Annamária Inzelt:

Update on the ESF MO Forum on Indicators of Internationalisation

ESF Forum on “Indicators of Internationalisation”
3rd Workshop, Bern, Switzerland 7-8 November 2011
Need much more information to understand the scale, scope and effects of existing international activities in science, its incentives and framework conditions

- Science policies that are navigating the actors
- Funding agencies that are increasingly promoting internationalisation
- Research performing organisations that are acting more and more internationally
Various needs of indicators in cycle of FAs work

- Design programs & projects
- Indicators attached to goals and targets
- Monitoring
- Measuring impact and success
- International comparison

Support policy-making
Indicators have to respond on key questions for assessment purposes:

- Why and to what extent are we investing in international research?
- What are the main characters of internationalization processes?
- What are the expected outcomes of investing in international activities?
- How are the countries differing by their efforts and by their outcomes of internationalisation?
Actors in indicator development

Practioners

1. Producers of data-bank and indicators
2. Users of indicators
3. Experts

Scientific community (ENID Conference)

Participatory process, involving all relevant actors
It has working well in the Forum
# Paris Outcome: Designed Indicators by Dimensions & Rationales

<table>
<thead>
<tr>
<th>Rationales</th>
<th>Critical mass</th>
<th>Complementary</th>
<th>Global coverage</th>
<th>Enlarging innovation networks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resources flows</td>
<td>I.1. % (sum) budget for joint research program</td>
<td>I.1</td>
<td>I.2. % (sum) budget spending abroad</td>
<td>I.3.</td>
</tr>
<tr>
<td>Funding knowledge production</td>
<td>II.1. Nr. of international co-authored papers to total publications of researchers funded by FA (by discipline's)</td>
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<td>II.1.</td>
<td>II.2.</td>
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<td>Funding knowledge circulation</td>
<td>III. 1. % (capita) inward/outward mobility by position</td>
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<td></td>
<td>I.3. % (sum) of budget to attract foreign researcher</td>
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<td>IV.1. % of annual budget spent on large facilities Replace: Large research infrastructure</td>
<td>IV.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Governance and processes</td>
<td>V.1 Nr. of offices abroad</td>
<td>V.2. % of foreign reviewers and panellist</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Exercises between Paris and Bern

- Phase 1: Experts provided short description of indicators and a template to collect information
  - on the availability of data, their sources to selected indicators
  - use of the indicator by FAs and needs of indicators for various purposes
- Phase 2: FAs and RPOs responded on questions, many details became clear
- Phase 3: Testing few selected indicators - data were readily available at most respondents
- Phase 4: Starting discussion on the unsolved problems (such as: treating multipurpose programs, breakdown by disciplines, by field of science, by economic activity)
## The Participating RPOs by Phases

<table>
<thead>
<tr>
<th>Country</th>
<th>Full name</th>
<th>09-11 2010.</th>
<th>07.- 09 2011</th>
<th>09 – 11 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. France</td>
<td>French National Institute for Agricultural Research, INRA</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>2. France</td>
<td>INSERM</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>3. Germany</td>
<td>Max Planck Society, MPS</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4. Italy</td>
<td>Istituto Nazionale di Fisica Nucleare, INFN</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>5. Italy</td>
<td>CNR</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>6. Spain</td>
<td>Agencia Estatal Consejo Superior de Investigaciones Científicas, CSIC</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>4 Countries</td>
<td>Total</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Indicator Development for Measuring Internationalisation of Funding Agencies
FAs are intermediaries between - the Government and - the performing sector

- Acting in a multi-layered policy environment,
- Performing different functionalities related to research funding (determining goals and content, submission and selection, decisions, contract management, etc.), which can be more or less internationalized,
- Performing different functionalities related to governance and processes according to a more or less propensity toward internationalisation
- Internationalization of FAs can be assessed by looking at the different functionalities

Source Reale et. al. 2011
## Type of FAs involved in investigating needs, usefulness and feasibility of indicators

<table>
<thead>
<tr>
<th>Type</th>
<th>ESF-type FAs</th>
<th>Foundation for Basic Research</th>
<th>Hybrid, multi-task organisations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples</td>
<td>RCN in Norway, SNSF in Switzerland, FWF in Austria, AKA in Finland, and FWO in Belgium Foundation for Polish Science, FPS</td>
<td>DNRF, Denmark Research Councils, RC, UK Deutsche Forschungsgemeinschaft, DFG</td>
<td>TUBITAK, Turkey</td>
</tr>
</tbody>
</table>
## The Participating Funding Agencies

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<thead>
<tr>
<th>Country</th>
<th>Agency</th>
<th>09-11 2010</th>
<th>07-08 2011</th>
<th>09-10 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Austria</td>
<td>Austrian Science Fund, FWF</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>2. Belgium</td>
<td>Fonds voor Wetenschappelijk Onderzoek – Vlaanderen, Research Foundation – Flanders, FWO</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>3. Denmark</td>
<td>Danish National Research Foundation, DEF</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>4. Finland</td>
<td>Academy of Finland, AFA</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>5. Germany</td>
<td>Deutsche Forschungsgemeinschaft, DFG</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6. Norway</td>
<td>Research Council of Norway, RCN</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>7. Poland</td>
<td>Foundation for Polish Science, FPS</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8. Swiss</td>
<td>Swiss National Science Foundation, SNSF</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>9. Turkey</td>
<td>The Scientific and Technological Research Council of Turkey, TUBITAK</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>10. UK</td>
<td>Research Councils, RC – UK</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10 countries Total</td>
<td></td>
<td>7</td>
<td>7</td>
<td>3</td>
</tr>
</tbody>
</table>
The Participant Funding Agencies

Countries of FAs: most are small and medium relatively small scientific community by fields

Founding: basic science; research organisations

Size is matter: total size of funding researchers

Missing mass: Large countries NMSs
## Data Sources to Indicators

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Central administrative (internal) databank</th>
<th>Central administrative file</th>
<th>Outside sources</th>
<th>Project database/ final project reports</th>
<th>National/regional database</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget for Joint Research Programs</td>
<td>FWO</td>
<td>AFA; DEF; RCN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FWF</td>
<td>2</td>
<td>TUBITAK</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Budget spending abroad</td>
<td>FWF</td>
<td>1</td>
<td>TUBITAK; DEF</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Budget for attracting foreign researchers</td>
<td>FWO; FWF</td>
<td>TUBITAK; AFA</td>
<td></td>
<td>DEF</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International co-authored papers</td>
<td></td>
<td></td>
<td>DEF</td>
<td>1</td>
<td>TUBI, AFA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FWF</td>
</tr>
<tr>
<td>Int. co-patenting</td>
<td></td>
<td></td>
<td>DEF</td>
<td>1</td>
<td>TUBI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AFA</td>
</tr>
<tr>
<td>Mobility (•)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By disciplines</td>
<td>FWO; AFA</td>
<td>TUBITAK; AFA</td>
<td></td>
<td>DEF</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>FWF</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By country of origin/destination</td>
<td>FWO; FWF</td>
<td>TUBITAK; DEF</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By position</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Large Facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offices abroad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

(*) By disciplines

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Data Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility (•)</td>
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</tr>
<tr>
<td>By disciplines</td>
<td></td>
</tr>
<tr>
<td>By country of origin/destination</td>
<td></td>
</tr>
<tr>
<td>By position</td>
<td></td>
</tr>
<tr>
<td>Large Facilities</td>
<td>RCN</td>
</tr>
<tr>
<td>Offices abroad</td>
<td>AFA</td>
</tr>
<tr>
<td>Evaluation</td>
<td>RCN; FWF</td>
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</table>
## Availability of Data

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Readily available</th>
<th>Not readily</th>
<th>Partly / uncertainty</th>
<th>Not available</th>
<th>Not applicable</th>
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<tbody>
<tr>
<td><strong>Budget for Joint Research Programs (JRP)</strong></td>
<td>RCN; DEF; NSF;</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>FWF; TUBI</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Budget spending abroad</strong></td>
<td>DEF; FWF; TUBITAK</td>
<td>3</td>
<td>RCN; SNSF FWF</td>
<td>AFA 1</td>
<td>FWO</td>
</tr>
<tr>
<td><strong>Budget for attracting foreign researchers</strong></td>
<td>AFA; FWF; TUBITAK</td>
<td>3</td>
<td>DEF; SNSF RCN</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>International co-authored papers</strong></td>
<td>DEF; AFA</td>
<td>2</td>
<td>FWF (outside source)</td>
<td>1</td>
<td>SNSF; FWO;RCN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RCN; FWF SNSF</td>
<td></td>
</tr>
<tr>
<td><strong>International co-patenting</strong></td>
<td>DEF; AFA</td>
<td>2</td>
<td></td>
<td></td>
<td>FWO</td>
</tr>
<tr>
<td>Mobility (*)</td>
<td></td>
<td></td>
<td></td>
<td>RCN 1</td>
<td>AFA; FWO</td>
</tr>
<tr>
<td>By disciplines</td>
<td>DEF; FWO; AFA;</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FWF; TUBITAK; SNSF</td>
<td>6</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>By country of origin/destination</td>
<td>DEF; FWF; FWO;</td>
<td></td>
<td></td>
<td>RCN 1</td>
<td>AFA; FWO</td>
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<td></td>
<td>TUBITAK; SNSF</td>
<td>5</td>
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<td>DEF; FWO; RCN</td>
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<td></td>
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<td>AFA; SNSF FWF</td>
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<td><strong>Large Facilities</strong></td>
<td>RCN; AFA</td>
<td>2</td>
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<td>FWF</td>
</tr>
<tr>
<td><strong>Offices abroad</strong></td>
<td>RCN; AFA; TUBITAK; SNSF</td>
<td>4</td>
<td>FWO</td>
<td>FWF</td>
<td></td>
</tr>
<tr>
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<td>4</td>
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<td></td>
</tr>
</tbody>
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## Use of Selected Indicators

<table>
<thead>
<tr>
<th>Status</th>
<th>Indicator</th>
<th>Purposes</th>
</tr>
</thead>
<tbody>
<tr>
<td>All respondents for similar purposes</td>
<td>International co-authored papers</td>
<td>1. Collaboration in international level</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Output from international collaboration, research activities</td>
</tr>
<tr>
<td></td>
<td>Evaluation</td>
<td>Analysing the internationalisation of the evaluation process</td>
</tr>
<tr>
<td>Few respondents for similar purposes</td>
<td>International co-patenting</td>
<td>Output of research activities from international collaboration</td>
</tr>
<tr>
<td>All respondents for different purposes</td>
<td>Budget for Joint Research Programs</td>
<td>1. Extent of European integration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Size of funding international mobility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Intensity of (funding) for international collaboration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Mutual learning</td>
</tr>
</tbody>
</table>
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<tr>
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</thead>
</table>
| **Majority of respondents for different purposes** | Budget spending abroad | 1. Size of fund for international mobility  
2. Extent of cross-border funding  
3. Enrich international scope of research activity |
| | Budget for attracting foreign researchers | 1. Brain drain/ brain gain  
2. Size of funding international mobility  
3. Information on specific schemes dedicated to attract foreign researchers |
| **Majority interested but difficulties for using** | Mobility by disciplines | Internationalization, measuring differences, supporting career development, international experience |
| | Mobility by country of origin / of destination | Attractiveness of the country, incoming mobility |
| **Not using and not interested** | Mobility by position | 1. identifying age or career-stage related obstacles to mobility |
| | Large Facilities | 1. information of the importance of these facilities  
2. Cooperation in international science |
| | Offices abroad | 1. Cooperation in international science  
2. Visibility |
FAs (as well as RPOs) are preparing indicators that are not used by themselves but they are very important for national / European policymakers.
# Status of Indicators

*(afternoon discussion)*

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pilot phase</strong></td>
<td>Testing with data (spot data and time-series)</td>
<td>Sept-Oct 2011</td>
</tr>
<tr>
<td><strong>Feasibility</strong></td>
<td>Some clarification needs;</td>
<td>Nov- ?</td>
</tr>
<tr>
<td></td>
<td>- Breakdown</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Overcome on definition and classification problems</td>
<td></td>
</tr>
<tr>
<td><strong>Blue sky</strong></td>
<td>Further research need to develop relevant indicator to the needs</td>
<td>Follow up after the Fora</td>
</tr>
<tr>
<td><strong>Leave it out</strong></td>
<td>Quantitative measure has very limited meaning for users</td>
<td>Bern decision</td>
</tr>
<tr>
<td>Rationales</td>
<td>Critical mass</td>
<td>Complementary</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
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<td>V.1 Nr. of offices abroad</td>
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</tr>
</tbody>
</table>

*keep it – pilot 3 feasibility 3; blue sky 2; leave it out 3*
Interim results and problems

- Co-operation of practitioners (FAs & RPOs) brought lot of fruits now we are much closer to useful and workable indicators.
- Hopefully there will be a publication in *Research Evaluation*.

In present stage

- The size of RPO sample is still too small and the country coverage is very narrow to provide robust results. We need more empirical evidences to compile a well established, relevant list of indicators.
- Sample size and missing type of actors are also a critical issue at FAs.

But the work is still worth as a pioneer study.
Thank you for your kind attention!

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