# European Alliance on Research Career Development

A Survey Analysis by the ESF Member Organisation Forum

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- Development of best practices and exchange of practices on science management, to benefit all European organisations and especially newly established research organisations.
- Harmonisation of coordination by MOs of national programmes and policies in a European context.

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# I. In brief

## a. Executive summary

EARCD: The ESF Member Organisation Forum 'European Alliance on Research Career Development' (EARCD) was launched in February 2011. In line with chapter 2 'Promoting European Research Careers' of the 'EUROHORCs and ESF Vision on a Globally Competitive ERA and their Road Map for Actions' EARCD aims to adopt a common strategy to ensure the attractiveness of research careers and thereby create and improve European-level and coordinated national policies and programmes for different career stages and career paths. It addresses the focus areas of: research career taxonomy, research career tracking, continuous professional skills development and mobility – both international and intersectoral – and peer review taking account of less linear career paths.

This survey: As one of the milestones of their activities EARCD members agreed during their launch conference to conduct a survey with the aim to investigate the respective organisations' policies and promising practices with reference to the focus areas of the Forum. The results, which are presented in this report, will be used to inform a number of further activities and publications, e.g. a guide for research organisations on the provision of continuous professional development opportunities for researchers at all stages, a set of policy recommendations on how to foster intersectoral mobility, a guideline for peer review for less linear career paths. During the survey phase, lasting from mid-May until the end of July 2011, 20 replies from research organisations were received, representing 17 different European countries.

Overview of findings:

*Research career taxonomy*

- EARCD seeks to endorse the 'European Framework for Research Careers' issued by the European Commission in July 2011 (R1 – first stage researcher, R2 – recognised researcher, R3 – established researcher, R4 – leading researcher). This survey, therefore, seeks to analyse whether or to what extent a joint European taxonomy for research careers could serve as a common denominator for future policies and activities by research organisations in Europe.

- Research funding and performing organisations in Europe are clearly strongly in favour of the new European taxonomy to describe research careers. Concerning the potential use of the framework, suggestions include utilising it as the basis for a common European classification, as a tool for national and international comparisons of research careers, as an instrument to better describe funding schemes to the respective target groups – also to be applied to the EURAXESS portal – and as a stimulus to encourage mobility of researchers. Caveats that were expressed by some organisations refer in particular to perceived difficulties in translating the European to existing national classifications. Others were concerned about the possibility that a potentially rigid application of the framework might make funding more complicated.

A large majority of organisations – 16 out of 20 – have their own taxonomies in place or refer to national or other European examples, e.g. the model as described by the League of European Research Universities. It is clear that these classifications almost exclusively build on a four-stage model, which

usually starts at the doctoral candidate level. As a commonality several organisations define timespans to differentiate between the individual career stages. Such taxonomies are mostly used for three different purposes: to define payscales and/or the occupational status of employees, to describe target groups and eligibility for funding schemes or, finally, for statistical analyses. Notably, participating organisations have only very limited awareness of taxonomies to categorise researchers in companies or doubt that such classifications are actually in place.

*Research career tracking*

- EARCD member organisations believe that by tracking research careers they will, for instance, be in a better position to analyse the impact of research career development schemes, to meet accountability requirements vis-à-vis their sponsors and main stakeholders, and to achieve strategic knowledge that may be used for policy planning and programme development. Besides such goals, this part of the questionnaire also had a very immediate objective. It served as preparatory analysis for an international workshop in Luxembourg in February 2012, co-hosted by ESF and the National Research Fund of Luxembourg.

- With regard to the organisations' experience with respect to career tracking we find a mixed picture: 12 organisations have gained experience, eight have not (yet) or did not provide a clear answer. It is clear that there is no distinct understanding of what is precisely meant by 'career tracking': some organisations have a focus on ongoing monitoring of researchers at certain career stages or in specific disciplines, others have developed national cohort studies to follow up on researchers' careers in regular intervals or conduct programme evaluation surveys and thereby track the careers of their alumni. It seems, thus, more appropriate to speak of 'research career surveys' in our context. In categorising the different types of survey we were able to derive a typology alongside the subsequent criteria: researchers' career stages (e.g. doctorate holders, senior researchers), level of analysis (national or organisational level), types of studies (e.g. programme evaluation, monitoring), and methodology (e.g. survey, database analysis).

- The introduction of systematic career tracking of researchers seems to be largely a work in progress. Slightly more than half of the organisations (11 out of 20) plan to introduce such systems, three do not and six did not provide a clear answer. It is, however, interesting to see that several organisations or countries that are considering introducing career tracking seem to be moving broadly in the same direction: i.e. career tracking as tool to measure the impact and success of funding or qualification schemes in view of accountability requirements.

*Continuous professional skills development*

- EARCD is preparing a guide for research organisations on the provision of continuous professional development opportunities for researchers at all stages of their careers. This guide builds on the relevant principles of the Joint European Skills Statement by the previous ESF Member Organisation Forum on Research Careers and on the European Charter for Researchers relating to researchers' career development and skills. In addition, EARCD runs a trial in different European countries which seeks to investigate whether the elements of the Researcher Development Framework as developed by the British organisation Vitae® apply to other European settings.

- It is clear that the issue of professional skills development is still rather new to research organisations in Europe: only eight out of 20 organisations indicated that they have relevant

policies in place, and national strategies or programmes are available in only four countries, with the longest tradition in the UK. Research performing organisations seem to be prepared to incorporate professional skills development in their internal staff development policies, whereas research funders are still seeking for appropriate approaches, e.g. by providing extra funds to their grantees. With regard to the target groups of such policies, most organisations address researchers at different career stages with a primary focus on the doctorate candidate (R1) level. Essentially, the need for continuous professional skills development seems to be recognised.

- However, the organisations give a fuzzy picture when they are asked to name examples of good practice in professional skills provision. This hints to a lack of common understanding of what is precisely meant by 'professional skills development' and how such skills could be best developed. What makes this situation even more difficult is the fact that research organisations barely acknowledge researchers' professional skills: six organisations take already acquired skills into consideration, only two appraise researchers' plans to develop their professional skills.

*Intersectoral mobility*

- EARCD addresses the issue of mobility in a broad sense, i.e. international, intersectoral, 'virtual' and interdisciplinary mobility. In view of intersectoral mobility it is EARCD's aim to formulate evidence-based recommendations on how the mobility of researchers between the public and the private research sectors could be improved. With this survey we, therefore, wanted to highlight obstacles to intersectoral mobility, to pinpoint policies or programmes to stimulate mobility between academia and industry and, eventually, to gain information on combined part-time positions or grants at universities or research institutes to researchers from industry – or vice versa.

- Research organisations in Europe, overall, seem to be quite conscious of the main obstacles to intersectoral mobility; the barriers were mentioned by several organisations: lack of acceptance on the side of the research organisation, differences in meriting systems, different salary levels or incentives, lack of interest/awareness of industry, different research cultures, lack of publications as a result of working in the private sector, few research activities of the private sector, a lack of interest in doctorate holders, limited awareness of researchers regarding career opportunities outside academia. It is apparent that a large majority of organisations (16 out of 20) have taken initiatives to foster intersectoral collaborations, with a certain focus on the doctoral candidate (R1) stage. Seven organisations have comprehensive approaches in place, addressing all stages of a research career.

- In analysing the details of policies or programmes to stimulate cooperation between the different sectors we find a distinct geographic distribution of policies and programmes. Whereas northern European countries focus on doctoral training (industrial PhD programmes), the primarily German speaking countries rely on broader approaches to support technology transfer and southern European countries refer rather to national legislation or ministerial programmes to foster intersectoral mobility and cooperation. Shared academia–industry positions are still somewhat scarce (eight out of 20 organisations gave positive replies) and have, perhaps with the exception of Norway, only recently been introduced.

*Peer review*

- In view of increasingly diversified careers, EARCD seeks to investigate whether or to what extent peer review is taking account of less linear career paths and to provide a guideline to this end. To the widest possible extent the Forum will derive these guidelines from the recently published European Peer Review Guide by the ESF Member Organisation Forum on Peer Review. However, we wanted to gain additional evidence on actual peer review policies or procedures in view of career breaks. In addition, we wished to find out details about the respective organisations' or countries' policy in dealing with different types of mobility in peer review.

- A considerable majority of organisations (14 out of 20) point out that they acknowledge career breaks. Altogether, we find that research organisations in Europe give particularly strong weight to family reasons and health issues when it comes to acknowledging career breaks in peer review: All organisations that recognise career breaks include parental leave. In the light of ageing populations it is, however, notable that only nine organisations in addition take note of care for the elderly. The subsequent classification describes research organisations' procedures for dealing with career breaks, namely: pragmatic approaches based on case-by-case decisions vs. formalised authorisation procedures, guidelines to reviewers, extension of eligibility windows or project durations, and return grants.

- When it comes to the consideration of mobility in peer review we see quite a mixed picture. In total, 11 out of 20 organisations acknowledge mobility, and all of them consider international mobility. Intersectoral mobility and virtual mobility, which is documented through international research collaborations and related publications, are of considerably lower importance (seven organisations each). Notably, the preparedness of researchers to embark on new interdisciplinary topics is less valued by research organisations (one reply).

## b. Conclusions and recommendations

Research career taxonomy: Overall, we see the need for further discussion and thoughts about how a European taxonomy for research careers can be translated to the national level and how it can be used to reach the goal of making research career paths and stages in Europe more transparent, comparable and, thus, predictable. This requires additional evidence by means of reports and surveys that focus on the structure of research careers, real conditions, and bottlenecks and requirements for action. The 'Researchers Report' in preparation by the European Commission might be one important step in this direction. Research organisations should contribute their perspectives to such reports and jointly decide if or to what extent they require additional evidence.

Research career tracking: Given the variety of concepts and practices regarding research career surveys, we see an urgent need for defining a joint framework and guidance to career tracking, one of the key objectives of the workshop on career tracking of February 2012. In this respect it will be useful to apply the European taxonomy for research careers in order to make transparent which groups of researchers are tracked and for what reason. It will also be essential to formulate a catalogue of benefits that research organisations offer by setting up career tracking systems with focus on accountability vis-à-vis their stakeholders.

Continuous professional skills development: In order to make research careers in Europe more transparent and give researchers a better feeling of what they can expect and what can be useful to them, there is an urgent need for a commonly agreed framework for researchers' professional skills development. The projected framework should also serve as tool for conducting needs analyses or as an R&D planning instrument in a more general sense. However, if professional skills development is to be seen as more than 'nice to have', but as a quality criterion in its own right, it will be essential for research organisations to acknowledge such skills in a more systematic and transparent way in their peer review and evaluation systems, ideally based on a compatible approach within the European Research Area.

Intersectoral mobility: Evidently, research organisations in Europe have taken dedicated measures to address the deficits of intersectoral mobility and collaborations. With respect to the development of research careers we can expect that career tracking programmes will be able to show the effectiveness of such policies and programmes. However, it is still necessary to analyse if further obstacles persist despite the measures that have been taken. One of these clearly refers to the question of how research organisations recognise merit and experience that researchers have gained in the context of intersectoral mobility.

Peer review: Our findings show that most organisations participating in this survey still treat various forms of mobility with reservations. International mobility seems to be the only commonly accepted feature. However, some organisations show considerable flexibility in dealing with mobility requirements. Yet if intersectoral mobility is still barely recognised it seems reasonable to question the effectiveness of schemes designed to foster this kind of mobility. In the light of these results further discussions are inevitable how research organisations could develop more flexible concepts to allow for increasingly diversified career paths of researchers and thus to better reflect the reality of current research careers. Ideally, EARCD should be able to formulate a set of peer review and evaluation criteria in view of the various forms of mobility to be adopted by the member organisations.

# II. The European Alliance on Research Career Development

## a. Mission and objectives

The ESF Member Organisation Forum 'European Alliance on Research Career Development' (EARCD) was launched in February 2011. In line with chapter 2 'Promoting European Research Careers' of the 'EUROHORCs and ESF Vision on a Globally Competitive ERA and their Road Map for Actions', EARCD aims to:

- adopt a common strategy to ensure the attractiveness of research careers
- create and improve European-level and coordinated national policies and programmes for different career stages and career paths.

EARCD builds on the results of the preceding ESF Member Organisation Forum on Research Careers, which were published in the report 'Research Careers in Europe – Landscape and Horizons' (http://www.esf.org/activities/mo-fora/completed-mo-fora/research-careers.html).

It addresses the subsequent focus areas:

- research career taxonomy and research career tracking
- continuous professional skills development
- mobility – both international and intersectoral
- peer review taking account of less linear career paths.

### b. Envisaged results of the MO Forum

EARCD is expected to conclude its work in December 2012. By that time the expected outcomes will be:

- a coherent description of European research career structure and taxonomy which encompasses private, public and higher education research
- mapping of existing good practice in tracking researchers' careers, in preparation for an international workshop in Luxembourg in February 2012
- a guide for research funding and research performing organisations on the provision of continuous professional development opportunities for researchers at all stages, in line with the European Charter for Researchers
- a set of policy recommendations on how to foster intersectoral mobility
- a guideline for peer review for less linear career paths.

## III. About this survey

### a. Objectives of the survey

At EARCD's launch conference in Brussels on 9th and 10th February 2011 it was decided to carry out a survey among participating Member Organisations and other research funding or performing organisations in Europe that are interested in the exercise. With the help of a questionnaire (see Annex 1) we aimed to gain insight into ESF Member Organisations' policies and practices in EARCD's focus areas. The results, which are presented in this report, will be used to inform the above mentioned activities and publications.

### b. The questionnaire: contents and structure

The questionnaire consisted of five major chapters referring to the focus areas of EARCD, namely:

- Research career taxonomy
- Research career tracking
- Continuous professional skills development
- Intersectoral mobility
- Peer review

In a last chapter we asked for some general information with the aim to identify which organisations participated and to receive the respondents' contact data.

All chapters of the questionnaire were designed in a similar way in that they usually began by providing an introduction to the respective topic. As a second step we asked for specific experiences of the organisation or the country in dealing with the topic. Next, we encouraged participants to share examples of good practice related to the field. Finally, we gave respondents the opportunity to name experts relevant to the topic or to reference reports or other related publications.

## c. Survey statistics

The original survey phase was meant to last from mid-May 2011 until the first week of June. However, we kept the electronic survey form accessible until the end of July 2011. This approach proved to be successful: we received replies from 20 research funding or performing organisations, representing different parts of Europe. Figure 1 shows the geographic distribution of the participating organisations, the table in Annex 2 lists each organisation. Out of the 20 participating organisations four are research performing organisations, 14 are research funders, one is a mixed research funding and performing organisation and one is an umbrella organisation of research agencies.

**Figure 1:** Geographic distribution of organisations participating in the survey

# IV. Findings in detail

## a. Research career taxonomy

The ESF and the European Commission have both produced sector-neutral taxonomies for research careers. The European Alliance on Research Career Development has proposed to the EC to ”integrate our descriptions of the research career structures and reach a common agreement on the purposes of such a structure.” EARCD seeks to endorse the document ’Towards a European Framework for Research Careers’ issued by the European Commission in July 2011[1]. This survey, therefore, seeks to analyse whether or to what extent a joint European taxonomy for research careers could serve as a common denominator for future policies and activities by research organisations in Europe.

The new taxonomy as proposed by the European Commission classifies research careers by using the following categories:

R1 – first stage researcher
(i.e. up to the point of doctoral graduation)

R2 – recognised researcher
(i.e. doctoral graduates or equivalent who are not yet fully independent)

R3 – established researcher
(i.e. researchers who have developed a level of independence)

R4 – leading researcher
(i.e. a researcher leading their research area or field; team leader or leading individual)

In the respective part of the survey we asked for participants’ opinions on the usefulness of a joint European taxonomy. Next we wanted to inquire about their awareness of existing taxonomies in their countries or organisations and eventually whether they knew of differing taxonomies, which are applied in the public as compared to the private enterprise research sector. As the survey also seeks to make national knowledge available to an international public we also encouraged respondents to give reference to any national reports, surveys or projects concerning research career taxonomy in their respective countries.

### 1. How should the new taxonomy be used?

Research funding and performing organisations in Europe are evidently strongly in favour of the new European taxonomy to describe research careers, as suggested by the EU. Roughly, the answer to this open question can be classified according to the categories depicted in Figure 2.

[1] Cf. http://ec.europa.eu/euraxess/pdf/research_policies/Towards_a_European_Framework_for_Research_Careers_final.pdf.

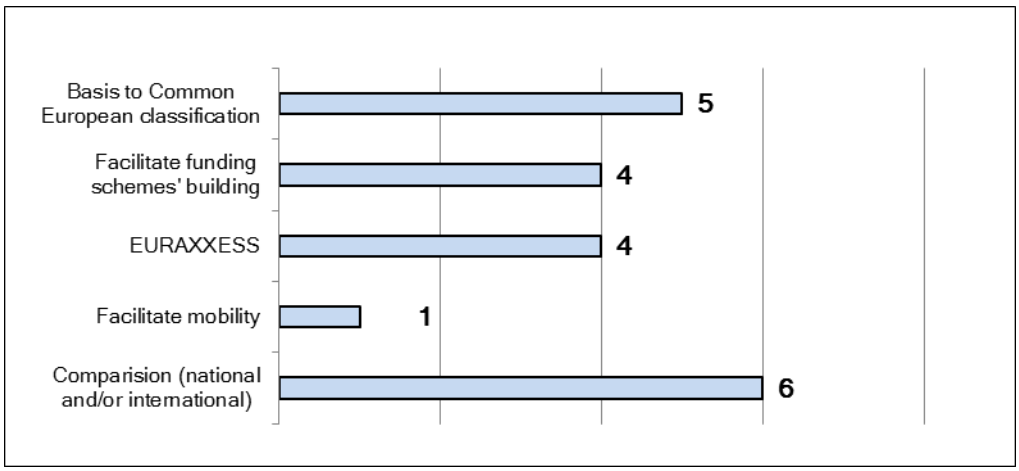



**Figure 2:** Member Organisations' views on the use of the European taxonomy, N=20

*Basis for common European classification*

Five organisations (Research Foundation – Flanders, German Helmholtz Association, Swedish Council for Working Life and Social Research, Scientific and Technological Council of Turkey, Research Councils UK) believe that the taxonomy should be the basis for classifying research careers both at European and national level. Advantages that the organisations highlight refer to enabling mobility into or within the European Research Area and between sectors and the potential for common use by the Member States:

- *"Make it easier for non-EU researchers to understand the European research landscape, and the profiles aimed at in specific calls/ vacancies etc. – as a rough approximation to performance-based remuneration".* (Research Foundation – Flanders)
- *"If related countries or organisations match their existing researcher titles with this framework, it will facilitate the mobility in EU and between sectors."* (Scientific and Technological Council of Turkey)

*Tool for national and international comparison*

Six organisations (Research Foundation – Flanders, German Helmholtz Association, German Research Foundation, Foundation for Polish Science, Swedish Council for Working Life and Social Research, Swedish Research Council, Scientific and Technological Council of Turkey) stress the opportunity for comparison between national and European classifications of research careers. Some advocate that the European taxonomy should be adopted in the widest possible sense at national level, some see a stronger relevance for the international comparison of researchers' career stages. Notable in this respect are the statements by the Swedish Council for Working Life and Social Research and the Swedish Research Council:

- *"The taxonomy should be used as widely as possible, and by as many stakeholders as possible (EC, National govn organisations etc.). The Research Councils in the member states should use it in their description of their career system, in career tracking etc."* (Swedish Council for Working Life and Social Research)

- *"A well designed taxonomy would be very useful in comparing researchers internationally. This could be also useful when designing EU research instruments and comparing instruments between different countries."* (Swedish Research Council)

*Funding schemes and EURAXESS*

In line with the finding above, four organisations emphasise:

- the opportunity of a joint taxonomy to develop new funding schemes and/or to better address the target groups of existing programmes (Estonian Science Foundation, Research Fund of Luxembourg, Slovak Research and Development Agency, Swedish Research Council)
- the suitability of the taxonomy for improving the structure of the EURAXESS job portal and funding information (Danish Agency for Science, Technology and Innovation, Estonian Science Foundation, Research Fund of Luxembourg, Research Councils UK).

In this sense, for example, the Slovak Research and Development Agency sees the advantage of *"defining the group of researchers at which a particular call for project proposals is aimed"*. The Research Fund of Luxembourg underlines the need for the *"EURAXESS websites to structure information on Jobs and Funding Opportunities"*.

*Limitations of a joint European taxonomy*

Despite the strong support of a joint European taxonomy for research careers several organisations have expressed caveats. Some institutions are concerned about a rigid use of the taxonomy. The Research Foundation – Flanders would like to avoid the notion 'taxonomy' and rather use 'profiles', and the German Helmholtz Association is worried that *"if the framework is implemented in a rigid way, it might result in excluding excellent researchers from certain programmes/funding opportunities because they don't fulfil the criteria"*.

Others pinpoint potential difficulties in translating or harmonising the EU taxonomy with existing national models. The Scientific and Technological Council of Turkey, therefore, underlines that *"Existing taxonomies or titles must not be changed with the categories in the Framework, they must be linked with the categories."* The Swedish Research Council shares this analysis.

In addition, a few organisations still find the denominations of the EU taxonomy misleading. The Research Council of Norway underlines: *"We would prefer a change in the naming of R2 and R3 as we think a researcher becomes established before recognised."* And the Hungarian Scientific Research Fund points out: *"From R2 on, they should be used with caution since "recognised," "established," and "leading" can mean different things."*

Overall, we see the need for further discussion and thoughts on how the European taxonomy for research careers can be translated to the national level and how it can be used to reach the goal of making research careers in Europe more transparent, comparable and, thus, predictable.

## 2. Are you aware of a taxonomy to describe research careers, which is used by your organisation or in your country?

Notably, 16 organisations stated that taxonomies to describe research careers are in place, which are mostly used at the level of the respective organisation. The four organisations that did not refer to such a taxonomy are the German Helmholtz Association, the Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding, the Spanish National Research Council and the Scientific and Technological Council of Turkey.

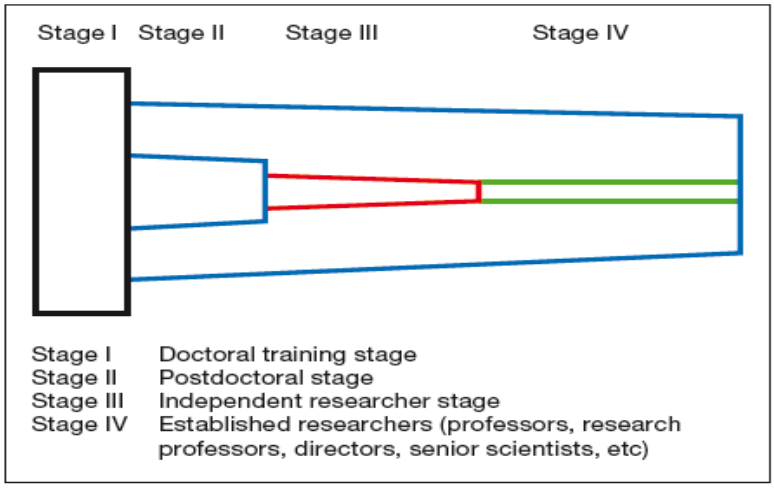
*Reference to other European taxonomies: LERU and ESF*

Three organisations use previously existing European taxonomies. The Slovak Research and Development Agency and the Swedish Research Council follow the four-stage taxonomy that was developed by the League of European Research Universities (LERU) in 2010. However, the Slovak Research and Development Agency states that a *"different classification system is used by the Law no. 131/2002 for the university teachers and researchers*".

The LERU taxonomy defines the following stages of a research career, which is focused on academia[2]:

- Phase 1: Doctoral candidate
- Phase 2: Post-doctoral Scientist
- Phase 3: University Scientist
- Phase 4: Professor

The preceding ESF Member Organisation Forum on Research Careers also builds on a four-stage model, but tends to be more sector-neutral (Figure 3). This classification is referred to by the Research Fund of Luxembourg, which uses it to describe its funding instruments, but has slightly adapted it to national needs.




[2] League of European Research Universities (Author: Geoffrey Boulton): Harvesting talent: strengthening the research careers in Europe, Brussels 2010, p. 9. http://www.leru.org/files/publications/LERU_paper_Harvesting_talent.pdf.

**Figure 3:** Schematic representation of a four-stage research career by ESF[3]

## 3. Specify the features of the national or organisational taxonomy. Which categories are in place to describe the different career stages?

*Use of national or organisation-specific taxonomies*

Apart from the three organisations that build on existing European taxonomies, 13 participants mentioned national or organisation-specific taxonomies. These almost exclusively use a four-stage classification, which usually starts at the doctoral candidate level. However, some research performing organisations, such as the Italian National Institute of Nuclear Physics or the Slovak Academy of Sciences, have defined their own nomenclature, which defines three different stages:

- *"Ricercatore – Primo Ricercatore – Dirigente di Ricerca To a first approximation these stages might be compared with R2, R3 and R4 respectivley of the taxonomy proposed by the EC. The main difference might be the higher level of independence, compared to R1, required for our stage Ricercatore. Graduated and PhD students, and post-Doc lie outside these three categories although they aren't, obviously, considered as equivalent."* (Italian National Institute of Nuclear Physics)

- *"1. scientific worker 2. established scientific worker (scientist) 3. leading scientific worker (scientist)"* (Slovak Academy of Sciences).

The three-stage model is also used by the Austrian Science Fund: *"Graduate Student Postdoc SeniorPostDoc."*

*Distinctive features of career stages*

It would prove too detailed to present an exhaustive list of all the categories used by organisations participating in this survey. However, several organisations define time-spans to differentiate between the different stages of a research career. This approach is typified by the replies from the Swedish Research Council and the Hungarian Scientific Research Fund:

- *"1. Graduate student – researchers in initial training up until their doctoral degree, usually a 4-year period 2. Postdoc – the first years after a doctoral degree, a not yet fully independent researcher, between 0–5 years after doctoral degree 3. Young researcher – researchers in the beginning of their career, usually 5–10 years after doctoral degree 4. Senior researcher – well established researchers, 10 years and after doctoral degree (all categories have some degree of overlap)". (Swedish Research Council)*

- *"Postdoctoral researcher: within 8 years of degree and below 40 years of age. Researcher: beyond postdoctoral criteria." (Hungarian Scientific Research Fund)*

3 European Science Foundation (Authors: Scholz, Beate; Vuorio, Eero; Matuschek, Susanne; Cameron, Iain): Research Careers in Europe – Landscape and Horizons. Report by the ESF Member Organisation Forum on Research Careers, Strasbourg 2010, p. 17.

### 4. For which purpose is this taxonomy being used?

In analysing the replies by member organisations we are able to distinguish three different purposes for which the respective taxonomies are being used:

- To define payscales and/or occupational status of employees (Research Foundation – Flanders, Austrian Science Fund, Danish Agency for Science, Technology and Innovation, Italian National Institute of Nuclear Physics, Estonian Science Foundation, Slovak Academy of Sciences, Research Council of Norway, Swiss National Science Foundation).
- To describe target groups and eligibility for funding schemes (Research Foundation – Flanders, Swedish Council for Working Life and Social Research, Slovak Research and Development Agency, Swedish Research Council, Estonian Science Foundation, Research Fund of Luxembourg, German Research Foundation, Foundation for Polish Science, Hungarian Scientific Research Fund, Swiss National Science Foundation).
- For statistical analyses (Swedish Research Council, Research Councils UK).

### 5. In your organisation or country, are there different taxonomies in place to categorise researchers in industry as compared to academia?

As Figure 4 shows, research funding and performing organisations in Europe have very limited knowledge about taxonomies to categorise researchers in companies as compared to university or non-university research. Only three organisations (Swedish Council for Working Life and Social Research, Research Council of Norway, Hungarian Scientific Research Fund) indicate that companies use their own taxonomies. This remark by the Research Council of Norway may be seen as describing the general situation: *"Research institutes and industry use other taxonomies. For these institutions there is no common, standard taxonomy."* (Research Council of Norway)

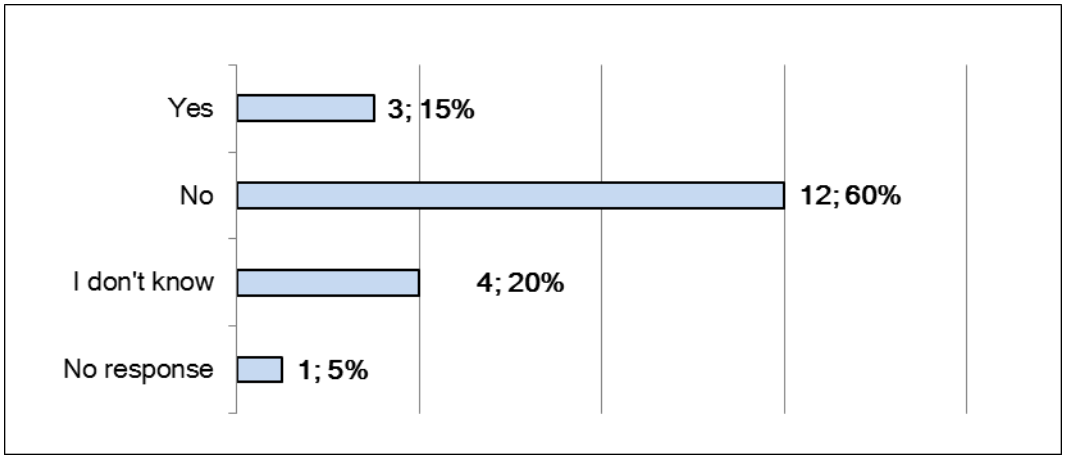



**Figure 4:** Awareness of there being different taxonomies in place to categorise researchers in industry as compared to academia, N=20

### 6. Please give reference to any national reports, surveys or projects concerning research career taxonomy in your country (references and links)

Despite the fact that many research funding and performing organisations in Europe have taxonomies in place to describe research careers, there are hardly any surveys or reports available that analyse the use of such taxonomies. Notably, only nine organisations answered to this question. The National Research Fund of Luxembourg and the Estonian Science Foundation mention the lack of such reports; however, the latter emphasises:

- *"In 2011, Estonia initiated a new programme for monitoring research and development and innovation policies. Some work packages of this programme will analyse the career systems and also mobility of researchers in Estonia."* (Estonian Science Foundation)

- In addition, the Swedish Research Council points out: *"Recently the goverment decided that each university can decide on their own which taxonomy to be used. No national report exists to my knowledge."*

An exception in this regard is probably the report referred to by the Danish Agency for Science, Technology and Innovation, which provides a "*Description of Job structure for Academic staff at universities."*

Reports cited by the German Research Foundation and the Swiss National Science Foundation analyse the situation of academic staff or early career researchers more in general.

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- Denmark: http://www.ubst.dk/en/laws-and-decrees/Memorandum%20on%20Job%20Structure%20for%20Academic%20Staff%20at%20Universities%202007.pdf

- Germany: Bundesbericht zur Foerderung des Wissenschaftlichen Nachwuchses (http://www.buwin.de/), Reinard Kreckel, Zwischen Promotion und Professur (http://www.hof.uni-halle.de/projekte/wiss_nachwuchs.htm ; http://www.hof.uni-halle.de/projekte/struktur_akademischer_lehre.htm http://www.hof.uni-halle.de/projekte/wiss_personal.htm)

- Poland: www.nauka.gov.pl/fileadmin/user_upload/eng/scientificresearch/2961.pdf; http://www.nauka.gov.pl/nauka/polityka-naukowa-panstwa/analizy-raporty-statystyki/analizy-raporty-statystyki/artykul/diagnoza-mobilnosci-instytucjonalnej-i-geograficznej-osob-ze-stopniem-doktora-w-polsce-w-roku-2009/ ;

- Sweden: Careers for Quality, Inquiry

- Switzerland: Zur Lage des akademischen Mittelbaus, Young *et. al.*(2009) http://www.sbf.admin.ch/htm/dokumentation/publikationen/bildung/mittelbaustudie.pdf

## b. Research career tracking

Career tracking plays a significant role in EARCD. Members of the Forum believe that by tracking the careers of current or former researchers they will able to obtain important information, for example to:

- define methodologies for career tracking exercises by using common denominators/key questions, in order to enhance comparability
- gain better insight into career development, obstacles researchers encounter, success or failure
- understand what drives individuals or groups to develop a career in research or what incentivises different career choices
- analyse the impact of research career development schemes, be they funding schemes or institutional HR programmes by research performing institutions
- be able to meet accountability requirements vis-à-vis sponsors and main stakeholders within the research system, first and foremost taxpayers
- achieve strategic knowledge that may be used for policy planning and programme development.

Besides these goals, the part of the survey referring to career tracking also had a very immediate objective. It served as preparatory analysis for an international workshop on career tracking in Luxembourg in February 2012, co-hosted by the European Science Foundation and the National Research Fund of Luxembourg. The survey encouraged participants to name experts for career tracking and contact persons of the participating organisations to be invited for the workshop. As the latter results are only of immediate relevance for the workshop we do not present them here.

Beyond the preparation of the workshop this survey seeks to investigate

- earlier experience of organisations or countries in career tracking of researchers
- good practice examples
- future plans to set up career tracking systems.

### *7.* Does your organisation or your country have earlier experience in career tracking of researchers?

Figure 5 shows that a majority of participating organisations (12 out of 20) indicate they have gained experience in career tracking of researchers or refer to other national experience. However, eight organisations (Austrian Science Fund, Estonian Science Foundation, Hungarian Scientific Research Fund, Italian National Institute of Nuclear Physics, National Research Fund of Luxembourg, Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding, Slovak Academy of Sciences, Swedish Council for Working Life and Social Sciences) have either not yet gained experience in career tracking or did not provide an answer to this question.

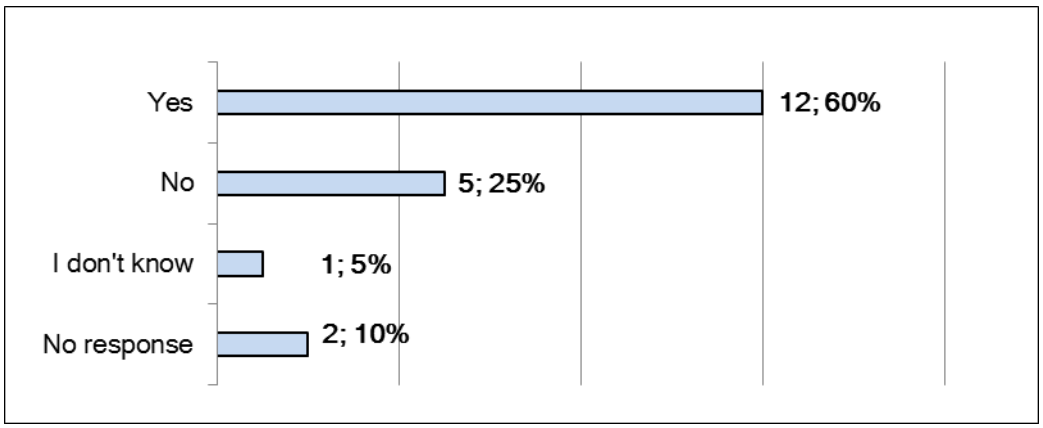


**Figure 5:** Experience in career tracking gained by research organisations in Europe, N=20

*Different understanding of career tracking*

In analysing the results we can distinguish between different categories of career tracking studies. However, we need to acknowledge that probably not all kinds of surveys that were mentioned could be seen as 'career tracking' in the sense of the following definition: *"A type of research study that follows the same group of subjects over an extended period of time."* (*http://en.mimi.hu/marketingweb/tracking_studies.html*)

Several are rather to be seen as monitoring approaches as they provide one-time or continuous analyses of researchers' career stages or status groups, or monitor researchers in specific disciplines:

- *"There is an expertise centre on R&D monitoring in place, which has a department specifically devoted to HR aspects of research, which has some experience in the field."* (Research Foundation – Flanders)

- *"In Denmark it is possible to track researchers' careers through the civil registration number. Through this it is possible to see how much a researcher earns, the researcher's job category, etc. Furthermore, through the research organisations' grants it is possible to link the funding instrument with the career development of the researchers. An evaluation on the conditions for researchers' careers is currently being carried out. The evaluation is e.g. looking at whether Danish universities are adequately able to attract and retain the best Danish and foreign researchers and how researchers' careers are handled at the universities. The target group of this evaluation is the political system, the universities and the research councils which can use this evaluation to further develop the research system. Besides, an evaluation is currently being carried out about the economic effect of private companies having a PhD employed. This evaluation is expected in September 2011."* (Danish Agency for Science, Technology and Innovation)

- *"The Swedish Research Council has made one analysis of our junior researchers in medicine and health and one survey of senior researchers in medicine and health. A government inquiry "Careers for quality" was made in 2008."* (Swedish Research Council)

Some Countries, such as the United Kingdom or Turkey, have developed national cohort studies to follow up on researchers' careers at regular intervals. The Turkish approach in particular builds on international standards:

- *"TURKSTAT has initiated the Survey on Careers of Doctorate Holders (CDH) which is based of the international project initiated by OECD in collaboration with UNESCO and EUROSTAT. First results were published for the year 2009. The results of the survey will serve as a tracking opportunity of doctorate holders which constitute the majority of researchers."* (Scientific and Technological Council of Turkey)

- *"The most recent UK Cohort studies have led to a series of publications 'What do Researchers Do?"* (Research Councils UK)

For some organisations career tracking of researchers forms part of evaluation surveys, which are used to analyse the impact and quality of funding schemes. This is the case for the German Research Foundation, the Foundation for Polish Science and the Swiss National Science Foundation. The German Science Foundation, for instance, describes in which programmes researchers' careers have been tracked: *"A survey was conducted on what became of the fellowship holders funded by DFG (…) When the Emmy Noether Programme was evaluated, one of the points of interest was what became of the researchers funded. (…). In the yearly report on the Research Training Groups, data is collected on what happens to the PhD candidates after their PhD."*

Given the variety of approaches, we use the more neutral term 'research career surveys' in the following context, instead of speaking of 'career tracking surveys'.

These findings underline the need for EARCD member organisations to work on a common understanding of career tracking. This will allow the individual organisations to form an opinion on which approach to career tracking or surveying might be most appropriate to their needs.

*Typology of research career surveys*

Table 1 shows that career tracking practices of research organisations or countries differ by:

- Researchers' career stages: e.g. doctorate holders, senior researchers
- Level of analysis: national or organisational level
- Types of studies: e.g. programme evaluation, monitoring
- Methodology: e.g. survey, database analysis.

| Organisation | Researchers stage | Level of analysis | Type of study | Methodology |
|---|---|---|---|---|
| **German Helmholtz-Association** | Alumni | Organisation level | | Programme |
| **Research Foundation - Flanders** | All researchers | Organisation level | | Rolling base |
| **Scientific and Technological Council of Turkey** | Doctorate Graduates | National level | **PhD Tracking**<br>Survey with analysis on: gender, disciplines, duration, source of funding, employment rate, international mobility | Survey 2009 |
| **Danish Agency for** | All researchers | National level | **1, Systematic tracking of researchers:** | 1, Rolling base |

| | | | | |
|---|---|---|---|---|
| **Science, Technology and Innovation** | | | track researchers carrier; track funding **2, Upcoming evaluation on researchers' carriers:** carrier tracking at Universities | 2, Evaluation |
| **Slovak Research and Development Agency** | Young researchers | National level | | Survey |
| **Swedish Research Council** | Junior and senior researchers | Discipline level (Health and Medicine) | | Survey |
| **German Research Foundation** | 1&2 Grant holders of specific funding schemes<br>3, PhD holders | 1, Organisation level<br>2, Funding scheme level<br>3, Organisation level | **1, Grant holders tracking.** Institutional ties and contact with the private sector; International mobility; benefit to the research work and subsequent career; Professional situation **2, Employment status** for Emmy Noether Programme<br>3, N/A | Survey |
| **Research Councils UK** | Doctoral Graduates | National level | **Employment of Doctoral graduates:** in non-HE and HE research roles; Employment sector; discipline clusters, type of contract... Three years time series | Surveys and interviews |
| **Foundation for Polish Science** | Laureates | Organisation level | Actual affiliation and publications | Survey, interviews and database search |
| **Swiss National Science Foundation** | Grant holders | Organisation level | Next career steps | |

**Table 1:** Typology of research career surveys

Although both the Research Council of Norway and the Spanish National Research Council indicate to be aware of career tracking practices, we were not able to make a classification, as the respective replies are of a more general character.

- *"Not sure if we understand the question correctly. However, there are regulations concerning appointment and promotion to teaching and research positions."* (Research Council of Norway)
- *"In fact, CSIC is the most important research Institution in Spain. The career tracking has been changed several times in the last twenty years."* (Spanish National Research Council)

These different approaches underline the need for defining a joint framework and guidance to career tracking, which is one of the key objectives of the workshop on career tracking of February 2012. In this respect it will be useful to apply the European taxonomy for research careers in order to make transparent which groups for researchers are tracked and for what reason.

*References to career surveys:*

- Germany: *A "survey was conducted on what became of the fellowship holders funded by DFG, http://www.dfg.de/download/pdf/dfg_im_profil/evaluation_statistik/programm_evaluation/ib02_2004en.pdf (English summary). When the Emmy Noether Programme was evaluated, one of the points of interest was what became of the researchers funded, see http://www.dfg.de/download/pdf/dfg_im_profil/evaluation_statistik/programm_evaluation/ib02_2*

*008en.pdf (English summary). In the yearly report on the Research Training Groups, data is collected on what happens to the PhD candidates after their PhD, see http://www.dfg.de/download/pdf/dfg_im_profil/evaluation_statistik/programm_evaluation/bericht_dfg_monitoring_grk_2011.pdf"* (German Research Foundation)

- Slovakia: *"Survey "Mladí vo vede" (The young in science) performed by the Ministry of Labour, Social Affairs and Family"* (Slovak Research and Development Agency)
- Sweden: "*government inquiry 'Careers for quality'"* (Swedish Research Council)
- United Kingdom: *'What do researchers do? http://www.vitae.ac.uk/policy-practice/107611/What-do-researchers-do-.html"* (Research Councils UK)

## 8. Is there any initiative of career tracking you are aware of that should be presented as 'good practice' for the planned workshop?

Even if a majority of organisations have stated that they are aware of career surveys, Figure 6 shows that only five respondents wanted to name good practice examples to be presented at the career tracking workshop in Luxembourg in February 2012. This discrepancy may potentially be seen as symptom of our finding above that not all surveys are career tracking analyses in the genuine sense.

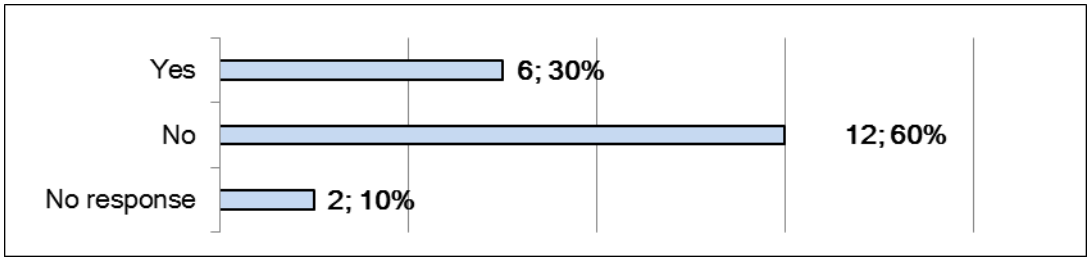


**Figure 6:** Organisations referring to 'good practice' in career tracking to be presented during the planned workshop, N=20

*References to 'good practice':*

- Belgium*: "centre on R&D monitoring, especially the branch at Ghent University"* (Research Foundation – Flanders)
- Germany: *"The careers of doctoral researchers are followed in a panel survey, see http://www.forschungsinfo.de/profile/start.html"* (German Research Foundation)
- Luxembourg: *"OECD CDH, VITAE, EUA"* (National Research Fund of Luxembourg)
- Poland: *"career tracking by the Wellcome Trust"* (Foundation for Polish Science)
- Sweden: *"The Swedish Research Council has made a follow-up and evaluation of junior researcher positions from the Swedish Research council, Medicine Career development and success'".* (Swedish Research Council)

## 9. Is there a specific interest in setting up systematic career tracking of researchers funded by your organisation or in your country?

Answers to the question whether survey participants are aware of specific interests by their organisation or in their country in setting up a systematic career tracking system of researchers produce a "mixed picture". Notably, half of the replies are positive, whereas (Figure 7) only three organisations give a negative answer and six organisations are either not sure or do not answer this question at all. The introduction of career tracking systems is of course an upcoming issue, although a considerable number of organisations have not yet developed their own strategy.

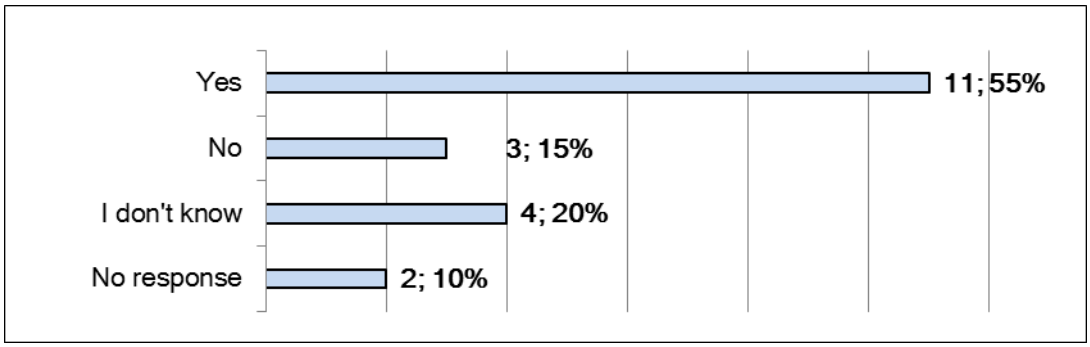


**Figure 7:** Interests by research funding organisation or by country to set up systematic career tracking of researchers, N=20

It is, however, interesting to see that several organisations or countries that are considering introducing career tracking seem to move broadly in the same direction: i.e. career tracking as a tool to measure the impact and success of funding or qualification schemes. Explicit in this regard are the statements by the German Helmholtz Association, which is setting up an alumni scheme, the German Research Foundation, the Hungarian Scientific Research Fund, the National Research Fund of Luxembourg and the Foundation for Polish Science:

- *"Monitor the success of our funding programmes (e.g. for early stage researchers), keep in touch with the researchers, establish a network, learn more about career paths and opportunities of researchers in EU."* (Helmholtz Association of German Research Centres)
- *"The DFG together with the Institute for Research Information and Quality Assurance (iFQ) is preparing a monitoring of Postdocs funded by DFG."* (German Research Foundation)
- *"For all calls for proposals – to evaluate how they contribute to various tracks of research career."* (Hungarian Scientific Research Fund)
- *"PhD and postdoctoral fellowship programme"* (National Research Fund of Luxembourg)
- *"As we fund individual researchers (not projects), our aim is to enhance their career. So the progress of their careers is one of the basic questions while we evaluate our activity."* (Foundation for Polish Science)

Certainly, the career tracking workshop in February will have to show if the five statements above indicate a trend, given that other organisations were less specific in describing their own or the national plans. For instance, the Danish Agency for Science, Technology and Innovation acknowledges: *"Yes – in Denmark we regularly look at this but systematic career tracking could be an advantage."*

## c. Continuous professional skills development

EARCD is preparing a guide for research funding and research performing organisations on the provision of continuous professional development opportunities for researchers at all stages of their career. This guide builds on the relevant principles from the Joint European Skills Statement by the previous ESF Member Organisation Forum on Research Careers as well as on the "European Charter for Researchers" (cf. http://ec.europa.eu/euraxess/index.cfm/rights/index), relating to researcher's career development and skills:

- Career development
- Value of mobility
- Access to research training and continuous development
- Access to careers advice
- Intellectual property rights
- Supervision
- Teaching
- Evaluation/appraisal systems

In view of formulating clear recommendations in the guide, this survey analyses examples of good practice in terms of institutional policies and/or implemented actions for any of the above principles.

In addition, EARCD runs a trial in different European countries which seeks to investigate whether the elements of the Researcher Development Framework as developed by the British organisation Vitae® (www.vitae.ac.uk) apply to other European settings. In Vitae's description we read: *"The Vitae Researcher Development Framework (RDF)*[4] *is a professional development framework for planning, promoting and supporting the personal, professional and career development of researchers in universities and research institutes."* The ultimate goal of this exercise is to come up with a European Framework for Researchers' Professional Skills Development.

With this survey we would like to address a few additional issues:

- Availability of policies or guidelines for professional skills development of researchers in the organisations or at national level
- Awareness of good practice examples
- Procedures to acknowledge researchers' professional skills development.

### 10. Does your organisation or country have policies or guidelines for professional skills development of researchers in place?

Figure 8 shows that the issue of professional skills development of researchers is still rather new to research funding and performing organisations in Europe or has at least remained largely unexplored. Only eight organisations (German Helmholtz Association of Research Centres, Austrian Science Fund, Scientific and Technological Council of Turkey, Italian National Institute of Nuclear Physics, National Research Fund of Luxembourg, German Research Foundation, Research Councils UK,

[4] www.vitae.ac.uk/rdf

Foundation for Polish Science) indicate that their organisation or country has policies or guidelines for professional skills development in place. However, we could find that in some cases, even if the answer was "No", respondents pointed to ongoing developments or policy debates in their countries (Danish Agency for Science, Technology and Innovation, Research Council of Norway).

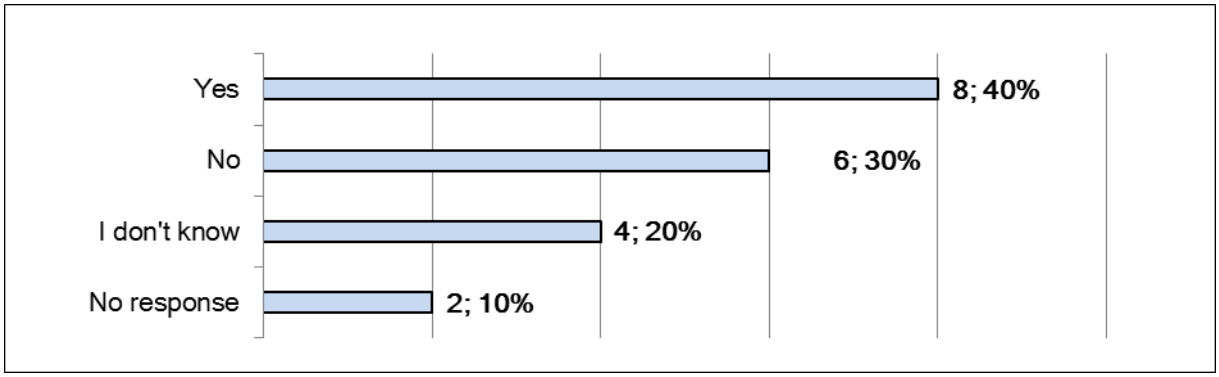


**Figure 8:** Replies by participating organisations referring to national or institutional policies for professional skills development of researchers, N=20

Analysing the descriptions provided by the respective respondents we could identify the subsequent categories:

- National policies vs. policies at the level of the organisations, in a few cases both
- Upcoming topic vs. established policies and programmes
- Professional skills development as integral part of internal staff development policies
- Different target groups that are addressed by the different strategies or measures.

*Level and tradition of transferable skills policies or programmes*

For the time being, only four countries can refer to national policies and programmes. Here, the United Kingdom is clearly in the lead with the longest tradition – in relative terms – of about ten years, whereas for other countries like Luxembourg, Norway or Turkey this is still largely work in progress. The UK also seems exceptional in that national policies and instruments are available, whereas the realisation largely happens at the level of the different institutions, for instance within the universities. In Turkey we can find a rather recent National Science and Technology Human Resources Strategy and Action Plan:

- *"Continuity of professional development skills policies and guidelines in place across all career stages."* (Research Councils UK)
- *"Under development: a* ***national strategy*** *jointly developed by the FNR, the Ministry of Research, the University of Luxembourg and the public research centers as well as representatives from the private sector."* (National Research Fund of Luxembourg)

- *"We are just about to have dialogue meetings with some key institutions in Norway on this issue. The aim of these meetings will be to get a better overview of current policies and guidelines at institutional level."* (Research Council of Norway)

- *"Supreme Council for Science and Technology (SCST), which is the highest level STI policy making body in Turkey, adopted* ***National Science and Technology Human Resources Strategy and Action Plan*** *in its 22nd meeting on 15 December 2010. "Increasing research culture, enhancing skills and experiences of researchers" and "Increasing mobility of researchers" are the relevant aims of the National Science and Technology Human Resources Strategy and Action Plan; various strategies and actions set to obtains these aims like: Establishing post-doc mechanism, enhancing national, intersectoral and international mobility mechanisms. Main strategies related with this aim is as follows: • Developing mechanisms for improving skills of researchers, • Adopting Post-doc mechanism, • Supporting interdisciplinary studies and cooperation, • Developing support mechanism to enabling young successful researchers to establish their own research groups, • Enhancing national, intersectoral and international mobility of researchers."* (Scientific and Technological Council of Turkey)

A total of five organisations name examples for professional skills policies and programmes (German Helmholtz Association, Austrian Science Fund, Italian National Institute of Nuclear Physics, German Research Foundation, Foundation for Polish Science). We would like to add the Danish Agency for Science, Technology and Innovation, which states: *"No, there are* ***no national*** *guidelines. However, employers and employees must have a yearly conversation (staff development dialogue) where e.g. the employee's skills development is discussed. Universities have their own policies or guidelines for professional skills development for researchers."*

We will refer to the Helmholtz Association and the Italian Institute of Nuclear Physics separately as their programmes form part of internal staff development policies. As for the others we can see that in the case of the Austrian Science Fund and the German Research Foundation professional skills development programmes are developed and applied by the respective grant-holders. The Foundation for Polish Science is different in so far as it develops a policy for the whole organisation:

- *"Curricula for doctoral students in doctoral schools".* (Austrian Science Fund)

- *"The DFG, being a funding organisation, does not employ researchers. However, all DFG-funded Research Training Groups and Graduate Schools as well as university wide schools, IMPRS etc. include skills training in various ways which can be chosen à la carte according to needs and interests."* (German Research Foundation)

- *"We have signed C&C and we* ***are in the process*** *of reviewing our practices and polices. Many of the principles are already in place (ethical codes, requirements of the candidates and laureates, etc)".* (Foundation for Polish Science)

*Professional skills development as part of internal staff development policies*

We found that especially for research performing organisations like the German Helmholtz Association and the Italian National Institute for Nuclear Physics it seems essential to incorporate

professional skills development in their internal staff development policies. This could also involve strategic alliances with universities in order to develop the teaching experience of their staff:

- *"Guideline for doctoral training, tailor-made transferable skills training for PhD students In-house management academy (professional training for different target groups, from young to experienced researchers, administrative statt etc.) Different Mentoring-Programs Tailor-made training program for the Helmholtz-Young Investigators Groups Leaders (Postdocs)"* (German Helmholtz Association)

- *"INFN has a Committee for* ***Professional Skills development and Training of scientific*** *(as well as non-scientific) employees. The Committee promote and coordinate training initiatives following the recommendations and under the supervisory of the INFN management. INFN signed "local" agreements with Universities allowing its* ***researchers to be involved in teaching as "Invited Professor"."*** **(**Italian National Institute for Nuclear Physics)

*Different target groups addressed by professional skills development*

From what we can tell from the descriptions that were provided by the different organisations the British, Danish and Turkish policies as well as the approach by the Italian National Institute for Nuclear Physics are the most comprehensive in that they refer to all stages of researchers' careers. The scope of the professional skills policy by the German Helmholtz Association, too, is rather wide: it includes researchers at the levels R1 through to R3. The Austrian Science Fund and the German Research Foundation focus primarily on R1.

*References to guidelines for professional skills provision:*

- Austrian Science Fund: http://www.fwf.ac.at/en/projects/doctoral_programs.html

- German Research Foundation: http://www.dfg.de/download/programme/graduiertenkollegs/antragstellung/1_301_e/1_301e.pdf, p 17ff.

- Foundation for Polish Science: http://www.fnp.org.pl/files/CodeofEthics-FNP.pdf

- Scientific and Technological Council of Turkey: National Science and Technology Human Resources Strategy and Action Plan (2011–2016) - http://www.tubitak.gov.tr/tubitak_content_files//BTYPD/arsiv/STI_in_Turkey_2010.pdf - http://www.tubitak.gov.tr/sid/1049/pid/468/index.htm

- Research Councils UK: *"Vitae the UK organisation championing the personal, professional and career development of doctoral researchers and research staff (R1, R2 and R3) and the Researcher Development framework; which fits with the Quality Assurance Agency for Higher Education (QAA) code of practice (R1) http://www.qaa.ac.uk/academicinfrastructure/codeOfPractice/section1/postgrad2004.pdf and the Concordat to support the Career Development of Researchers (R2). Research Council Fellowships (R3) include expectations for professional development. http://www.bbsrc.ac.uk/funding/fellowships/david-phillips.aspx The Leadership Foundation for Higher Education provides support for professional development (R3 and R4) as does the Higher Education Academy (R3 and R4) http://www.heacademy.ac.uk/."*

## 11. Are you aware of any examples of good practice related to professional skills development of researchers by your organisation or in your country?

Interestingly, the number of organisations that are aware of good practice examples of professional skills development is larger than that of organisations that themselves have relevant policies or programmes in place. As Figure 9 shows, 11 organisations in total (German Helmholtz Association, Research Foundation – Flanders, Austrian Science Fund, Scientific and Technological Council of Turkey, Italian National Institute of Nuclear Physics, Slovak Research and Development Agency, Swedish Research Council, National Research Fund of Luxembourg, German Research Foundation, Research Councils UK, Spanish National Research Council) name such examples. Notable is, however, that some organisations that have either provided a negative answer to the earlier question or have answered they were not sure now mention positive examples in view of their own organisation (Spanish National Research Council, Swedish Research Council).

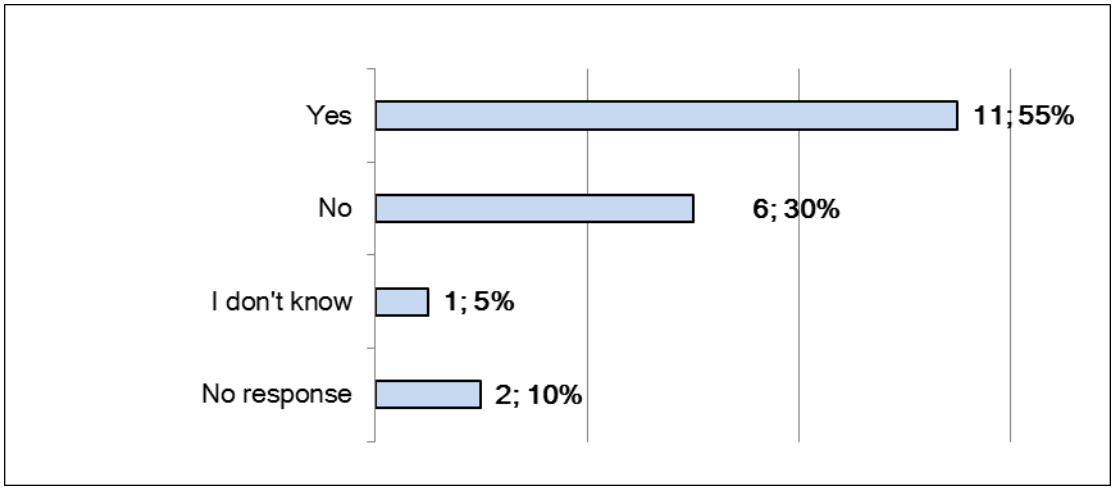


**Figure 9:** Awareness of good practice examples related to professional skills development by respective organisation or country, N=20

*Examples of good practice named by participating organisations*

In most cases (8 out of 11) organisations refer to their own programmes or instruments, whereas two (Research Foundation – Flanders, Slovak Research and Development Agency) name other national examples. Overall, the examples are too varied as to be further classified. We therefore display a list of statements and references only.

List of good practice examples referring to own organisation:

- Austrian Science Fund: http://www.fwf.ac.at/en/projects/doctoral_programs.html,
- Italian National Institute for Nuclear Physics: *"Activity of INFN Committee for Professional Skills development and Training is supported by a database* ***used to manage the budget and expenses of training courses and for tracking the training of researchers."***

- National Research Fund of Luxembourg: *"From the national strategy that we develop, the FNR will derive a programme and fund courses for the research community; on top of this**, each AFR fellow receives 2000 EUR per year that he may use for his/her individual training plan** (conference or summer schools, courses, scientific or non scientific training); in addition, the FNR accompanying measures offer **up to 4000 EUR per year for training and conference participation**, on the basis of **individual requests."***

- Spanish National Research Council: *"CSIC has a **program (JAE) oriented to develop professional skills for people related to the science** (from technicians and technical workers to predoc and postdoc positions)".*

- Swedish Research Council: *"1. Researchers that are successful in the first step in the application to ERC Young Investigator Award get a **training opportunity in preparation for the interview**. 2. Applicants for reintegration grant write a career plan. We are also discussing to have a **career plan in our new international mobility grant."***

- Scientific and Technological Council of Turkey: *"TUBITAK has a wide range of funding programmes for researchers aiming to develop their careers, skills and experience. These programmes range from national and international PhD, post-doc scholarships, **covering the expenses for participation of an international conference, organizing national and international events, short-term research scholarship in international universities and research centers**. For instance, one of the recent funding programmes (shortly, EVRENA) gives **opportunity to researchers to expand their research team with short-term senior international researchers**. It covers the fellowship for the international researcher and related other project costs. With this programme, national researchers can increase their experience and skills by working together established international researchers."*

- Research Councils UK: *"The Vitae **Database of Practice*** http://www.vitae.ac.uk/dop."

List of good practice examples referring to other organisations or institutions:

- Research Foundation – Flanders: *"Different universities are taking initiatives within the framework of newly created doctoral schools. An example is the "**competence profile for PhD candidates**", developed in Leuven, and intended **to make PhD candidates aware of the skills they (may) acquire during a research career**."*

- Slovak Research and Development Agency: *"E.g. "Soft skills" project by EUREA (http://www.eurea.sk)".*

  Checking the website of this organisation we find the following mission statement: "*EUREA supports the development of modern trends in the secondary and tertiary education. The members and co-workers of the organization will offer knowledge and skills in the form of lectures, trainings and publication activities, namely for university students, young research workers and the people working in the field of science research."*

In conclusion, we can state that research organisations do obviously not only have different policies in place and apply diverse programmes, they also seem to lack a common understanding of what is meant by 'professional skills for researchers' and how these could be best developed and acknowledged. This is not to say that all organisations should stick to the same set of measures.

However, in order to make research careers in Europe more transparent and give researchers a better feeling of what they can expect and what can be useful to them, there is clearly an urgent need for a commonly agreed framework for researchers' professional skills development. It can be expected to provide not only orientation to researchers themselves, but also to policy makers and to those organisations that fund or carry out programmes. However, we still see the need for research organisations to consider how they can better acknowledge the professional skills that their researchers have developed.

### 12. Does your organisation or country have policies or procedures in place to acknowledge researchers' professional skills?

Next we wanted to find out if or how research organisations in Europe acknowledge professional skills that researchers have already acquired or plan to acquire. Figure 10 demonstrates that the results are rather poor when it comes to the acknowledgement of professional skills. Altogether eight organisations gave a positive reply, of which two (Spanish National Research Council, Research Councils UK) indicate they acknowledge plans for professional skills development, whereas the other six (Italian National Institute of Nuclear Physics, Swedish Research Council, German Research Foundation, Research Council of Norway, Foundation for Polish Science, Swiss National Science Foundation) state that their primary interest is in already acquired skills.

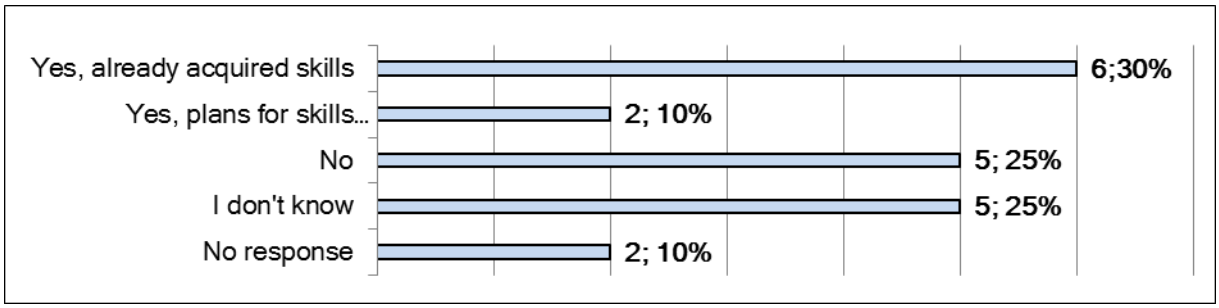


**Figure 10:** Do research organisations or countries acknowledge researchers' professional skills development? N=20

In addition, although providing a negative answer, the Danish Agency for Science, Technology and Innovation explains: *"Not specifically but each researcher has the possibility to negotiate a pay supplement once per year as part of a salary agreement."* As we can see, we only find very limited evidence whether or to what extent research organisations acknowledge researchers' plans to acquire (additional) professional skills. The Spanish National Research Council does not describe its policy any further. Research Councils UK is the only organisation which provides slightly more information: *"Training Needs Analysis for researchers at all stages are established across sector."*

Considering those six organisations that acknowledge researchers' already acquired skills we find that most use this information in the framework of peer review procedures or appraisal systems for career advancement. The German Research Foundation is exceptional in its more decentralised approach: "***Some*** *of the Research Training Groups and Graduate Schools have their own* ***credit point systems and certificates.****"* The remaining five organisations use this information as assessment tool or as prerequisite for applications. In the latter context the Swiss National Science Foundation stipulates: *"At the level of individual funding instruments, there* ***are mobility and experience requirements****."*

- ***"Participation to training initiatives** CAN be used to qualify the competences and skills of researchers".* (Italian National Institutes of Nuclear Physics)
- *"Regulations for appointments and promotion to teaching and research positions".* (Research Council of Norway)
- *" Peer review".* (Foundation for Polish Science)
- *"The **applicant state** in their CV if they have **teaching experience for students, supervision of graduate students or postdocs**. Also **public outreach activities and patents should be included** in the CV."* (Swedish Research Council)

These results underline that research organisations in Europe evidently have only very limited awareness of how they could use information on researchers' plans to develop their professional skills in a prospective manner. Clearly, the projected common framework for researchers' professional skills development could serve as a tool for conducting needs analyses or as a planning tool in a more general sense. Equally neglected is the use of information about acquired skills as an indicator of quality in selection or career promotion procedures. If professional skills are being seen as more than 'nice to have', but as a quality criterion it will be essential firstly to acknowledge such skills in a more systematic and transparent way and secondly to develop a compatible approach within the European Research Area.

## d. Intersectoral mobility

EARCD addresses the issue of mobility in a broad sense, i.e. both international and intersectoral mobility. In relation to intersectoral mobility it is EARCD's aim to formulate evidence-based recommendations on how intersectoral mobility of researchers could be improved. We, therefore, dedicated some questions to this issue, namely:

- obstacles inhibiting intersectoral mobility that have been identified by the respective organisation or in the country
- awareness of policies or programmes to stimulate mobility between academia and industry
- availability of combined part-time positions or grants at universities or research institutes to researchers from industry – or vice versa.

### 13. Which obstacles inhibiting intersectoral mobility have been identified by your organisation or in your country?

Awareness of obstacles to intersectoral mobility seems to be quite obvious in research organisations across Europe. Only five organisations (Austrian Science Fund, German Research Foundation, Italian National Institute for Nuclear Physics, Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding, Swedish Council for Working Life and Social Research) did not answer this question.

In analysing the different replies we were able to identify the subsequent answer categories. Explanations that are given by two or more organisations refer to:

- Lack of acceptance on the side of the research organisation, differences in meriting systems
- Lack of interest/awareness of industry
- Different research cultures
- Lack of publications
- Different salary levels or incentives
- Few research activities of the private sector
- Missing interest in doctorate holders
- Limited awareness of research career opportunities outside academia

Individual organisations mention:

- Barriers in employment legislation of researchers in public universities
- Difficulties to resourcing interactions on the side of small and medium-sized enterprises (SMEs)

*Lack of recognition or awareness and differences in culture*

The most frequently mentioned obstacles, named four times each, are the lack of recognition and the differences in meriting systems by public research organisations (German Helmholtz Association, Estonian Science Foundation, Research Council of Norway, Swedish Research Council) versus the lack of awareness or interest in intersectoral collaborations which the research organisations perceive on the side of industry (Research Foundation – Flanders, National Research Fund of Luxembourg, Spanish National Research Council, Swiss National Science Foundation). Equally four organisations (Research Foundation – Flanders, National Research Fund of Luxembourg, Research Council of Norway, Foundation for Polish Science) see the major hurdle to intersectoral mobility in the different cultures of research in the private as compared to the public sector and/or vice versa. Illustrative in this regard are the three following statements:

- *"Lack of acceptance from the side of research organisations for researchers that have worked in industry."* (German Helmholtz Association)
- *"Not sufficient interest of industry".* (Swiss National Science Foundation)
- *"Cultures/expectations between the world of academia and firms are too different (very applied vs. fundamental)".* (National Research Fund of Luxembourg)

*Differences in rewarding*

Another important impediment to intersectoral mobility, which is clearly linked to the differences in recognition and cultures, refers to the differences in rewarding structures. By rewarding we do not only mean financial rewards, especially salaries, but also the opportunity to publish. Not by

coincidence, the notions ‘publish’ and ‘public’ have the same word stem, whereas in the private research world the confidentiality of results and economic competition have to be seen as two sides of the same coin.

Three organisations (Estonian Science Foundation, Research Council of Norway, Research Councils UK) point out that limitations to publish might be crucial for hindering intersectoral mobility. The Estonian Science Foundation describes the difficulties that a researcher might encounter in moving from the private to the public sector quite comprehensively: *“Going from Industry to Academia is problematic due to the requirements set for academic staff (esp. professors): lack of publications, competitions very area specific, work experience not taken into account, few professor positions available, candidates from academia preferred (selection process may not be too transparent). Requirements for individuals in academia and industry differ.“*

In addition to these barriers, which exist on the public side, it is necessary to ask, too, why a researcher should be inclined to change sectors when salaries are much higher in companies than in public research institutions. Consequently, the Danish Agency for Science, Technology and Development points to the “*lack of incentives for researchers to move between sectors”*. Both the German Helmholtz Association and the Slovak Agency Research and Development Agency specifically pinpoint the large differences in salaries, which they perceive as major obstacle inhibiting intersectoral mobility.

*Lack of activities and interest*

Two organisations respectively highlight the lack of research activities in industry (Slovak Academy of Sciences, Foundation for Polish Science) or the lack of interest by companies in hiring doctorate holders (Research Foundation – Flanders, Spanish National Research Council). However, low rates of private investment in R&D certainly do not apply to all European countries. Thus, the question of whether or to what extent private investment in R&D correlates with employment rates of doctorate holders in industry might need further investigation. There might be a negative correlation in the sense of the Flemish and the Spanish organisations that even if the private sector accounts for a large degree of R&D investment, research is perhaps carried out by researchers who would not necessarily have to hold a PhD. Two other organisation (National Research Fund of Luxembourg, Research Council of Norway) assume there might be a lack of interest or awareness of career opportunities outside academia on the researchers’ side.

*Particular obstacles to intersectoral mobility*

Two organisations (Scientific and Technological Council of Turkey, Research Councils UK) mention specific aspects that might prevent mobility between the public and the private research domains:

- *“Researchers employed in universities can run projects in collaboration with universities. But they cannot spend their sabbatical period in the private sector. There are currently barriers in employment legislation of researchers in public universities.”* (Scientific and Technological Council of Turkey)

- *"The UK has a relatively high level of interaction e.g. about 33% of studentships and grant funded by the Research Councils are collaborative Size Enterprises are less aware of the value of interactions and find resourcing interactions more difficult." (Research Councils UK)*

### 14. Are you aware of any policies or programmes by your organisation or in your country to stimulate mobility between academia and industry?

In view of the obstacles to intersectoral mobility we asked the participating organisations to share their knowledge about their organisation's or national policies or programmes to stimulate intersectoral mobility. Figure 11 shows a majority of 16 organisations is aware of such policies or programmes. Only four organisations (Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding, Slovak Academy of Sciences, Swedish Council for Working life and Social Research, Scientific and Technological Council of Turkey) either indicated they are not aware of such programmes or they did not provide an answer to this question.

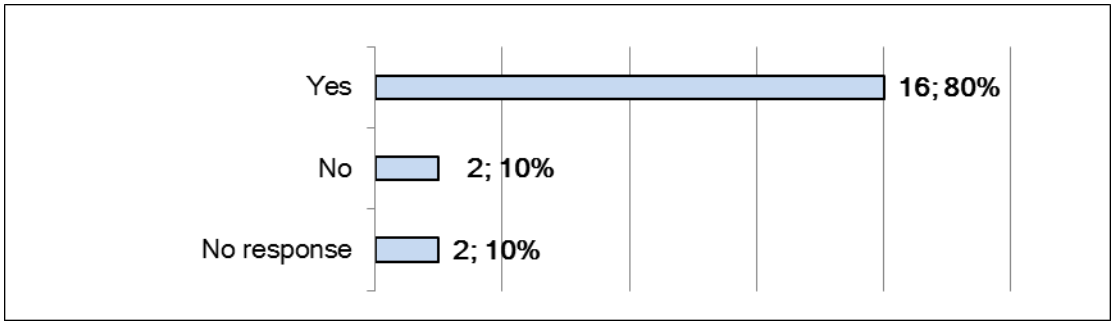


**Figure 11:** Awareness of policies or programmes to stimulate intersectoral mobility, N=20

In line with the European taxonomy for research careers we also wanted to find out which stages of a research career such policies or programmes refer to:

R1 – first stage researcher
(i.e. up to the point of doctoral graduation)

R2 – recognised researcher
(i.e. doctoral graduates or equivalent who are not yet fully independent)

R3 – established researcher
(i.e. researchers who have developed a level of independence)

R4 – leading researcher
(i.e. a researcher leading their research area or field – team leader or leading individual)

As Table 2 shows, the majority of organisations (13 in total) addresses first stage researchers, i.e. in general doctoral candidates. Thus, there are obviously strong beliefs that intersectoral mobility should be fostered at the earliest possible stage. Six out of the thirteen organisations (Research Foundation – Flanders, Danish Agency for Science, Technology and Innovation, Estonian Science Foundation,

Swedish Research Council, Spanish National Science Foundation, Foundation for Polish Science) indicated that they focus their programmes or policies exclusively on this stage. The National Research Fund of Luxembourg targets also the R2 stage, usually the postdoc level. The German Helmholtz Association, the Italian National Institute for Nuclear Physics and the Hungarian Scientific Research Fund start from the R2 level and address also the R3 and R4 levels. The remaining seven organisations have a comprehensive approach in that they provide measures to all stages of a researchers career.

| Organisation | R1 | R2 | R3 | R4 |
|---|---|---|---|---|
| **German Helmholtz-Association** | | X | X | X |
| **Research Foundation – Flanders** | X | | | |
| **Austrian Science Fund** | X | X | X | X |
| **Danish Agency for Science, Technology and Innovation** | X | | | |
| **Italian National Institute for Nuclear Physics** | | X | X | X |
| **Slovak Research and Development Agency** | X | X | X | X |
| **Swedish Research Council** | X | | | |
| **Estonian Science Foundation** | X | | | |
| **National Research Fund of Luxembourg** | X | X | X | X |
| **German Research Foundation** | X | X | X | X |
| **Research Council of Norway** | X | X | X | X |
| **Research Councils UK** | X | X | X | X |
| **Spanish National Research Council** | X | | | |
| **Foundation for Polish Science** | X | | | |
| **Hungarian Scientific Research Fund** | | X | X | X |
| **Swiss National Science Foundation** | X | X | X | X |

**Table 2:** Career stages that the measure to stimulate intersectoral mobility refer to (several answers were possible)

In analysing the details that participating organisations provided concerning the policies or programmes in their country or by their organisation we find a distinct geographic distribution of policies and programmes. Whereas northern European countries focus on doctoral training, the primarily German speaking countries rely on broader approaches to support technology transfer strategies. Southern European countries refer to national legislation or ministerial programmes to foster intersectoral mobility and cooperation.

The UK seems to have the most comprehensive approach, in that the research councils offer particular support schemes for all research career stages. Research Councils UK lists: *"R1 CASE and Industrial CASE studentships and Student Internships, Knowledge Transfer Partnerships (KTPs), R2 Knowledge Exchange Fellowships, Policy Fellowships, KTPs, R3 Industrial Fellowships, R4 Industrial Fellowships".*

*Focus on the doctorate*

The Scandinavian countries have 'industrial PhD' programmes in place. Several schemes are mentioned, which are geared to supporting new forms of intersectoral collaboration in doctoral education. Such programmes are described by the Danish Agency for Science, Technology and Innovation, the Research Council of Norway and the Swedish Research Council, and also by the Estonian Science Foundation. The specifications by the Danish and the Swedish organisations are illustrative:

- *"In Denmark we have an **Industrial PhD project** which is a **business focused PhD project** lasting three years where the **student is hired by a company and enrolled in a university** at the same time. **The company receives a monthly wage subsidy of DKK 14,500 while the university has its expenses for supervising etc. covered**. The PhD student works full time on the project and divides his or her time equally between the company and the university."* (Danish Agency for Science, Technology and Innovation)

- *"Swedish Research Council has an **Industrial PhD programme**. A collaborative grant between academia and industry is supported by a flat rate corresponding **to at least 50% of the salary on the PhD student**. **Rest of the project is financed by the company**. Other Swedish financing bodies have other programmes."* (Swedish Research Council)

It can be assumed that the recently introduced new programme component in the framework of the Marie Curie Scheme, the European Industrial Doctorates, have been modelled on these programmes. Thus, national good practice obviously provides guidance to new European or supranational approaches. Interestingly, the Estonian Science Foundation has already used European funds to set up its Doctoral Studies and Internationalisation Programme:

- *"Doctoral Studies and Internationalisation Programme DoRa (co-financed by the European Social Fund), one of the programme activities – Strengthening research cooperation between universities and businesses, industrial PhD students, the activity enables universities to train doctoral students in cooperation with companies. Students work part time (under employment contract) in an enterprise or R&D institution (other than university). They continue to study at the university and pursue practical research at the partner company. The university will be responsible for the quality and progress of student's studies. Has supervisor both at university and enterprise (the latter is a specialist in his field, needn't have PhD). Degree awarded upon successful completion of studies – PhD."* (Estonian Science Foundation)

In addition, the Research Foundation – Flanders and the National Research Fund of Luxembourg try to endorse public–private research collaborations with the help of their funding programmes for doctoral and/or postdoctoral researchers:

- *"'Baekelandt fellowships', which allow a PhD candidate to spend part of the time in a private company closely associated to the PhD project".* (Research Foundation – Flanders)

- *"The FNR manages the AFR-PPP scheme, a specific public–private partnership component of the AFR PhD and Postdoc scheme; funding: 100% of salary of PhD/Postdoc (R1 and R2 career stages)."* (National Research Fund of Luxembourg)

*Emphasis on technology transfer*

Notably, the organisations in the D-A-CH (Germany, Austria, Switzerland) countries have a broader approach to promoting intersectoral cooperation in the framework of their technology transfer strategies. Therefore, these programmes are either not limited to a specific research career stage or encompass primarily the more advanced research career stages. This is specifically the case for the German Helmholtz Association. The German Research Foundation and the Swiss National Science Foundation describe their programmes most explicitly:

- *"The collaboration between academic institutions and industry (as well as non-profit organisations) is encouraged (knowledge transfer projects). Output from DFG-funded projects can be further developed with an industrial partner. Funding can be applied for only by the academic partner. The companies/institutions are expected to contribute towards the project appropriately; a joint work programme is essential. Transfer projects are limited to the pre-competitive sector. Prerequisite: cooperation agreement that deals with the issues relating to publication and intellectual property rights."* (German Research Foundation)

- *"NCCR, National Centres of Competence in Research, promote long-term research projects in areas of vital strategic importance for the development of science in Switzerland, for the economy of the country, and for Swiss society. Each Centre of Competence is under the directorship of a university or another recognized research institution which allows research groups based at the home institution to network with other teams working throughout Switzerland. Thus, NCCRs improve the research structure in Switzerland. Other important features are: research of outstanding, internationally recognized quality, knowledge and technology transfer, training and the promotion of women researchers."* (Swiss National Science Foundation)

*National legislation and ministerial schemes*

Both the Italian National Institute for Nuclear Physics and the Spanish National Research Council refer to regulations or initiatives at the state level:

- *"A **Government Law** D.L. 213/2009 has been **approved though not fully applied yet**. Art.12, comma 4 requires Research Performing Institution to include in their policies initiatives for: - the development of independence and professional skills of researchers; - supporting the mobility and for eliminating gender discrimination in the access to managerial positions - **supporting national and international mobility as well as between the Research Institution and Industry**."* (Italian National Institute of Nuclear Physics)

- *"INNCORPORA program from the Spanish Ministry of Science and Innovation gives some funding and credit facilities to companies in this direction."* (Spanish National Research Council)

*References to programmes or strategies supporting intersectoral mobility or cooperation*

- Austrian Science Fund: http://www.fwf.ac.at/de/applications/trp-translational-research.html
- Slovak Research and Development Agency: http://www.apvv.sk/buxus/docs//agentura/dokumenty/programme-cusase.pdf

- National Research Fund of Luxembourg: http://www.innovation.public.lu/fr/financer-projets/rd-entreprise/detachement-temporaire-personnel/index.html
- Research Councils UK: http://www.rcuk.ac.uk/kei/ktportal/Pages/home.aspx
- Foundation for Polish Science: http://www.fnp.org.pl/programmes/overview_of_programmes/facilitating_technology_transfer/ventures_programme; http://www.fnp.org.pl/programmes/closed_programmes/innovator_programme

**15. Does your organisation or your country offer combined part-time positions or grants at a university, or research institute, to researchers from industry – or vice versa?**

Crossing the intersectoral boundaries of public and private research with the help of shared positions is still an exception in most countries participating in this survey. As Figure 12 shows, only eight organisations gave a positive answer to this question. In addition, we have to take into account two statements by the National Research Fund of Luxembourg and the Research Council of Norway in answering the previous question:

- *"The Ministry of Economic Affairs manages a Scheme since 2009 funding the temporary secondment of employees between academia and industry, limited to SMEs as hosts; funding of 50% of up to 3 years of salary costs, and certain administrative costs".* (National Research Fund of Luxembourg)
- *Adjunct professor  Professor II positions* (Research Council of Norway)

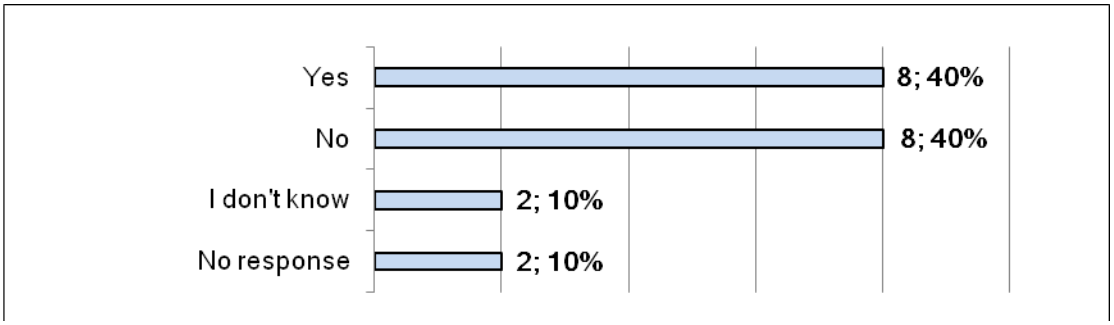


**Figure 12:** Organisations or countries offering combined part-time positions or grants, N=20

*Shared academia*–industry positions

The Research Foundation – Flanders refers to the scheme it has previously mentioned, the Baekeland fellowships, for the support of doctoral candidates, and the Italian National Institute mentions again the Government Law D.L. 213/2009. Research Councils UK highlights a specific aspect of the CASE programme, which we have referred to in the preceding chapter and name an additional aspect: *"CASE and Industrial CASE studentships, KTPs and Fellowships can all be combined part time and we are aware of many Industry funded professorships at universities"*.

Both the German Research Foundation and the German Helmholtz Association name a recent model of shared positions, which have been realised by the Karlsruhe Institute of Technology:

- *"At the Karlsruhe Institute of Technology, some junior professors have a 50% position at the university and a 50% position in industry."* (German Research Foundation)
- *"BELLA – KIT/BASF Joint Laboratory for Batteries and Electrochemistry* http://www.int.kit.edu/english/916.php (German Helmholtz Association)

  In following this link we find the subsequent specification of the collaboration: "*The development of new and improved materials for electrochemical energy storage devices is currently one of the most active fields in materials research. At BELLA (Batteries and Electrochemistry Laboratory), which is being funded in equal parts by KIT and BASF SE, both fundamental as well as application-driven projects on materials for future battery generations will be performed. The infrastructure and equipment of the laboratory offers all opportunities for synthetic work, electrochemical characterization of electrode and electrolyte materials, as also for the study of cell performance."*

*Clinical research positions*

The Danish Agency for Science, Technology and Innovation together with the Swedish Research Council depicts a particular form of intersectoral positions: shared appointments of medical doctors between clinics and research institutes, which are supported through dedicated grants:

- *I.e.* ***Clinician Scientists Positions*** *- part-time appointments. See:* http://en.fi.dk/funding/calls/calls_2011/call-for-proposals-spring-2011-the-danish-council-for-independent-research-medical-sciences/fss-call-for-proposals-spring2011-final.pdf (Danish Agency for Science, Technology and Development)
- *The Swedish Research Council has a programme named Grant for* ***Half-time Position*** *in* ***Clinical Research.*** (Swedish Research Council)

In conclusion of this chapter we can state that it is clear that dedicated measures have been taken to address the deficits of intersectoral mobility and collaborations. With respect to the development of research careers we can expect that career tracking programmes will be able to show the effectiveness of such policies and programmes. However, it is still necessary to analyse if further obstacles persist despite the measures that have been taken. One of these might refer to the issue of how merits and experience are recognised, which researchers have gained in the context of intersectoral mobility. This aspect will be studied in the framework of research organisations' approaches to dealing with various career paths in peer review.

## e. Peer review

In view of increasingly diversified careers, EARCD seeks to investigate whether or to what extent peer review is taking account of less linear career paths. In this regard it builds on the finding of the previous ESF Member Organisation Forum on Research Careers according to which *"Research careers nowadays tend to be less path-dependent and to develop more and more into 'portfolio*

*careers'"*.[5] EARCD aims to provide a guideline for peer review to take special note of less linear career paths. To the widest possible extent these guidelines will be derived from the recently published European Peer Review Guide by the ESF Member Organisation Forum on Peer Review (http://www.esf.org/activities/mo-fora/peer-review.html). Nevertheless, we asked a few additional questions in order to achieve an insight into the organisations' and also national policies and practices, referring to:

- The availability of peer review policies or procedures to take into account career breaks and if so which career breaks are acknowledged
- The consideration of mobility taken in peer review and, should this be the case, which kinds of mobility are considered
- Details of the organisation's or country's policy in dealing with mobility in peer review.

### 16. Does your organisation or country have peer review policies or procedures in place to take into account career breaks?

A number of research organisations in Europe nowadays take career breaks into account in their review procedures (Figure 13). A considerable majority of 14 organisations points out that they acknowledge career breaks. Only six organisations (Foundation for Polish Science, Swedish Research Council, Swedish Council for Working Life and Social Research, Hungarian Scientific Research Fund, Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding, Scientific and Technological Council of Turkey) provide a negative or no answer to this question.

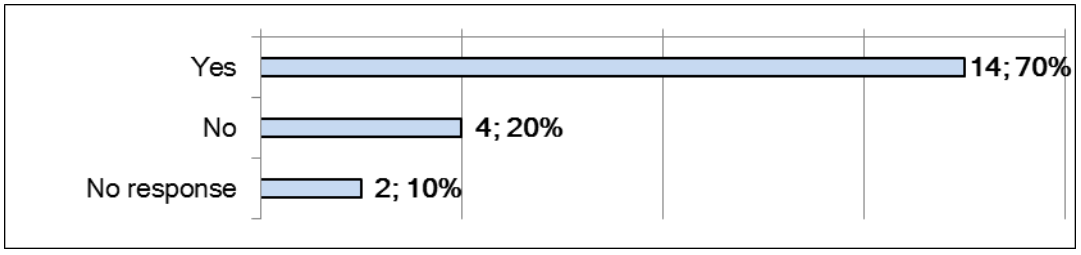


**Figure 13:** Do peer review procedures acknowledge career breaks? N=20

Next, we wanted to inquire which kinds of career breaks are taken into consideration. Participating organisations were allowed several answers to this question. Overall, we find that research organisations in Europe give particularly strong weight to family reasons and health issues when it comes to acknowledging career breaks in peer review (Figure 14). Altogether, 14 organisations indicate that they take note of family reasons and ten organisations consider prolonged illness. In addition, eight organisations consider military service.

[5] European Science Foundation (Authors: Scholz, Beate; Vuorio, Eero; Matuschek, Susanne; Cameron, Iain): Research Careers in Europe – Landscape and Horizons. Report by the ESF Member Organisation Forum on Research Careers, Strasbourg 2010, p. 12.

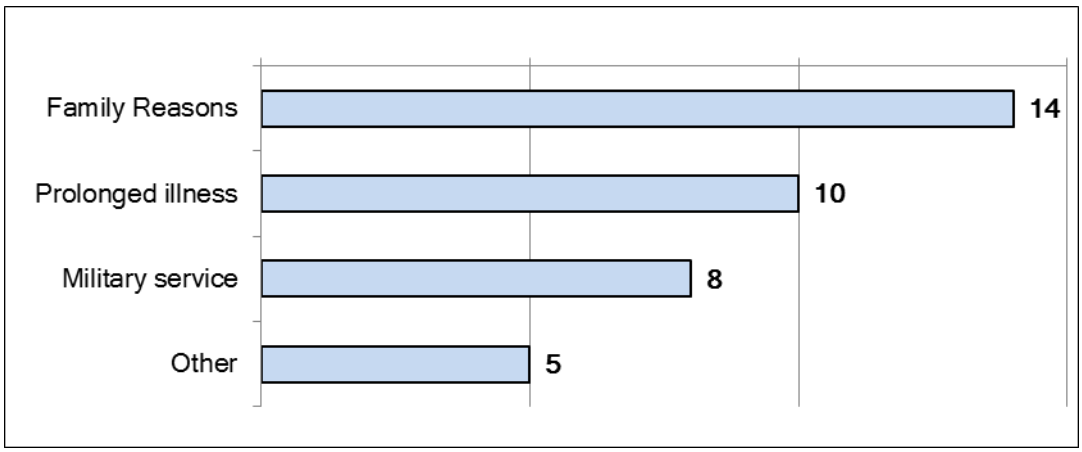


**Figure 14:** Which career breaks are acknowledged? N=43 (Several answers were possible)

As we expected that family reasons would be most strongly acknowledged, we wanted to inquire which family reasons are especially valued. As we see from Figure 15 all organisations that acknowledge career breaks consider parental leave in their peer review procedures. In the light of ageing populations it is notable that only nine organisations take note of the care for the elderly. Seven organisations indicate that they take into account other reasons without specifying what these are.

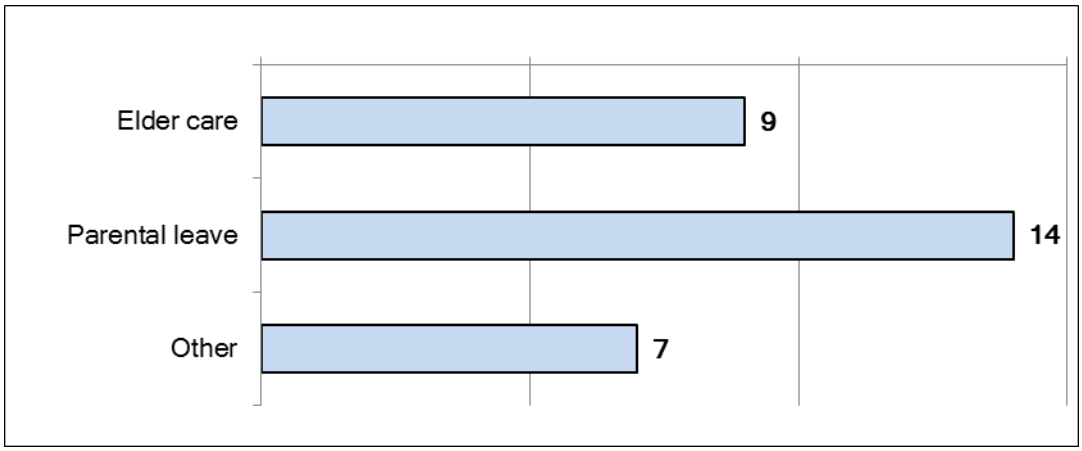


**Figure 15:** What is understood by 'family reasons'? N=30 (Several answers were possible)

It is interesting to see that several organisations allow for additional career breaks, namely:

- Working in industry, if related to research (German Helmholtz Association) or intersectoral mobility (Italian National Institute for Nuclear Physics, Research Councils UK)
- Humanitarian Aid Work (Danish National Agency for Science, Technology and Innovation)
- Living abroad (Slovak Academy of Sciences).

*Specific approaches to dealing with career breaks*

In analysing the descriptions referring to organisations' policies or procedures in dealing with career breaks we find a variety of approaches. However, we can distinguish the following features:

- Pragmatic approaches in dealing with career breaks, based on case-by-case decisions
- Formalised authorisation
- Guidelines to reviewers
- Extension of eligibility windows or project durations
- Return grants.

*Case-by-case decisions*

Both the German Helmholtz Association and the Research Foundation – Flanders have chosen a rather pragmatic attitude in dealing with career breaks:

- *„Scientific Excellence is most important criteria, above mentioned reasons are accepted for career breaks. No structured procedures/policies, case-by-case decision."* (German Helmholtz Association)
- *"Expert panels take into account the fact that, due to career breaks, publication output is lower for certain candidates, and they level this out when comparing all applicants. However, there are no formal guidelines for panel members in place at this moment."* (Research Foundation – Flanders)

*Formal authorisation*

In contrast to the previously mentioned model other organisations require formal approval of career breaks by their authorities. They either request formal management decisions and/or a check whether individual cases comply with the existing legislation:

- *"Careers breaks must be allowed by the INFN management".* (Italian National Institute of Nuclear Physics)
- *"Breaks are allowed according to job legislation and based on mutual agreement with the financer (in case of grants) and employee."* (Estonian Science Foundation)

*Guidelines to reviewers and extension of eligibility*

A number of organisations (e.g. Austrian Science Fund, Research Foundation – Flanders, Danish Agency for Science, Technology and Innovation) have taken the effort to give precise guidelines to their reviewers on how to address career breaks. Some (National Research Fund of Luxembourg, German Research Foundation, Research Councils UK, Swiss National Science Foundation) have introduced flexible eligibility windows in order to take into account less linear career paths. To provide a few examples:

- *"We inform our reviewers in the guidelines for reviewers that: 'For the FWF, equal opportunities include accounting for unavoidable delays in the scientific careers of applicants (for example longer periods of qualification, gaps in publications, or less time spent abroad for family reasons).'"* (Austrian Science Fund)

- *"The eligibility of the AFR postdocs was put at PhD +8 years, in order to explicitly allow career breakers to participate in the scheme. The Guidelines for Evaluators of the AFR scheme state that career breaks should not be considered negatively when reviewing an application."* (National Research Fund of Luxembourg)

*Grant regulations*

Whereas most organisations pay special attention to career breaks in peer review, few point to specific granting regulations or even separate grants to address this matter. This applies to the Slovak Research and Development Agency, the Spanish National Research Council and Research Councils UK. The subsequent statements are exemplary in this respect:

- *"Projects are automatically extended by a period equal to the duration of parental leave."* (Slovak Research and Development Agency)

- *"The Daphne Jackson Trust provides Fellowships for those returning to research careers."* (Research Councils UK)

Finally, we would like to highlight an issue that has been frankly raised by the Research Council of Norway: "However, in practice there is always a negative side effect of being absent from colleagues and working networks." It would be desirable to know if this statement is shared by other organisations, too.

### 17. In your organisation or country, is mobility taken into account in peer review?

When it comes to the consideration of mobility in peer review we see quite a diverse picture (Figure 16): 11 organisations acknowledge mobility, six organisations do not, one was not sure and two decided not to reply to this question. Given the strong attention that research organisations usually pay to mobility as having value of its own, this distribution is somewhat surprising. We would have expected that more organisations value mobility as a quality criterion in their peer review procedures.

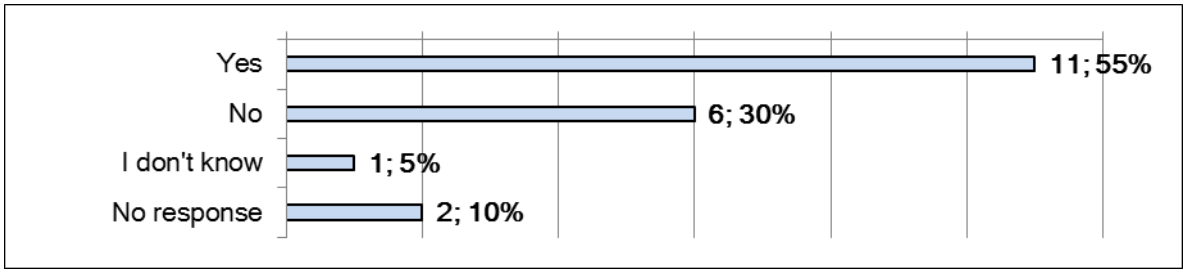


**Figure 16:** Is mobility acknowledged in peer review? N=20

*Types of mobility*

The next results might seem even more astonishing: We asked the participating organisations to specify which kinds of mobility they consider. The answer options that we offered comprised:

- Intersectoral mobility: namely work experience in a company, public management or other
- International mobility
- *"*Topical" mobility (i.e. embarking on new topics without prior track record)
- *"*Virtual" mobility (e.g. international research collaboration leading to visible outputs, for instance joint publications).

The results underline how the importance of international mobility still prevails. A total of 11 organisations consider mobility in peer review and again all 11 organisations state that they consider international mobility (Figure 17). Intersectoral mobility and virtual mobility, which is documented through international research collaborations, are of considerably lower importance (seven organisations each). Notably, the preparedness of researchers to embark on new topics is almost neglected by research organisations. We, therefore, have to ask if this can be seen as a sign of risk aversion. However, we have to accept the limits of a written survey in that maybe not all respondents have understood this answer option in the way we meant it to be.

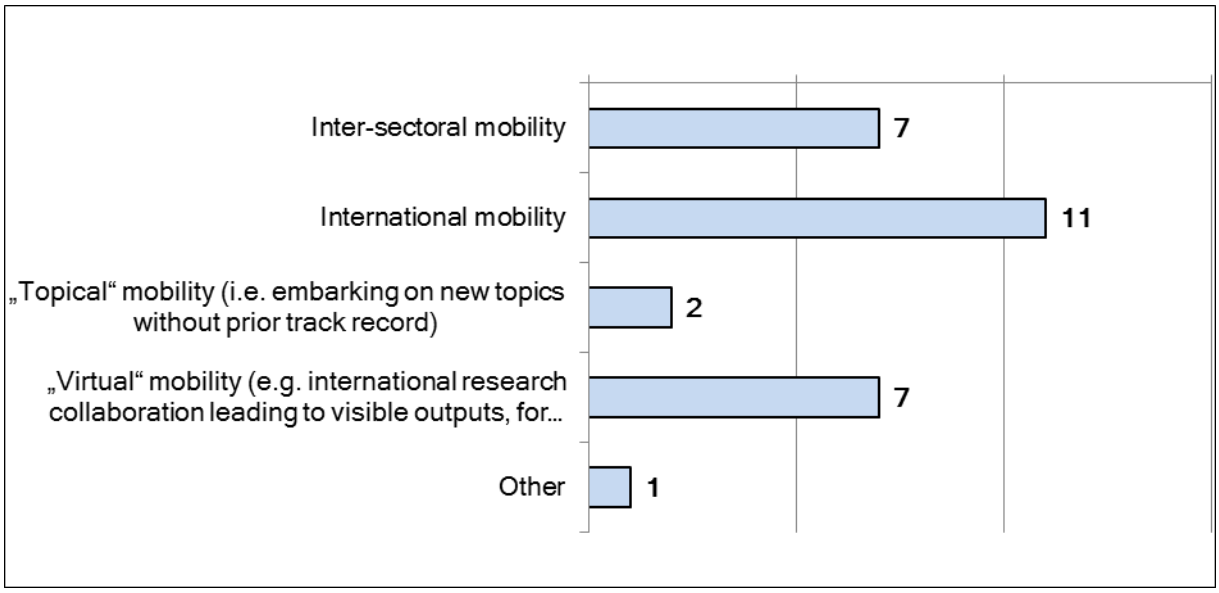


**Figure 17:** Types of mobility that are considered, N=28 (Several answers were possible)

*Acknowledgement of intersectoral mobility*

Given that intersectoral mobility receives particular attention by research organisations we wanted to ask which kinds of intersectoral mobility they consider. Figure 18 indicates that only six organisations pay special attention to work experience in a company, and even fewer are interested in work experience in public management.

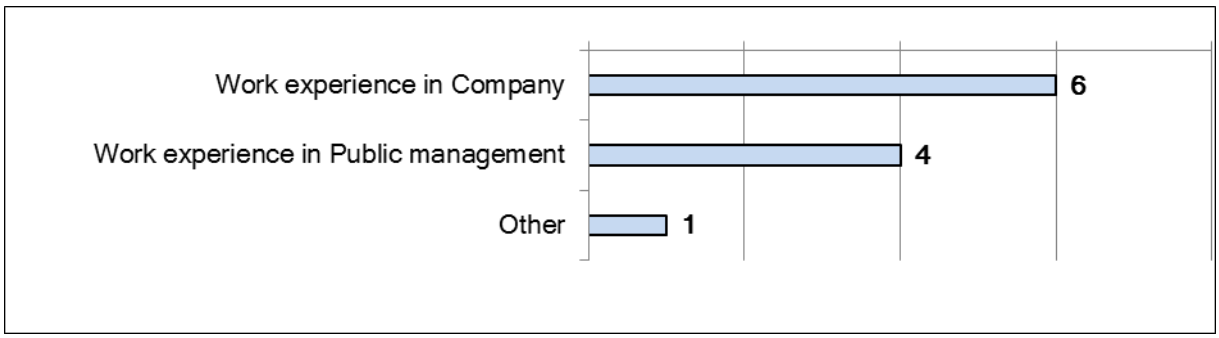


**Figure 18:** Specification of intersectoral mobility, N=11 (Several answers were possible)

*Further insights in policies addressing mobility in peer review*

Finally we asked the participants to share a few more details of their organisations' or countries' policies in dealing with mobility in peer review. It is probably unsurprising that almost all organisations emphasise their particular regulations concerning international mobility. Exceptional in this regard are the statements by Research Councils UK and the Swedish Research Council:

- *"The Research Excellence Framework has guidance on mobility and career breaks and how they should be considered. The Research Councils peer review procedures expect all types of career breaks and periods of mobility to be taken into account when considering track records of researchers at all levels."* (Research Councils UK)

- *"International and "virtual" mobility after a PhD is always considered as an important merit. But the value of intersectorial mobility depends on topic and scientific discipline."* (Swedish Research Council)

Most other organisations have a more or less firm mobility expectation in view of international mobility. To some it is even a mandatory eligibility criterion, which is, however, applied in a more or less strict manner as the subsequent quotes illustrate:

- *"The emphasis is on international mobility, which is an explicit criterion to obtain a postdoctoral fellowship, and especially a renewal of this fellowship. There is however no formally required minimum mobility period."* (Research Foundation – Flanders)

- *"Mobility is a mandatory criterion for three of the FNR's schemes: the AFR postdoc scheme (mobility in/out) and the ATTRACT (junior) and PEARL (senior) excellence schemes, the two latter being limited to incoming mobility. In peer review, mobility is not explicitly a criterion; the Luxembourg research population is currently composed of around 80% of non nationals."* (National Research Fund of Luxembourg)

- *"Depending upon the scheme, mobility is assessed by reviewers and given certain weight".* (Foundation for Polish Science)

- *"For some funding instruments mobility are an absolute requirement. Non-mobility needs specific explanation."* (Swiss National Science Foundation)

These findings highlight that most organisations participating in this survey still treat various forms of mobility with reservations. International mobility seems to be the only commonly accepted approach. However, some organisations show considerable flexibility in dealing with mobility requirements. Yet, if intersectoral mobility is still barely recognised we see the need to ask how effective schemes to foster intersectoral mobility can be. In the light of these findings further discussions are inevitable on how research organisations could develop more flexible concepts to allow for increasingly diversified career paths of researchers and thus to better reflect the reality of current research careers.

# Annex 1

**Questionnaire by the ESF Member Organisation Forum**
**European Alliance on Research Career Development**

Dear Colleague,

We ask for your support by filling out this questionnaire. Please feel free to forward it to colleagues whose expertise might be useful with respect to our questions. We shall be glad to receive your input **by 6th June 2011**. Thank you very much for your time and cooperation!

## About this questionnaire

### 1. Background

The ESF Member Organisation Forum 'European Alliance on Research Career Development' (EARCD) was launched in February 2011. In line with chapter 2 'Promoting European Research Careers' of the 'EUROHORCs and ESF Vision on a Globally Competitive ERA and their Road Map for Actions' the EARCD aims to

- adopt of a common strategy to ensure the attractiveness of research careers and thereby
- create and improve European-level and coordinated national policies and programmes for different career stages and career paths.

The EARCD builds on the results of the preceding ESF Member Organisation Forum on Research Careers, which were published in the report 'Research Careers in Europe – Landscape and Horizons' (http://www.esf.org/activities/mo-fora/completed-mo-fora/research-careers.html). It addresses the subsequent focus areas:

- research career taxonomy and research career tracking
- continuous professional skills development
- mobility – both international and intersectoral and
- peer review taking account of less linear career paths.

## 2. Objectives

With the help of this questionnaire we would like to gain insight into ESF Member Organisations' policies and practices in the focus areas of the EARCD. Your replies will help us to reach the goals of the EARCD, namely

- a coherent description of European research career structure and taxonomy which encompasses both private, public and higher education research
- mapping of existing good practice in tracking researchers' careers, to this end an international workshop will take place in Luxembourg in February 2012
- a guide for research funding and research performing organisations on the provision of continuous professional development opportunities for researchers at all stages, in line with the European Charter for Researchers
- a set of policy recommendations on how to foster intersectoral mobility
- a guideline for peer review in view of less linear career paths.

***It will take you approx. 45 minutes to complete this questionnaire.***

**Questions**

## I. Research Career Taxonomy

*The ESF and the European Commission have both produced sector-neutral taxonomies for research careers. The EARCD has proposed to the EC that we should "integrate our descriptions of the research career structures and reach a common agreement on the purposes of such a structure." The EARCD participants believe that the attached document 'Towards European Framework for Research Careers' (see: attachment) should be endorsed by the ESF as it has taken account of our input and meets our objectives.*

*We would like to know your opinions about the new taxonomy as proposed by the European Commission in line with the ESF. We would also like to know whether there are any other taxonomies your organisation/country is using today.*

**1. The new taxonomy as proposed by the European Commission classifies research careers by using the following categories**

R1 - First Stage Researcher
(i.e. up to the point of Doctoral Graduation)

R2 - Recognised Researcher
(i.e. doctoral graduates or equivalent who are not yet fully independent)

R3 - Established Researcher
(i.e. researchers who have developed a level of independence)

R4 - Leading Researcher
(i.e. a researcher leading their research area or field – team leader or leading individual)

a. In your opinion, how should this taxonomy be used? Please describe:

_____

**2. Are you aware of a taxonomy to describe research careers, which is used by your organisation or in your country?**

☐ No ☐ I don't know

☐ Yes

a. If yes, please specify the features of this taxonomy. Which categories are in place to describe the different career stages?

_____

b. For which purpose is this taxonomy being used?

_____

**3. In your organisation or country, are different taxonomies in place to categorise researchers in industry as compared to academia?**

☐ No ☐ I don't know

☐ Yes

a. If yes, please describe the different taxonomies:

_____

**4. Please give reference to any national reports, surveys or projects concerning research career taxonomy in your country (references and links):**

_____

## Research Career Tracking

*One of the activities of the EARCD is the organisation of a workshop in February 2012 on experience gained in the tracking of research careers, whether by surveys or any other means. In this regard, large initiatives such as the Careers of Doctorate Holders project (CDH), a joint initiative of the OECD, UNESCO and Eurostat, as well as institutional, regional, national or international examples of good practice in career tracking will be presented and discussed. One of the aims of the workshop will be to define methodologies for career tracking exercises by using common denominators/key questions, in order to enhance comparability.*

1. **Does your organisation or your country have earlier experience in career tracking of researchers:**

   ☐ No ☐ I don't know

   ☐ Yes

   a. If yes, please describe shortly the experience, which your organisation or country has achieved:

   _____

2. **Is there any initiative of career tracking you are aware of that should be presented as 'good practice' in the planned workshop.**

   ☐ No

   ☐ Yes

   a. If yes, please describe it shortly:

   _____

3. **Is there a specific interest in setting up systematic career tracking of researchers funded by your organisation or in your country?**

   ☐ No ☐ I don't know

   ☐ Yes

   a. If yes, for a specific scheme? Please indicate:

   _____

4. **Here you have the opportunity to name a contact person in your organisation or your country who is interested in receiving information on the planned career tracking workshop:**
   Name:
   First name:

   Organisation:
   Function:
   Email Address:

5. **Would you like to suggest any expert(s) who should be involved in the workshop?**
   Name:
   First name:
   Institution:
   Function:
   Email Address:

## II. Continuous professional skills development

*The EARCD is developing a guide for research funding and research performing organisations on the provision of continuous professional development opportunities for researchers at all stages of their career. This guide builds on the relevant principles from the "European Charter for Researchers" (cf. http://ec.europa.eu/euraxess/index.cfm/rights/index), relating to researcher's career development and skills:*

- *Career Development*
- *Value of mobility*
- *Access to research training and continuous development*
- *Access to career advice*
- *Intellectual Property Rights*
- *Supervision*
- *Teaching*
- *Evaluation/appraisal systems*

*In view of formulating clear recommendations in the guide, we are looking for examples of good practice in terms of institutional policies and/or implemented actions for any of the above principles.*

**9. Does your organisation or country have policies or guidelines for professional skills development of researchers in place?**

☐ No ☐ I don't know

☐ Yes

a. If yes, please provide a short description:
_____

b. Please, give reference to any guidelines that might be useful for our survey (references and links):

_____

**10. Are you aware of any examples of good practice related to professional skills development of researchers by your organisation or in your country?**

☐ No ☐ I don't know

☐ Yes

a. If yes, please provide a short description:
_____

**11. Does your organisation/country have policies or procedures in place to acknowledge researchers' professional skills?**

☐ No ☐ I don't know

☐ Yes
☐Already acquired skills

☐Plans for skills development

a. If yes, please provide a brief description:

_____

12. **We invite you to name a contact person in your organisation or your country who is in charge of professional skills development for researchers:**
Name:
First name:

Organisation:
Function:
Email Address:

## III. Intersectoral mobility

*We would like to formulate evidence-based recommendations on how intersectoral mobility of researchers could be improved. For that purpose, please, answer the following questions*:

**13. Which obstacles inhibiting intersectoral mobility have been identified by your organisation or in your country?**

_____

**14. Are you aware of any policies or programmes by your organisation or in your country to stimulate mobility between Academia and Industry?**

☐ No ☐ I don't know

☐ Yes

a. If yes, please indicate which stages of research careers these measures refer to:

- ☐ R1 - First Stage Researcher
- ☐ R2 - Recognised Researcher
- ☐ R3 - Established Researcher
- ☐ R4 - Leading Researcher

b. Please provide a few details of the respective policies or programmes:

_____

**15. Does your organisation or your country offer combined part-time positions or grants at a university, or research institute, to researchers from industry – or vice versa?**

☐ No ☐ I don't know

☐ Yes

a. If yes, please specify:

_____

## IV. Peer review

*The EARCD also aims to provide a guideline for peer review to take account of less linear career paths. To the widest possible extent we will derive these guidelines from the recently published European Peer Review Guide by the ESF Member Organisation Forum on Peer Review (http://www.esf.org/activities/mo-fora/peer-review.html). Yet, we would like to ask you a few additional questions.*

**16. Does your organisation or country have peer review policies or procedures in place to take into account career breaks?**

☐ No ☐ I don't know

☐ Yes

a. If yes, please indicate which career breaks are acknowledged:

- ☐ Family reasons
  - ☐ Parental leaves
  - ☐ Elder care
  - ☐ Other:_____
- ☐ Prolonged illness
- ☐ Military service
- ☐ Other:_____

b. Please describe shortly the policies or procedures in dealing with career breaks:

_____

**17. In your organisation or country, is mobility taken into account in peer review?**

☐ No ☐ I don't know

☐ Yes

a. If yes, please specify which kinds of mobility are considered:

- ☐ Inter-sectoral mobility: work experience in
  - ☐ Company
  - ☐ Public management
  - ☐ Other:_____
- ☐ International mobility
- ☐ "Topical" mobility (i.e. embarking on new topics without prior track record)
- ☐ "Virtual" mobility (e.g. international research collaboration leading to visible outputs, for instance joint publications)

b. Please describe briefly your organisation's or country's policy in dealing with mobility in peer review:

_____

## General information:

What organisation do you represent? Please also specify if it is public or private.

_____

Here you can provide us with your contact details (optional):

Name: First name:

Organisation:
Function:
Email Address:

# Annex 2

## List of participating organisations in the survey

| Country | Research Organisation | | | Public or Private Organisation |
|---|---|---|---|---|
| Austria | Austrian Science Fund | FWF | Fonds zur Förderung der wissenschaftlichen Forschung | Public |
| Belgium | The Research Foundation – Flanders | FWO | Fonds Wetenschappelijk Onderzoek – Vlaanderen | Public |
| Denmark | Danish Agency for Science, Technology and Innovation | FI | Forsknings- og Innovationsstyrelsen | Public |
| Estonia | Estonian Science Foundation | ETF | Eesti Teadusfond | Public |
| Germany | Helmholtz Association | Helmholtz | Helmholtz Gemeinschaft | Public |
| Germany | German Research Foundation | DFG | Deutsche Forschungsgemeinschaft | Public |
| Hungary | Hungarian Scientific Research Fund | OTKA | Országos Tudományos Kutatási Alapprogramok | Public |
| Italy | National Institute of Nuclear Physics | INFN | Istituto Nazionale di Fisica Nucleare | Public |
| Luxemburg | Fonds National de la Recherche | FNR | National Research Fund | Public |
| Norway | Research Council of Norway | RCN | Norges Forskningsråd | Public |
| Poland | Foundation for Polish Science | FNP | Fundacja na rzecz Nauki Polskiej | Private |
| Romania | Executive Agency for Higher Education, Research, Development and Innovation Funding | UEFISCDI | Unitatea Executiva pentru Finantarea Invatamantului Superior, a Cercetarii, Dezvoltarii si Inovarii | Public |
| Slovakia | Slovak Research and Development Agency | APVV | Agentúra na podporu výskumu a vývoja | Public |
| Slovakia | Slovak Academy of Sciences | SAS | Slovenskej akadémie vied | Public |
| Spain | Spanish National Research Council | CSIC | Agencia Estatal Consejo Superior de Investigaciones Científicas | Public |
| Sweden | Swedish Council for Working life and Social Research | FAS | Forskningsrådet för arbetsliv och socialvetenskap | Public |
| Sweden | Swedish Research Council | VR | Vetenskapsrådet | Public |
| Switzerland | Swiss National Science Foundation | SNF | Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung | Public/Private |
| Turkey | The Scientific and Technological Council of Turkey | TÜBITAK | Türkiye ve Bilimsel teknolojik Araştırma Kurumu | Public |
| United Kingdom | Research Councils UK | RCUK | Research Councils UK | Public |

# Annex 3

## List of participating organisations in ESF Member Organisation Forum

| Country | Organisation | Name of the contact person |
|---|---|---|
| Austria | Austrian Science Fund | Lydia Wysocki |
| Austria | Austrian Academy of Sciences | Barbara Haberl |
| Belgium | The Research Foundation – Flanders | Olivier Boehme<br>Stijn Verleyen |
| Czech Republic | Academy of Sciences Czech Republic | Miroslav Tuma |
| Denmark | Danish National Research Foundation | Vibeke Schrøder |
| Estonia | Estonian Science Foundation | Tiina Loit |
| Finland | Academy of Finland | Tiina Petänen |
| Germany | Helmholtz Association | Nina Löchte |
| Germany | German Research Foundation | Anjana Buckow |
| Ireland | Health Research Board (HRB) | Annalisa Montesanti |
| Italy | National Institute of Nuclear Physics | Luciano Catani |
| Luxemburg | Fonds National de la Recherche | Marie-Claude Marx<br>Ulrike Kohl |
| Norway | Research Council of Norway | Hans Borchgrevink |
| Poland | Foundation for Polish Science | Marta Lazarowicz-Kowalik |
| Slovakia | Slovak Research and Development Agency | Marek Sarissky |
| Spain | Spanish National Research Council | Jose Vicente Garcia Ramos |
| Sweden | Swedish Council for Working life and Social Research | Cecilia Grevby |
| Sweden | Swedish Research Council | Maria Starborg |
| Switzerland | Swiss National Science Foundation | Marcel Kullin |
| Turkey | The Scientific and Technological Council of Turkey | Recep Tugrul Ozdemir |
| United Kingdom | Research Councils UK | Iain Cameron |

**Coordination of the MO Forum:** Laura Marin, ESF
**External Advisor**: Beate Scholz, Scholz – consulting training coaching