and the Arctic and Antarctic Research Institute in St. Petersburg. Linked to this joint laboratory joint training courses are regularly arranged for students from Russia and Germany (POMOR). Apart from political support, the activities (joint projects and POMOR) receive funding from German Federal Programmes. In addition, in 2006/07 BMBF funded a study on the legal basis for future activities of OSR in Russia.

Concordia Station in the Antarctic

The Italian National Research Programme in the Antarctic (PNRA) and the French Polar Institute (IPEV) signed in 1993 a cooperation agreement for the construction of the Concordia station in the site Dome C in the continental Antarctic Plateau at an altitude of 3233 meters above sea level. The Concordia Station offers unique opportunities for scientific research and is open to the International Scientific Community since 2005.

The research areas are on

- Glaciology e.g. the European Project for Ice Coring in Antarctica (EPICA), supported by the European Union, by the European Science Foundation and by ten individual European countries;
- Atmospheric Sciences as part of the Network for the Detection of Stratospheric Changes;
- Astronomy and Astrophysics - in conjunction with the Joint Australian Centre for Astrophysical Research in Antarctica (JACARA), the Dome C site is being tested in view of future astronomical observations in the visible and infrared ranges;
- Earth Sciences with a seismic observatory at Dome C, to be included in the GEOSCOPE network;
- Human Biology and Medicine related to understanding human adaptation to hostile conditions;
- Remote Sensing for calibrating and validating satellite sensors operating in the visible and the infrared.

2.4. Policy dialogues on Third Country cooperation

Joint German-French Working Group on cooperation with Third Countries
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The Joint German-French Working Group on cooperation with Third Countries was in operation in 2004/05. The Working Group was set up at ministerial level between the French Ministry of Education and Science and German Federal Ministry of Education and Research. Its rationale was to strengthen the framework for joint initiatives of German and French institutions with Third Countries by offering transparency on ongoing and planned activities and exchanging best practices, launching joint innovative initiatives targeting major global challenges in cooperation with Third Countries such as Russia, China or India, and contributing to building the ERA by developing a consistent and coherent cooperation policy with Third Countries based on common interest and mutual benefit.

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This report summarises the results of the work done throughout 2008 by the CREST OMC Working Group on 'Internationalisation of R&D - Facing the Challenge of Globalisation: Approaches to a Proactive International Policy in S&T' with respect to the coordination of policy measures between the Member States, Associated Countries and the European Commission in variable geometries.

Applying the Open Method of Coordination, the Expert Group was established at the beginning of 2007 to take stock of the policies, strategies and measures adopted at national level for R&D cooperation with Third Countries. The Group continued its work in 2008, focussing on the policy approaches and objectives of cooperation in R&D with Russia, India and Brazil.

This report is available online on the webpage: <http://ec.europa.eu/research/iscp/index.cfm?lg=en&pg=initiatives>



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