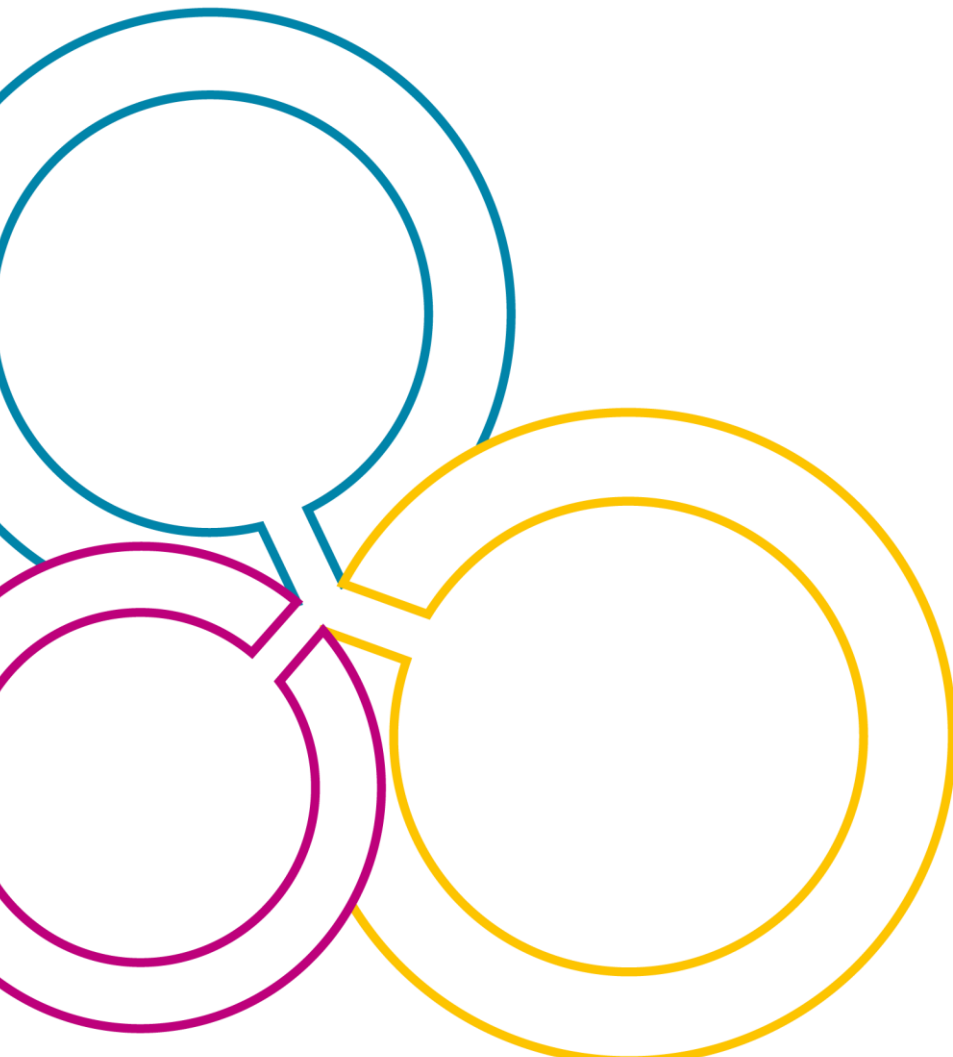euraxess

RESEARCHERS IN MOTION

MEASURING IMPACT OF RESEARCHER PROFESSIONAL DEVELOPMENT STRATEGIES

STATE OF THE ART AND THE ROLE OF EURAXESS

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MEASURING IMPACT OF RESEARCHER PROFESSIONAL DEVELOPMENT STRATEGIES

INTRODUCTION

In January 2000, the Commission adopted a Communication proposing the creation of a European Research Area (ERA)[1] that emphasised the need to introduce a European dimension into careers in R&D, and appealed for more abundant and more mobile human resources.

Furthermore, one of the key priorities of the European Commission (EC) to complete the European Research Area (ERA) is the achievement of an open labour market for researchers within the European Union (EU), facilitating mobility (geographical, disciplinary and sectorial), supporting training and assuring attractive research careers. This priority is essential to achieve the Innovation Union policy target of one extra million researcher jobs in Europe to enhance the research intensity of its economy, a majority of which should be recruited in the private sector. This necessarily implies the development of comprehensive research career development strategies in Europe that will assure that researchers are offered with a set of skills facilitating their mobility and incorporation into other sectors [2].

At the level of the EU, a number of policy initiatives have been developed to support researcher career development, including the EURAXESS initiative, the *Scientific Visa Directive*, a *Human Resources Strategy for Researchers* based on the *European Charter for Researchers & The Code of Conduct for the Recruitment of Researchers* (Charter and Code or C&C)[3], the *Principles of Innovative Doctoral Training*[4], or support for a new pan-European supplementary pension fund for researchers. Also the *Marie Skłodowska-Curie actions* (MSCA) have set standards for research training, attractive employment conditions and open recruitment for all EU researchers.

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[1] COM(2000)6 final of 18.01.2000.
[2] "Researchers in the European Research Area: One Profession, Multiple Careers, Communication from the Commission to the Council and the European Parliament", COM(2003) 436 final, July, Brussels. https://ec.europa.eu/research/fp6/mariecurie-actions/pdf/careercommunication_en.pdf
[3]The European Charter for Researchers & The Code of Conduct for the Recruitment of Researchers http://ec.europa.eu/euraxess/pdf/brochure_rights/am509774CEE_EN_E4.pdf
[4] Principles for Innovative Doctoral Training http://ec.europa.eu/euraxess/pdf/research_policies/Principles_for_Innovative_Doctoral_Training.pdf

The same is true at the level of Member States and Associated Countries.

The last *Researchers' Report* (2014)[1] concluded that a number of measures were being taken at national level to ensure training enough researchers to meet the national R&D targets. These included National Action Plans, programmes, strategies, legislative acts, white papers, thematic acts and multi-annual development plans. Likewise, many countries have taken steps to improve the quality and relevance of doctoral training and provide researchers with training in innovation and entrepreneurship. Nevertheless, this same report also highlights that it is generally too early or there is lack of information with which to measure the direct or indirect impact of such measures.

1. Researchers' Report 2014

http://ec.europa.eu/euraxess/pdf/research_polic ies/Researchers%20Report%202014_FINAL%20 REPORT.pdf

THIS REPORT

This report is part of the activities of the FP7 funded project PIPERS (*Policy into Practice: EURAXESS Researcher Skills for Career Development*), which has the overall aim of improving EURAXESS services for supporting researcher career development.

Over the past ten years, EURAXESS has been a key initiative at EU level which through its four strands of Jobs, Services, Rights and Links, has promoted and supported the mobility of researchers, championed the rights of researchers through the Charter and Code, and has connected Europe with researchers working in key third countries. Now within Horizon 2020 (H2020), EURAXESS wants to move forward into the next phase by further developing its activities in order to support researcher career development in a much more comprehensive way.

Skills Considering that EURAXESS spans across 40 countries, and has more than 200 services centres, it can be a powerful tool for building and maintaining a strong talent pool of researchers who have the professional competencies and skills necessary for careers both within and outside academia, and who are empowered to be responsible for their own career development, and knowledgeable about the tools available to support them in this.

Considering the extension of services proposed for the EURAXESS initiative, the project includes among its core objectives enabling EURAXESS Service Centre staff to support the professional development of researchers through sharing of good practice policy case studies, resources and trainings.

In line with the sharing of good practices in policy implementations across EURAXESS, a

number of actions have already been executed within the project:

- Identifying potential policy-level stakeholders from across Europe for EURAXESS' future involvement in researcher professional development actions.
- Organizing a policy workshop with some of these stakeholders to discuss policy recommendations at different levels, including for the EURAXESS initiative (see *High Level Policy Recommendations To Foster Researcher Career Development In Europe*).
- Compiling examples of international good practices on policy implementations supporting professional development of researchers (see *Policy Good Practices on Researcher Professional Development Systems*).
- Collecting case studies from workshop participants and beyond to have a wider and more in-depth understanding of their researcher career development strategies (see Annex I)

The current report is the next step of the process and focuses in measuring the impact of researcher career development initiatives. Building upon the abovementioned actions, this document attempts to highlight for EURAXESS members the importance of taking into account the measurement of impact,

including some recommendations, for when implementing any researcher career or professional development initiative.

DRIVERS TO MEASURE IMPACT OF RESEARCHERS DEVELOPMENT

Researcher professional development services comprise a complex range of activities, trainings and actions in order to improve the knowledge, expertise, attributes and employability of researchers in all career steps.

Traditionally, within the researcher development community most developers tend to be very much focused on developing innovative and successful activities for researchers within their institutions, and have little time to focus on evaluation activities.

The truth is that, for example, the outcomes and impact of specific trainings addressing different skills and capabilities are very varied and range from very direct impact (e.g., satisfaction with the content of the course of participants) to more indirect, meaningful and medium or long-term impact (e.g. actual change in behaviour leading to better professional performance and outcomes), which, to make things more complex, may even be affected by many other factors.

This complexity makes establishing a framework to measure impact in a comprehensive way a very challenging goal.

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When planning on measuring the impact of professional development actions, it is a crucial element to come up with rigorous, continuously evolving strategies based on data. Furthermore, this framework needs to be useful for very different stakeholders (individual, team, department, institution, country, etc.) and purposes (analyse return of investment, analyse the evolution of the researcher community skills, analyse the evolution of the research labour market, etc.)

This section tries to identify the drivers for measuring impact of researcher career development strategies for the different stakeholders already addressed when preparing the policy recommendations (see *High-Level Policy Recommendations to Foster Researcher Career Development In Europe*):

➢ European Commission
➢ Members states and Research Funding Organisations
➢ Research Performing organisations
➢ EURAXESS
➢ Researchers

EUROPEAN COMMISSION

In the last years, the EC is giving clear steps towards the implementation of a European framework for researcher career development. Probably the most significant document proving this is the C&C, which is basically a set of general principles and requirements specifying roles, responsibilities and entitlements of researchers as well as of employers and/or funders of researchers. A

number of these principles are directly focused on researcher career development (see *D2.3 Set of good practice policy case studies* for more details).

The *Human Resources Strategy for Researchers* (HRS4R) supports research institutions and funding organisations in the implementation of the *Charter & Code* (C&C) within their policies and practices, awarding those institutions who prove that they have a strategy in place to improve their human resources in research management. The new procedure to apply for the award (in place in January 2017) will ask institutions to set up concrete success indicators of their progress in regards to each C&C principle, strengthening the message that there is a need to measure progress/impact of the strategies.

In addition, the EC has further stimulated the uptake of the C&C principles by asking beneficiaries of H2020 funding through an article in their grant agreements to make the best of their efforts to try to meet with the C&C principles.

Thus, the European Commission could benefit from leading what it seems the next natural step to this set of policies: implementing an *Impact Framework for researcher professional development in Europe* that could generate the necessary data to assess the success of these policies in a number of ways. The drivers for the EC to set up the framework for impact measurement would be:

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- ✓ Analyse the impact of the implementation of the C&C in the advancement of ERA.
- ✓ Promote a common language for measuring impact of researcher professional development strategies and activities in Europe.
- ✓ Set up new concrete goals for ERA based on evidence.
- ✓ Secure the commitment to researcher professional in the national, institutional, and individual level.
- ✓ Continue to work towards the construction of the "European researcher identity", having researcher professional development as a core principle.
- ✓ Continue to work with the EURAXESS network in giving support to researcher professional development in Europe.

MEMBER STATES AND RESEARCH FUNDING ORGANIZATIONS (RFOs)

Member states (in many cases through the RFOs) have the opportunity to lead the researcher professional development impact analysis at the national level by providing with the necessary framework and tools to the different stakeholders in the country to have a common approach to measuring impact, thus benefiting from:

- ✓ Being able to monitor the progress of the C&C principles, including those relating to researcher professional development.

- ✓ Being able to monitor the impact of the European and national policies developed to support researcher career development.
- ✓ Leading the behavioural change required for research performing institutions to start offering measurable researcher professional development strategies.
- ✓ Identifying researchers´ skills gaps and strong points in the country and developing policies accordingly.
- ✓ Allowing researcher professional development benchmarking between countries.

RESEARCH PERFORMING ORGANIZATIONS (RPOs)

Research performing organizations have a crucial role in developing research professional development strategies for their researchers and in measuring the impact of their activities and actions. A number of drivers can be identified for RPOs measuring impact of research development actions:

- ✓ Better tailor the strategies according to the gathered impact data.
- ✓ Secure funding and high level commitment towards researcher professional development based on evidence
- ✓ As practitioners, inform research funding organizations and government administrations of research career development needs.

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- Use impact data on branding material of the institution, showing its commitment towards supporting professional development of researchers and proving its impact on researchers career
- Adjust doctoral training curricula and researchers training in general according to the impact data related to career tracking.

EURAXESS

The EURAXESS network has a very good opportunity in supporting the EC if it gets to develop an impact framework for researcher professional development. EURAXESS is a unique pan-European network that has successfully support researchers mobility and it´s currently assessing its role as a key researcher career development stakeholder.

Since its launching, one of the EURAXESS roles has been to actively promote the implementation of the C&C in RPOs, so the network is a clear stakeholder already in supporting researcher career development. But beyond this, EURAXESS has now the mandate and possibility of being directly involved in the implementation of career development actions.

In general terms, the EURAXESS community is well connected and placed within their institutions, which implies a great potential for sharing a common impact framework for researcher professional development. This would allow for:

- Gathering relevant and comparable impact data
- Displaying a common language for researcher career development (ideally, agreed at the national even the European level).

RESEARCHERS

Researchers have a leading role in successful professional development strategies. There is a general agreement that researchers need to take an active role and become responsible for developing their own professional development and careers. This implies there are a number of drivers for researchers supporting impact frameworks:

- By participating in evaluations of research development activities and strategies, researchers can influence future policies put in place after the evaluation of impact data.
- Assuming impact analysis in their own self–assessments researchers can monitor their own progress against their personal professional goals.

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CURRENT LANDSCAPE

In general terms, a structured approach to researcher professional development strategies is still in its infancy, as already stated in the PIPERS recommendations (see High *Level Policy Recommendations to Foster Researcher Career Development in Europe*). Measuring the impact of research career development strategies in a rigorous, not isolated way so that trustable conclusions can be drawn is still even less mature.

This section tries to give a flavour of the current state of the art in Europe in regards to measuring the impact of career development initiatives by building upon the work currently being done within the TOP III project to design pilot EURAXESS Career Development Centres, plus on the case studies developed after the PIPERS Policy workshop.

THE EURAXESS NETWORK: MEASURING IMPACT AND KNOWLEDGE ABOUT BASELINE INFORMATION

The *Report on Career Development Services and Centres in the EURAXESS Network* recently published as a deliverable of the TOP IIII project has surveyed the EURAXESS network to find out the current perspectives of the EURAXESS centres towards offering researcher professional development services. From the replies received, 47% of the respondents informed they indeed offered

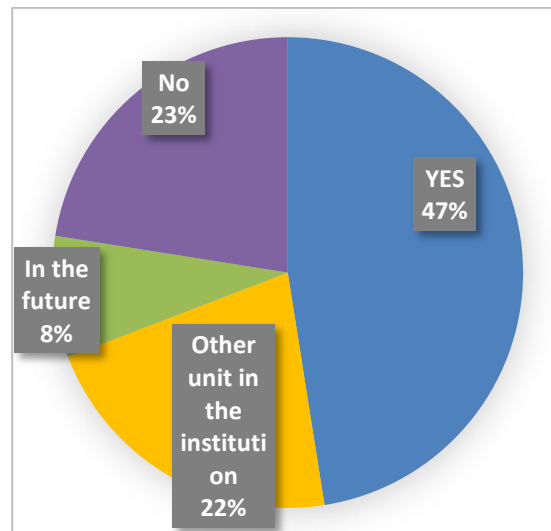some kind of support or advice on career development for researchers (Figure 1).

Figure 1. Does your EURAXESS centre provide support or advice on career development for researchers? (From the "Report on Career Development Services and Centres in the EURAXESS network, available at www.euraxess.eu)

But when asked if they used some sort of feedback tool concerning the services provided and their impact, only 35 % of the institutions provided an answer. From the 64 answers, 58 institutions declared to do some impact analysis, mainly on the shape of meetings, surveys and data collection, etc., (Figure 2).

Apart from the fact that none of the respondents referred to any medium or long-term impact strategies, it is worth highlighting that the authors of the report consider that low number of responses from the survey in connection with this question may be considered the most significant aspect, as it

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might suggest that hardly one third of respondent institutions provide a structured approach to the services, and have therefore a clear view on how measure impact of their initiatives.
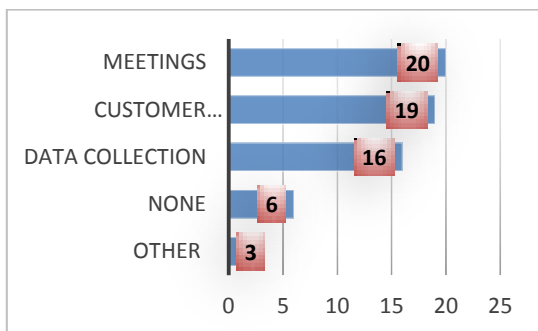
One very crucial aspect when planning a researcher career development strategy and how to monitor its impact, is having enough "baseline information" that allows to plan the strategy according to the current environment (in terms of existing resources, researchers needs and expectations, and employability, skills requirements from industry and academia, research performance, etc.). The structure of EURAXESS with 40 national networks composed by centres within different organizations of the national R&D systems (research institutions, universities, public foundations, etc.), theoretically make EURAXESS an excellent platform to draft a common baseline which could be compared between the different countries.

Nevertheless, the TOP III project survey also asked EURAXESS members about their knowledge on "any source of information (regular surveys, databases, etc.) at local, regional or national level, providing data on employment of researchers/highly skilled personnel or industry and private sector needs as far as competencies of highly skilled people are concerned". Although this only refers to part of the necessary info to allow for a correct monitoring of impact, the answers received give a hint of the existing interest and/or capacity for currently compiling this information within the EURAXESS networks.
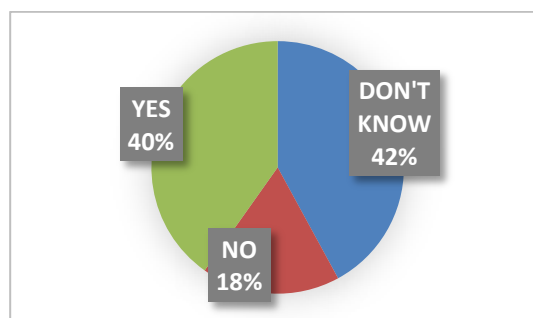

Figure 3. To your knowledge, is there any source of information (regular surveys, databases, etc.) at local, regional or national level, providing data on employment of researchers/highly skilled personnel or industry and private sector needs as far as competencies of highly skilled people are concerned?

As seen in Figure 3, 42% of the respondents declare to be uncertain about the question, showing a lack of knowledge of the environment in which they provide their services.

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CASE STUDIES. DIFFERENT INSTITUTIONAL APPROACHES TO MEASURING IMPACT

As a result of the stakeholder mapping performed during the PIPERS project, 5 different European institutions were asked to share their experiences regarding the researcher career development services they provided. Most the participant institutions (The University of Copenhagen in Denmark, The Barcelona Supercomputing Centre in Spain, The Polish Foundation for Science and Technology, the Helmholtz Foundation in Germany, and Vitae in the United Kingdom) were part of a PIPERS policy workshop, and are either offering or getting ready to offer some kind of researcher career development service for their research staff.

The full case studies are available in Annex I, but in regards to this report, we highlight the fact that they were asked whether they are measuring impact of their researcher career development activities. All of these organizations proved to have a strong commitment with researcher career development, nevertheless their level of implementation is somewhat different.

The Barcelona Supercomputing Centre is currently putting a career development plan in place, which will includes the setup of key performance indicators to monitor the impact

Moreover, researchers with a good set of transferable skills are likely to be more mobile –across countries, sectors and disciplines.

of the actions included in the plan, although at the time of responding, no further information could be offered.

The Polish Foundation for Science and Technology and the Helmholtz Foundation all have some sort of survey/questionnaire/"happy sheet" for participants of the offered courses and training.

The University of Copenhagen also compiles the reaction of the participants following the career development events using surveys, but in addition organizes focus groups and uses the data from the Danish National registry to analyse the impact of their research career development services. Specifically, the University of Copenhagen has been looking into the labour market of young researchers through several tracking studies of its PhD and postdoctoral researchers:

- Statistical analysis of PhDs one year after graduation
- Statistical analysis of Postdocs from 2008-2013
- Survey to PhDs graduated in 2014 and 2011

These studies produce both quantitative and qualitative data related to their working sector, positions, income, gender, etc., which are very useful for the design on researcher career development initiatives.

Finally, in the UK Vitae measures the impact of its career development activities using the principles of the *Concordat to Support the*

Career Development of Researchers on behalf the *Concordat Strategy Group.* In the UK, the Concordat provides an unambiguous statement of the expectations and responsibilities of researchers and their managers, employers and funders, which gives a framework to detail progress on measures related to recruitment and selection, recognition and value, or career development, among other. Most of this evidence is gathered from regular surveys to researchers in the UK:

- *Postgraduate Research Experience Survey* (PRES) to postgraduate research students run by the Higher Education Academy[5]
- *Careers in Research Online Survey* (CROS) run by Vitae to early career research staff[6]
- *Principal Investigators and Research Leaders Survey* (PIRLS) also run by Vitae to research leaders and principal investigators[7]

In addition to the surveys, Vitae also runs an *Impact and Evaluation Group* which provides support to the higher education sector regarding the evaluation of the professional development of researchers. Their work builds upon an impact framework developed in 2012 which is strongly based on the Kirkpatrick framework traditionally used for the

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[5] https://www.heacademy.ac.uk/institutions/surveys/postgraduate-research-experience-survey

[6] https://www.vitae.ac.uk/impact-and-evaluation/cros

[7] https://www.vitae.ac.uk/impact-and-evaluation/pirls

evaluation of training programs (see Section *How to measure impact. Two theoretical frameworks*).

LITERATURE REVIEW ON "MOBILE RESEARCHERS' CAREER DEVELOPMENT"

As part of PIPERS project, a literature review on "mobile researchers' career development" has been done (*D2.1 Literature review*). This literature review addressed empirical research projects, literature-based studies and theoretical debates in the forms of reports, books, journal articles, PhD theses and conference papers, to compile a comprehensive collection of references addressing a wide range of issues concerning mobile researchers' career development, across various disciplines and all career stages, in the higher education context in regions worldwide, including United Kingdom, Asia, North America, Europe, Australia and New Zealand.

The 208 references included in the report were reviewed to identify any relevant information on procedures to evaluate the impact of researcher career development activities. And whereas a significant number of documents focused on the impact of researcher mobility for employment, a serious lack of empirical studies on the skills needs was detected. Furthermore, none of the references focused on addressing the measuring the impact of professional development and training initiatives for researchers.

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MEASURING IMPACT AS PART OF THE HUMAN RESOURCES STRATEGY FOR RESEARCHERS (HRS4R)

The HRS4R supports research institutions and funding organizations in the implementation of the C&C principles in their policies and practices, and several of those principles are directly referred to the provision of career development support to the research staff.

The progress of aligning research institutions' Human Resources (HR) policies to the principles of the C&C is recognized with the 'HR Excellence in Research' award. For this, the organizations need to submit an action plan of how this is being, or will be, done.

Due to this, the action plans of 20 Spanish organizations holding the award were also reviewed to identify possible ways in which the impact of the researcher career development activities were going to be measured (see Annex II).

All the action plans reviewed showed different levels of implementation, ranging from organizations which at the time of presenting it already had career development plans (6) and training plans (7) in place, to those who were still working on them (10 and 9 respectively). Several organizations also mentioned the existence (2) or plans to arrange (1) mentoring schemes for the researchers, and most of them (13) had already training resources available for their research staff. Nevertheless, no specific plans for measuring the impact of the different activities could be found.

HOW TO MEASURE IMPACT. TWO THEORETICAL FRAMEWORKS

The limited amount of information available on the ways that stakeholders are currently measuring impact of their research career development strategies, and of training activities in general, is directly related to the complexity of this process.

Nevertheless, the importance of doing it is also clear in order to justify the investment of resources in these kinds of activities. Furthermore, a good knowledge on what is the outcome of these actions is also necessary to allow evaluating their effectiveness and thus applying any modifications if needed.

Considering that EURAXESS has only recently been requested to provide a wider range of services to researchers from the point of view of supporting their career development, an overview of two existing theoretical frameworks is offered next to facilitate EURAXESS members to design the way they will measure impact in any new researcher career development activity they could implement.

Note that both of these frameworks are not fully incompatible, and as a matter of fact there is some overlap between them. And also, that although both frameworks refer to measuring the impact of trainings specifically, they can be used to plan the impact

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KIRKPATRICK´S FOUR LEVEL TRAINING EVALUATION MODEL

measurement of other researcher career development activities (e.g., coaching programmes).

This model[8] was designed by Donald Kirkpatrick in the 50´s in order to structure the way in which impact could be measured in a sequenced way. It is based in for levels of impact. Some practitioners claim that the evaluation gets more complicated as the levels increase as many other factors can influence the measurements.

Level 1 - Reaction

Level 1 solicits opinions of the learning experience following a training event or course. Typical questions concern the degree to which the experience was valuable (satisfaction), whether they felt engaged, and whether they felt the training was relevant. Training organizations use that feedback to evaluate the effectiveness of the training, students' perceptions, potential future improvements, and justification for the training expense. Normally, the kind of questions to answer in this level would be:

- Did the trainees feel that the training was worth their time?
- Did they think that it was successful?
- What were the biggest strengths of the training, and the biggest weaknesses?

- Did they like the venue and presentation style?
- Did the training session accommodate their personal learning styles

A variety of sources estimate that approximately 80 percent of training events include Level 1 evaluation.

Level 2 - Learning

Level 2 measures the degree to which participants acquired the intended knowledge, skills and attitudes as a result of the training. This level is used by instructors and training executives to determine if training objectives are being met. Only by determining what trainees are learning, and what they are not, can organizations make necessary improvements. Level 2 can be completed through a post-evaluation only, although ideally it should involve:

- Identifying what you want to evaluate (i.e., the things that could change: knowledge, skills, or attitudes.)
- Measuring these areas identified both before and after training.
- Once training is finished, test your trainees a second time to measure what they have learned, or measure learning with interviews or verbal assessments.

Level 3 - Behavior

Level 3 measures the degree to which participants' behaviors change as a result of the training – basically whether the knowledge and skills from the training are then applied on the job. This measurement can be, but is not

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[8]
https://en.wikipedia.org/wiki/Donald_Kirkpatrick#Four_Levels_of_Learning_Evaluation

necessarily, a reflection of whether participants actually learned the subject material. For example, the failure of behavioral change can be due to other circumstances such as individual's reluctance to change. One of the best ways to measure behavior is to conduct observations and interviews over time, and the kind of questions to be addressed would be:

- Did the trainees put any of their learning to use?
- Are trainees able to teach their new knowledge, skills, or attitudes to other people?
- Are trainees aware that they've changed their behavior?

Level 3 evaluation necessarily involves both pre- and post-event measurement of the learner's behavior.

Level 4 - Results

Level 4 seeks to determine the tangible results of the training such as:

- Reduced cost
- Improved quality and efficiency
- Increased productivity
- Employee retention
- Increased sales
- Higher morale

While such benchmarks are not always easy or inexpensive to quantify, doing so is the only way training organizations can determine the critical return on investment of their training expenditures. One typical challenge is to identify whether specific outcomes are truly the result of the training. Level 4 requires both

pre- and post-event measurement of the training objective.

THE TAXONOMY OF TRAINING AND DEVELOPMENT OUTCOMES (TOTADO) EVALUATION FRAMEWORK [9]

This Whereas the Kirkpatrick's´ framework is based on measuring impact at the individual (trainee) level, the TOTADO framework establishes four basic levels at which impact needs to be assessed : individual, team (or work group), organisational and societal.

Individual outcomes

It establishes five different types of individual-level outcomes where the trainee is the unit of analysis:

- Affective (e.g. participant reactions to training, motivation, self-efficacy, attitudes, mental well-being)
- Cognitive (e.g., verbal knowledge, knowledge representation)
- Behavioural (e.g., off-the job task performance, on-the-job task performance)
- Physical (e.g. health, fitness, injuries)
- Instrumental (e.g., events, actions or status changes resulting from participation in training and development activities that are work intrinsic (increased job control), work extrinsic (pay rise, promotion) or

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[9] Birdi, K. (2010). The Taxonomy of Training and Development Outcomes (TOTADO): A new model of training evaluation. In The B.P.S. Division of Occupational Psychology Conference Book of Abstracts 2010, 32-36.

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work relational (forming new relationships or networks))

Team outcomes

According to the TOTADO framework, team level needs to be considered as teamwork gets more and more relevant in the work place.

The majority of the outcomes which will be described for individuals can also be applied by aggregation to the team context, although there is more focus on measuring interpersonal behaviours and group cognition and affect. The four dimensions of impact here where the team or group is the unit of analysis are therefore:

- Affective (e.g. changes in average team identity or trust)
- Cognitive (verbal knowledge, knowledge representation in terms of shared cognition)
- Behavioural (team task processes, intra-team processes)
- Instrumental (events, actions or status changes for the team as a whole such as increased team autonomy or gaining team bonuses)

Organizational outcomes

Although individual-level or team-level outcomes can be aggregated to provide organizational-level outcomes (e.g. proportion of company employees with a certain technical qualification), some variables can only be measured at the organizational level (e.g. company profitability, shared values). This

level would be very similar to level 4 at the Kirkpatrick´s framework. The four dimensions of organizational performance outcomes would be:

- Financial (e.g., turnover, profit, share price)
- Outputs (e.g., quantity, quality, variety of components, products or services)
- Processes (e.g., time to complete tasks, communication system efficiency, or any other aspect informing how well the organization works)
- Resources (human or non-human)

Societal outcomes

These relate to the impact of training beyond the organizational level where the area or group outside the organization is the unit of analysis. At this level, we can therefore also assess the impact of training on a sectoral, regional or even national basis. The five broad dimensions of societal impact we can consider are therefore:

- Economic (e.g., R&D investment in the region, sector or country);
- Health and Welfare (e.g., work absenteeism in the region, sector or country)
- Educational (e.g., scientific output in the region, sector or country)
- Law and Order (e.g., local crime rates in the region, sector or country)
- Environmental (e.g., pollution levels)

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CONCLUSIONS AND RECOMMENDATIONS FOR EURAXESS

The work done for preparing this report draws up three key conclusions around evaluating the impact of activities supporting researcher career development:

1. Most efforts for measuring the impact of researcher career development activities focus on the immediate individual output following the activities.

2. This is so, because measuring the impact of research career development activities can become very complex and time consuming, especially when looking for medium and long-term effects.

In Considering that EURAXESS has only recently received the mandate for providing career development services for all researchers, mobile or not, the network members getting involved in the organization and implementation of such activities should try to:

- Establish a good knowledge of what is the baseline situation before launching any initiative. Furthermore, the wide geographical coverage of the EURAXESS initiative could actually be used to organize coordinated efforts to evaluate the status quo and compare between organizations, regions, countries, etc.

- As part of the design of any activity in support of researcher career development, the measuring of impact should be included. The frameworks described in this report offer the guidelines to facilitate the design of an impact evaluation plan. Examples and templates are currently available in the Internet.

This report has been issued in the framework of the project PIPERS (Policy into Practice: EURAXESS Researcher Skills for Career Development, grant agreement number 643330), an international project funded by the European Commission through the 7th Framework Project that is coordinated by British Council.

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This paper can be found at: http://www.fecyt.es/es/publicacion/how-measure-impact-researcher-professional-development-strategies-state-art-and-role

PARTNERS