European RTD Evaluation Network Meeting
Wednesday 7 November 2018
Vienna, Austria

Note of Meeting

Introduction

The European RTD Evaluation Network, first established in 1997, is a platform for sharing information and best practices on issues related to evaluation methodologies, the use of indicators and the measurement of impact for research and innovation (R&I). This meeting was organised back-to-back with Austrian EU Presidency conference 'Impact of R&I Policy at the Crossroads of Policy Design, Implementation and Evaluation'.

Purpose of the meeting and main agenda points

The central theme of the meeting was learning from best practices at national level in the use of unique identifiers, Big Data, the use of Artificial Intelligence for data analysis, and the automatic harvesting of databases for the purposes of R&I impact evaluation.

Overview from the European Commission

A number of important EU R&I policy developments took place since the previous Network meeting, which took place in October 2017 in Tallinn. In particular, in June 2018, the European Commission published its proposal for Horizon Europe, the future EU R&I Framework Programme 2021-2027, and its accompanying impact assessment.

Thus DG Research and Innovation presented an opening overview of the planned Monitoring and Evaluation Framework under Horizon Europe, the future EU R&I programme 2021-2027. Designed as an evolution from the current system used under Horizon 2020, nine Key Impact Pathways are foreseen as the backbone to track progress towards scientific, societal and economic impacts generated by Horizon Europe. Key principles informing this approach can be summarised as Proximity, Attribution, Traceability, Holism and Stability (PATHS). The Impact Pathways are expected to allow for a better capture and communication of the progress of Horizon Europe towards its objectives, including beyond the programme's lifetime, while allowing for a clearer identification of the many impacts that R&I investments can have[1].

A further update was provided on the ongoing revision of the Public Sector Information Directive[2] and its implications on research data. The Commission also presented a short

[1] More information on the Commission proposal for Horizon Europe, including the full impact assessment (details on Key Impact Pathways in Annex V) can be found at: https://ec.europa.eu/research/evaluations/index.cfm?pg=horizoneurope

[2] Further information on the revision of the Public Sector Information Directive can be found at: https://ec.europa.eu/digital-single-market/en/proposal-revision-public-sector-information-psi-directive and the results of the Mutual Learning Exercise on Business R&I Grant Schemes can be seen at: https://rio.jrc.ec.europa.eu/en/policy-support-facility/mle-ex-post-evaluation-business-ri-grant-schemes

overview of the recently-concluded Mutual Learning Exercise on the Evaluation of Business R&D Grant Schemes. This was conducted under the Horizon 2020 Policy Support Facility, which gives Member States and countries associated to Horizon 2020 practical support to design, implement and evaluate reforms that enhance the quality of their R&I investments, policies and systems. This includes the Mutual Learning Exercises, as well as Peer Reviews which provide an in-depth assessment of a country's R&I system and result in concrete recommendations on necessary reforms to be undertaken.

Presentations from national representatives

Representatives from five countries presented good practices at national level in the use of unique identifiers, Big Data, the use of Artificial Intelligence for data analysis, and the automatic harvesting of databases for the purposes of R&I impact evaluation.

Italy gave an overview on experiences in using the ORCID unique identifier for the national R&I assessment exercise for the 2011-2014 period. The ID was mandatory for all staff members working for the institutions evaluated by this exercise, even though all submitted research outputs from all staff members were evaluated. This meant that institutions were incentivised to acquire the ID for their staff – in just two months, 98% of staff in organisations participating in the exercise did obtain the ID.

This had been previously embedded by an exercise known as IRIDE, which aimed to facilitate the widespread use of ORCID amongst Italian R&I organisations. There are many positive effects of using ORCID (enables following the career of researchers, even if they move; stronger online visibility of researchers' activity; correct assignation of publications to authors; reliable data for evaluation purposes and for developing bibliometric indicators; alignment between international (Web of Science Scopus) and local databases.

A further step is to populate ORCID profiles through universities' research databases (CRIS) which undertake a semi-automatic update. An experimental phase will be tested in a limited number of universities in collaboration with ORCID and ANVUR. Remaining issues and lessons learned for further embedding ORCID include: resource-intensive data validation process and differing validation procedures across organisations; need to incentivise researchers to update their profiles and further automatise this; extend the scope to fixed-term staff. Technical integration of databases often takes longer than planned, due to privacy/comparability issues.

Norway provided an update on recent developments in the CRIStin system. Incentives to register results in CRIStin exist, as the data is used for result-based financing and the results are made openly accessible. Dedicated employees at the institutions assure the quality of publication data. Researchers register the Research Council project number with their results, and the result is good quality and almost complete data in CRIStin. Compared to Scopus the dataset is complete and includes different formats such as books, monographs, presentations etc. in different languages. Patents and business data can also be registered but there is no organised system to check data quality for such results.

This data is used for R&I monitoring and disciplinary/thematic evaluations in Norway, and is useful for indicators i.e. on productivity, publication language, co-authorship, publication profiles. There are plans to import more automatically data from other sources, such as Web of

Science and Scopus (citations including ORCID, currently done twice a year but matching done manually) and Norwegian government agencies, notably statistics on higher education in Norway, turnover data (Statistics Norway) and research personnel register (NIFU).

A logic model has been introduced for all the programmes of the Research Council, allowing to show which outputs, outcomes and impacts are expected and how. Impact is evaluated in many ways, using qualitative (case based, interviews, expert panels) and quantitative (surveys, econometrics) methods. In the two last disciplinary evaluations (on humanities and social science) the impact assessment is inspired by the UK REF system. Another key current focus is in conducting evaluations which trace the broader long term impacts (over 20 years) of NO funding programme portfolios in, for example, health, development and welfare research. Also, a "Doctor Monitor" follows PhD candidates, including the types of jobs they get. Complete registries are also available in Sweden and Denmark, the missing part is when researchers migrate outside Europe.

In the presentation from **the Netherlands** the focus was on the Semantically Mapping Science (SMS) data infrastructure for R&I studies and evaluations, in particular the RISIS project (Research Infrastructure for Research and Innovation Studies, 2014-2018[3]) which integrates single datasets from 14 countries notably on universities, companies, projects, careers, publications. The open and non-open data integrated and enriched (including geolocation, geo-statistical data, ontologies (e.g. according to societal challenges), annotations) through the SMS platform allows, for example, searching, retrieving and analysing data to show the correlation of universities' performance (i.e. in top-cited papers) with their characteristics and immediate environment.

Key lessons learned include: role of data-based competition and different views on integration and open data; data linking and enrichment is promising and the enabling technologies are improving; data accessibility is key to success; regulation (including privacy and competition rules) provided a generally supportive framework although some barriers still remain. Finally, the SMS platform benefits from being a 'neutral' facility (i.e. not corresponding to a single discipline/single policy or political objective).

A **Slovenian** expert provided an overview of recent developments and current challenges at national level with respect to R&I evaluations, organised by typology of evaluation (on the R&I system; on projects funded by the Slovenian research agency; instruments financed by the Structural Funds). Coordination of evaluations at the level of the R&I system is an issue, with sometimes overlapping exercises conducted by OECD, ERAC and others, and different priorities which are set. In terms of the national research agency, 'entrance conditionality' acts as a kind of pre-screening of applicants, while current evaluation criteria show strong alignment with those used under the FPs. Socio-economic impact, has, however proved difficult to capture.

The right balance is still being sought on the timing of evaluation – early enough to have policy implications, but also enabling demonstration of impact. A final constraint is the lack of readiness at political level, or even within the national funding agency, to accept negative evaluation findings even when demonstrated to be objective and evidence-based – it needs to be accepted that this represents learning to improve in the future, more so than criticism.

[3] The project website is at: https://risis.eu/

An **Austrian representative of the Urban Europe Joint Programming Initiative** presented on approaches to tackling the evaluation of societal impact. The expected impacts of the JPI contribute to broader EU policy goals, with the relevant indicators reflecting this (8 out of 20 indicators address societal impact, with all participating countries co-creating them). These impacts are operationalised in various ways (foster public sector innovation in urban planning; become a well-recognised source of evidence-based knowledge).

Instruments are assigned for each operational objective, with corresponding performance indicators, and outcome indicators are developed to capture results and reflect long-term pathways to impact. There is a strong focus on monitoring and self-evaluation to better tailor support instruments towards societal impact from the very beginning, allowing for regular learning. Finally, specific action is taken in implementing JPI funding calls which is designed to increase societal impact, including: desired participation of societal actors in calls and evaluators coming from city authorities/NGOs etc.

Breakout sessions then took place, the aim of which was to build on the morning's discussions and collectively compare perspectives and experiences in respect of R&I evaluations on: state of play; challenges today and in the future; solutions.

Key messages on **state of play** included: ORCID is in its infancy in some countries, with researchers using it only when in their interest[4], while in some others it is mandatory; uncertainly on what will be the gold-standard identifier in the future; data quality issues are directly related to questions of self-completion and validation; in some countries (NO, FI) there are joint data linking exercises underway; need high-level institutional and political push on a more embedded use of unique identifiers.

Some country-specific situations were highlighted:

- Unique identifiers for researchers are not yet mandatory in the UK but it is intended that they will be mandatory in future REF exercises (beyond 2021). Use is made of ResearchFish in the UK, which is an external web-based portal to track research outputs andoutcomes including for evaluations. Matching is done on publications in ResearchFish and UK funding to universities. There is also a willingness to go into text mapping and develop ontologies and taxonomies for more in-depth analysis.
- Unique identifiers for researchers are used extensively but not mandatory in Sweden and Switzerland,
- Unique identifiers for researchers are demanded by the Science Fund in Austria but only part of the researchers are in public institutions and there is no central CRIS in Austria.
- In Germany this is not compulsory and there is no CRIS system; the decision to feed into a core dataset system is taken at the university level.
- In Slovenia, there is a Slovenian CRIS (SIC CRIS) where all entities receiving funding should be registered; the question there is how to deal with open access.

[4] On the reasons why researchers might show resistance to update their online profiles, it was explained that in life sciences, for example, some researchers do not want to show their full profile but only their most relevant selected scientific outputs.

- In Italy, there is also a specific project on linking PhD students and different datasets including on labour. A mandate from the Ministry was needed to be able to work on PhD names. This is now part of the Country Statistical Plan.
- In Latvia, scientific quality is at the core of evaluations and this has an impact on higher education. The assessment of the socioeconomic impact is based on the self-evaluation of researchers. Researchers are now obliged to give acknowledgment of the funding source in their publications. A national database was launched which includes publications and researchers information.

Key messages on **current and future common challenges** included: clarification of regulation, ethical and legal aspects; representativeness of data samples is often an issue (only a small proportion of researchers with data in Web of Science); incentives and benefits of data entry need to be clear to those tasked with it; certain data quality standards should be safeguarded; need to structure the unstructured data (e.g. analyse the content of publications and identify trends in scientific areas); need to consider some data as public goods (publications, company information?);stability and continuity of available tools is important; a clear understanding of costs and benefits is needed, especially on the benefits and risks of misuse; indicators must always correlate well with the desired effects; and there are sometimes different views on the value of certain basic R&I outputs (patents, publications).

Key messages on **solutions** included: better coordination and oversight of national activities at EU and international level, and continued optimisation of tools and databases to do so; more networking and capacity-building activities to bring together European practitioners; EU to bring people together and possibly give the impetus to build up a solid data infrastructure on research activities in Europe thus allowing for a smarter use of resources (e.g. European CRIS to not depend on commercial databases, such as PATSTAT?); more comprehensive and longer-term indicators under Horizon Europe will help due to the structuring effect of the FPs funding on the national level, in particular FP indicators will have an effect on indicators used nationally; more pilot experiments with willing groups of countries; more rigorous exploitation of data.

A presentation was then provided by an invited **Eurostat** representative on the challenges and opportunities of using business microdata. The close and intense degree of cooperation between Eurostat and National Statistical Institutes (NSIs) was described, as was the upcoming role to be played by Eurostat in monitoring the implementation of the FPs (one of three priority areas outlined in the Memorandum of Understanding signed with DG Research and Innovation). This was described as a bridge between the European Statistical System (ESS) and CORDA, with more work required in order to: identify best suited monitoring indicators in line with the FP impact pathways; refine the technical identification of enterprises supported (through VAT identifier) and not supported by the Framework Programme; ensure transmission of data (including data for non-FP beneficiaries) and quality of results. Opportunities include: strong counter-factual analysis via data linking; assessment of long-term impacts via time-lagged linking and achieving representativeness through ESS datasets.

But remaining technical challenges include: confidentiality guarantee; appropriate expertise available within NSIs; representativeness issues due to the small proportion of companies that have received EU funding, the fact that most business statistics are surveys, and that the overlap between the two groups might be small. The question of 'sharing what data when' is important – should we aim for microdata-sharing above all, in which case we should be prepared for variable

quality of data, or rather at the level of methodologies or output formats? There are some restrictions on microdata sharing, stemming mostly from national data protection legislation and from differing reporting practices. Another tricky issue is identifying the legal entity within a company that has a complex structure and/or international presence.

Microdata linking can help to develop new statistics and indicators when using existing datasets and combining them with administrative information or new data collections. However, budget constraints and unwillingness to increase burdens on ESS respondents and on NSIs impose other types of restrictions. Issues of motivation are also pertinent, including the burden on NSIs caused by new uses of official statistics and the need for institutional and political leaders to understand the benefits and results.

Eurostat is keen to engage further with NSIs on pilot studies for business microdata linking to support the assessment of the economic impact of the Framework Programme including through counterfactual evaluation. In particular these pilots can shed light on the impact of the Framework Programmes at the national level, which is then in a common interest. As policymakers and users usually need further information on the companies themselves, the possible depth of data is a challenge worth exploring.

In order to acquire feedback throughout the process, and to develop a forum for the exchange of best practices, **this invitation from Eurostat for NSIs to participate to pilot activities** would need to be endorsed by relevant ministries and is **extended to other relevant national agencies**, including those responsible for R&I evaluations.

A group discussion then took place on the role governments could play in stimulating greater cooperation with NSIs, notably on business microdata sharing. A final **tour de table** then took place on recent and upcoming developments in national R&I evaluations. These included:

- Switzerland: a monitoring report on Swiss participation in Horizon 2020 has recently been published, taking into account the changes in Switzerland's associated status during the last few years. An evaluation of the impact of the Framework Programmes in Switzerland, dating back to FP5, is under preparation.
- Germany: the High-Tech Strategy 2020 of the Federal Government is being developed further, with upcoming reviews of all initiatives including the Initiative for Excellence.
- Ireland: recent national evaluations have focused primarily on support for start-ups and equity provision and an analysis of their enterprise agencies overseas office activities. Evaluations of the impacts of R&D expenditure and R&D policies are due to be undertaken in the next year.
- UK: for the next edition of the REF in 2021, all researchers will be part of the submissions, though this is still subject to consultation and further discussions. The next REF will take account of the findings of the evaluations of the previous exercise that took place, including the 'Stern Review'.

- Norway: a key current focus is on set of impact case studies in social sciences and humanities, based on those done under REF and using a new evaluation method.
- Austria: later in December 2018, an OECD review of the RTI system in Austria will be published, which will be an important basis for the development of the post-2020 national RTI strategy. In June 2018, an evaluation about the implementation of Horizon

2020 to date in Austria was published - this concludes with different options how to further improve the national support mechanisms.

- Finland: a study has been carried out on "How can the EU Framework Programme for Research and Innovation increase the economic and societal impact of RDI funding in Finland". Overall, the FP provides clear added value for Finnish participants, and they are generally very satisfied with their experience and the results of participation. The evaluation proposes: 1) A clear national RDI strategy towards the EU and FPs, 2) Analysis of the root cause of low application success rate, 3) Strengthening FP support measures, 4) Leveraging best practices in FP application and participation.
- Italy: the next Research Assessment Exercise is scheduled for 2020, while various initiatives have been designed to support the participation of excellent researchers in EU funding calls for proposals.

Delegates were then asked to identify one key take-home message from the meeting. Key points included: welcoming the Eurostat invitation to pilot microdata exercise; all struggling with the same issues; need to structure the unstructured (e.g. develop common ontologies on SDGs across countries?); need cooperation on data, link between data and good evaluations; tipping point with new methodologies becoming available; experiences to share, different types of impacts of research and innovation activities (Impact Pathways of Horizon Europe); importance of societal impact and the challenge of capturing it; need synergies and collaboration; a lot already exists and can be recombined; need to think more about data linking, need to know what we can show and how; need comparability, traceability and international operability of data; communication between Member-States is important; EU level impact is more than national impacts together; need databases also at national level if non existing; need to get to other countries' standards; scope for reducing burden on researchers by linking existing datasets; RTD evaluation network useful to not reinvent the wheel; need funder identification in output data as well as researcher unique identifier; time for serious experimentation with data for evaluations.

To conclude, DG Research and Innovation encouraged a regular exchange of dialogue and information on R&I evaluations amongst the Network members, including via a revamped European RTD Evaluation Network web page (to be available by December 2018) which will act as a public window on national and European R&I evaluation activities.

Follow-up actions (for DG Research and Innovation):

- To circulate presentations and written updates on national R&I evaluations
- To refresh Network web page to be carried out with the aim of enabling a more regular posting of materials and exchange of information relevant to R&I evaluations between member countries
- Further dialogue to take place with Eurostat on optimising collaboration on issues, including the sharing of business data.
- To extend the scope of the network to cover the evaluation of research and innovation activities (beyond research only).

Date of next meeting

To be communicated to Network members, provisionally foreseen for the second half of 2019.

Participants

Country	Name	Organisation
AT	SCHUCH Klaus	Centre for Social Innovation (ZSI)
CH	ZURBRIGGEN Mascha	State Secretariat for Education, Research and Innovation (SERI)
CZ	FRANK Daniel	Technology Centre of the Czech Academy of Sciences
DE	GRIMM Andrea	German Aerospace Center (DLR)
DE	HINZE Sybille	German Centre for Higher Education and Research Studies (DZHW)
ES	BRAVO Julio	State Research Agency (AEI)
FI	TUOMIKOSKI Teppo	Business Finland
IE	MOLONEY Andrew	Department of Business, Enterprise and Innovation
IT	SILVANI Alberto	National Research Council of Italy (CNR)
IT	NAPPI Carmen	National Agency for the Evaluation of the University and Research Systems (ANVUR)
LT	JANUŠEVSKAITĖ Gintarė	Research and Higher Education Monitoring and Analysis Centre (MOSTA)
LV	KOKOREVICS Arnis	Latvian Council of Science (LZP)
NL	VAN DEN BESSELAAR Peter	Vrije Universiteit Amsterdam
NL	VAN DE LINDE Erik	Royal Netherlands Academy of Arts and Sciences
NO	WINSNES Eirin	The Research Council of Norway
NO	SOLBERG Espen	Nordic Institute of Studies in Innovation, Research and Education (NIFU)
MD	BOAGHI Viorica	National Agency for Research and Development
SE	HERMANSSON Kenth	Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS)
SE	QUIST Maud	Swedish Research Council
SI	STRUNA Mateja	Ministry of Education, Science and Sport
SI	BUČAR Maja	University of Ljubljana, Faculty of Social Sciences
TK	YILDIRIM Cagri	Scientific and Technological Research Council of Turkey (TUBITAK)
UK	SMART Sue	Engineering and Physical Sciences Research Council
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European Commission

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