



## Terms of Reference

# Call for Scientific Evaluators for Benchmarking European, Eastern European and Central Asian Nano-Science/Nano-Technology Research Organisations

<b>Title</b>	<b>Call for Scientific Evaluators for Benchmarking European, Eastern European and Central Asian RTDI Institutions from the field of Nano-Science/Nano-Technology</b>
Work package Lead:	ZSI, ICBSS, PT-DLR
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**Abstract** This is a call for Scientific Evaluators from the field of nano-technologies and/or nano-sciences with profound research management and research strategy analysis capabilities to run a benchmarking exercise of research organisations working in the fields of nano-technology and/or nano-sciences in EU, Eastern European and Central Asian Countries.

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# 1 Introduction

INCO-NET EECA (S&T International Cooperation Network for Eastern European and Central Asian Countries) is an **International Cooperation Network project**, funded under the EU's 7<sup>th</sup> Framework Programme for Research and Technology Development (FP7). Its general objective is to support and enhance the Science and Technology (S&T) policy dialogue between EU Member States (MS)<sup>1</sup>, Associated Countries (AC)<sup>2</sup> to the FP7, and the countries of Eastern Europe and Central Asia (i.e. Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan). In particular the IncoNet EECA project aims at:

- Supporting bi-regional EU – EECA S&T policy dialogue involving stakeholders from policy making, science community and industry.
- Carrying out activities aiming at an increased participation of researchers from EECA countries in FP7.
- Implementing a series of analyses feeding the policy dialogue and increasing its efficiency, monitoring the project's own activities with emphasis on their sustainability and implementing coherent dissemination activities in order to increase its visibility and impact.

The INCO-NET EECA project has started in January 2008 and will last until June 2012. It is implemented by a consortium of 22 organisations.

Detailed information on the project is available at its website:

<http://www.inco-eeca.net/>

Information on INCO.Nets in general is available at the European Commission's webpage:

<http://ec.europa.eu/research/iscp/index.cfm?lg=en&pg=inconet>

**One of the activities of the project, which is directly addressed by these Terms of Reference (ToR) is to organise a Benchmarking exercise of research organisations in EU, Eastern European and Central Asian countries working in the field of nano-sciences and/or nano-technologies. For the implementation of this Benchmarking exercise we are looking for experienced experts from the field of nanotechnologies and/or nano-sciences with profound research management and research strategy analysis capabilities, who will act as scientific evaluators under this Benchmarking exercise.**

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<sup>1</sup> EU member states are: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom

<sup>2</sup> Countries associated to the FP7 are: Albania, Bosnia and Herzegovina, Croatia, Faroe Islands, FYR of Macedonia, Iceland, Israel, Liechtenstein, Montenegro, Norway, Serbia, Switzerland, Turkey (and Moldova as of 1 January 2012)

## 2 Task Description

### *Goals and expected results*

This pilot-benchmarking exercise is based on a voluntarily participation of approx. five comparable RTDI<sup>3</sup> organisations from five countries (tentatively: Armenia, Belarus, Bulgaria, Kazakhstan and Ukraine) which work in the field of nano-sciences and/or –technologies. The focus of this benchmarking exercise is on assessing the research performance of these RTDI organisations along the following three dimensions:

- knowledge generation
- knowledge utilisation and
- knowledge diffusion

Although performance benchmarking in these three dimensions is envisaged, it has to be stated quite clearly that due to the complexity, diversity and variability of RTDI organisations, the specific environments in which they operate and the pilot character of the exercise, the output is expected to provide signs of good practice rather than robust evidence of good performance.

Thus, the idea behind this exercise is to learn from good practices of other comparable RTDI organisations from other countries rather than checking performance accountability.

The already pre-selected group of around five RTDI organisations will be benchmarked on basis of the RECORD methodology (Borsi et al, 2004), which has been developed under the 5<sup>th</sup> European Framework Programme for RTD. This methodology can and has to be adapted to specific circumstances and needs by the Evaluation Team. The RECORD methodology is made available to the evaluators.

The Evaluation Team consists of two external scientific evaluators (addressed by this call) who are professionals in the scientific field under scrutiny and of one external evaluator who is experienced in the benchmarking and evaluation of RTDI organisations in general (a “generalist”). The generalist is an experienced social-scientific researcher whose capacities will be provided by the INCO-NET EECA project.

The scientific evaluators will be made familiar in the RECORD methodology and assisted in the implementation of this benchmarking methodology by the generalist.

The primary objectives of this benchmarking exercise are:

- to identify together with the management of the RTDI organisations under scrutiny the *strengths, weaknesses, opportunities and threats (SWOT)* of each of the voluntarily participating RTDI organisations;
- to collect and analyse data in a systematic way for the purpose of *assessing the performance* of the research organisation under scrutiny in comparison with similar other research organisations which participate in this benchmarking exercise, in order to foster *learning* and *to raise awareness for improvements* at the different research and management levels of the RTDI organisations under scrutiny.

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<sup>3</sup> RTDI = abbr. Research, Technological Development and Innovation

The following secondary objectives can be pursued by the RTDI organisations under scrutiny on a voluntarily basis outside<sup>4</sup> this benchmarking exercise, but based on the results of the benchmarking exercise:

- to possibly establish and implement a future action plan to safeguard favourable positions or to improve the situation where deemed necessary, based on the output of the benchmarking exercise;
- to possibly use data and information obtained in establishing an intellectual capital balance sheet in the future;
- to possibly use the evaluation for image building and public relation.

In the context of this benchmarking approach the *learning dimension* is in the forefront.

### **Methodology**

In order to systematise and structure the learning dimension under this benchmarking exercise, a SWOT approach will be chosen which is based on the RECORD Benchmarking Methodology<sup>5</sup>. The SWOT approach will take into account the performance of the RTDI organisations under scrutiny in terms of (i) knowledge generation, (ii) knowledge utilisation and (iii) knowledge diffusion. For these three dimensions:

- internal strengths and weaknesses (under the control of the RTDI organisations under scrutiny)
- external opportunities and threats (not under the control of RTDI organisations under scrutiny)
- and in-between or so called negotiated factors (these factors can be partially and potentially influenced by the RTDI organisations under scrutiny)

will have to be considered.

The most important *internal factors* which will be taken into consideration under this evaluation in order to establish the SWOT analysis are

- The mission and value system of the RTDI organisation
- Critical mass (size)
- Strategic Research Management
- Good Human Resource management
- Research and innovation output

The most important *negotiated factors* which are taken into consideration under this benchmarking exercise are:

- Mobility (researchers, PhDs ...)
- User involvement
- Public Relations
- Financial Position

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<sup>4</sup> which means, that these secondary objectives must neither be accompanied, supported nor supervised by the Evaluators

<sup>5</sup> Borsi, B., Dévai, K., Papenek, G. and Rush, H. (2004): The RECORD Manual. Benchmarking Innovative Research Organisations in European Accession Countries. European Commission: Brussels

Borsi, B., Dévai, K. and Papanek, G. (2005): The RECORD Experimental Map. Innovative Research Organisations in European Accession Countries. European Commission: Brussels

Schuch, K. and Pejovnik, S. (2009): SWOT Based Evaluation of the Institute of Chemistry of the Cyril and Methodius University Skopje, Deliverable of the SWOT-CHEMISTRY-FOOD project supported under FP7-REGPOT-2008-2, Project no.: 229627

The *external factors* under scrutiny within this SWOT based benchmarking evaluation are

- The transition stage of the RTDI policy in the country under scrutiny
- The transition stage of the “capital market” for financing RTDI
- The (in)dependency from political influence
- The transition stage of the industrial sectors relevant for the RTDI organisation under scrutiny.

For each of these bullet points more detailed categories and indicators are available. If we take – for instance – the bullet point ‘*critical mass*’, a series of issues have to be considered in the benchmarking exercise (see box 1 below).

**box 1: Critical Mass**

Each RTDI organisation needs critical mass to fulfil its objectives in a comprehensive non-subcritical manner. Critical mass is needed in terms of

- Human resources,
- Infrastructure and
- R&D investment.

As regards *human resources* the following indicators will be recorded and assessed:

- Researchers (in headcount numbers and in full time equivalents excluding teaching and general university administration work!) differentiated by skills (e.g. foreign languages; technical competence); by scientific degree (e.g. PhD); by age and by gender;
- Support staff (in headcount numbers and in full time equivalents excluding teaching and general university administration work!).

As regards *infrastructure* the following indicators will be recorded and assessed:

- Scientific infrastructure (labs)
- Technical infrastructure (e.g. internet connectivity)
- Library facilities (incl. access to online resources etc.)

The assessment will be differentiated by scientific orientation (goals) rather than at department level.

As regards *R&D investment* the focus is on the distribution of the budget to cost factors in general and to infrastructure in particular (lab equipment, general facilities, general technical infrastructure, and access to external infrastructure). Since some of the RTDI organisations under scrutiny might be part of a public university which is eventually undergoing a fundamental restructuring process, it is likely that the evaluators will be confronted with scarce data as regards R&D investment figures since there are hardly balance sheets and financial time series data available.

The annexed RECORD methodology (Borsi et al, 2004) provides specifications for all of the above mentioned categories.

In order to fulfil the objectives of this exercise, there are certain data requirements which have to be met:

- Input data (e.g. human resources and material and non-material investments)
- Output data (e.g. publications and citations are not enough but have to be complemented by innovation related indicators)
- Information about organisational framework conditions and systemic RTDI conditions.

The latter information is essential, because framework conditions are supposed to have a high negotiated or external influence on the benchmarked RTDI organisations from the EECA

countries<sup>6</sup>. The RTDI systems of the EECA countries differ, but all of them are under transition and challenged by many internal and external factors. On one hand, these framework factors enable certain corridors of action, but on the other hand they also prevent to pursue certain potential action spaces, but rather create path dependencies, which – like any path dependencies – run danger to become outdated and not suitable anymore to meet new societal and economic demands.

Without any doubt, the collection and translation of data (time series) will necessitate some efforts for the staff of the RTDI organisations under scrutiny and for the evaluators! A quantitative and a qualitative questionnaire will have to be derived from the RECORD methodology in order to collect necessary data and information prior to a visit in situ. Sample templates for such questionnaires will be made available by the INCO-NET EECA project to the Evaluators who can and should adapt them for this benchmarking exercise.

### ***Who will participate?***

1. Around 5 RTDI organisations from different countries in the EU and the EECA region (tentatively: Armenia, Belarus, Bulgaria, Kazakhstan and Ukraine)
2. The management of these RTDI organisations, their scientific and administration staff as well as students with research performing activities (e.g. PhD students) (samples)
3. The evaluators (scientific evaluators and generalist)
4. Staff from the IncoNet EECA project as facilitators

### ***Roles, Tasks and activities to be implemented by the evaluators (scientific evaluators and social-scientific evaluation expert [the ‘generalist’])***

The benchmarking will be organised by three external evaluators who will evaluate all participating RTDI organisations with a standard SWOT based approach. The evaluators will be in the duty to write a comparative benchmarking report and highlight especially good practices which were identified during their field trips to all RTDI organisations which participate in this benchmarking exercise.

All participating RTDI organisations under scrutiny will be invited to provide feedback to the benchmarking report and suggest corrections to factual mistakes.

More specifically, the following tasks and activities are demanded from the evaluators:

- Study of the RECORD Benchmarking Methodology.
- Participation in the Benchmarking Training provided by ZSI one day before the kick-off meeting. Half-day training will be used for the familiarisation of the evaluators to the RECORD methodology.
- Participation in a one day long kick-off meeting in Vienna tentatively between 13<sup>th</sup> and 17<sup>th</sup> February 2012. At his kick-off meeting evaluators and research managers of the selected RTDI organisations will be getting together under the supervision of the INCO-NET EECA project partners. The kick-off should be used for talks between the evaluators and managers of the selected RTDI organisations on the general approach and outline of the SWOT based benchmarking in order to define shared objectives and a shared understanding and responsibilities about the meaning, purpose, scope and size of the evaluation.

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<sup>6</sup> A RTDI institution from a new EU Member State has been added in the group on purpose to show differences and similarities.

- Fine-tuning of the SWOT concept and evaluation methodology by the evaluators.
- Document analysis and literature research concerning RTDI policy in the countries in which the RTDI organisations under scrutiny operate in general and review of documents and materials regarding the RTDI organisations under scrutiny in particular, which should be provided beforehand by the participating RTDI organisations (e.g. former [educational] evaluations; self-evaluation; bibliometric analysis; internal promotion documents, information about scientific programmes etc.).
- Collection and analysis of quantitative data provided by the management of the RTDI organisations under scrutiny based upon the quantitative questionnaire elaborated and distributed by the external evaluators.
- Implementation of the interviews with personnel of the RTDI organisations under scrutiny (with management positions and without) at the location of the RTDI organisations (minimum stay of 3 days at each participating RTDI organisation).
- First draft report on the comparative benchmarking findings based upon the implemented SWOT concept and evaluation methodology.
- Distribution of this draft benchmarking report to the RTDI organisations and the INCO-NET EECA partners for feedback.
- Finalisation of the Benchmarking Report, which includes the take-up of the feedback and corrections of factual misunderstandings received by the RTDI organisations and the INCO-NET EECA partners. The final report also has to include a series of recommendations for each participating RTDI organisation and a description of identified good practices (around 10) for further discussion amongst the participating RTDI organisations.
- Participation at the final meeting (probably in Athens) together with all RTDI organisations and selected INCO-NET EECA partners where the external evaluators have to present the comparative evaluation findings (including the identified good practices). The evaluators have to stimulate and organise exchange and learning between the participating managers of the RTDI organisations.

**The three evaluators are collectively responsible to overview and manage the entire benchmarking process and are in charge for the compilation of the inputs from the participating RTDI organisations and their staff, for consolidation and drafting of the draft and final benchmarking report incl. recommendations and good practice examples.** The evaluators have to take care about confidentiality requirements and treat sensitive issues with discretion. A good communication basis with the RTDI organisations has to be established on such matters.

The evaluators will be assisted with secretariat services by the IncoNet EECA project consortium mainly in organisational and logistic terms (travel arrangements, reimbursement of costs etc.).

### ***Roles, Tasks and activities of the participating RTDI organisations***

Top-management representatives of all participating RTDI organisations (e.g. the scientific director and the business director, if any) will get together twice: firstly at the beginning of the benchmarking exercise at the kick-off-meeting in Vienna in order to get informed about the methodology, to become instructed about the data collection requirements and the logistical needs in order to organise the field trips of the external evaluators (which are a minimum of 3 days at the site of the participating RTDI organisation). At the end, all



participating RTDI organisations will have to comment on the draft benchmarking report and should meet again in a final workshop in Athens. At this workshop the external evaluators will present their findings and stimulate the exchange of good practices, which are deemed necessary for the advancement of (some of) the RTDI organisations under scrutiny.

In agreement with the participating RTDI organisations expedient access to information, data and personnel should be granted to the evaluators. Details should be discussed and clarified at the kick-off meeting in Vienna. In particular, the managers of the participating RTDI organisations have to make available to the evaluators scientific and administration personnel to be confidentially interviewed by them on their requests. Moreover, the RTDI organisations are obliged to collect on request of the evaluators statistical data which are needed for the benchmarking exercise.

### ***Time resources needed from Evaluators***

Around **40 working days** must be earmarked by every scientific evaluator.

### ***Tentative implementation period***

January 2011 to June 2012.

### ***Tentative Timeline***

Kick-off meeting – tentatively between 13<sup>th</sup> and 17<sup>th</sup> February 2012 (in Vienna)

Methodology adaptation – February 2012

Collection of data (desk research) – March 2012

Field trips to the 5 RTDI organisations – March/April 2012

Drafting of the report – first half of May 2012

Finalisation of the report – end of May 2012

Final meeting to present results – first half of June 2012 (in Athens)

### ***Funding and Reimbursement***

The pilot exercise will be funded exclusively through the INCO-NET EECA project<sup>7</sup>.

The maximum budget for each single evaluator for the above described tasks to be delivered (including reports etc.) is up to € 30,000. This maximum budget includes the consultancy fee, travel costs and daily allowances for the travels as outlined above. At least seven trips are foreseen:

- participation at the kick-off in Vienna (February 2012, 1.5 days),
- benchmarking trips to 5 RTDI organisations, possibly combined (March/April 2012)
- final presentation meeting in Athens (June 2012, 2 days).

Delays are not acceptable.

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<sup>7</sup> A formal decision of the European Commission for launching the exercise is pending.

### 3 Selection and contracting procedure

The Scientific Evaluator will be selected in a call for experts procedure. These Terms of Reference will be published at the INCO-NET EECA website, the incrEAST and other websites and distributed by INCO-NET EECA consortium partners.

#### *Required qualification/skills/experiences of the scientific evaluators*

- The *scientific evaluator* should possess profound research management and research strategy analysis capabilities in the fields of nano-technology and/or nano-sciences (minimum of 10 years of experience evidenced by the CV, and comprehensive list of projects, [research] management positions and publications in the field of nano-technology and/or nano-sciences).
- Moreover, s/he has to be an excellent process manager (minimum of 10 years of experience evidenced by the CV and references [e.g. similar project references if any]) and ready to engage hands-on in the preparation and organisation of the visits, feedback rounds and the drafting of the benchmarking report.
- The scientific evaluator must make him/herself familiar with the RTDI organisations which participate in the benchmarking exercise and with the national STI system of the host countries. S/he must be flexible and ready to travel and to spend a couple of days at location.
- The scientific evaluator has to define the scope of the benchmarking exercise carefully in agreement with the participating RTDI organisations (not too large and not too tightly focused), build on what is available, emphasize that the benchmarking process is not an evaluation but a critical friends approach, employ hands-off facilitation with a less directive approach which encourages participants to manage and develop the discussions, deal with language concerns, promote sensitive questioning and active listening in a gentle, supportive and yet challenging without being threatening way, and manage time well because it is important to have enough time for reflection within the evaluation team!
- The scientific evaluators must be fluent in English (proven by a list of publications). Proficiency of the host country's language skills or of Russian is of advantage.
- The scientific evaluators must not be employed by one of the INCO-NET EECA consortium partners.

#### ***Application***

An application for the position of the scientific evaluators from the field of nano-technologies and/or nano-sciences shall include the following documents:

- a cover letter/e-mail with short description of the motivation;
- a CV, highlighting relevant experience and reference projects;
- a short implementation plan (3 A4 pages), which shall sketch out the methods and work to be performed, including an assessment of the risks of the benchmarking exercise;
- a cost plan specifying the allocation of consultancy days foreseen for the implementation of the benchmarking tasks.

### ***Submission of application***

Please submit the required documents for the application as *Scientific Evaluator from the field of nano-technologies and/or nano-sciences* per e-mail to:

Centre for Social Innovation (ZSI), Austria

c/o Klaus Schuch

e-mail: [schuch@zsi.at](mailto:schuch@zsi.at)

**Deadline** for the submission of an application is **Monday, 16 January 2012, 17:00 CET (date of entry of the eMail)**.

### ***Selection***

A committee will be convened to select the *scientific evaluators from the field of nano-technologies and/or nano-sciences*. This selection committee will be composed by representatives from the

- International Centre for Black Sea Studies ICBSS (co-ordinator of INCO-NET EECA)
- International Bureau of the Federal Ministry of Education and Research – German Aerospace Center DLR
- Centre for Social Innovation ZSI

Telephone interviews with suitable candidates will be held in January 2012, if deemed necessary.

The Contractor reserves the right not to place any order. Costs for necessary document preparation by the applicants to this call for tender will not be reimbursed. This call for tender is not subject to the conditions of the Austrian Public Procurement Law.

### ***Contracting procedure for external expert***

The applicants and the selected *scientific evaluators from the field of nano-technologies and/or nano-sciences* will be informed until end of January 2012 at the latest on the result of the selection procedure. The contract with the scientific evaluators will be established by the INCO-NET EECA Project shortly after the selection of the experts. As soon as the contract is concluded, the evaluators will get access to data and necessary documents. The benchmarking exercise will be implemented in close contact with ZSI (Austria), ICBSS (Greece) and IB-DLR, (Germany).

The duration of the contracts with the evaluators will last from January 2012 (earliest) until 29 June 2012.