

Mutual learning exercise (MLE) on national practices in widening participation and strengthening synergies

Topic Report:
Attracting qualified R&D staff in the
public and private sectors
(Topic 1 Widening)



March - 2018

Mutual learning exercise (MLE) on national practices in widening participation and strengthening synergies - Topic Report: Attracting qualified R&D staff in the public and private sectors (Topic 1 Widening)

European Commission
Directorate-General for Research and Innovation
Directorate A Policy Development and Coordination

Unit A.4 – Analysis and monitoring of national research and innovation policies

Contact Marta Truco Calbet

E-mail marta.truco.calbet@ec.europa.eu

Directorate B Open Innovation and Open Science

Unit B.5 – Spreading Excellence and Widening Participation
Contact Dionysia Lagiou
E-mail dionysia.lagiou@ec.europa.eu
RTD-PUBLICATIONS@ec.europa.eu

European Commission

B-1049 Brussels

Manuscript drafted in March 2018.

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Mutual learning exercise (MLE) on national practices in widening participation and strengthening synergies

Topic Report:

Attracting qualified R&D staff in the public and private sectors

(Topic 1 Widening)

Prepared by the independent expert:

Claire Nauwelaers

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FOREWORD

This document has been prepared under the auspices of the Policy Support Facility (PSF) set up by DG Research and Innovation under H2020 to support countries in reforming their research and innovation (R&I) systems. It is one of a series of reports drafted as part of a Mutual Learning Exercise (MLE) on 'Widening Participation and Strengthening Synergies' (WPSS).

Widening participation in the Framework Programme (FP) can help countries tap into their unexploited R&I potential and improve overall R&I system performance.

Ensuring and strengthening synergies between activities supported by the FP and those supported by European Structural and Investment Funds (ESIF) can improve the overall efficiency and effectiveness of public funding for R&I and enhance the performance of R&I activities.

Thirteen countries (Belgium, Bulgaria, Cyprus, Croatia, Germany, Hungary, Latvia, Poland, Portugal, Slovenia, Sweden, Spain and Turkey) are participating in the MLE, with Germany participating as an Observer.

The schedule for the MLE called for Challenge Papers covering different aspects of 'Widening' and 'Synergies' to feed into discussions at a series of four workshops, prior to the production of Topic Reports based on these discussions and relevant material contributed by participating countries.

The aspect of 'Widening' covered by this Topic Report is Topic 1: 'Attracting qualified R&D staff in the public and private sectors.'

1 Introduction

Developing and implementing EU-wide partnerships and proposals to be funded by the Framework Programme (FP) are challenging tasks. One of the most frequent obstacles mentioned in particular by those countries with low R&D intensity is the lack of human resources to participate in such very competitive partnerships. Attracting highly skilled staff from abroad is one way of reinforcing national research and innovation systems with a view to widening national participation in FP. Several arguments are deployed to justify governmental efforts to support the attraction of foreign talent, namely:

- Foreign researchers bring new expertise and skills that are not present nationally;
- They help create and strengthen research and business relationships with their home country;
- They overcome labour shortages and boost entrepreneurship in knowledge-based sectors in the host country.

According to a recent study,¹ more than half (56%) of the researchers working in the HEI sector have been (or are currently) internationally mobile, while this is the case for 41% of industrial researchers. Both types of mobile researchers are important resources for national research and innovation systems.

Promoting international mobility of researchers is on the policy agenda both at EU and national levels. At EU level, one of the European Research Area (ERA) pillars consists of the creation of an open labour market for researchers, a challenge that involves in particular the promotion of researchers' mobility across the EU. This is seen as the 'fifth freedom' (free movement of knowledge) and EU incentives encourage this, notably via the famous Marie Skłodowska-Curie Actions programme, as well as via the ERA-Chair programme, which targets widening countries in particular. Promoting researcher mobility internationally is also on national agendas, embedded within ERA Action Plans as well as in research internationalisation strategies within national programmes.

While the focus of many national initiatives is placed on *incoming* researcher mobility, it should be noted that, for national authorities, promoting mobility of researchers does not only involve attracting foreign talent to the home country. *Outgoing* mobility of national researchers is also a good way to stimulate the participation of national research performing actors in transnational research partnerships since mobile researchers are good vehicles to connect their original home institutions with foreign institutions. *Brain circulation*, which involves both incoming and outgoing mobility of researchers is arguably the most relevant target for policies aiming at reinforcing human resources in a national research system, especially if the scope covers mobility between Member States (MS), Associated countries (AC) and third countries.

The focus of this paper is on national initiatives aimed at fostering brain circulation, in particular by attracting foreign-based qualified R&D personnel in both the public and private sectors.

The report is the result of a workshop held in Zagreb on 6-7 February 2018 as part of the H2020 Policy Support Facility (PSF) Mutual Learning Exercise (MLE) devoted to widening participation in the EU Framework Programme (FP) and enhancing synergies between the FP and the European Structural and Investment Funds (ESIF). The focus of this report was identified as a priority issue when the MLE was designed by the participating countries. A background 'Challenge Paper' was prepared before the workshop as a basis for discussion.

¹ IDEA Consult (2010), *Mobility Patterns and Career Paths of EU Researchers*, report prepared for DG Research. https://cdn3.euraxess.org/sites/default/files/policy_library/more_final_report_final_version.pdf

During the workshop, representatives from Member States (MS) and Associated Countries (AC) presented and shared good practices that attempted to foster brain circulation.

The scope of the 'Attracting qualified R&D staff in the public and private sectors' topic is detailed in section 2. An overview of the landscape of existing practices under the topic is presented in section 3. Lessons learned from exchanges at the workshop and from evidence on existing practice are exposed in section 4. The final 5th section concludes with the main policy findings from the MLE and suggests ways forward in terms of improving brain circulation with a view to enhancing participation in FP.

Contributions from participants from MS and AC, as well as contributions on Ireland from Helena Acheson, an expert in this MLE, are gratefully acknowledged, as are the helpful comments provided by the other experts involved in the MLE process. All workshop presentations as well as additional information on the cases referred to in this report can be found on the PSF website:

<https://rio.jrc.ec.europa.eu/en/policy-support-facility/mle-widening-participation-and-synergies-between-horizon-2020-and-esif>

2 Scope

2.1 Definition of the topic

Many conditions² are necessary for a country to become an attractive magnet for researchers: the presence of high level academic, public research institutions and innovative companies with excellent levels of research and a top-quality infrastructure; adequate and easily accessible funding for public and private research activities; attractive salary levels, working conditions and career paths for researchers; good interconnections between research carried out in the public and private sectors; suitable support for entrepreneurship; adequate IPR regimes; an attractive living environment; a welcoming culture for foreigners; an immigration policy that is adequate for highly qualified researchers;³ and the efficient external promotion of national assets in public and private research. A recent study⁴ confirms that those countries with stronger research systems are also, generally, those that experience the highest (inward and outward) mobility levels.

The above are all important conditions concerning not only the *attraction* but also the *retention* of (national and foreign) researchers once the mobility period expires. The MLE does not cover all the above issues (some of them are located under policy domains other than R&D, such as immigration policy, and are not specific to researchers) but rather focuses on specific types of national public actions within the R&D policy sphere that aim directly and explicitly at increasing the international mobility of researchers.

It should be pointed out that the strategies of individual public research organisations can act as important facilitators or barriers for this international mobility (e.g. bilateral agreements between large research institutions in different countries, involving the exchange of scientists). Universities and Public Research Organisations (PROs) have developed their own mobility schemes (often oriented towards student mobility, including doctorate students). Internal strategies within multinational companies are obviously key determinants of researcher mobility within the private sector. Despite the relevance of the latter, the focus here is on actions and initiatives that involve governmental action.⁵

While the Member States and Associated Countries of the European Union are the natural focus of this MLE exercise, the exchange of experiences covers both intra-EU and extra-EU mobility, since both are important potential contributors to national research and innovation systems (and it is in practice quite common to find schemes and incentives that are open to all nationalities, EU and non-EU).

² Appropriate funding for research and the availability of positions are found as being the two most important drivers (and their absence, the two most important barriers) for researchers mobility in the MORE3 study European Commission (2017), *MORE3 Final Report Comparative and policy-relevant analysis*, https://cdn5.euraxess.org/sites/default/files/policy_library/final_report_1.pdf

³ This is notably one of the main barriers cited by non-EU nationals in the enquiry carried out in the study: IDEA CONSULT (2008), *Evidence on the main factors inhibiting mobility and career development of researchers*, report for DG Research.

⁴ Fernandez-Zubieta, A. and K. Guy (2010), *Developing the ERA: improving knowledge flows via researcher mobility*, *JRC scientific and technical reports*.

<http://publications.jrc.ec.europa.eu/repository/bitstream/JRC58917/lfna24511enn.pdf>

This report also presents country-specific data on researcher mobility and shows the wide imbalance between EU countries. Some (in particular the UK) are net beneficiaries of researcher inflows, while others (such as most of the EU-13 Member States) have net outflows of researchers. The IDEA CONSULT (2008) study also depicts a huge concentration of mobile researchers within the 'EU5' (UK, FR, DE, IT, ES).

⁵ Governmental action could also address mobility to/from the private sector, this is covered under Topic 2 of this MLE.

To sum up, the topic focuses on **national-level strategies, initiatives, programmes and schemes aimed at attracting qualified R&D staff working abroad (within or outside the EU) to work in national research performing organisations from the public and private research sectors, namely PROs/HEIs and R&D-active companies. The topic also includes coverage of outgoing mobility schemes for national researchers.**

The topic does not cover the following initiatives:

- International mobility schemes targeting *students*^{6,7} or focusing on joint educational initiatives (joint courses and degrees, etc);
- *General R&D funding programmes*, which have a wider focus but include aspects linked to international mobility as incidental or implicit features. Typically, this covers: 1) university or PROs funding schemes, and national individual fellowship schemes⁸ which may support international mobility of public researchers within their broader goals of promoting research excellence and impact; and 2) general schemes to support the hiring of R&D or innovation staff in companies.⁹ These types of schemes are considered under the present topic only if they include a specific focus or strand targeting the attraction of foreign researchers or the outgoing mobility of national researchers;
- *EU initiatives* such as the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers; the scientific visa directive; the directive on conditions of entry and residence of third-country nationals for the purposes of research, studies, and training; the Marie Skłodowska-Curie actions under H2020, the ERA-Chairs programme under H2020, or the EURAXESS Service Centres (including the Science4Refugees action) which provide free and personalised assistance on challenges that are faced by researchers and their families when relocating. The present topic focuses on national initiatives (but their articulation with EU level initiatives, e.g. the COFUND schemes, is an important point of attention).

In the scoping and kick-off workshops, participants to this MLE mentioned issues that they want to consider under this topic. As a result, the topic is defined along two strands, each including different types of schemes and initiatives.

1) International mobility schemes for researchers in the public sector

Three types of **dedicated mobility schemes** can be distinguished (programmes can include all or some of these types). Such programmes are either designed for *longer term* mobility (one year or more) or for *short-term* mobility, with the latter sometimes referred to as 'visiting fellowship' schemes:

1. Incoming attraction schemes: incentives for attracting foreign researchers to national PROs/HEIs;
2. Outgoing schemes: incentives for nationals to work in foreign PROs/HEIs;

⁶ Doctorate students have a status similar to that of researchers in some countries, and to that of students in others. Hence, they can be targeted together with researchers in some incentive programmes, in which case they are included under this topic heading.

⁷ It is interesting to note, though, that student mobility increases the subsequent probability of researchers becoming mobile later in their careers, as reported by IDEA (2010), op. cit.

⁸ One example is the Latvian postdoc scheme ([see the presentation on the PSF website](#)), in which 11 out of the 141 awarded researchers gained a PhD outside Latvia, 4 are foreigners and 1 is a "returnee".

⁹ One example is the Danish Innovation Assistant Programme (VP Programme).

3. Return schemes: incentives for attracting national researchers working abroad back to national PROs/HEIs (bringing back the 'scientific diaspora').

In addition, measures to ensure **portability of research grants** ('Money follows research' schemes) facilitate researcher mobility since they make it possible to continue research projects in institutions in countries other than the country in which the research grant was initially allocated: this involves the possibility of transferring the grant from one institution to another foreign institution. The aim is to avoid project disruption due to cross-border researcher mobility. In this respect, it is also relevant to facilitate the movement of groups of researchers and not only individual ones: the European Research Council (ERC) has accumulated some experience on this issue.

Finally, schemes supporting more **flexible concepts of mobility** complement the above traditional schemes aiming at fostering physical mobility. Some schemes promote virtual mobility through enhancing the connection with national researchers abroad (connecting the 'scientific diaspora'). Other schemes promote part-time 'shuttle' or 'circular mobility':¹⁰ instead of staying abroad during a single long period, researchers could have a number of micro-stays combined with intense on-line interactions.

2) International mobility schemes for researchers in the private sector

This includes national strategies and schemes for attracting highly-skilled workers from abroad to work in the private sector in the host country.

Dedicated company-oriented schemes for hiring foreign researchers in national firms (including schemes which facilitate mobility of public sector researchers, e.g. in the form of sabbatical periods, and vice versa) constitute one type of initiative covered under the present topic.

Migration policies targeting skilled migrants have been adopted in many countries, including the EU:

"Recognizing the importance of skilled migration for the economy, OECD countries have adopted a wide range of measures to attract skilled migrants, including scholarships and financial support, simplification of visa procedures, legislation regarding recognition of foreign professional qualifications, and acquisition of social welfare entitlements by foreign researchers" (OECD, 2012).¹¹

2.2 Complementarity with other topics covered by this MLE

The challenge of enhancing participation to FP will not be met solely by the provision of solutions to support 'brain circulation'. Other significant routes will be addressed in some of the other 'widening' topics covered in this MLE, specifically:

- **Topic 2: improving science – industry relationships and cooperation:** this includes, notably, the issue of inter-sectoral mobility of researchers, which is complementary to the present topic of international and cross-border mobility.
- **Topic 3: improving networking at EU level:** participation in European-wide projects and partnerships is a good way for researchers to get acquainted with other research actors in other countries, and this can act as a stepping stone for physical mobility decisions.

¹⁰ The ERA expert group report on *"Realising a single labour market for researchers"* (2008) promoted the concept of 'shuttle stays' as a relevant solution for resource weak countries or those with family commitments.

¹¹ OECD (2012), *International Migration Outlook 2012*, OECD Publishing, Paris.

Discussions relevant to the theme of synergies between the use of European Structural and Investment Funds (ESIF) and FP funds (Topics 5, 6 and 7 of this MLE), at both strategic and operational levels, are also complementary to the present topic. Promoting researcher mobility is a suitable objective for ESIF strategies aimed at reinforcing national research and innovation systems. The role played by the European Social Fund (ESF) within ESIF is particularly relevant.

3 Landscape

3.1 International mobility schemes for researchers in the public sector

Both increasing the attractiveness of national research systems to foreign highly qualified researchers and raising the international profile of national researchers are objectives that feature prominently in the national research strategies of EU Member States. As a consequence, most countries have established incentives to attract researchers to their PROs/HEIs, frequently in the form of schemes supporting **incoming and/or outgoing and/or returnee researchers**. These schemes differ according to: target groups (from young early career researchers to well-established professionals); cost coverage (from salary costs and travel costs only to wider coverage that can include project funding, infrastructure, equipment or even full research teams); and type of funding (subsidy or tax incentives). According to Fernandez-Zubieta and Van Bavel (2011),¹² countries with less-developed research systems tend to concentrate more on incoming schemes – due to a fear that brain drain problems would be worsened by outgoing schemes – and on return schemes, since the weak attractiveness of their national system is seen as a factor preventing incoming schemes targeting foreigners from being successful.¹³

Some examples illustrating the diversity of this landscape of mobility schemes targeting public sector researchers are listed below.

Programmes encompassing all three types of schemes:

- In **Croatia**, the International Fellowship Mobility Programme for Young and Experienced Researchers (NEWFELPRO – [see description on the PSF website](#))¹⁴ 2013-2017, is a programme of the Government of the Republic of Croatia and the Ministry of Science, Education and Sports (MSES), co-funded by the FP7 Marie Curie COFUND. Its total budget is €6.1 million, out of which 60% is financed from national sources. It offers three types of schemes: incoming attraction schemes for experienced researchers (12-24 months); outgoing schemes for Croatian researchers (16-36 months, including a return phase) and return schemes for Croatian researchers working abroad (24 months).

Programmes focusing on some of the three types:

- In **Poland** ([see description of various schemes on the PSF website](#)), the Foundation for Polish Science manages the 'Homing' grant that aims to attract foreign young researchers established abroad to work in the country's HEIs; this programme is also a 'return scheme' as it places a special focus on returning Polish scientists. The 'Polonez' grant is also an incoming scheme, implemented by the National Science Centre, and supported under the H2020 Marie Skłodowska-Curie COFUND¹⁵ programme,¹⁶ which supports experienced researchers coming to Poland. Other similar grants, implemented at the level of universities or research institutes, are available on a sectoral basis (biomed, medical, physics);

¹² Fernandez-Zubieta, A. and R. Van Bavel (2011), Making Research Careers More Attractive and Promoting Mobility, JRC scientific and technical reports. Luxembourg: Publications Office of the European Union.

¹³ This difference was already highlighted in CREST (2007), Internationalisation of R&D – Facing the Challenge of Globalisation: Approaches to a Proactive International Policy in S&T: Policy Approaches towards S&T Cooperation with Third Countries, CREST report.

¹⁴ www.newfelpro.hr

¹⁵ Poland and the Czech Republic have been the only widening countries to succeed in COFUND under Horizon 2020 calls so far.

¹⁶ https://ec.europa.eu/research/mariecurieactions/actions/co-funding-programmes_en

- The **Austrian** Science Fund (FWF) manages two mobility schemes: the outgoing Erwin Schrödinger Programme,¹⁷ which provides grants for research stays in excellent research institutions abroad (with an optional return phase) and the incoming Lise-Meitner-Programme,¹⁸ financing long-term stays of foreign (or returning Austrian) researchers at an Austrian research organisation;
- In **Hungary**, the Momentum programme managed by the Hungarian Academy of Sciences is a return programme for outstanding Hungarian researchers working abroad. It provides personal allowances of two to three years for projects carried out in Hungary in the field of their specialty. The programme invites researchers to take part in scientific/development programmes in Hungary;
- In the **Netherlands**, Rubicon – an outgoing scheme managed by the national funding agency NWO – supports young doctorate holders from a Dutch university or PRO to acquire research experience abroad for a period of 1 to 2 years. Tax rebates are provided for a period of 10 years for qualified foreign (EU and non-EU) researchers coming to work in Dutch HEIs, subject to the condition that no equivalent profiles are available domestically;
- In **France**, the international postdoctoral fellowship programmes AgreenSkills and AgreenSkills+,¹⁹ supported under the FP7 and H2020 Marie (Skłodowska)-Curie COFUND programme, offer fellowships of two types (incoming and outgoing) to young and senior researchers. The duration is from 1 year up to 3 years for incoming fellowships and 6 months to 24 months for outgoing fellowships.

Programmes that try to attract foreign-based ‘star’ scientists in order to create strong research teams around them are quite popular.²⁰ Frequently they provide long-term funding extending beyond the salary of the mobile researcher:

- The **German** Alexander von Humboldt Foundation²¹ promotes academic cooperation between excellent scientists and scholars from abroad and from Germany. It offers both incoming and outgoing research fellowships and research awards. The Alexander von Humboldt Professorship International Award for Research aims to recruit foreign excellent researchers who will remain in Germany on a long-term basis, reinforcing the country as a research location and helping universities and research institutions to define or refine their strategic development as well as strengthening the connections between researchers in Germany and the international research landscape. The fellowship includes an allowance for research costs that can cover financing equipment, research assistance and administrative costs. The sums involved can amount to €5 million for academics in experimental disciplines and €3.5 million for researchers in theoretical disciplines, and fellowships are granted for a period of five years. Additional benefits are available for an incoming researcher’s family. The Heisenberg programme (developed by the Deutsche Forschungsgemeinschaft (DFG)) targets early career researchers;
- In the **Czech Republic**, the J. E. Purkyně Fellowship²² is a return scheme for young outstanding Czech scientists working abroad for a long-time period and an incoming scheme for top foreign scientists coming to work at the Czech Academy of Sciences.

¹⁷ <https://www.fwf.ac.at/en/research-funding/fwf-programmes/schroedinger-programme/>

¹⁸ <https://www.fwf.ac.at/en/research-funding/fwf-programmes/meitner-programme/>

¹⁹ <https://www.agreenskills.eu/>

²⁰ Note: calls try to distinguish these cases from sabbatical periods although in practice borders can be blurred.

²¹ <https://www.humboldt-foundation.de>

²² <http://www.avcr.cz/en/academic-public/support-of-research/the-j.-e.-purkyne-fellowship/>

Applications for the J. E. Purkyně Fellowship are submitted by the directors of the Institutes of the CAS. The funding is awarded for 5 years;

- In **Flanders**, the Odysseus programme²³ is a brain gain initiative that provides funds for outstanding researchers working abroad to come to Flanders to establish a research group at a university. These can either be foreign researchers or Belgian researchers who have worked abroad for the last couple of years. The engagement has two components: on the one hand the university ensures a fixed appointment with a competitive salary, while on the other hand the Funding Agency FWO provides the researcher with substantial start-up funding (up to €1.5 million per year for senior researchers and up to €200.000 per year for researchers with high potential,). The funding lasts for 5 years;
- The Foundation for **Polish** Science has established the International Research Agendas Programme (IRAP),²⁴ co-funded by ESIF (see description on the PSF website). The programme is based on the Teaming for Excellence programme, which is part of Horizon 2020. It gives top scientists, irrespective of their nationality, the opportunity to create a research unit (innovative centre of excellence) in Poland that would conduct world-class R&D activities focused on a specific and timely scientific challenge. Researchers must cooperate with a renowned research centre based in another country. Thanks to its (non-exclusive) focus on foreign researchers, it is (partly) an incoming mobility scheme;
- The **Turkish** Academy of Sciences (TÜBA) has managed the TÜBA Academy Prizes (see description on the PSF website) since 2015. These encourage international mobility and are dedicated to young researchers with original, leading-edge and path-breaking works in their fields. As part of the existing 'Outstanding Young Scientist Award Programme' (GEBIP), the award facilitates research visits abroad. The objective of TÜBA-GEBIP is to foster young, outstanding scientists who are at the stage of establishing their own research programmes in Turkey after finishing their post-doctoral research activities. TÜBA supports these scientists for a period of three years and helps them set up their own research groups;
- In **Sweden**, the Individual Grants for Future Research Leaders²⁵ bestowed by the Swedish Foundation for Strategic Research (SSF) aim to support and promote young scientists of the highest standing, from Sweden as well as from other countries, who have the potential to become future leaders of academic and/or industrial research in Sweden. Each grant amounts to SEK 12 million (incl. overheads) (approx. €1.2 million) and covers a period of five years. Up to 20% of the grant can be used to cover the recipient's own salary, with the remainder used to build a research group;
- The PEARL programme²⁶ in **Luxembourg** supports the recruitment of foreign outstanding scientists in strategically important areas to work in research institutions in Luxembourg. The financial contribution can be used flexibly to implement the research programme at the host institution. PEARL projects have a lifespan of five years with a financial contribution of between €3-4 million by the national research funding agency, FNR. The FNR's ATTRACT²⁷ programme is a similar programme targeting junior researchers;

²³ <http://www.fwo.be/nl/mandaten-financiering/onderzoeksprojecten/odysseusprogramma/>

²⁴ <https://www.fnp.org.pl/en/oferta/irap/>

²⁵ <https://strategiska.se/en/call-for-proposals/>

²⁶ <https://www.fnr.lu/funding-instruments/pearl/>

²⁷ <https://www.fnr.lu/funding-instruments/attract/>

- The **Finnish** Distinguished Professor (FiDiPro)²⁸ funding programme, run by the Academy of Finland and Tekes, supports universities and research institutes in hiring foreign professor-level researchers or Finnish professor-level researchers who have long worked abroad to conduct research in Finland for a fixed period. They will primarily be based in scientifically significant and strategically key fields defined by universities and research institutes and are expected to strengthen internationally competitive research and innovation in Finland;
- In **Spain**, the State Plan for Scientific and Technical Research and Innovation includes measures to encourage the attraction of talent and the recruitment of highly-reputed Spanish or overseas research professors into the Spanish National Science and Technology System under stable employment conditions (Ramón y Cajal Programme). During the period 2014-2014, 109 non-Spanish research professors (21% of the total beneficiaries) were awarded under this Programme.

Short-term mobility schemes (in the range of 1-6 months), which are often limited to the funding of mobility costs (while salaries are still borne by the home institutions), are found in many countries. These include:

- The **UK** (incoming) Visiting Fellowships scheme offers awards of up to £33,000 (approx. €37,150) to support: subsistence and accommodation costs; research expenses; travel expenses; and a contribution of 50% of the total award to enable the UK institution to host the Visiting Fellow. Bilateral programmes in the UK do also support short-term mobility (both ways) between the UK and specific regions of the world, for example: (i) the ICSSR-ESRC (Indian Council for Social Science Research and UK Economic and Social Research Council) India-UK Scholar Exchange Scheme; (ii) the ESRC-SSRC (Social Science Research Council) Collaborative Fellowship Scheme for the Americas; and (iii) the BA-AHRC-ESRC (British Academy, Arts and Humanities Research Council and Economic and Social Research Council) Visiting Fellowships for South Asia and the Middle East;
- Tübitak in **Turkey** manages various incoming and outgoing scholarship programmes for both native and international PhD students in order to trigger the effective participation of young people in higher education and to have them involved more in research activities (see full list on the PSF website). During the period 2010-2016, 801 researchers returned to Turkey: 460 via national fellowships; 340 via MSCA and 1 via ERC;
- The National Scholarship Programme of the **Slovak Republic**²⁹ supports mobility of PhD students, university teachers, researchers of any nationality except Slovak (EU and non-EU) for stays of 1-10 months in a Slovak HEI (incoming grant) and well as outgoing mobility. It supports living expenses and travel costs;
- The **Hungarian** Academy of Sciences³⁰ awards subsidies to distinguished scientists to come to Hungary for the purpose of research work at the Hungarian Academy of Sciences, or with HAS research groups at Hungarian universities, for periods of 3-12 months. The subsidies cover living expenses;
- The **Estonian** Kristjan Jaak and Dora Plus Scholarships (the latter co-funded by ESIF) are governmental programmes aimed at internationalising Estonia's science and research. They provide incoming and outgoing grants to early career researchers for short study visits up to 30 calendar days;

²⁸ <http://www.aka.fi/en/about-us/scientists-behind-the-research/fidipro/>

²⁹ <https://www.scholarships.sk/en/main/o-programe>

³⁰ http://mta.hu/data/dokumentumok/palyazatok/MTA_vendegkutatoi_palyazati_felhivas_EN_2016.pdf

- The Fulbright programme, co-funded by the American and national governments, runs in many EU countries. In **Sweden**,³¹ for example, it offers a variety of grants, notably for Swedish Visiting Lecturer/Research Scholars willing to stay in the US to conduct advanced research and/or lecture for a period of 3 to 12 months, or – vice-versa – for US scholars to make short-term visits to Sweden or stay for periods from 6 to 12 months;
- The **German** DADD programme³² provides a return scheme for German nationals that have worked abroad for at least 1 year. It offers travel grants for job interviews and scientific presentations in Germany that might enable their possible return. It also offers monthly scholarships to conduct research in Germany, with the goal of reintegration into the German scientific community. A dual career service³³ in Germany offers family-friendly assistance, especially in the fields of education or research. The employer supports the (highly) qualified partners of new employees in finding a job and provides practical help with settling into new surroundings.

Concerning the **portability of grants**, a recent survey³⁴ stated that this was only allowed by a small minority of funding agencies in the EU, and most often limited to specific countries or even specific partner institutes (for single investigator grants the figure was 24%, whereas it was only 12% for multiple investigator grants).³⁵ Overheads and equipment are the least portable components of research grants: in some cases (at least in ERC) it is common to provide additional local resources to a researcher with an ERC grant; in case of moving to another institution this extra-support is lost. The most frequent conditions for portability set by funders include a commitment to continue to report the results of the project (including mentoring and monitoring) and an agreement by the host institution to provide the working environment in which the research will take place. Examples of programmes managed by funding agencies that allow the portability of grants are:

- The D-A-CH programme, which is a joint research funding programme from **Germany, Austria and Switzerland**, includes a provision that allows the principal investigator of a funded project to move to another country partner of the programme during the implementation of the research; the grant is transferred from the original research institutions to the new institution;
- The **Dutch** public research funding agency NWO³⁶ has established the 'Money follows the researcher' scheme: if conditions likely to ensure the success of a research project are present, NWO agrees to allow research grants awarded under its 'Veni-Vidi-Vici' scheme to accompany principal investigators moving to another EU country;

The **networking of researchers** is promoted through various types of structural initiatives: the creation of networks connecting home-based and foreign-based national

³¹ http://www.fulbright.se/About_Us/index.html

³² <https://www.daad.org/en/>

³³ <http://www.research-in-germany.org/en/jobs-and-careers/info-for-senior-researchers/dual-career-programmes.html>

³⁴ Final report of the ERA-SGHRM Working Group on access to and portability of grants (2012). https://cdn1.euraxess.org/sites/default/files/policy_library/access_to_and_portability_of_grants_may_2012.pdf

³⁵ This is confirmed in Fernandez-Zubieta, A. and R. Van Bavel (2011), op. cit. According to their enquiry to all EU MS, only the Netherlands reportedly allows researchers to move their publicly-funded grant to another ERA country 'to a large extent'. Seven countries reportedly allow it 'to a moderate extent' and five countries 'to a small extent'.

³⁶ <https://www.nwo.nl/en/research-and-results/programmes/Money+follows+researcher>

researchers (the first two examples below); and the establishment of international cooperation networks (see the last two examples):

- The Wild Geese Network of Irish Scientists (WGNIS)³⁷ is an all-**Ireland** professional network enabling connection, communication and collaboration between the Irish scientific, technological and engineering diaspora. The Network provides a forum for discussion, advancement of ideas, consultancy, publicity and engagement of Irish scientists in policy. It aims to facilitate the engagement of Irish scientists abroad or their institutions in knowledge-based development of the Irish economy, thereby maintaining the connectivity of scientists both within Ireland and abroad;
- The OST Scientist Network (OSTINA)³⁸ is an interdisciplinary network of over 2,000 **Austrian** scientists and scholars based in the United States and Canada with the aim of building bridges of knowledge and expertise between these and scientists at home. OSTINA provides a forum for understanding the needs of Austrian scientists and scholars in North America, offering support on issues such as dual citizenship and double taxation and providing networking opportunities and information on job openings and research collaboration opportunities in Austria;
- The **Sino-German** Center for Research Promotion (SGC) Cooperation Groups,³⁹ jointly established by the Deutsche Forschungsgemeinschaft (DFG) and the National Natural Science Foundation of China (NSFC), offers support to German and Chinese researchers to establish cooperation groups in order to engage in intensive exchanges on specific scientific topics, possibly leading to a comprehensive joint research project and preparing the establishment of this project. The funding extends for 3 years and covers the costs of meetings and travel;
- The **Polish-Norwegian** Research Programme⁴⁰ pursues the aim of reducing economic and social differences and promoting bilateral cooperation through popularisation and support of scientific research. Mechanisms implemented to intensify this cooperation include a mobility component, allowing the Polish and Norwegian R&D project partners to take advantage of each other's research expertise.

3.2 International mobility schemes for researchers in the private sector

Given the dominance of company-level decisions concerning researcher mobility in the private sector, governmental schemes promoting this type of mobility are much rarer than those targeting researchers in the public sector. Many countries have programmes that support the **placement of highly qualified people (PhDs, masters) in research positions in companies**, which are in principle open to foreigners:

- One example from **Spain** is the Torres Quevedo Programme. This co-finances the recruitment of PhDs with accredited research and innovation capabilities in companies and technological institutes. During 2013-2015, 74 non-Spanish PhDs (12%) were recruited by the Spanish private sector under this programme.

However, the effectiveness of such schemes in terms of attracting foreign researchers is generally not known as this is not a primary goal of such programmes.

³⁷ <http://wildgeesenetwork.org>.

³⁸ <http://www.ostina.org>.

³⁹ www.sinogermanscience.org.cn/de/forderung/forderprogramme/koo/201503/t20150316_9414.html

⁴⁰ www.ncbr.gov.pl/en/norwaygrants/

There are examples of **mobility schemes that are open to companies** that act as host organisations for mobile researchers or highly skilled people:

- Using funding from the World Bank (loans), **Croatia** has established the Unity through Knowledge Fund (UKF)⁴¹ ([see description on the PSF website](#)), which aims at utilising the scientific and professional potential of Croatia and its diaspora in the development of the knowledge-based society. During the period 2007-2017, the Fund financed 128 scientific and technological projects, targeting research that is internationally competitive, innovation-oriented and likely to aid the development of the Croatian research infrastructure. UKF includes six sub-programmes that encourage all forms of mobility, including mobility involving industry. During the programme, 65 foreign scientists were attracted to Croatia and 175 Croatian scientists moved location, during short and long-term mobility stays. Out of 218 collaborations, 35 involved the private sector; out of the 316 organisations involved, 60 were from the private sector; and 19% of the total funding involved came from the private sector. As a consequence of the projects, 62 partners from private sector invested €800m, and projects emerging from UKF had a remarkably higher success rate in FP than the average for Croatian submissions;
- In **Catalonia**, TECNIOspring PLUS⁴² is an incoming/outgoing/return mobility programme that aims to foster the mobility of experienced researchers. The programme is managed by ACCIÓ, the executive public agency for the competitiveness of Catalan companies. Fellows may join a company, research or technology centre in Catalonia and/or anywhere in the world. Fellows hosted by a research organisation may be seconded to a company (cross-sectoral secondments) or spend some time there (short visits). The programme offers two types of fellowships: 1) Incoming: a 2-year contract in a Catalan company or a TECNIO entity; 2) Outgoing + return: a 1-year contract in a research/technology centre or R&D department of a company located outside Spain, and a 1-year contract in Catalonia or a TECNIO entity afterwards. The programme funds salary, research and travel costs;
- In **Wallonia**, the BEWARE fellowships,⁴³ funded by the regional government and the COFUND EU programme, provides two-year fellowships to researchers of any nationality, established abroad, with 4 to 10 years research experience. Incoming researchers can be hosted in public research centres as well as in research intensive SMEs. They have to work in one of the priority research areas defined by the regional government;

Other types of policies designed to attract foreign workers to companies include **tax relief for incoming talent**:

- **Italy** has established a fiscal incentive for researchers working abroad who want to work as researchers in Italy, the 'Rientro dei cervelli' (Re-entry of brains) incentive.⁴⁴ The scheme applies to EU citizens. This foresees tax breaks in the form of reduced income taxability – only 70% of revenues are taxed – and the scheme is scheduled to run for 5 years.

Migration policies try to attract highly qualified migrants in order to address skills shortages in the national economy and reinforce the human resource side of the national

⁴¹ www.ukf.hr

⁴² <http://catalonia.com/en/innovate-in-catalonia/tecniospringplus/index.jsp>

⁴³ <http://recherche-technologie.wallonie.be/fr/menu/acteurs-institutionnels/service-public-de-wallonie-services-en-charge-de-la-recherche-et-des-technologies/departement-des-programmes-de-recherche/direction-des-programmes-federaux-et-internationaux/cofund-beware-fellowship/cofund-beware-fellowships.html>

⁴⁴ <http://www.dottrinalavoro.it/notizie-c/pubblicato-il-decreto-sul-rientro-dei-cervelli>

research and innovation system. Three types of approaches are found across the EU:⁴⁵ 1) criteria-based points accumulation systems⁴⁶ that are based on the matching of supply and demand approaches – immigrants are given points according to those specific characteristics and skills that are seen as potentially beneficial for the host country's economy; 2) employer-led systems, which are present in almost all countries, where the decision to accept the skilled migrant is left to employers; and 3) hybrid systems.⁴⁷ It should be noted that these systems are typically developed within the realm of migration policies without explicit links to research or innovation policies.

Examples illustrate how changes in migration policies can support inward mobility for non-EU nationals:

- In **Germany**,⁴⁸ since its inception in July 2008, the action programme 'Labour Migration helping to ensure there is an adequate supply of skilled workers in Germany' (Beitrag der Arbeitsmigration zur Sicherung der Fachkräftebasis in Deutschland) has removed barriers to the immigration of highly-qualified and highly-skilled people to Germany to meet the demands of the labour market. For academics from the new EU Member States it is completely open. For academics from outside the EU, the labour market is open subject to a priority check (Vorrangprüfung) that ensures that no German researcher is suited for the post (BMI, 2008), though the Vorrangprüfung is not required anymore for any foreign employee that has graduated in Germany;
- Following **Ireland's**⁴⁹ implementation of the Third Country Directive in 2007, there is now an administratively light procedure for accredited research organisations to recruit researchers from outside Europe for specific research contracts. Additionally, the implementation of the Directive facilitates researchers bringing their spouses and children to Ireland for the duration of the research contract. Regarding dual career opportunities (i.e. positions offered to couples in the same institution), these may be offered at the discretion of the higher education institution concerned.

⁴⁵ Jones, B. (2012), *Innovation and Human Resources: Migration policies and employment protection policies: Compendium of Evidence on the Effectiveness of Innovation Policy Intervention*, Manchester Institute of Innovation Research. <http://www.innovation-policy.org.uk>

⁴⁶ Jones, B. (2012) cites the UK, Denmark and the Czech Republic in the EU as countries applying a point-based system.

⁴⁷ Jones, B. (2012) cites Sweden, UK and Denmark as EU countries adopted the hybrid approach.

⁴⁸ Example extracted from Fernandez-Zubieta, A. and R. Van Bavel (2011), op. cit.

⁴⁹ Idem.

4 Lessons

4.1 General lessons to address barriers faced by mobile researchers

As a starting point, it should be remembered that the overall attractiveness of a national public research system is crucially determined by the level of excellence and quality of research activities, research infrastructure and working conditions for researchers (including career paths, degree of research freedom, access to funding, social security provisions, pension rights, etc.). Mobility schemes are intended in the long-run to enhance this overall attractiveness, but their chances of success are greatly dependent on existing levels of attractiveness. Thus, **the primary task for governments wishing to raise the level of researcher mobility is to focus on policies that reinforce the effectiveness and attractiveness of the system as a whole.**⁵⁰

- As an illustration, in its 2017 advice,⁵¹ the **Flemish** Advisory Council for Innovation and Enterprise highlighted the importance of “putting top international talent at the centre” as a strategic objective for the region. Moreover, it considered that four broad factors were key to this aim: “(1) attractive careers and work; (2) attractive knowledge and innovation infrastructure; (3) attractive living environment; (4) smooth immigration policy”;
- **Turkey** has adopted its Tenth Development Plan (2014-2018). One ‘Priority Transformation Programme’ within it is the ‘Attracting Qualified Human Resources Programme’. Creating a suitable environment for researchers and improving cooperation among universities, industry, public sector and research centres are seen as key conditions for improving the country’s attractiveness to foreign talent (see the description of Turkish strategies on the PSF website). The programme aims to increase the number of qualified people moving to Turkey, especially Turkish nationals living abroad, and to increase the number of foreign researchers working under contract at educational and research institutions. A range of detailed performance indicators are used to assess its success;

Salary levels have an important influence on the transnational mobility of researchers. Low levels on offer constitute an effective deterrent: high levels are a magnet. In most cases, however, it is not possible to escape from national rules that bar the payment of higher salaries to incoming foreign researchers from countries with higher salary scales.

There are nevertheless other determinants of mobility that are more amenable to direct and focused governmental responses:

- One barrier impeding outgoing mobility is the failure in some countries to **valorise foreign experiences in the career progression** of researchers.⁵² Mobility is hampered by rules that do not consider stays abroad as positive elements in the career paths of researchers, favouring instead those who stay in domestic institutions for most of their careers.⁵³ One specific issue relates to the possibility for incoming researchers to get a tenured position after some period of time in the

⁵⁰ A discussion of routes of action to be taken by governments to make researchers’ careers more attractive can be found in Fernandez-Zubieta, A. and R. Van Bavel (2011), op. cit.

⁵¹ Flemish Advisory Council for Innovation and Enterprise (VARIO) (2017), *VARIO advise n°1: internationale toptalent aantrekken en verankeren*, Varío, www.vario.be

⁵² This is one clear finding from IDEA CONSULT (2008), op. cit.

⁵³ Some countries/organisations recognise mobility as a positive feature in a researcher’s career, in some it is even mandatory for career progression. But in others, it seems that being abroad actually slows down career progression. While abroad, researchers cannot adequately foster/maintain a network of influence in their home countries/organisations and are hence not always well positioned to obtain tenure vs. researchers that remain there and have more opportunities to ‘lobby’.

same institution. This is one issue that can be dealt with by Ministries in charge of HEIs and universities;

- Other barriers include lack of **information** on the availability of research positions in other countries; on their conditions (contracts, pay differentials etc.); and on potential funding and support programmes.⁵⁴ Conversely, even when adequate information is available on individual mobility schemes, the multiplicity of programmes and initiatives supporting all types of mobility is also experienced as a problem, since it can make it more difficult to make appropriate choices. Euraxess and national portals are of help in this respect;
- The difficulty faced by mobile researchers when trying to overcome **language and culture** barriers⁵⁵ is one area where governments can offer programmes or schemes, possibly within the larger frame of immigration policies. Overcoming language barriers faced by incoming researchers can also be addressed by developing English as a working language, an issue that might be difficult to implement due to regulatory barriers, e.g. in **Flanders** the law indicates that a maximum of 18% of bachelor courses and 50% of Master courses can be given in English rather than Dutch. In practice these percentages are, respectively, 2% and 22%. Foreign students coming to Flanders are required to pass a test to demonstrate that they have sufficient knowledge of the language to be able to follow courses in Dutch and must subsequently prove an in-depth knowledge of the language after 5 years;
- Lack of **transparency** in researcher recruitment procedures is another hurdle that can be addressed by national authorities, along with lack of equal opportunities due to a bias against foreign applicants;
- A lack of efficient **accreditation procedures**⁵⁶ to establish the equivalence of foreign degrees or other academic qualifications is another mobility barrier that needs to be addressed;
- One important constraint on mobility is the possibility for the **researchers' partner/spouse** to find work in the host country, as well as the general living conditions (e.g. schools, etc.). Organisations/regions/countries are increasingly understanding that they can act on this parameter as well to become more attractive to research talents, especially international researchers.

As mentioned above, the situation differs between countries with stronger or weaker research systems, the former being characterised by higher rates of researcher mobility than the latter.⁵⁷ The fear of brain-drain is logically more present in the latter countries and hence it has been found that these countries tend to resist policies targeting 'brain circulation' and focus on 'brain attraction' only. Nevertheless, it can be argued⁵⁸ that countries with weaker research systems would also benefit from brain circulation and that this could be fostered by incentives targeting returnees and young researchers at home.

⁵⁴ Idem.

⁵⁵ Fernandez-Zubieta and Guy (2010), op. cit.

⁵⁶ See Fernandez-Zubieta, A. and R. Van Bavel (2011), op. cit.

⁵⁷ The results of the MORE3 study point to persistent heterogeneity of mobility patterns among EU countries. https://cdn5.euraxess.org/sites/default/files/policy_library/final_report_1.pdf

⁵⁸ Fernandez-Zubieta and Guy (2010), op. cit.

4.2 Lessons from mobility support initiatives for public sector researchers

Lessons can be learned from existing experiences with national efforts to promote the mobility of public sector researchers. A few evaluations of mobility schemes (in countries with well-performing research systems) deliver a number of messages:

- Two evaluations of the **Austrian** Erwin Schrödinger scheme^{59,60} are available. Both are very positive about the effectiveness of the programme. Warta (2006) found that the programme very effectively fulfilled the expectations of outgoing researchers in terms of gaining experience abroad but expressed a concern about the low rate of outgoing fellows returning back to Austria.⁶¹ She also concluded that the length of the outgoing scheme (2 years) was too short, especially in some disciplines. Finally, former grant-holders reported a lack of support after the grant and a desire for more networking activities for alumni. The more recent evaluation of the scheme by Meyer and Bühner (2014) confirmed the additionality of the scheme and found that the higher research output of the incoming Schrödinger fellows and the good reputation they enjoyed within the Austrian science system explained their impressive career advancement. The programme works well in terms of improving the position of Austria in international research networks. They found that poor research conditions and unattractive career prospects within the Austrian science system explained the relatively low rate of return of outgoing Schrödinger fellows, especially women. However, they also highlighted the fact that these outgoing Schrödinger fellows assumed the role of 'bridge heads' that improve the integration of Austrian researchers in international networks. The evaluation concluded as follows: "*To increase the positive impacts of the Schrödinger Program, it seems warranted to focus on an improvement of the research conditions and career prospects within the Austrian science system*";
- The evaluation⁶² of another **Austrian** mobility scheme, the Lise Meitner incoming programme, highlighted the benefits gained over time once the programme had been modified on three fronts: an increase in funding allocated to beneficiaries; an extension of the duration of the grants; and a shift from scholarship to employment in the host institution. All these features are relevant to the goal of attracting high calibre researchers;
- The Vienna Science and Technology Fund (Wiener Wissenschafts-, Forschungs- und Technologiefonds – WWTF) in **Austria** was evaluated in 2013.⁶³ Although this is not a mobility scheme *per se*, the good conditions associated with the WWTF grants (which offer tenure-track positions) have been found to play a positive role in initiating international mobility and attracting star scientists from abroad who are then in a position to attract ERC grants

⁵⁹Warta, K. (2006), *Evaluation of the FWF mobility programs Erwin Schrödinger and Lise Meitner*, Technopolis, Vienna.

https://www.fwf.ac.at/fileadmin/files/Dokumente/Ueber_den_FWF/Publikationen/FWF-relevante_Publikationen/fraunhofer-isi_schroedinger-impact-evaluation.pdf

⁶⁰ Meyer, N. and S. Bühner (2014), *Impact Evaluation of the Erwin Schrödinger Fellowships with Return Phase*, Final Report for the Austrian Science Fund (FWF), Institute for Systems and Innovation Research ISI.

⁶¹ "Very often, the qualification resulting from the Schrödinger grant allows them to apply for a higher position that is not vacant in their former institute, but which is elsewhere, maybe abroad." (Warta, K. 2006).

⁶² Warta, K. (2006), *op. cit.*

⁶³ Laudel, G. (2013), *An In-depth Case Study of Selected WWTF Impacts*, WWTF evaluations 2013/14. https://www.wwtf.at/upload/WWTF_impacteval2013_CasestudyLaudel.pdf

- In **Germany** a recent evaluation⁶⁴ of the Alexander von Humboldt Professorship awards, which aim to attract 'star' researchers from abroad (half of those awarded professorships are German), found that *"these awards promote and strengthen internationality and top-level research at research institutions in Germany thanks to the flexibility it allows in the use of funds, its clear focus, efficient processing, and well-proportioned budget and duration. The Humboldt Professors often become central actors in building structures (centres) which cross-cut the universities' traditional organisation into faculties"*. It also found that *"the majority of Humboldt Professors embark on new collaborations with partners abroad after they have taken up their professorships"*. An important finding is that all the awarded professors remained in Germany after the subsidy period. Since the nominee's qualifications and the universities' commitment are equal criteria in the selection process, the result is that the awarded professors become key players in the development of their host institution. The report also noted that the support for dual careers provided by the Foundation is a positive aspect of the scheme.

Apart from the above in-depth evaluations, evidence on impacts of mobility schemes is very scarce. It is even more difficult to trace effectiveness of support for mobility when this is embedded in larger research funding programmes, within which the promotion of mobility is only an incidental feature.

Lessons from the implementation of the NEWFELPRO scheme in **Croatia** ([see the description on the PSF website](#)), which was discussed during the MLE workshop, are as follows:

- The scheme funded 76 inward and outward fellowships, though only 6 of the 'inward' fellows were 'returnees'. The 'reintegration' scheme cannot therefore be considered an overwhelming success, even though all 6 'returnees' remained in Croatia after the end of the grant. The proportion of all incoming fellows remaining in Croatia after the end of the grant was 25%;
- The fellows funded by the programme were generally successful in attracting further funds from national and international programmes;
- The programme had a capacity building effect as the steady influx of NEWFELPRO fellows helped the host institutions to improve their project management procedures. Programme management within the Ministry of Science and Education also improved;
- The encouraging overall results for the programme triggered subsequent plans: 1) to implement a similar programme of mobility for young researchers funded out of the state budget; and 2) to prepare a Seal of Excellence programme, funded by ESF, for incoming and Croatian researchers not funded by Marie Curie Skłodowska scheme despite evaluation scores greater than 85%;
- The programme helped create a platform for an open dialogue on public policies in the area of excellent science, with a special emphasis on the framework programme.

Other lessons can be learned from a study of the state-of-play of ERA initiatives,⁶⁵ which included a chapter on researcher mobility:

⁶⁴ Warta, K. A. Geyer and J. Gorraiz (2017), *Evaluation of the Alexander von Humboldt Professorship – International Award for Research in Germany*, Technopolis. <https://www.humboldt-foundation.de/web/evaluation-alexander-von-humboldt-professorship.html>

⁶⁵ Nauwelaers, C. and R. Wintjes (2009), *Monitoring progress towards the ERA*, ERAWATCH report. <https://rio.jrc.ec.europa.eu/en/file/8897/download?token=cmHcen-e>

- There is a growing interest in initiatives aimed at providing **tailored information** to mobile researchers, as well as services like the provision of housing facilities;
- Mobility initiatives are seldom restricted to European countries⁶⁶. Policies most often address worldwide mobility without making a distinction between EU and non-EU countries. Many schemes focus on specific countries or groups of countries, e.g. schemes for attracting researchers from the developing world. Other schemes take the form of bilateral agreements between countries. In some cases, national mobility schemes tend to prioritise non-EU mobility on the grounds that EU mobility is promoted through EU-level instruments;
- There are too few in-depth **evaluations** of mobility scheme impacts;
- Available (patchy) evidence, gained through evaluations and other studies, indicates that the **volume and continuity of grants** are key conditions for the success of mobility initiatives. In several cases of inward mobility schemes, the size of the grants had to be increased in successive programmes because it was found that the prevailing grant schemes were insufficient to attract top-level researchers;
- **Short-term schemes** (or division of long-term schemes into several short-term periods) may be gaining relevance as possibilities for virtual cooperation increase. Small amounts of seed money for international travel, such as grants for research networks run by the British Council, have usefully led to longer term research collaboration.

4.3 Lessons related to international mobility schemes for private sector researchers

As mentioned above, the level of mobility of highly skilled staff within the private sector is primarily influenced by companies' internal decisions. The general economic context conditions for economic activities also influence this mobility, as do measures within the R&D policy sphere targeting companies, such as the availability of R&D tax incentives or lower social security payments for hiring researchers: the latter can have an important influence on the attractiveness of a country to foreign researchers.⁶⁷

It is hard to identify lessons from public initiatives targeting private sector researcher mobility since these initiatives are scarce and are not central features of STI policies. Only limited anecdotal evidence can be reported:

- A recent study⁶⁸ found that, for researchers in the private sector, **profession-related motives** – referring to motivations related to the career or the profession of the researchers (e.g. personal research agendas, career progression goals, career opportunities at a new location, salary and other financial incentives, etc.) – are more important motivations for international mobility than other motivations;
- Lessons can be learned from a programme in the **UK**, the Dorothy Hodgkin Postgraduate Award (DHPA), which focuses on PhD students, who can spend part of their time in a company. The scheme attracts outstanding people from the developing world by offering them a stipend, with 50 per cent of the total cost met by the Research Councils and 50 per cent met by a corporate sponsor. The latter feature is relevant to mobility schemes targeting researchers too. Despite limited

⁶⁶ This is confirmed by the analysis of Fernandez-Zubieta and Guy (2010), op. cit.

⁶⁷ This issue is covered in another MLE exercise: <https://rio.jrc.ec.europa.eu/en/policy-support-facility/mle-administration-and-monitoring-rd-tax-incentives>

⁶⁸ IDEA (2010), op. cit.

evidence, an evaluation⁶⁹ of the scheme found that: *“the DHPA can offer corporate sponsors a number of benefits, including access to some of the best students from the developing world, improved links with academic partners and the opportunity to carry out research which is half-funded by the Research Councils. However, the lack of awareness of the scheme amongst potential corporate sponsors has meant that only a very small proportion of eligible companies have been able to benefit from the scheme.”* In addition: *“the scheme has successfully attracted top students to the UK that would have otherwise gone to competitor countries such as Australia or the US, and furthermore around half of all students have indicated that they will actively maintain their links to the UK”*;

- Concerning **migration policies**, Jones (2012)⁷⁰ argues that the points-based system is the most effective for attracting highly skilled migrants. However, the use of this system is hampered by difficulties in assessing present and future skills requirements in recipient countries. There have been only limited attempts to carry out fully-fledged impact assessments of policies such as these, with the best examples emanating from Canada and Australia. The recent migration crisis has of course reopened this debate and it is beyond the scope of this MLE to investigate the implication of recent and ongoing developments in migration policies on the mobility of researchers.

⁶⁹ Booth, K. (2010), *Review of the Dorothy Hodgkin Postgraduate Award Scheme*, report to British Research Council.

⁷⁰ Op. cit. The report also provides an overview of the limited evidence on the effects of international mobility of high skilled labour on innovation in host countries.

5 Conclusions and way forward

Strong brain circulation, epitomised by high rates of the incoming and outgoing mobility of researchers and highly skilled people, is a positive feature of healthy research and innovation systems. Intense brain circulation facilitates the participation of domestic research and innovation actors in H2020 since mobile people act as links to partners in other countries. There is thus a positive link between brain circulation and the goal of widening participation to FP, one of the subjects of this MLE. The question debated in this MLE workshop was whether and how governments can influence brain circulation, so that their systems perform better and are able to reap the potential benefits of the EU FP.

Conclusion 1: The principal action by governments to promote brains mobility is to act towards improving effectiveness of research and innovation ecosystems

The best way to attract and retain researchers and qualified people into a national or regional research and innovation system is to improve the latter's effectiveness. Those countries that experience the highest rates of outgoing and incoming (including 'return') mobility are also those with the best performing ecosystems. The latter are characterised by: excellence in cutting edge research; availability of top-level infrastructures; efficient interactions between public and private actors and a highly innovative business sector; attractive career conditions and salaries (as well as living environment) for researchers etc. Hence it is important to act on all those conditions if a system has to become more attractive to both foreign researchers and to returning nationals (one good example from the workshop was the 'Attracting Qualified Human Resources Programme' in the Turkish Tenth Development Plan (2014-2018)). In particular, reforming the public research sector is an important prerequisite in those countries that have not yet undergone a full modernisation process.

In other words, the promotion of brain mobility encompasses much more than mobility programmes per se; it actually covers the many aspects that make a research and innovation system attractive and well-performing. Mobility programmes should be designed and implemented with this broader goal in mind.

Conclusion 2: Countries with less attractive R&D systems can use ESIF to build incentives for attracting researchers

For those countries or regions that are not at the cutting edge of research and innovation and/or with poor conditions for these activities, there are ways forward to attract and retain brains in their system. Developing incentives to foster brain mobility is a good option since bringing new blood and new ideas through mobile researchers can help to initiate or reinforce needed changes in the system.

These countries and regions should build on their smart specialisation strategies (S3) as a promising approach to improve the situation. Investing in setting-up a MSCA COFUND programme (one good example of this was given by the NEWFELPRO programme in Croatia) that focuses for example on the region's/country's S3 would allow to reinforce skilled human research capacity in areas of priority and to even combine COFUND and ESIF to support such an initiative

Conclusion 3: Countries should work out a balanced mix of mobility incentives, in line with the main features of their research and innovation system

When designing mobility promotion schemes, it is important to clarify the goals pursued and to translate them into specific types of mobility.

An effective policy mix of support measures for the mobility of researchers should ensure a good balance between: (a) incentives for incoming, outgoing and 'return' mobility; (b) targeting young and experienced researchers; (c) long-term and short-term mobility; (d) physical and virtual mobility. That balance should be defined on the basis of a good

understanding of the system's needs. The discussions at the MLE workshop pointed in particular towards the relevance of the following schemes with respect to some specific objectives and situations:

- Closed and low-performing systems would benefit from short-term outgoing mobility schemes with a view to gaining experience abroad and bringing back new ideas for system changes, without creating too high a risk of 'brain drain';
- 'Shuttle' incoming mobility schemes are appropriate for countries with less attractive research systems that are unable to compete with stronger ones in terms of attracting star scientists. However, countries with strong systems, such as Sweden, also deploy various types of schemes, since they are in competition with strong systems such as the US research system;
- Outgoing schemes incorporating a return phase (such as the NEWFELPRO scheme in Croatia) are also seen as good practice in order to avoid a situation of 'brain loss';
- Attracting and/or connecting with researchers from the diaspora is another relevant goal for countries with less attractive research systems. More generally, students and members of the diaspora are useful actors to target when the aim is to build bridges between the domestic research system and foreign ones. The examples of the Unity through Knowledge fund in Croatia and the Irish practice of including members of the diaspora in the Board of their Science and Innovation Council were highlighted as good practices in terms of diaspora mobilisation;
- 'Star scientist' mobility schemes aiming to attract and retain high calibre researchers from abroad (foreigners or nationals returning to the home country) require bold and long-term incentives, covering not only salaries but also funding for research, infrastructure and team building. The Flemish Odysseus programme and the Polish International Research Agendas Programme (IRAP) were mentioned at the meeting as good examples. The ERA-Chair scheme was proposed as good practice at the EU level;
- Active migration policies can help to attract researchers from third countries, in particular from developing or emerging economies.

Conclusion 4: Both financial and non-financial 'soft' and regulatory measures should be combined to support brain mobility

Governments throughout the EU have been deploying a wide range of financial incentives to promote brain mobility. The discussion in the MLE workshop demonstrated that the existence of 'fixed and low' salaries in some countries (Poland was presented as an example of a country where this is problematic) acts as a strong disincentive to inward mobility in those countries. The possibility of circumventing such restrictions (through the provision of additional packages, or bonuses) should be explored if the performance of mobility schemes is to improve.

Beyond this, one general conclusion reached in the workshop was that, to reach their full potential, financial incentives need to be complemented by a range of non-financial incentives, in particular:

- The provision of information on research positions that is transparent and easily accessible for foreign researchers;
- Dual-career support that facilitates the attraction of people, in particular at mid-career stage (but increasingly also at early career stage), at a time when family responsibilities are an important consideration for mobile researchers;
- The development of accreditation schemes ensuring recognition of qualifications across borders and sectors;

- The incorporation of mobility as a positive criterion when assessing career progress in HEIs and PROs;
- The promotion of the use of English in education and research as it helps to lower the language barriers faced by mobile researchers. Despite tension with attempts to protect the use of national languages, linguistic rules can be modified if countries decide that the goal of promoting mobility is important enough (as demonstrated by the examples of Slovenia and Flanders).

Conclusion 5: More attention should be paid to mobility from/to the private sector

The discussions in the MLE workshop demonstrated that the topic of brain mobility is closely related to another topic of this MLE, namely Topic 2, fostering closer interactions and relationships between science and industry. Cross-border mobility of researchers and highly skilled people can also, in practice, take place across sectors, e.g. from the public research sector in one country to the private sector in another country. Two examples were mentioned in the workshop, the Torres Quevedo Programme in Spain, in which 12% of PhDs recruited by the Spanish private sector were foreigners; and one from Croatia, the Unity through Knowledge Fund, which supports mobility and receives 19% of its funding from the private sector. Very few governmental schemes, however, actively explicitly and promote cross-sectoral mobility.

One way forward would be to include private sector hosting organisations in existing public-sector oriented mobility schemes (i.e. the vast majority of schemes). PhD students, for example, could be encouraged to spend part of their time in industry on a cross-border basis (a variation of the Industrial PhD schemes found in some countries). However, in order to be responsive to the rapidly evolving and ever-changing needs of industry (SMEs in particular), such schemes would have to be able to respond quickly and flexibly when attempting to match the supply of relevant human resources with the demand from firms.

Conclusion 6: Mobility schemes would benefit from more policy intelligence: better evidence base on mobility drivers and barriers and on mobility schemes' effectiveness

It is evident from the overview and discussion of mobility schemes undertaken in this MLE exercise that greater efforts are needed to supplement the evidence-base that could inform the development of more effective policy measures. This would require:

- Better understanding of existing barriers (e.g. regulatory barriers) to which governments could respond;
- The use of 'smart' monitoring systems that would allow further real-time and ex-post analyses of the ways in which schemes are being implemented;
- The more widespread evaluation of mobility programmes;
- Enhanced strategic approaches that provide a detailed explanation of the intervention logic and the setting up of key performance indicators (cf. the KPIs established for programmes in Turkey).

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This report provides lessons learned from the Mutual Learning Exercise (MLE) devoted to widening participation to FP and enhancing synergies between FP and ESIF. The focus of this report is on national-level strategies, initiatives, programmes and schemes targeting the attraction of qualified R&D staff working abroad (within or outside the EU), into national research performing organisations from the public and private research sectors, namely PROs/HEIs and R&D-active companies. The topic also includes outgoing mobility schemes for national researchers. The report provides a landscape of existing initiatives, and identifies lessons learned through exchanges of experience with respect to practices in 2 areas: 1) International mobility schemes for researchers in the public sector; 2) International mobility schemes for researchers in the private sector.

Studies and reports