REPORT
of the ERA-SGHRM Working Group
on

Innovative Transnational Research Mobility and Welcoming Researchers to Europe

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Contents

ERA-SGHRM WG on Innovative Transnational Research Mobility and Welcoming Researchers to Europe

Background

The issue of the asymmetric flow of researchers across borders has been dealt with many times in the past under various headings, e.g. cohesion actions and brain drain/gain/circulation. Some initiatives have been undertaken by the Commission through Teaming, Twinning and ERA Chairs (as part of Spreading Excellence and Widening Participation in Horizon 2020), European Structural Funds and Smart Specialisation. In particular, the ability of countries to couple Structural Funds with that from other part of the EC especially Horizon 2020 has been studied.

The asymmetry of researcher mobility between countries is due to many factors including the location of world-class research facilities, excellent teams and lack of career opportunities. Another challenge is how to ensure talent circulation across ERA given the large salary differences between countries. Moreover, it can be difficult for countries to pay researchers beyond the national norms. Therefore, it is important to consider conducting an analysis to see if an innovative transnational mobility can be put in place within ERA in order to reduce some of these problems.

It should be kept in mind that significant policy work has been done on this topic in the past and what is needed now are practical recommendations. One approach would be to introduce funding schemes that could enable researchers to collaborate with leaders in their field without the need for long-term mobility. The world has changed significantly with technology and in particular due to the ability to communicate effectively through web tools including Skype and WebEx. This collaboration could be achieved through funding for short-term mobility that would allow researchers to establish a working relationship and the possibilities of Virtual Mobility.

One of the challenges here is the difficulty to evaluate this form of mobility, which would be necessary for funding agencies to justify investment. The SGHRM notes that there will be a specific study on this topic funded by the Horizon 2020 Marie Sklodowska Curie Actions[1].

Independent of the type and period of mobility, it is important to first consider the measures needed to help intra-EU mobile researchers and researchers from third countries be integrated in the receiving country ,

- Innovation Union - Commitment 30 (“By 2012, the European Union and its Member States should put into place integrated policies to ensure that leading / the best academics, researchers and innovators reside and work in Europe and to attract a sufficient number of highly skilled third country nationals to stay in Europe”)
- The issue of a “Welcoming culture” is included in the ERAC Opinion on the ERA Roadmap under ERA Priority 3 – an open labour market for researchers: “*At European and national levels, authorities should encourage openness and the circulation of international talent by*

[1] Included in the MSCA Work Programme 2016-2017.

*reinforcing a **welcoming culture** for EU and third-country researchers and reducing obstacles to mobility*".

- The issues of Open Science, Open Innovation and Open to the World. These concepts have an underlining relation to researcher mobility and how EU policies directly affect (simulate, promote) incoming researchers.

Furthermore, this issue includes not only legal matters (like the scientific visa directive on European level and its national implementation as well as national alien laws) but also data (number and origin of third country researchers coming to Europe) and soft measures (e.g. EURAXESS Service Centres, national Researcher's Guides, and relevant working groups).

The legal aspect of immigration has been dealt with already in the Third Country Directive. There may be an opportunity to review the implementation of the Directive, as this has not been done for a number of years. Discussion points could be a review of existing strategies in MS as well as already undertaken initiatives in the MS and at RPOs.

There is a new aspect to welcoming researchers to Europe since in the past all researchers came because of the attractiveness of European institutions. Now there are researchers coming to Europe as refugees and not by choice. The approach needed to welcome these researchers will be quite different from the general approach to date.

There is no doubt that the EURAXESS centres will play a key role in the implementation of any recommendations. The first step should be to analyse the previous stocktaking exercises of available information, good practice and other relevant information carried out under EURAXESS (i.e. WG on "welcoming culture). Practice could be shared between countries on what has already been done to integrate foreign researchers. One target group, which should be dealt with are researchers: R1-R4 referring to the EFRC.

But EURAXESS still does not receive the awareness it should have and not all universities and research performing organisations in Europe are part of the EURAXESS Service Centre network. This for e.g. could be one of the recommendations to MS and organisations: Signature of EURAXESS DoC.

Definitions and Methodology

The WG focused focused on three different aspects of brain circulation:

- Involuntary researchers: integration tools to support them in the new countries. Such as the researchers at risk initiative: Turkey, Austria, and the European University Association
- Third countries: recruit those interested in coming. Best investment as they can return to their countries and continue the collaboration in the future. EURAXESS could be the link. Target group: focus on neighborhood countries – Spain, Israel
- Diaspora: getting our researchers to return home, it is a smart to require them return or to stay there and allow partial re-integration. Young students who find jobs do not return because they are in the industrial sector. Scientific Diaspora, Israel and Greece, Turkey

It was agreed that in addition some work needs to be done in new aspects such as

- Virtual Mobility: development of career solutions, recognition, career considerations, growing trend. Importance in the scenario of crisis, part-time jobs, and application in the context of re-integration for facilitating good researcher involvement. Spain, Israel
- Intra-EU mobility: Estonia and France

- Innovation hub: Incubators/Innovation centers for young talents. How to enable a quick transfer of knowledge. Tools for facilitating the knowledge mobility and innovation hubs as an option to attract. Portugal and Israel

In order to recover some information a questionnaire with request for information related to different aspects of the topics of the WG was submitted to the HBOs and later used for identification of some of the gaps and needs for recommendations.

Finally it was decided to cover each topic of the report on different chapter with a conclusion and recommendation for each of them. The guidelines for each chapter were the following:

1. **The broad picture and general context of the topic (up to 1 page)**

- Include the relevance for addressing this topic with respect to mobility and welcoming
- include definitions, explanation of concepts (what we mean, what are talking about)
- Reasoning that this is relevant (in terms of timing, policy issues, opportunity)

2. Issues to be addressed (up to 3 pages)

- Include what is at stake (why is this problem/topic an "issue")
- Include existing policies (if any, if relevant)
- Examples of what is being done (from countries). Include some of the "responses" from the questionnaires received

3. Outcomes/ Recommendations (up to 1 page)

- Concrete recommendations addressed to different target groups / level (EU, National) or stakeholder (RPOs, RFOs)

Chapter 1: Involuntary Mobility:

2. The broad picture and general context of the topic

- Include the relevance for addressing this topic with respect to mobility and welcoming
- Include definitions, explanation of concepts (what we mean, what are talking about)
- Reasoning that this is relevant (in terms of timing, policy issues, opportunity)

Involuntary Mobility

In 2015 over 1.2 million first-time asylum seekers applied for international protection in the member states of the European Union (EU), a number more than twice that of the previous year (Eurostat). Syria (29% of the total number of first-time applicants) was the main country of citizenship of asylum seekers in the EU member states in 2015, followed by Afghanistan (14%) and Iraq (10%).

The highest number of first-time applicants was registered in *Germany* (35% of all first-time applicants in the EU member states), followed by *Hungary* (14%), *Sweden* (12%), *Austria* (7%), *Italy* (7%) and *France* (6%). Compared to the population of each member state, the highest number of registered first-time applicants in 2015 was recorded in *Hungary* (17,699 first-time applicants per million inhabitants), ahead of *Sweden* (16,016), *Austria* (9,970), *Finland* (5,876) and *Germany* (5,441).

In **Austria,** approximately 90,000 people applied for asylum in 2015, which is three times more than in 2014. Almost a third of the asylum applicants came from Afghanistan; the second-largest group were Syrians, while Iraqi citizens came in the third position. Compared to other European countries and taking into account the overall national population, Austria ranks among the top reception countries.

Between January and October 2015, more than 580,000 individuals followed the Eastern Mediterranean route into the European Union, crossing from Turkey to Greek islands in the Aegean Sea, while hundreds lost their lives in the attempt. Well over half of those arriving on the islands were Syrians, while most of the others were from Afghanistan and Iraq.[2]

Considering these arrivals and knowing the high numbers of refugees waiting in Turkey, it was obvious that the flow to Greece will continue and the number of refugees will rise. Despite this, it took a long time for the Greek authorities to realize the emergency situation and for the new government to start making decisions. Local NGO's and international organisations, with the support of the mayors and volunteers, organized the reception of the refugees, their relocation to accommodation facilities, and the collection and provision of food, water, clothes and medicines. Even if most refugees aspire to continue their journey to Germany, Austria or Sweden, some are going to stay in Greece and the government is urged to ASAP prepare an integration plan[3].

Refugees suffer more from barriers than other immigrants and their integration in Western societies is often problematic. New and common methodologies and approaches should be developed for **refugees' adaptation in the reception countries, via the knowledge sharing between academia and market, aiming at the minimization of problems, conflicts and lawlessness.** Domestic

[2] *Frontex, "Eastern Mediterranean Route," accessed December 14, 2015, http://frontex.europa.eu/trends-and-routes/eastern-mediterranean-route.*

[3] *Greece: Assessing the refugee crisis from the first country of reception perspective, European Web Site on Integration - European Commission*

entrepreneurship can also be boosted by vocational training. The defining of skills that could be really beneficial for the refugees who are thinking of starting their own entrepreneurial business should be specified. The same approach with refugees could be adopted in research and academia.

Towards this goal, **vocational training constitutes good practices, which can be developed by intersectoral mobility.** This definition is the first step in the process of embracing and taking advantage of immigrant flow in a new country. Vocational training aims at the apprenticeship of the new country's language (or a universal language), morals and customs, acquisition of new skills or the exploitation proper adaptation, further evolution or development of current professional knowledge and experience, information on the status and structure of legislation, educational and sanitary system, opportunities and preconditions necessary to join, awareness-raising on potential cultural, psychological, and emotional difficulties, training on transport behavior, law, regulations, standards and skills, and information and knowledge transfer on social security and environmental issues.

2. Issues to be addressed

- Include what is at stake (why is this problem/topic an "issue")
- Include existing policies (if any, if relevant)
- Examples of what is being done (from countries). Include some of the "responses" from the questionnaires received

European Policies and initiatives

In September 2015, the European Council adopted a decision establishing provisional measures in the area of international protection for the benefit of Italy and Greece. This decision establishes a temporary and exceptional relocation mechanism for the coming two years, from the frontline member states - Italy and Greece - to other member states. It will apply to persons in clear need of international protection as from 15 August 2015 until 16 September 2017.

Many organisations across Europe and beyond are responding to refugees by providing them shelter, advice and support in dealing with authorities, and engaging them in cultural and sport opportunities. Higher education institutions are also developing initiatives tailored to refugee students and university staff, and have included subjects concerning migration and refugees into teaching and research.

The **Refugees Welcome Map campaign**[4] EUA (European University Association) aims to showcase and document the commitment of higher education institutions and organisations in supporting refugees. EUA is collecting data on their initiatives and activities via a brief survey and presenting them in this interactive map, which will be continuously updated. The campaign began in Europe but is open to institutions and organisations around the world.

Academic integration

Recognition and validation of education would be a valuable step in ensuring access to the labor market for those with the ability to present their degrees and/or prove their technical expertise. Existing tools to identify work experiences and professional skills are often not very suitable for refugees. For the time being, adequate tools are only scarcely developed. Pilot schemes recently launched in several Member States have still to be evaluated on their practicality for everyday operational decisions and their transferability to other countries. There are only a few examples of a nationwide implantation of specific tools. Newcomers often require support in validating diplomas

[4] *http://refugeeswelcomemap.eua.be/Editor/Visualizer/Index/34*

and skills gained abroad, and support in adapting skills to new labour markets (including occupationally specific language training). Poland and Estonia, while they do not accept refugees, have adopted long-established actions designed to facilitate refugees' access to education and training, support skills validation and adaptation (Annex I). The OECD highlights the Norwegian recognition scheme as a good practice example (Annex I).

Integration in society

Combining language courses with work experience

Knowledge of the national official language or a recognised language certificate, respectively, is the first important step towards integration into the society and the labour market for migrants. There is a need to tailor language courses since the same type, level, and duration of language support may be neither necessary nor feasible for refugees who come from different educational backgrounds, speak different languages, and have different career prospects. Language courses should start as early as possible, implying that access to language training should also be given to asylum-seekers prior to recognition, at least to those with high prospects of being allowed to stay. Additional to basic language training, further language development should be combined with work experience, internships or apprenticeships.

Refugees/researchers training *for additional skills / networking / internships*

The training of researchers in order to improve their additional skills and competences and to have better prospects in the European Labor Market is generally accepted and a priority within the EU. Depending on the different target groups, different needs might arise. Therefore, it is important to identify which additional skills are relevant to the scientists/refugees. The online tool (app) developed within the **FP7 PIPERS** (**Policy into Practice: EURAXESS Researcher Career Skills for Career Development)** can be used, which enables individual researchers to assess their value and motivations regarding their skills, experience and expertise and the opportunities for future jobs. The tool is underpinned by existing and new research on career motivation, destinations and skills of researchers. The output consists of a short self-reflection report which can be used to stimulate thinking, for conversations with supervisors, and to support the development of a career plan or strategy. Furthermore, the training modules created within this project, covering career development and transferable skills, can be used and are grouped into four themes:

- Managing careers and professional development and researcher self-assessment
- Research and enterprise: entrepreneurship, managing intellectual property and setting up companies
- Maximising the impact of research: engaging the public and key organisations, working with industry
- Leading in the research context: including key skills in information literacy, e-research skills and interdisciplinary working

Jobs for refugees and migrants | Start-ups

The European Commission has launched the **Science4refugees initiative** to help refugee scientists and researchers find suitable jobs that both improve their own situation and put their skills and experience to good use in Europe's research system. Science4Refugees matches talented refugees and asylum seekers who have a scientific background with positions in universities and research institutions that are 'refugee-welcoming organisations' and that have suitable positions available, including internships and part-time and full-time jobs. Science4Refugees is accessible to refugees and institutions through the EURAXESS - Researchers in Motion portal.

Conclusions

Ideally, support policies for refugees consist of a holistic and timely coordinated integration package starting with skills assessment and help in the recognition of vocational qualifications. Continuing with language support is crucial to ensure country-specific skills. Additional vocational qualifications as well as work experiences in the local labour market, e. g. through internships or employment measures might be valuable particularly for skilled refugees to find adequate work. Developing an **individual integration plan** has been proven in some Member States to be a good way to follow and guide the integration process. The question is who should be responsible for such an individual integration path.

Guidance services are provided in several countries at different stages of the integration process ranging from basic interventions in knowledge of language through advice on skills assessment, validation and learning options to the establishment of complex integration or career development plans. However, services tend to be irregular and often they are not adjusted to reflect the specific national and cultural background.

3. Outcomes/ Recommendations

General recommendations:

It is important that refugees are integrated as soon as possible in local societies. By assisting the development of local representative leaderships within such communities, their integration is enhanced, grievances more effectively address by the authorities, and they integrate in a democratic way into representative political structures on the local, regional and later national levels.

To EURAXESS Network:

- To provide specific training for EURAXESS staff (additional skills, more information; intercultural differences etc.) to extend the basic mobility related services in order to support refugees/migrants. Services must be tailored to take into account cultural diversity, gender, age and specific needs;
- To upload on the EURAXESS webpage good practices related to the integration of scientists/refuges;

To EURAXESS Network and public authorities:

- To identify candidate services that could be possibly applied in the future by the whole EURAXESS network and would target better social integration of the refuges in collaboration with public authorities. The selection criteria should be based on social integration impact of researchers/refugees and their families (e.g. family reunion or dual career issues);
- To disseminate the 'science4refugees' initiative for asylum-seeking and refugee scientists and researchers through the EURAXESS - Researchers in Motion portal to enable a match-making process between refugees and asylum seekers with a scientific background and the scientific institutions that voluntarily declare themselves as "refugee-welcoming organisations".
- To provide in the longer term, with the support of the EURAXESS Service Centers, schemes on training mentoring, language and integration courses, to be added to the 'science4refugees' initiative to help refugees settle into their host country of residence;
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- To adopt the Euraxess website of Germany for refugees by the whole Network;
- To provide free language courses free for refugees also on-line courses by the whole Network adapted to their identified needs; Set minimum requirements for language proficiency using the Common European Framework of Reference (CEFR);

To public authorities:

- To launch programs relating to immigrants, refugees and asylum seekers (Israel example): **a) Immigrant Talents as Human Capital for Economic and b) Developing Local Leadership in Immigrant Communities;**

To public authorities and HEI's, research centers:

- To establish a specialized center for the acknowledgement of skills;
- To evaluate already existing credentials and skills through interviews, practical tests and the online tool (app) developed within the **FP7 PIPERS** (**Policy into Practice: EURAXESS Researcher Career Skills for Career Development)** Project;
- To increase availability of on-the-job training for high-skilled refugees to improve content and delivery of skills-based language learning using the training modules, created within the **PIPERS Project**, covering career development and transferable skills;
- To support employment agencies in recognizing skills of refugees and in directing them to appropriate employment;
- To promote mentoring of refugees, in co-operation with NGOs and public services;
- To conduct further research on migration in order to gain a more in-depth knowledge of qualifications and experiences of refugees;

Annex I: Best practices adopted by EU Member States facilitating the integration of refugees

Chapter 2: Third Countries Mobility:

Integration of researchers from third countries

1. The broad picture and general context of the topic

Background and context

The EU is facing important structural challenges of both demographic and economic nature. The working age population has practically stopped growing and over the next couple of years it will start shrinking. For both economic and demographic reasons the observed patterns of employment growth with emphasis on skilled labour will persist during the decade ahead. The EU is also facing a situation of 'innovation emergency'. Europe is currently spending 0.8% of GDP less than the US and 1.5% less than Japan every year on Research & Development (R&D).

Thousands of the best researchers and innovators have moved to countries where conditions are more favourable. Although the EU market is the largest in the world, it remains fragmented and not innovation-friendly enough. The Europe 2020 Strategy and its Innovation Union flagship initiative set the goal of increased investment in research and innovation, requiring an estimated extra one million more research jobs in Europe. Immigration from outside the EU is one source of highly skilled people, and third-country national students and researchers in particular are groups which are increasingly sought after and which the EU needs to actively attract.

Third-country national students and researchers can contribute to the pool of well-qualified potential workers and human capital that the EU needs in order to cope with the above-mentioned challenges. The EU Global Approach to Migration and Mobility sets the overarching framework of the EU's external migration policy. It defines how the EU organises its dialogue and cooperation with non-EU countries in the area of migration and mobility. The framework aims to contribute – inter alia – to the achievement of the Europe 2020 Strategy, in particular through its objective of better organising legal migration and fostering well-managed mobility (alongside its other pillars dealing with irregular migration, migration and development and international protection).

Particularly relevant in this context are the Mobility Partnerships, which offer a tailor-made bilateral framework for cooperation between the EU and selected non-EU countries (notably in the EU neighbourhood), potentially also containing measures and programmes for promoting the mobility of the groups addressed in this proposal Directive. Allowing third-country nationals to acquire skills and knowledge through a period of training in Europe encourages "brain circulation" and supports cooperation with third countries, which benefits both the sending and the receiving countries.

Globalization calls for enhanced relationships between EU enterprises and foreign markets, while movements of trainees and au pairs foster the development of human capital, resulting in mutual enrichment for the migrants, their country of origin and the host country and an improved mutual familiarity between cultures.

What is the current EU policy situation?

The EU is facing important demographic and economic challenges. Its working age population has practically stopped growing and will probably start shrinking over the next couple of years, and thousands of the best researchers and innovators are moving to countries where conditions are more favourable.

Allowing third-country nationals[5] to acquire skills and knowledge through a period of training in Europe can contribute to a pool of well-qualified potential workers and encourage brain circulation, supporting cooperation with third countries.

However, previous rules regulating access for some of these groups were insufficiently clear and did not address some of the practical difficulties faced by applicants. There was need for amending the student directive (2004/114) and researcher's directive (2005/71). Therefore, on 12 May 2016 a new directive on conditions of entry and residence of third-country nationals for the purposes of research, studies, and training entered into force. The directive seeks to improve the conditions of entry and residence of third-country researchers, students, trainees and volunteers. Member states have until 23 May 2018 to translate the directive into national law.

The draft directive provides harmonised conditions of entry and residence in the EU of researchers, students, trainees and volunteers taking part in the European Voluntary Service from third countries. It also seeks to improve the situation of researchers and students by the following means:

- The mobility within the EU of third-country researchers or students has improved: third-country nationals working as researchers or pursuing studies in one member state may, in certain cases, enter and carry out part of their research or studies in another member state upon simple notification. Furthermore, the period of mobility for researchers has been increased to six months making the European Union a more attractive destination for third-country nationals.
- Family members of researchers will be allowed to accompany them and also benefit from the improved right of mobility within the EU.
- Students from third countries will have the right to work at least 15 hours per week outside their study time in order to allow them to cover part of the cost of their studies.
- Researchers and students from third countries may stay for at least nine months after having completed their research or studies to look for a job or set up a business.
- Member states may decide to apply the new EU rules also to third-country nationals applying for participating in a pupil exchange scheme or educational project, volunteers other than those taking part in the European Voluntary Service or au pair work.

Why is this important?

Europe needs talented students and researchers in order to achieve its goals for smart, sustainable and inclusive growth. For this reason, the initiative to revise the Directive on the conditions of entry and residence of third-country nationals for the purposes of research, studies, pupil exchange, remunerated and unremunerated training, voluntary service and au pair work is welcomed.

Europe research centres and universities require talent in order to sustain their high-level research as well as teaching, both in order to keep Europe at the forefront of global knowledge creation and to train highly qualified workers for the knowledge-intensive industries on the continent. At present, there are

[5] *DEFINITION: Third-country national: Any person who is not a citizen of the Union within the meaning of Article 17 (1) of the Treaty, including stateless persons (see Art. 2.1 (i) of the Council Regulation (EC) no 862/2007)*

not enough highly qualified people within Europe to sustain, let alone develop, a globally competitive knowledge economy. Human resources from elsewhere are needed.

In comparison with other countries, the EU is still far behind the USA and Japan in terms of researchers in the work force, and China is catching up. The European Commission estimates that the growth in the number of new job opportunities in research, across all sectors, will reach the million target between now and the end of the decade. Competition for these research positions is increasing globally, and the EU cannot afford to create obstacles that will reduce their appeal.

For this reason, it is of the utmost importance that talented students and researchers from across the world are welcome in Europe and that their entry to the EU should be as straightforward as possible. Moreover, in order to bolster the attractiveness of Europe as a destination for researchers, the question of giving the same rights to researchers entering Europe as those already enjoyed by EU citizens, such as free mobility within the Union, is crucial. This is particularly important for researchers and students who need to build European networks so as to fully contribute to research and innovation. They need to feel at home and welcome throughout Europe.

2. Issues to be addressed

For years, the EU has faced a number of challenges in terms of migration management because of the impact on the European economy and demography. The global economic crisis has represented a difficult period. The high unemployment rates make a discussion of labor market a focused need.
Generally, it is considered that attracting talent from outside the EU borders can be a useful tool to enhance European competitiveness and can highly contribute to make Europe the most competitive and dynamic knowledge-based economy in the world.

In addition, the aging of the population affects the entire European Union. Life expectancy increases while the birth rate has been reduced. As a result, it was estimated that an extra half a million researchers[6] were needed to meet that goal.

Management of legal migration and integrating third-country nationals has significantly evolved in the recent years. Several new legal instruments have been introduced; the most important, the Single Permit (2011) and the Blue Card Directive (2009), in order to facilitate permanent residence and assist in attracting highly skilled workers.

The Blue Card is an approved EU-wide work permit allowing high-skilled non-EU citizens to work and live in any country within the European Union, excluding Denmark, Ireland and the United Kingdom, which are not subject to the proposal.

According to Eurostat[7], more than 14.000 Blue Cards were granted in 2014, with most of them (12.108) granted in Germany. The top countries of origin were India, Russia and China.
The Single Permit, implemented in 2011, is a complementing directive to the Blue Card. Instead of applying in separate entities for the work and the residence permit, it is possible to apply for the Single permit at one authorized entity only and allow a third-country national to “reside legally in its territory for the purpose of work “(Art 2 (c) Directive 2011/98/EU)

[6] European High level Group (HLG) on Human Resources for Science and Technology Report
[7] EU Blue Cards by type of decision, occupation and citizenship

For welcoming third country researchers, the most significant related to existing policy instrument to support implementation is the Euraxess Network; this Pan European network is part of an initiative to help mobile researchers. This Network is made of more than 200 European Services Centres in 40 different countries.

The mission of the EURAXESS Services Centres is to provide free and personalised assistance for the challenges faced by researchers and their families when relocating, such as:

- Visas
- Work Permits
- Accommodation
- Legal Issues
- Social security, medical care, pension rights and taxes
- Family support, language courses, day care, schooling, etc.
- Research funding
- Social and cultural aspects
- Family support, language courses, etc.
- Research funding

In addition, Euraxess provides initiatives to attract and retain foreign talent promoted at regional or at organizational level.

This includes support to organizations that have hired or want to recruit highly qualified professionals in order to facilitate the integration of third country researchers (VISA, residence accommodation…) or offering information about career opportunities.

For connecting Europe with third country researchers, the most significant related existing policy is the use of Euraxess Links.

3. Outcomes/ Recommendations

Recommendations for EURAXESS/HEI:

- Improved coordination with Euraxess Links in Third Countries
- Welcome packages specific for third country nationals
- Offer spouse services for accompanying family members (e.g. dual career services, as well as advice on child care institutions etc.).

Recommendation to Member States:

- The national authorities should put Third Country mobility (open to the world) on the political agenda and allocate the necessary budget for it
    - Coordinate efforts and establish a series of joint initiatives to attract talent, not only focus on integration, but also a joint strategy to get concrete results, especially with Ministries of Foreign Affairs
    - International mobility should encompass issues including international collaboration and science diplomacy. Many countries have bilateral agreements with third countries, and scientific collaboration with exchange/mobility of researchers should be included.
- To develop the appropriate institutional framework to attract competent researchers from abroad
    - Implementation Directives on Scientific Visa and on the Blue Card in order to provide for the legal framework concerning the entry and stay of the families of researchers (health, insurance, family reunion); and highly skilled personnel. Specific initiatives for family integration (i.e. language courses, job seeking, support for administrative issues) can be provided on an autonomous basis by hosting institutions.
    - Implementation of the New Directive.
- Attraction of technologists and support to entrepreneurs: provide a wide range of services to help establish foreign companies in European countries, provide information, assess opportunities, help investors connect to relevant networks and facilitate investment processes.

Chapter 3 Diaspora

1. The broad picture and general context of the topic

Diaspora

Since launching the European Commission's initiative for the development of the European Research Area in 2000, the mobility of researchers has become a main component of many EU policy initiatives. It is also fundamental to the EU's Growth and Jobs Strategy and Vision for 2020, which aims to improve the dynamism and competitiveness of the EU economy. Massive and permanent outflow of highly qualified individuals (researchers, academics and scientists) from home ("sending") to foreign (or 'receiving') countries is usually defined as **"brain drain"***. "***Brain gain"***,* on the other hand*,* is used to denote programs and/or projects aiming at drawing scientific workers to a given country.[8] When skilled workers, such as researchers and scientists move to larger and "denser" economies they can benefit the sending country by producing "better" knowledge, accumulating human capital faster and improving their productivity, thereby increasing the potential return flows of knowledge[9]. It seems that the "Brain Mingling", is one aspect of "global changes" of massive population transience. This matter is not a transient occurrence -- it is a permanent phenomenon. As such, it is our obligation to understand the inner-workings of this phenomenon in order to find the right ways of dealing with this challenge.

In most European countries, there has been considerable brain drain at all levels of the research career-PhD students, postdocs, and other academic and industry research personnel over the years and the tendency was for top scientists to move to the USA in particular. According to the MORE2 Extra-EU mobility report (2013)[10] most EU researchers currently working outside Europe still have strong ties with Europe (91%). 4% considered moving back to Europe and 18,4% have taken concrete steps. European researchers currently abroad who had to make an effort to return to Europe, faced difficulties mainly related to finding a suitable position (including a position for their spouse), obtaining funding for research, and securing current levels of remuneration.

EU researchers abroad[3]

An estimated 34,000 EU-born researchers working abroad in five large countries, of which 15,000 are in the USA. The stock of EU researchers in the US is estimated to have increased from around 9,000 in 2000 to around 15,000 in 2011, with a steady annual increase. This would correspond to a total of around 34,000 EU-born individuals working as researchers in 2011 in US, Australia, New Zealand, Canada and Mexico.

Overall, OECD and Open Doors data show that the US is an important destination for EU27 researchers and that this flow is quite substantial. The number of EU born citizens who were awarded a doctoral degree in the US increased from 1,882 in 2000 to 2,021 in 2011. This figure represents around 2% of all EU citizens who earned a doctoral degree in 2011. On average, an increasing share of EU-born individuals attaining a doctoral degree in the US remain to work there (28.1% in 2000 and over 40% in 2005 and 2011).

[8] *The Scientific Diaspora as the Brain Gain Option: Exploring the Case of Bosnia and Herzegovina Sara Nikolić, Boriša Mraović and Emina Ćosić, 2010*

[9] *THE GLOBAL COMPETITION FOR TALENT: MOBILITY OF THE HIGHLY SKILLED – ISBN 978-92-64-04774-7, OECD 2008*

[10] *MORE2 Extra-EU mobility report: "support for continued data collection and analysis concerning mobility patterns and career paths of researchers" (MORE2), 2013*

The conclusions of this report are in line with the findings derived from the project WeB-InUnion: The most important reasons that encourage the researchers to return to their county are a "high quality of science activities", "prospect for career development", "reform to home county science" and "research funding opportunities".

The current policy instruments deployed in EU countries aim at attracting the researchers abroad and those with already existing ties to their home countries, which form a large potential target group[11]. There are however, few initiatives targeted specifically at scientific excellence and accompanied by corresponding incentives with a view to attracting top scientists. In the Western Balkan region for example, where the emigration of skilled professionals has been significant throughout recent history, there have been some general national policies about the Diaspora in the past but few which particularly focus on the scientific Diaspora. Empirical evidence about the spatial movements of elite scientists remains scarce. Their migration process has often been regarded as part of the overall problem of brain drain, but methods that focus upon general tendencies have failed to delineate the patterns of migration among specific groups. Further work is needed if countries are to better understand patterns and changes in stocks, flow of scientists, engineers and researchers, and the broader category of the highly skilled. Moreover, a striking result of the MOREbrain Project, is the realization that "brain loss" is not only an issue of quantity rather mainly an issue of quality. This is evident in the findings of certain countries. These countries found relatively low percentages of brain drain, yet discovered that despite these low percentages, a large percentage of those who did stay abroad were among the most successful and prominent in their respective fields. As such the brain drain must be studied on both a quantitative and qualitative level. In addition, we discovered that there exist significant differences between the Young Researcher population and that of established researchers. As such, this should be taken into account.

2. Issues to be addressed

European Policies and initiatives

European policies have been developed since the beginning of the 2000s with a view to increasing the centrality of the policy promoting attractiveness and research mobility in the European system. In addition to funding instruments and support services, the EU has also sought to enhance working conditions and career opportunities by promoting a uniform set of rules and practices across the Member States. As a result, the European Charter for Researchers and a Code of Conduct for the Recruitment of Researchers were adopted by the European Commission as a Recommendation to the Member States in 2005.[12] The 'Charter and Code' define the roles, responsibilities and rights of researchers as well as those of their employers and the funding organisations. The aim was to guarantee attractive research careers and improve employment and working conditions for researchers throughout Europe. Human Resources involvement is necessary to help the different institutions implement the Charter and Code into their policies and practices.

Strategy for Researchers was also introduced by the European Commission in 2008.[13]

The European Commission (Communication: "A Reinforced European Research Area Partnership for Excellence and Growth" of July 2012) and the Member States (Council Conclusions of December 2012)

[11] *DIRECTORATE GENERAL FOR INTERNAL POLICIES POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY: The Attractiveness of the EU for Top Scientists (IP/A/ITRE/ST/2011-17), 2012*

[12] *Commission Recommendation of 11 March 2005 on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers.*

[13] *Information Note from the European Commission "Human Resources Strategy for Researchers Incorporating the Charter & Code". 2008. http://ec.europa.eu/euraxess/pdf/hrs4r/Paper_on_the_HR_Strategy_for_Researchers.pdf.*

identified the following individual fields of action for the creation of a strong European Research Area – the so-called **ERA Priorities**:

- **More effective national research systems** – including increased competition within national borders and sustained or greater investment in research
- **Optimal transnational co-operation and competition** - defining and implementing common research agendas on grand-challenges, raising quality through Europe-wide open competition, and constructing and running key research infrastructures effectively on a pan-European basis
- **An open labour market for researchers -** to ensure the removal of barriers to researcher mobility, training and attractive careers
- **Gender equality and gender mainstreaming in research** – to end the waste of talent which cannot be afforded, to diversify views and approaches in research, and foster excellence
- **Optimal circulation, access to and transfer of scientific knowledge including via digital ERA** - to guarantee access to and uptake of knowledge by all.

ERA priority 3 – open labour market for researchers

Free movement of knowledge has been highlighted as the EU's 'fifth freedom' needed to maintain a competitive and attractive EU labour market, a knowledge-driven economy and to avoid 'brain-drain' through the loss of European talent to competing regions such as Brazil, Russia, India, China (BRIC countries) and the US[14].

At a European level, EURAXESS Links has established a global researchers' network to provide support for collaboration and mobility services in Brazil, China, India, Japan, North America and South East Asia. This service could be expanded to provide support on all forms of mobility and foster collaboration by linking the European scientific Diaspora into a community of global scientific citizens.

See examples of Diaspora engagement policies in Annex II.

EU Scientific Diaspora networks in USA

Connecting with scientific Diaspora

The **Wild Geese Network of Irish Scientists** (WGNIS) 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, and 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 WGNIS harnesses the knowledge, experience and success of the Irish scientific Diaspora from Ireland to provide an up-to date and comprehensive global human database for the scientific community.
http://wildgeesenetwork.org/

The **OST Scientist Network** (OSTINA) is an interdisciplinary network of over 2000 Austrian scientists and scholars in North America with the aim of building bridges of knowledge and expertise between Austrian researchers based in the United States and Canada and the scientific community in Austria. 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. *http://www.ostina.org/de/*

[14](Communication: "A Reinforced European Research Area Partnership for Excellence and Growth" of July 2012)

3. Outcomes/ Recommendations

Recommendations

To EURAXESS Network, HEI's and research centers:

- To analyze the repatriation trends regarding EU Diaspora researchers regarding factors such as career stage or age influence of brain gain by assessing the data collected by EURAXESS-LINKS, National Research Policies Reports, MSCA, EURAXESS TOPIII Project, FP projects (like WebInUnion);
- To promote the interaction between the European Associations in the U.S. through the EURAXESS Links and to form a common strategy for connecting all of the European Scientific Diasporas and strengthen transatlantic scientific cooperation;
- To develop the appropriate institutional framework to attract competent researchers from abroad in parallel with dual career services;
- To raise awareness of the range of initiatives to facilitate researchers' mobility and increase the attractiveness of EU as a destination for leading researchers, use of measures to facilitate access to information on mobility via EURAXESS Links and EURAXESS Service Centers, the adoption of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers in Europe to improve researchers' rights (the Charter & Code) and the Marie Skłodowska Curie Actions;

To public authorities:

- Both the countries of origin and the countries of destination should play a proactive role aimed at facilitating the forging of links with scientific Diasporas in order to encourage them to become true development partners, through:
  - The promotion of good dialogue and communication with scientific Diasporas
  - The provision of support for the creation of scientific Diaspora associations and networks and of encouragement for appropriate public initiatives
  - The promotion of dissemination of information about the status, activities, skills and contributions of scientific Diasporas and encourage a broad recognition of their value
  - The encouragement of dissemination of good practices that can contribute to the stimulation of further Diaspora initiatives and collaborations between relevant parties
- Both the countries of origin and the countries of destination should create the conditions that are conductive to circular migration and temporary return, while reintegration programmes should be connected to labour market policies;
- Promote policies and/or projects involving skilled migrants; specific areas of collaboration with the Diaspora should be identified while the engagement of Diasporas in their activities should also be systematically encouraged;

To public authorities, research centers and industry:

- To strengthen the role of Diasporas for more effective collaboration from a distance with relevant research and industrial actors in EU supporting the national economic development from overseas (virtual collaboration); rather than encouraging return at present, given the current economic climate which is unable to entice the best and brightest back home;
- Creation of services and facilities in order to promote the linkage between private sector enterprises, interested in hiring highly skilled human capital, (high-tech, Pharma, fintech, etc..) and Diaspora researchers interested in returning.

Chapter 4 Brain Circulation within Europe Intra-EU Mobility

Intra-EU mobility

1. The broad picture and general context of the topic

Free movement is, for the EU citizens, their most cherished EU right and most closely associated with the Union citizenship. This is also the most well-known aspect of EU citizenship rights (90% of EU citizens know they have this right). Free movement is finally one the most important achievements of the European Union.
EU citizens have the right to:

- Look for a job in another EU/EFTA country,
- Work there without the need for a work permit,
- Reside there for that purpose,
- Stay there after employment has finished,
- Enjoy equal treatment with nationals in access to employment, working conditions and all other social and tax advantages,
- Workers may be joined by family members who have derived rights.

Nevertheless, in most Member States, mobile EU citizens represent less than 4% of the total population[15].

In research, mobility is a core concept of the European Research Area (ERA). Academics' and researchers' international mobility is recognised and set as an objective in many European countries, as a necessary element for individuals in order to pursue a successful career at the university/in research institutions, or in industry/the private sector.

International mobility is also considered a driver of excellence and diversity of research and a cornerstone in creating the European Research Area.

Researcher mobility depends largely on[16]:

- Open, transparent and merit-based recruitment,
- Portability of publicly funded grants,
- Transparent transfer conditions,
- Clear immigration rules and procedures,
- Attractive employment and working conditions, including career prospects with long-term employment opportunities, competitive salaries, sufficient social security benefits (such as statutory pension rights, health care, and unemployment benefits).

Around 15% of researchers who currently work in the European Union are currently mobile. 18% of current or recent doctoral candidates were mobile during their PhD (returning home to obtain their PhD)[17].

[15] Source: Eurostat migration statistics, supplemented by Eurostat EU LFS quarterly data, national data sources and DG EMPL estimates.
[16] Researcher's Report 2014, Deloitte, European Commission, DG Research and Innovation.

Subsequently, intra-EU mobility for researchers and academics should continue to be encouraged and supported through mobility programmes and grants, research infrastructure, human resources policies (for the family members as well), and other support facilitating the relocation from one EU country to another, especially in the dual-career programmes.

2. Issues to be addressed

The research impact of internationally mobile researchers is nearly 20% higher than those who have never moved abroad. Subsequently, mobility for research purposes should be considered more widely than merely inside European borders. Moreover, it has been observed that the intra-EU mobility is lower compared to the percentage of researchers, including doctoral candidates, coming from third countries and is a rather one-way road to some Member States (MS).

While the concept of ERA and more integrated research systems inside the EU have been taken into account since 2000, the opposition between cooperation and competition still remains. There are still differences across Europe and a long-standing division. The innovation gap keeps EU divided and the attractiveness of MS influences researchers' mobility flow, especially from East/South to North/West.

Peoples, researchers, and innovators are the main source of successful and sustainable development. It is crucial that activities are related to and supportive of each other, starting with mobility grants for researchers, attractive research environment for individuals' employment and social security issues for their family members.

As was mentioned, mobility is a core concept of the ERA. The European Union and the Member States took several measures to foster mobility within the EU. The European Commission, in cooperation with the Member States, has proposed and implemented various measures to facilitate researchers' mobility such as:

- The adoption of the Charter for Researchers and the Code of Conduct for the Recruitment of Researchers in Europe[18]. Its purpose is to improve researchers' rights across Europe and to remove barriers to their mobility.
- The Euraxess portal is an interesting tool that provides a wide range of information and services for researchers to become mobile.
- RESAVER ("Retirement Savings Vehicle for European Research Institutions") was created to foster the mobility of researchers as a driver of excellence in research. Researchers have to face many difficulties in preserving their supplementary pension benefits when moving between different countries. To address this issue, RESAVER will offer a defined contribution plan, tailor-made for research organisations and their employees.

Furthermore, the European Union has implemented several programs developing mobility, for example the Marie Skłodowska-Curie actions (MSCA), Erasmus and Erasmus+ which develop mobility projects and cooperation in Europe.

Finally, the COST program improves cooperation between researchers by supporting and fostering collaboration of nationally funded science and technology research through the creation of networks (for more details, see Annex III/case 1).

[17] MORE2 – Higher Education Sector Report, August 2013.
[18] http://ec.europa.eu/euraxess/pdf/brochure_rights/eur_21620_en-fr.pdf.

The European Union has also voted new legal provisions to remove existing barriers for third-country nationals[19]. In 2016, new rules have been adopted to attract non-EU researchers as well as between EU countries. This new directive (2016/801) will have specific impact on intra-EU mobility and will facilitate researchers' move within the EU during their stay. According to the new rules, researchers will only have to notify the member state where they are moving, instead of having to submit a new visa application and wait for it to be processed, as is the case today. Researchers will also be able to move for longer periods of time than what is currently allowed.

In order to contend with the international competition and improve their attractiveness, Members States have also adopted incentives measures to remove barriers to researchers' mobility. They have developed their own mobility program to recruit researchers from other Member States and from third countries (see Annex III/Case 2).

France has developed International postdoctoral fellowship programmes such as AgreenSkills and Agreenskills+. These programs concern young and senior researchers and propose two types of fellowships (incoming and outgoing). They offer attractive working conditions.

In Germany, different programs have been implemented to increase the mobility of researchers. The Heisenberg program (developed by DFG) promotes early career researchers. In addition, the Alexander von Humboldt Foundation offers Research fellowships for post-doctoral and experienced researchers.

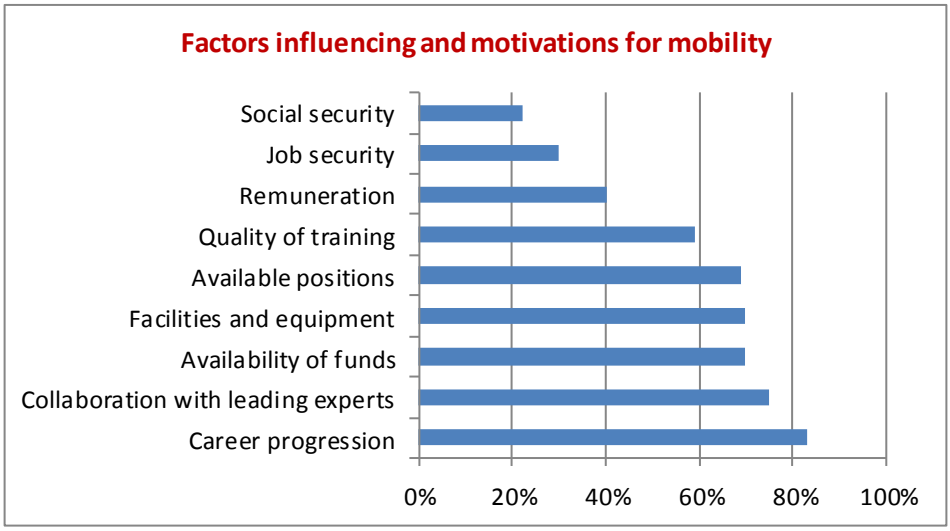
Another example is the Momentum program developed by the Hungarian Academy of Sciences which supports the reintegration of outstanding Hungarian Researchers working abroad.

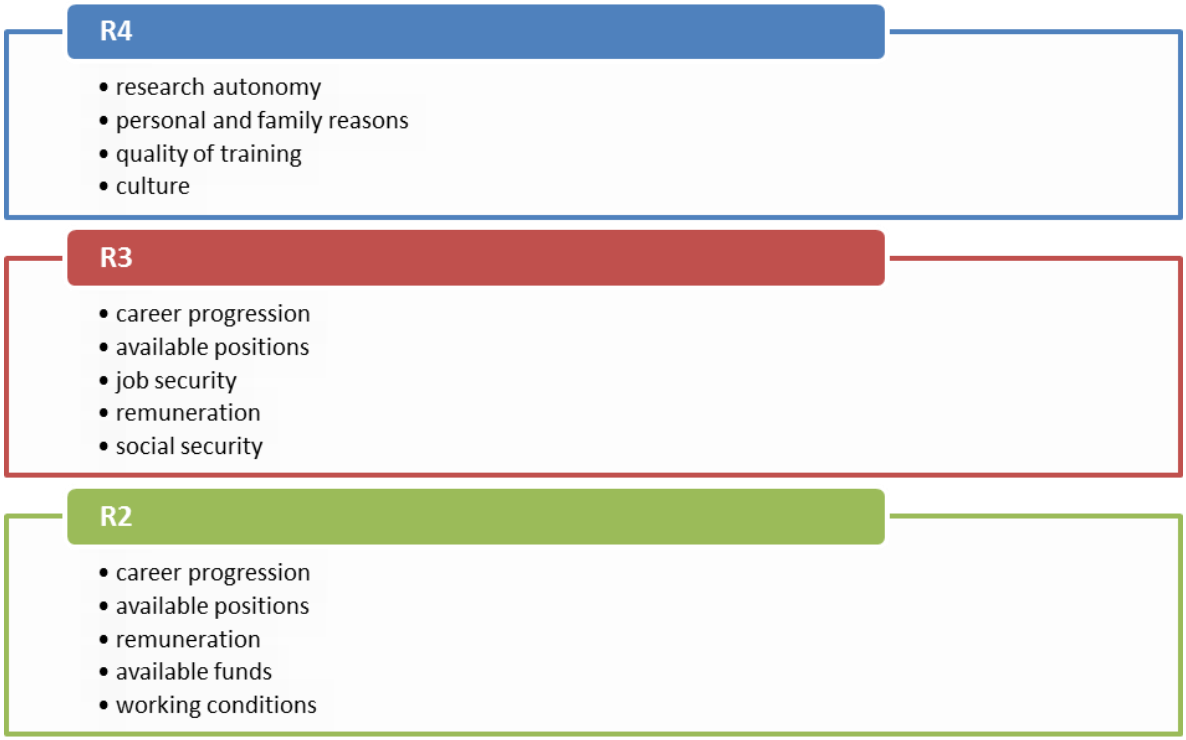
Mobility is motivated by complex considerations frequently related to individual preferences. Proposing various supporting measures is important. Academics' and researchers' incoming and outgoing mobility needs to be supported at different levels: European, regional, national and institutional.

Different factors influence and motivate mobility. According to the Researcher's Report 2014, the most important factor is "career progression", followed by "collaboration with leading experts". Factors like remuneration, job security and social security appear to be less important for mobility[20]. However, these factors differ among the different career stages (R4, R3 and R2).

[19] Council Directive 2005/71/EC of 12 October 2005 on a specific procedure for admitting third-country nationals for the purposes of scientific research

[20] Researcher's Report 2014, Deloitte, European Commission, DG Research and Innovation. The study has been conducted in EU-28 and countries associated to the Seventh Framework Programme for research and technological development: Norway, Iceland, Liechtenstein, Switzerland, Israel, Turkey, the Former Yugoslav Republic of Macedonia (FYROM), Serbia, Montenegro and Bosnia & Herzegovina whereas Croatia became member of the European Union in July 2013.





For many individuals, especially for PhD candidates/PhD graduates and women, family considerations (having or intending to have children, being carer for other family members, professional difficulties for the partner to move to another country, etc.) have been pointed out as serious drawbacks for physical international mobility.

According to the main results of the EU's project TANDEM (Talent and Extended Mobility in the Innovation Union), dual career and child care/school are ranked as the most important aspects next to housing/living. The existence of dual career services would clearly make a difference to researchers' final decisions, as for a large majority of them it was the partner who made more compromises in order

to become mobile. Researchers assess flexible work hours as highly useful, followed by help with childcare, as they are completely reliant on third party help for it.[21]

That is why it seems important to implement more actions/measures to support the work-life balance of academics and researchers while being in another European country, and also the mobility of their families (partner and children).

Finally, special attention should be given to and taken by the less favoured regions in order to raise the attractiveness of the Europe worldwide. If we focus on the EU13 Members States, the economic factor may be more important for researchers than for the others in EU15: in H2020, about 90% of the current funding is received by EU15 participants, while less than 5% of it is received by EU13 participants[22]. One of the key factors influencing this situation is the difference in researchers' salaries which, under new remuneration rules of H2020, significantly sustain the 'brain drain' phenomena. Differences in researchers' salaries affect disparities in H2020 project budgets. For instance, in Belgium, a researcher will be paid between 46 750 and 72 880 € per year whereas in Poland, the annual salary would be between 8 410 and 14 100 €[23].

3. Outcomes/ Recommendations

Measures pointed out here are specifically important for Intra-EU mobility and exclude those which have an impact for all kinds of mobility (as for example from third countries or between sectors). These measures are of various types:

- ✓ **European/national programmes fostering mobility:**
  - Developing and fostering programs (similar to Erasmus) in order to coordinate the mobility of PhD students and post-docs more broadly at an EU-level (Marie Skłodowska-Curie actions are welcome, but many MS still face restrictions in applying for COFUND or EID/IDT).
  - Upscaling programs (such as MSCA, Erasmus+, etc.) at the EU level need to address further career mobility, especially for high-level researchers: when matching the institutions, researchers should also meet physically, not just virtually.
  - Developing programs that encourage academics and researchers to be internationally mobile, by proposing interesting extra-funding possibilities and personalized career plans (such as AgreenSkills and AgreenSkills+, Vitae career development plan or support given by the EURAXESS service centres). Mobility and international cooperation should be a widely recognised and supported element during the doctoral studies in EU.
  - Strengthening the links between ERA and EHEA (European Higher Education Area).
  - Strengthening the collaboration between the EU13 and EU15 countries and developing more effective measures to foster brain circulation inside EU.
  - Fostering EU regional cooperation and between the neighbourhood countries to serve wider EU goals.
  - Developing welcome programmes to recognise the diversity of Europe.

[21] ETH, TANDEM, Analysing the chances and risks of mobile researchers and their partners/families within Europe
[22] Source: eCORDA
[23] MORE2, IDEA Consult (2013).

- ✓ **Research infrastructures:**
  - Investing in big infrastructures to facilitate the EU the mobility flow all over.
  - Developing EU supported infrastructures and research centres close to innovation hubs in order to raise the attractiveness of the regions.
  - Promoting the development of a common framework to tackle dual-career issues.

- ✓ **Funding support:**
  - Agreements between national RFO to support the implementation of the 'Money Follows Researcher' principle.
  - Funding schemes for regional, national or EU initiatives that support young talented students intending to pursue a research career.
  - Financial support for organizations providing effective dual-career services.
  - Support the existing dual-career networks, by showcasing them so as to inspire the creation of new ones across Europe through funding initiatives.

- ✓ **Human resources policies/strategies:**
  - National language requirements in research positions should be clearly defined by the specified tasks (teaching lower than doc level for example).
  - Recognizing the career progression in similar conditions.
  - Fostering the recognition of HRS4R by the researchers and high evaluation of it by the institutions.
  - Recognizing new forms of mobility, such as virtual mobility, as an international experience and an effective way of developing new transnational networks.
  - Implementing time management facilities such as teleworking/remote working, part-time jobs, and specific policy on meeting hours.
  - Providing opportunities to researchers to balance work and family life within a research career, with employers' support
  - Incentivizing recognized researchers to remain in the research field.
  - Raising awareness of dual-career issues, as a key leverage factor to recruit and retain the most talented researchers in Europe.
  - Develop mobility programmes so that they support and expand researchers' career perspectives.

- ✓ **Support:**
  - Facilitating the move from one country to another, by proposing different relocation measures.
  - Recognizing and preserving social security benefits when moving between MS (a single European pension arrangement for research organisations and their employees, similar to RESAVER that is supported by the European Commission,).
  - Offering various relocation measures that allow a better work-life balance (administrative support for the academics/researchers and for their families, language and other practical courses, childcare support, etc.) in addition to financial support for the mobility of the family,
  - Proposing other dual-career programs (see some existing ones in Annex III/Case 3) that decisively help the partners in finding a job in the new European country (finding job offers for them or at least informing them on how the recruitment procedure works in the new country and guiding them in seeking a job suitable for their degree/experience). Supporting the creation of virtual communities dedicated to dual-career practical issues.

Chapter 5: Innovation Hubs

1. The broad picture and general context of the topic

Innovation hubs, innovation centres, accelerators, and incubators are nowadays the most modern and efficient tools to create start-ups and spin-offs, which eventually will lead to promising SMEs which in a short time will become a one billion euro enterprise creating thousands of new jobs. The essence of this tool is sharing of best practices between the academic and business players which facilitate creation of new start-ups and spin-offs. Most of the activities are in the "WOW" domains like, IoT (Internet of Things), Big Data, Cyber Security, Digital Health, Smart Cities and Smart Manufacturing, FinTech, etc.

This tool addresses the three strategic priorities recently set by EU-Commissioner for Research, Science and Innovation – Open innovation, Open Science and Openness to the world. These priorities are to be addressed through (1) Involvement of actors across the value chain (2) Taking advantage of cross sector collaboration (3) Enhancing international innovation cooperation (4) Creation of added value for Europe in knowledge exploitation.

It is foreseen that the top Innovation Centres in Europe will join forces and cooperate, together with the Academia, which will make a long-term contribution to the EC priorities and Europe's economic prosperity. This initiative will spread best practice which will increase the success of start-up companies across Europe by creating synergy between technological universities and accelerators.

2. Issues to be addressed

Innovation Hubs (incubators/innovation centers) have been established throughout Europe to facilitate knowledge transfer, promoting innovation. They offer opportunities for mobility of researchers towards the business segment, as well as opportunities for international mobility and attraction of talent into the ERA.

Most countries have supporting mechanisms for start-ups and spin-offs. However, creating the necessary conditions to trigger their inception is still a major pan-European challenge.

Creating environments where academia meets industry and supporting people and ideas is key in promoting innovation. This is true for every career stage, every sector and every country or region, in order to achieve their full potential.

Specific recommendations on inter-sectoral mobility are currently lacking, although the issue is considered relevant and addressed across the EU. One good example of this is the industrial integration of doctors, which has been practiced at a national level in many countries for a number of years. In the framework of Horizon 2020, two new actions alone were launched in 2016: the SME Innovation Associate and the Society and Enterprise panel of the Individual Fellowships of the Marie Sklodowska-Curie Actions.

Moving from industry back to academia faces even more challenges, such as the higher salaries in industry in some countries, the different pre-requisites for an academic career and a career in the

private sector and the system of science funding, which makes it very difficult to apply for funding to those who do not already have an excellent track-record of recent publications[24].

Strengthening the collaboration between the academia and business sector is not a new priority, but remains a current one. Many universities and research institutes have offices to support young talents and innovation, while others would like to be able to offer more training so that the gap to industry could be bridged. Signed partnerships with companies have been considered a convenient way of sharing knowledge, promoting joint events, and encourage future collaborations.

One best-practice example of a national program that covers the innovation cycle quite extensively is the EXIST programme, in Germany. EXIST aims at improving the entrepreneurial environment at universities and research institutes and at increasing the number and success of technology and knowledge based business start-ups (see Annex IV).

3. Outcomes/

Innovative transnational research / Inter-sectoral mobility at the pan-European, national and regional level

- Industry-academia collaboration should continue to be supported.
- Promoting inter-sectoral mobility should take into account that the flux from the private sector to academia is very low; specific programmes for bringing people from industry back to academia should be implemented on a pilot scale and evaluated. It is important to share best-practices.
- High level academic staff will exchange and discuss policies and best practices with intersectoral national stakeholders.
- Programmes for industrial integration of doctors should be supported.
- Theoretical and practical training to young entrepreneurs, mentoring and education.
- Programmes and prizes for talents should be encouraged and supported (in all sectors).
- Networks for researchers, innovators and entrepreneurs, all together, should be created.
- Periods of inter-sectoral mobility should be part of doctoral training, and promoted at all career stages.

A pilot that will support graduates and PhD candidates, through mobility to specialized hubs in order to have the opportunity to visit and receive entrepreneurial training from a relevant Accelerator prior to the end of their studies.

EURAXESS could take the lead supporting experts, innovators and entrepreneurs. The network resources could be used to help spreading examples of best practices and even be involved in new forms of short-term mobility that would promote interaction of research and business. The EURAXESS network is already being used to provide training on specific topics of transferable skills, such as entrepreneurship.

Outcomes and best practices will be disseminated to all European countries via EURAXESS network, the European Entrepreneurship Education Network (EE-HUB), Start-up Europe Universities Network (SEUN), as well as EU Projects like TOP4.

[24] UK mentioned experience on this at the BHO meeting, but no details were provided

Chapter 6: New Paradigms of Mobility: Virtual Mobility

1. The broad picture and general context of the topic

Europe must be able to attract, retain, and network world-leading researchers across fields and sectors in an increasingly global competition for scientific talent. At the same time brain drain from less scientifically attractive areas should be counteracted. In that sense the collaboration and exchange of experience in research is expanding its possibilities due to the generalization of high speed internet access and additional technical infrastructure that offer scientists new ways of interaction. The information-technology revolution makes the physical location of a laboratory less important than the speed of its Internet connection. If they wish, researchers can now communicate more often, and just as easily, with colleagues in a different time zone than with those in the next office.[25]

The question then arises whether conventional geographical mobility researchers between labs is always a must or could perhaps be combined with the use of ICT technologies to create alternative means of mobility,

A tentative definition of virtual mobility based on the document[26] below could be:
Virtual mobility: International, interdisciplinary and intersectoral research collaboration acknowledged by outcome parameters (e.g., co-publication, co-patenting) without (need of) physical or interdisciplinary or intersectoral mobility by means of the use of information and communication technologies (ICT) to obtain the same benefits as one would have with physical mobility

Virtual mobility could be an important collaboration mechanism for senior researchers especially when the focus is on increasing the short-term mobility but can also complement the conventional geographical mobility of early-career researchers between labs. In that sense half of scientists questioned in a European Commission survey[27] (www.more-2.eu) believed that virtual mobility would make short-term visits unnecessary. At the EuroScience Open Forum meeting[28] it was concluded that virtual mobility would work, but should be combined with short-term visits to other labs to allow face-to-face contact. On the other side of the coin, for early-researchers who need to build their own career, a continuous change of location especially once they start building their own family is rather disruptive and something that can be mitigated by the use of ICT.

Collaboration can take many practical forms, such as visits or the use of virtual and web-based technologies. The interlinkage with mobility is important but not well documented to date. Increasingly, empirical studies and the academic literature more generally are shifting towards the effects of research collaboration but also its impact on researchers' mobility. The conceptualization of "virtual mobility" as a type of (international) mobility (and not as an outcome of research as is commonly meant) is an interesting and relatively unexplored notion. Although one can intuitively argue that while virtual (electronic) access to research resources or the informal exchange of data between individuals located in two different countries is intrinsically embedded in every research process and therefore should/could not be observable, formal international research collaboration on the production of ideas (co-authorship), products (joint ventures, prototypes, patents) or services (outsourcing, consultancy) leading to actual knowledge exports could, in fact, be of particular interest as a worthwhile area of study. New

[25] R. Garwood *Nature* **510,** 313; 2014
[26] http://www.esf.org/uploads/media/spb49_ResearcherMobility.pdf
[27] www.more-2.eu
[28] C. O'Carroll *Nature* **511,** 292; 2014

technologies enable researchers in many fields to gather data remotely, reducing the need to spend extended periods of time in host institutions. Therefore, shorter periods, where researchers operate in a 'shuttle' fashion, would suffice for discussion of projects or findings, thus combining physical mobility with other modes of virtual communication.

2. Issues to be addressed

As stated above and in[29] the discussion paper, researcher mobility should no longer be associated with physical and geographical mobility alone. Mobility is not a goal in itself, but rather a means for improving scientific quality and access to international frontline results and international research collaboration across fields and sectors. Long-term physical mobility may be needed for the education and professional development of researchers from less-favourable scientific environments, but is hardly necessary for setting up collaboration between top labs. Virtual mobility has an enormous potential impact. It adds a new dimension to researcher mobility alongside international travel, and can further broaden our definition and understandings of mobility. Virtual mobility partly substitutes short-term mobility of EU researchers. The development of virtual communication/interaction technology appears to be an important aspect of research mobility.

The MORE2 project was an example of a pioneering project in terms of exploring virtual mobility. The report[30] shows that virtual mobility is increasingly conceived as an additional tool in international research collaboration and new technologies enable researchers in many fields to collaborate with foreign researchers without the necessity for travel. 50% of respondents reported that virtual technologies in international research collaboration helped to reduce (or even replace) their short-term visits (of less than 3 months). In contrast, only 9% think that it helps to reduce (or replace) their long-term visits (3 months or more).

The Internet opens the possibility for virtual mobility and the establishment of virtual multidisciplinary network research centres. Centres of Excellence do no longer need to be established as one physical geographical location. Virtual mobility can be a tool to facilitate the development of virtual multidisciplinary network research centres following the extension of eScience vision on synergetic research groups across the world without physical mobility. Experiences like the ones reported in Nordic countries, such as the Nordic EMBL Partnership for Molecular Medicine (EMBL-associated virtual network - CoE combining leading researcher groups from three Nordic countries, national basic funding) or the Norwegian Centres of Excellence (CoEs) could be of great value. Flexible opportunities should be encouraged, stimulating a more effective use of human and financial resources in research, in line with the core idea of ERA[31]. Additionally, Euraxess has a section able to offer infrastructure to researchers and spin-off companies in certain conditions that could offer good support for virtual collaboration.

Virtual mobility options support inclusion, e.g. of researchers with disabilities, equal opportunities for researchers from less favoured regions and help those on parental leave to maintain contact with their national and international networks. Additionally, virtual mobility can be combined with part-time positions to attract frontline researchers who want to collaborate, but do not want to leave their main position or family for a longer period. This also facilitates researcher exchange and increasing cooperation between the institutions. Combined part-time positions, including part-time ERA Chairs,

[29] Discussion Paper ESF MO Forum EARCD WG3 Mobility, 2012
[30] MORE2 Study on Mobility Patterns and Career Paths of Researchers, 2013
[31] Hans M. Borchgrevink, The Research Council of Norway SFIC SGHRM Mobility Workshop Brussels 12 June 2012

may be established to counteract brain drain and link the emerging research institution to front-line institutions for future continuous collaboration. Combined and part-time positions are attractive for women researchers, as they might be easier to combine with family life. This might increase recruitment of women for leading research positions and thus make better use of the potential in both genders, as well as contribute to greater scientific quality and innovation through greater gender diversity. Mobilising the potential of women senior researchers would also be a key element in increasing the number of researchers in Europe.

Finally, virtual mobility could be a highly recommended practice to develop collaboration with other countries and especially with the country of origin, with the potential perspective to return home. That can help reduce the brain drain from less scientifically attractive areas within Europe but also to facilitate the return of foreign researchers to their countries of origin and create new ecosystem of research in those countries. One approach [32] to increase cooperation with BRIC countries is virtual mobility: collaboration demonstrated by outcome parameters, e.g. co-publication; and the development of international research units (research cluster, international graduate schools) settled in BRIC countries or virtual joint labs.

Although no specific initiatives have been identified at the MS level in general, the strategy of most of the countries focuses on improvement of the technical infrastructure at universities and research institutions -- which has been made possible due to the Structural funds of EU in countries like Slovakia, Spain and others – and has provided the majority of research institutions with the most up-to-date technologies (teleconferencing, videoconferencing systems) that enable them to get involved in virtual mobility and fully benefit from it. In that sense the Geant initiative is a key infrastructure for Europe. Additionally, several countries are pursuing virtual mobility at the educational level, mostly by higher education institutions' own initiatives, as a first step by means of initiatives such as deployment of MOOCs.

3. Outcomes/ Recommendations (up to 1 page)

Virtual mobility needs to be supported by several measures:

To EURAXESS Network and HEI's:

- Improve the offering of laboratories facilities to researchers and to external entities as a way of promoting collaboration with industries and innovation hubs in order to externalize services and facilitate the "virtuality" of the collaboration
- Extend the usage of MOOCs to support collaboration in skills exchange and continuous training by virtual environments
- Facilitate access to well-resourced labs in order to support equal right to research equipment / infrastructures, extend and increase the access to high speed internet and the access to new ICT tools to facilitate virtual collaboration and exchange of knowledge

To public authorities:

- Peer review and evaluation structures need to acknowledge these new mobility concepts. Implement new researchers' profiles and means of evaluation that take into account criteria how to measure individual contribution (to counteract strategic "invited in" co-authorship) and virtual collaboration.

[32] Workshop on improving the mobility of researchers between Europe and BRIC countries, 2012

- Further develop the Virtual Research Centre concept combining first-class researchers or Innovation Centres in Europe to join forces and cooperate between start-ups and academia/industry, by means of the support of virtual mobility to strength intersectoral mobility.

To research centers and industry:

- Create programs to attract first-class researchers who want to collaborate, but do not want to leave their main position or family for a longer period based on the possibility of virtual mobility mechanism, and to mobilise the potential of senior women researchers as a key element in increasing the number of researchers in Europe
- Combined/part-time positions - lead to institutional collaboration, and may meet researchers' individual interests, foster scientific excellence, facilitate knowledge transfer across disciplines, sectors and countries beyond project duration - and counteract brain-drain from less attractive areas by providing a framework for continued collaboration
- Promote virtual mobility as a means of reducing brain drain from less developed regions, or from less scientifically attractive areas within Europe but also to facilitate the return of foreign researchers to their countries of origin and create a new ecosystem of research in those countries, keeping them connected and part of international research collaboration.

ANNEX I

Enhance access to university courses (including without official status)
Open study places dedicated to refugees ("More" programme)

Uniko (Universities Austria) launched the programme MORE to support refugees in September 2015. In the winter term 740 MORE students were counted, most of them from Syria, Afghanistan and Iraq; for the summer term similar numbers are expected.

What does the More initiative (www.more-uni.at) offer?

MORE aims at providing a space for reflection for refugees where one can find out whether university studies are an option for the future. It offers orientation in academic and artistic study fields and language training. MORE students will be admitted as extra-curricular students.

MORE courses are available in every university town in Austria. They cover various academic and artistic fields as well as training in the German language. The language of instruction is either German or English.

MORE students can sign up for existing courses and seminars and also for courses which have been specifically designed for them. Universities grant a certain number of places in these courses for MORE students.

What does it mean to be a MORE student?
• Admission as an extra-curricular student. The universities will offer a non-bureaucratic procedure to determine the qualifications necessary for the individual courses.
• Tuition fee waiver
• Waiver of the membership fee for the Austrian Student Union; the insurance fee being covered by the Student Union
• Access to the university library
• Some courses have an examination at the end, which MORE students can take. In that case the students will receive a transcript of records at the end of the semester. There is also no legal right to academic recognition or credit transfer by the university. However, the certificates will document successful completion of university courses and may help you to qualify for future studies.
• If there is no exam, students will receive a certificate of attendance.
• Support in the day-to-day life by student buddies
• Where possible, support for travel expenses and expenses for teaching materials can be provided.
Who can participate?
Women and men with the following residence permits:
• Asylum-seekers with a residence entitlement card acc. to Art. 51 Asylum Act
• Recognised refugees
• A person who has been granted subsidiary protection acc. to Art. 52 Asylum Act
• A person who has been granted temporary leave to remain acc. to Art. 46a Aliens Police Act
MORE perspectives is a platform where refugees can share their knowledge and experiences with an interested public. If possible, academic and artistic courses will be designed collaboratively with the refugees and give them an opportunity to impart their skills and knowledge in a university setting. This process can open up new perspectives for everybody involved. Further information: http://uniko.ac.at/projekte/more/perspectives/

Spain

The University of Barcelona has set up a refugee support programme that includes some measures to help those fleeing from Syria's brutal civil war. The University estimates that the programme can take in 100 refugees, help them to settle in Catalonia and enable them to continue their studies in Barcelona. The programme is supported by other institutions, like the Barcelona City Council and the Catalan Association for Solidarity and Assistance of Refugees).

Academic integration

Qualification recognition for humanitarian migrants in Norway

Qualification recognition for humanitarian migrants in Norway In 2013, a national recognition scheme for humanitarian migrants with little or no documentary proof of their higher-education credentials was rolled out. It is known as the Recognition Procedure for Persons without Verifiable Documentation (the UVD procedure), (UVD stands for *Uten Verifiserbar Dokumentasjon* in Norwegian, which means non verifiable documentation) *and is carried out by expert committees commissioned and appointed by the Norwegian Agency for Quality Assurance in Education (NOKUT). The UVD scheme involves the following:*

• If there is no evidence of completed education (Bachelor, Master or PhD), the person will automatically undergo the "UVD scheme".

• The "UVD scheme" involves an interview and a test using an expert committee.

• The testing process involves a complete replacement of the usual approval of education (which means they are entitled to the same rules of appeal as otherwise)

• This scheme is used whenever it's impossible to prove the correctness of the documentation or the documentation is lost.

• Regarding PhD authentication, it's usually entrusted to the higher education institutions themselves in the event of an employment process, because it is so subject-specific.

The procedure involves a combination of academic assessments, home assignments, and a mapping of work history. It results in a formal decision on whether to recognise foreign qualifications as equivalent to a Norwegian higher education degree. A survey of applicants suggests that more than half of the refugees who had their skills recognised in 2013 either found a related job or entered further education[33].

Other programmes followed are listed in the box below:

Challenges	Inspiring practices
Lack of documentation justifying diplomas/credits/level of prior learning and competences	**Germany:** In its resolution from 03.12.2015, the Standing Conference of German Ministers of Education and Cultural Affairs gives a recommendation on how to deal with applicants who cannot prove their higher education entrance qualification or an enrolment for a higher education programme at the home country (https://www.kmk.org/fileadmin/Dateien/veroeffentlichungen_beschluesse/2015/2015_12_03 Hochschulzugang-ohne-Nachweis-der-Hochschulzugangsberechtigung.pdf, available in German only). **BiH:** Diploma recognition is in hand of relevant entity and cantonal Ministries and these procedures are not standardised in the country. For more details, please refer to BiH Centre for Information and Recognition of

[33] http://www.nokut.no/en/Foreign-education/Otherrecognition-systems/Recognition-Procedure-forPersons-without-Verifiable-Documentation/ cited in OECD (2016)

	Qualifications in Higher Education (http://www.cip.gov.ba/index.php/en). **SE:** These questions are more directed to the Swedish Migration Board. The evaluation of submitted proposals is based on the evaluation criteria. It is up to the applicant to provide sufficient information in order to allow the evaluators to perform their duties. No requirements of the formal type of documents are expressed. **IT:** Data provided on the web, knowledge of existing institutions at the country of origin and individual interviews are among the tools used. Specific trainings are organized at national level by the Italian Rectors' Conference and CIMEA (the National ENIC/Naric), in order to provide universities with appropriate tools on this matter (included available online tools). **Romania** respects the Lisbon Convention through which those who are refugees can continue their studies or work in the field in which they are prepared even when they cannot bring certificates and diplomas granted on the territory of the signatory states. In Romania there are no such special methods in place to our knowledge until now. The institution that offers support in on this topic is CNRED – Centrul National pentru Recunoasterea si Echivalarea Diplomelor (The National Center for Recognition and Equivalence of Diplomas) http://cnred.edu.ro/en/#Activities **Ireland**: All asylum applications are investigated and processed in Office of Refugee Applications Commissioner in Ireland: http://www.orac.ie **CH:** For students: ENIC/NARIC assistance to HEI in the process. HEI are currently revising their policy on treatment of undocumented students. Usually reconstruction of diploma supplement and statutory declaration. **AT:** Diploma recognition in Austria lies with the universities and universities of applied sciences. In case of an incomplete documentation the academic authorities will try to go certain paths, depending in particular on the field of study: Validation tests, expert interviews, evaluation of academic and professional achievements, compensation examinations, indirect (i.e. by secondary documents, labour contracts) proof. **Greece:** The Council of the University of the Aegean unanimously decided to exceptionally accept refugee students without the usual admission tests. The plan proposed by the Rector of the University of the Aegean provides an exceptional chance for refugees to continue their education in university faculties based on the islands of Mytilini, Samos, Chios, Rhodes, Syros and Lemnos[34].
Lack of official status to enroll at university[35]	• Give access without formal enrolment (while waiting for their official status) to enable refugee students to continue their studies to complete their degree (e.g. *University of Bremen*). • Permission to follow courses as guests and use university facilities; guest study program with relevant certification (e.g. IN-Touch project from *Bremen University International Office; Leuphana at University of Lüneburg with "Open Lecture Hall" and "Refugee Bridging Programme").* • Open study places for refugees (*Online lectures at The Silent University that refugees can follow online at their own pace*). • Academic counselling/student mentors to choose the right courses and

[34] *https://ec.europa.eu/migrant-integration/news/greece-university-plans-to-accept-refugee-students-without-the-usual-admissions-tests*

[35] *ErasmusplusRefugees2015*

	mentoring programme (e.g. *Deggendorf Institute of Technology*). • Preparatory courses. • Orientation courses.

Targeted procedures for skills assessment and qualification recognition does not exist in **Hungary** and **Slovakia** (due to the low number of applicants awarded refugee status). Recognition of diploma is possible in **Serbia and Latvia** only in case when valid document (diploma and supplement diploma) are available.

Poland has long-established practices for the validation and recognition of non-formal and informal learning. For instance, in the training for craftsmen and candidates for the diplomas of apprentice and foreman in crafts, the *Crafts Act* (Government of Poland, 1989) stipulates the conditions for carrying out examinations. These examinations can be taken by both young people who have completed vocational education and training in crafts and adults wishing to validate their knowledge and skills acquired through work or theoretical training [36] .

Integration in society

Combining language courses with work experience

Knowledge of the national official language or a recognised language certificate, respectively, is the first important step towards integration into the society and the labour market for migrants. There is a need to tailor language courses as the same type, level and duration of language support may be neither necessary nor feasible for refugees who come from different educational backgrounds, speak different languages, and have different career prospects. Language courses should start as early as possible, implying that access to language training should also be given to asylum-seekers prior to recognition, at least to those with high prospects of being allowed to stay. Additional to basic language training, further language development should be combined with work experience, internships or apprenticeships.
The Norwegian language training system is mentioned as a good example on how to differentiate length and level of language courses according to refugees' varying educational and competency levels:
In **Norway**, according to the Introduction Act refugees and their families who have been granted a residence permit in Norway have the right to and are obliged to complete an introductory programme. All municipalities that settle refugees are obliged to offer the programme. The introduction programme is designed for persons who need to obtain basic qualifications. Upon completion or interruption of a

[36] *Duda, A. 2010. European inventory on validation of informal and non-formal learning 2010. Country Report: Poland. Brussels, European Commission, DG Education and Culture in co-operation with the European Centre for Development of Vocational Training (Cedefop)*

programme, a certificate of participation is being issued. Refugees receive economical support whilst participating in the introductory programme.

Norwegian language training is provided as part of the country's introduction programme for humanitarian migrants. Courses are provided by municipal authorities and streamed into three tracks with different paces of progression, work methods and group sizes. Track 1 is suitable for migrants with little or no prior schooling, who include illiterate migrants and those who have little experience in using written language. Track 2 is intended for those who have some prior schooling and have acquired writing skills in their mother tongue or another language. They can use written language as a tool for learning. Some, however, may have little or no experience of the Latin alphabet and others knowledge of one or more foreign languages. Track 3 is suitable for humanitarian migrants who have a good general education, including those educated to tertiary level. Participants in Track 3 are used to reading and writing as tools for acquiring knowledge and often have learned one or more foreign languages at school. Indeed, many have developed high linguistic awareness. They progress fast. To ensure that humanitarian migrants are assigned to the track that matches their profile and needs, municipalities identify and assess participants' educational background, profession, work experience, proficiency in foreign languages, and future plans. The exercise may consist of a conversation with the migrant, possibly through an interpreter, complemented by language tests in Norwegian and other languages. Municipalities have two months in which to determine which tracks participant will follow[37].

The practices followed by the rest of the countries are presented in the table below:

Challenges	Inspiring practices
Language courses for refugees	At **Austrian** universities MORE courses cover also training in the German language. The University Preparation Programme of the Vienna Universities (Vorstudienlehrgang der Wiener Universitäten) offers German language courses for refugees. **Germany:** Most German universities offer internal German (possibly also English) language courses for students and researchers. Such courses also address refugees who are in some way linked to that university. Besides, there are also German courses for refugees supported by various public institutions (these follow a broader approach to everyday German): The German Federal Employment Agency (cf.https://www.arbeitsagentur.de/web/content/DE/Institutionen/Traeger/Einstiegskurse/Detail/index.htm?dfContentId=L6019022DSTBAI782320),The German Federal Office for Migration and Refugees as well as numerous other institutions also on Bundesländer or community level or offered by a multitude of private institutions, many of which work non-profit. **LT:** Lithuanian language courses are organized in the Refugees Reception Centre for the adult foreigners granted asylum without specific programs for scientists/refuges. **SE:** Courses are mainly arranged locally via the employer according to the needs of the individual person. Courses in the local language (Swedish) are arranged by the municipalities. There are also some specific programs for different professions. **IT:** These initiatives can be provided by single Universities, however, based on individual activities at university level. Recently a national initiative - 'U4Refugees' (Universities for Refugees) has been launched by the Ministry of Education, Universities and Research in order to provide training and cultural paths to university students and researchers, who had already started a programme in their own countries. This way the "welcome" assistance can be integrated also with a cultural and educational experience at university level, allowing the target public to continue

[37] *Regulation to the Norwegian Introduction Act (https://lovdata.no/dokument/SF/forskrift/2012-04-19-358) cited in OECD (2016).*

	or complete their educational path. **Romania**: Romanian language courses are organized. In order to get enrolled in a class, one has to make a formal request to IGI – the General Inspectorate for Immigration. IGI collaborates with the Romanian Ministry of National Education and Research and with school inspectorates in order to offer Romanian language classes in every location. There are universities that organize in parallel Romanian classes for refugees in order to help them integrate. One of them is Universitatea de Vest din Timisoara (the West University of Timisoara). **Hungary**: The Central European University has a project named Open Learning Initiative in which groups of refugees are taught English (at levels corresponding to their needs) as well as additional skills, such as environmental sciences, human rights law, economics, philosophy, politics, public policy, international business law, sociology/social anthropology and mathematics. **Slovakia**: The refugees are included into the official 2 years integration programme, part of which are also intensive language courses (Slovak language). **Ireland**: Students who are accepted on a course in higher education will be given assistance and put on an English language course provided by the institution. Official refugees can liaise with the Irish Refugee Council (IRC), a national non-governmental organisation which specialises in working with and for refugees in Ireland. **CH:** Local language courses are part of integration measures for recognized refugees. Programmes are on commune level and usually encompass A2/B1 level. However, intensive language courses for C1/C2 level (academic requirement) are still lacking as a preparatory measure.

Refugees/researchers training *for additional skills / networking / internships*

At the national level in Germany most universities offer various courses for their students / graduates / personnel e.g. on intercultural trainings as well as job application training to facilitate researchers' integration into the labour market. This offer is not exclusive to academic refugees.
In **Norway** researchers increase their portfolio of skills such as *project management*, *leadership, networking or budgeting*, by participating in research projects at different levels in their career and learn those skills on their way. On the other side **Switzerland** does not have a specific training scheme for refugee/researchers. An integration of refugees into the labour market is part of a policy at national level. Once a research job is secured in Ireland either in academia or industry, researchers can attend additional skills training as other researchers/staff members at the organization.
Science in Asylum in Austria supports scientists who have fled from war and are seeking asylum in Europe. Refugees can make use of the "lost time in the waiting loop" in order to gain a foothold in the science community and the labour market. A course of seminars offers information and support, which will help the participants to make use of their education and work experience in the **Austrian** scientific field. Persons entitled to asylum who possess an academic background may undertake internships at the Academy's research institutes at the **Austrian Academy of Sciences (OeAW)**. The Vienna University of Economics and Business also offers internships for recognised refugees.

Jobs for refugees and migrants | Start-ups
"Persons entitled to asylum", i.e. whose applications for asylum have been approved, enjoy the same status as **Austrian** employees. The Austrian Academy of Sciences (OeAW) actively encourages persons entitled to asylum to apply for OeAW positions, provided they are suitably qualified. The free

multilingual offer for start-up workshops in Vienna has been extended: New are Arabic and Farsi. The offer is also open to recognised refugees. Workshops took place at the 6th Vienna Integration Week.

High quality specific and unique services as National EURAXESS Service Networks additionally to the minimum requirements

German EURAXESS service centres help foreign researchers and their families to plan and organise their stay in Germany, providing assistance in all matters related to researchers' mobility. All services provided are also applicable to refugee scientists. Among other services, most German EURAXESS service centres offer common social activities for researchers and their families in order to enhance their social integration.

National EURAXESS Service network as well as the University of Oslo and Oslo and Akershus University College of Applied Sciences in Norway under a call for an "*Academic Dugnad*" - made an extraordinary effort to welcome refugees and asylum seekers into the society (*dugnad* means unpaid voluntary, orchestrated community work and is the typical Norwegian way of getting together to solve ongoing challenges). A series of activities and initiatives are and will be launched among the Norwegian HEIs. The **Norwegian** academia has knowledge and experience that may give understanding of the background for the crisis, advise the government and help refugees to create new lives in Norway.

In Italy, Universities of Bologna and Torino, (EURAXESS Services Centres) provide free enrolment in university programmes and /or scholarships reserved to asylum seekers or refugees and/or free access to services (libraries; canteens) etc. The EURAXESS BHO-CRUI Foundation organizes with the national ENIC /Naric centre training sessions on issues of particular interest such as Recognition of Diploma.

EURAXESS **Slovakia** provides broad spectrum of services in line with the minimum requirements while EURAXESS **Ireland** provides direct assistance with visa and immigration procedures once a researcher has been accepted for a research position either on a hosting agreement or under any other immigration scheme by any Irish university or any other research active institution in the country.

ANNEX II

EU Member States' policies

Diaspora Engagement -Greece

A number of government and civil-society initiatives connect with the Greek Diaspora and encourage their contributions—financial, entrepreneurial, and academic—to their country of origin. Many such initiatives reflect the particular challenges of the current economic crisis and the resulting rise in emigration. For example, the Greek government's General Secretariat for Greeks Abroad (GSGA) is identifying the needs of new emigrants in various destination countries. Similarly, newer civil-society-led initiatives such as The Hellenic Initiative are focusing their expertise on revitalizing the Greek economy. GSGA maintains several databases on the Greek Diaspora[38].For decades it compiled a roster of Greek Diaspora organizations—which at last count numbered around 3,000—but the database has not been updated in the past three years[39].At the request of the government, GSGA recently compiled lists of Greek businessmen abroad and Greek language programs, of all types (within schools, afternoon classes, etc.), in operation throughout the world. With the help of Greek consular authorities in destination countries, it also compiled a list of Diaspora organizations' philanthropic contributions to Greek nongovernmental organizations (NGOs), made in response to the Greek economic crisis. These databases are complemented by the work of several other Greek government agencies that have also created registries of Diaspora members for various purposes. One example is the Hellenic Quality Assurance and Accreditation Agency, whose database of Greek scholars and academics abroad is utilized to form committees for the external evaluation of Greek universities.[40]

One of the most high-profile, Diaspora initiatives to be led by civil society in response to the economic crisis is The Hellenic Initiative, whose launch in Athens in July 2012 featured former U.S. President Bill Clinton alongside Greek business leaders and prominent members of the global Greek Diaspora[41]. The initiative promotes entrepreneurship through educational programs at graduate business schools by linking Greek enterprises with export markets, and by convening business plan competitions in which the winning proposals receive funding, mentoring, and business support services. It also connects young managers in Greek businesses with 12-month placements in leading U.S. businesses, requiring them to return to Greece to use their new skills to promote Greek economic development.

Another important initiative is the annual summer Conference on Research on Economic Theory and Econometrics (CRETE), founded by Greek economists[42]. CRETE brings together foreign and Greek academics from universities abroad with professors and advanced PhD students at Greek universities.

The Israeli Model

The Israeli Model adopted to enhance **Diaspora Researcher Mobility** was focused on the implementation of the governmental Brain Gain programs **KAMEA** and **I-CORE (Israeli Centers of Research Excellence).** These initiatives aimed to strength the scientific research, innovation in Israel in disciplines of system-wide and national importance and promote research collaboration at global level.

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[38] *The General Secretariat for Greeks Abroad (GSGA) is a government agency founded in 1983 under the aegis of the Ministry of Foreign Affairs, charged with the planning, coordination, and implementation of policies concerning the Greek diaspora, including the successful integration of those returning to Greece. It aims to strengthen ties between the Greek diaspora and their country of heritage by promoting Greek language, history, and culture.*

[39] *GSGA, "Diaspora Organizations," accessed December 29, 2014, www.ggae.gr/frontoffice/portal.asp?cpage=NODE&cnode=10&- clang=1.*

[40] *Hellenic Quality Assurance and Accreditation Agency, "Quality Assurance," accessed December 29, 2014, http://qa.auth.gr/en/ node/2008.*

[41] *The Hellenic Initiative, "Who We Are," accessed December 29, 2014, http://hellenicinitiative.com/web/#.*

[42] *Conference on Research on Economic Theory and Econometrics (C.R.E.T.E.), CRETE 2015, accessed December 15, 2015, www. aueb.gr/conferences/Crete2015/.*

The challenge was to find the appropriate strategy to attract Diaspora researchers in order to make a substantial contribution to the growth of the economy at national level. According to the results of the research conducted by the Division on Social Innovation factors such as better work environment and new professional challenges are as important as the level of salary to encourage researchers to return to the same degree as the salary level. No single organization (either research institute, NGO or industry) can combat brain drain issues but this is a task on a national level. Two approaches were followed in Israel to target Diaspora researchers: one on individual basis (personal requirements to be addressed) and the other on institutional basis (effective institutions to attract Diaspora researchers). The success of the **Israeli Model** is based on the mapping of the needs and priorities of potential researchers, recruitment of Diaspora researchers in terms of existing research contacts and priorities (on a three years basis). Next, through mobilizing universities, Diaspora communities, social organisations as well as the Ministry of Immigration absorption representatives abroad follows the approach of the targeted Diaspora researchers. The EURAXESS platform provides also active links. Recently the Israeli government decided to establish The Israel Brain Gain Program. This program is led by the Chief Scientist of the Ministry of Industry and Trade. It is a joint collaboration of the Ministry of Absorption, the Ministry of Industry and Trade, the Finance Ministry and the Planning and Budgeting Committee of the Council for Higher Education.

ANNEX IIII

Case 1 Examples of mobility programs developed by the European Union

Marie Skłodowska-Curie actions (MSCA) provide grants at each stage of researchers' careers - for doctoral candidates or for highly experienced researchers - and encourage transnational, inter-sectorial and interdisciplinary mobility. MSCA enable research-focused organisations (universities, research centres and companies) to host talented foreign researchers and to create strategic partnerships with leading institutions worldwide.
MSCA aim to equip researchers with the necessary skills and international experience for a successful career, either in the public or in the private sector. The programme addresses challenges faced by the researchers, offering them attractive working conditions and the opportunity to move between academic institutions and other settings.
MSCA are open to all domains of research and innovation, from fundamental research to market take-up and innovation services. Research and innovation fields are chosen freely by the applicants (individuals and/or organisations) in a completely 'bottom-up' manner.

Erasmus is a framework program for education, training, youth and sport. The aim of Erasmus+ is to contribute to the Europe 2020 strategy for growth, jobs, social equity and inclusion, as well as to the aims of ET2020, the EU's strategic framework for education and training.
Erasmus+ also aims to promote the sustainable development of its partners in the field of higher education, and to contribute in achieving the objectives of the EU Youth Strategy. Specific issues tackled by the programme include reducing unemployment, especially among young people.
For individuals, Erasmus+ has opportunities for people of all ages, helping them to develop and share knowledge and experience at institutions and organisations from different countries.
For organisations, Erasmus+ has opportunities for a wide range of organisations, including universities, education and training providers, think-tanks, research organisations and private businesses.

European Cooperation in Science and Technology (COST) is an intergovernmental organisation, also known as “COST Actions”. Created in 1971, COST is a European framework supporting transnational cooperation among researchers, engineers and scholars across Europe.
This program contributes to close the gap between science, policy makers and society in Europe. COST also contributes to develop researchers’ mobility.

PRIMA and BONUS[43]. Regional programmes to foster collaboration and mobility inside EU (including doctoral candidates and post-docs).

Case 2 Examples of mobility programs developed by Member States

France
AgreenSkills and **AgreenSkills+** are international postdoctoral fellowship programmes co-funded by the European Union and coordinated by the French national Institute for Agricultural Research (INRA), in collaboration with Agreenium-IAVFF, the French Agricultural, Veterinary and Forestry Institute.
AgreenSkills programmes promote international mobility for young and independent researchers up to

[43] http://www.bonusportal.org/about_us
http://www.medspring.eu/sites/default/files/MEDSPRING-Awareness-meeting-PRIMA-Rossano.pdf

10 years of research experience after a PhD.
AgreenSkills+ welcomes challenging basic or applied research projects in all fields of life, food and environmental sciences which may contribute to scientific domains of Agreenium-IAVFF members, i.e. agriculture and forestry, food and nutrition, environment and animal health.
These programs propose t**wo types of fellowships:**
- Incoming fellowships for researchers coming from all countries which apply to undertake a research project within one of the 300 Agreenium-IAVFF member receiving labs in France.
- **Outgoing fellowships** for researchers employed by one of the Agreenium-IAVFF member organisations, who wish to apply for work in a university research unit or research center outside France.
Agreenskills and Agreenskills+ offer attractive salaries, excellent research labs, and high level of hosting conditions, training and networking opportunities.

Germany
DGF – Heisenberg program
The objective of this programme is to promote early career researchers who are eligible for appointments to a professorship and have demonstrated excellence in their research achievements.
The programme is intended both to stimulate progress in research and to maintain an outstanding pool of early-career researchers for the scientific community, while ensuring appropriate gender distribution.
Heisenberg Programme is aimed for researchers who are qualified for a professorship but have not yet been appointed. This qualification may have been attained through the Emmy Noether Programme, a junior professorship, habilitation (or equivalent degree), DFG project positions, industrial research activity or mid-level faculty positions.
Humboldt Research fellowship
Alexander Humboldt Foundation enables highly-qualified scientists and scholars from abroad to spend extended period of research in Germany.
The research outline is carried out in cooperation with academic hosts at research institutions in Germany. Applicants have to choose their own topic of research and their host institution. Candidates are selected solely on the basis of the evaluation of their academic qualification. No quota for individual disciplines or countries is applied within this program.

Hungary
The Momentum (*Lendület*) Program of the Hungarian Academy of Sciences supports the relocation to Hungary of outstanding Hungarian researchers working abroad, by providing personal allowances of two to three years for projects carried out in Hungary in the field of their specialty. The Program invites researchers to take part to the scientific/development programmes in Hungary. By maintaining the call for applications, the heads or research teams must raise funds from Hungarian institutions during five years.

Estonia
Researcher mobility support enables both Estonian and foreign researchers to carry out research in a new research environment to exchange experience, expand their co-operation networks and obtain new skills. There are grants to support both outgoing and incoming researchers (including fellowships for doctoral candidates to support full and part-time studies and grants for post-docs).
Mobilitas Pluss programme (funded by the ERDF) aims to strengthen the international competitiveness of Estonian researchers and research performing organisations, including companies; expand international collaboration and professional development opportunities for the state, R&D institutions, higher education institutions, companies, students and academic staff by improving intersectoral and international mobility and cooperation. There are four types of mobility grants:
- Support for study visits and training abroad;

- Postdoctoral grant
- Returning researcher grant
- Top researcher grant

Welcoming programme (funded by the ESF) was established 2015. The programme is coordinated by Ministry of Interior, in order to support foreign nationals including researches and students who have migrated to Estonia to settle in and to acquire the primary knowledge and skills. The welcoming programme consists of 8 informative and interactive training modules: Basic module; Working and entrepreneurship; Studying; Research; Family life; International protection; Children and young people; Language training. All training modules include vital practical examples that help new arrivals to better understand the things they have learned in the trainings and use the acquired knowledge in their daily lives. Trainings about research in Estonia are carried out by the Estonian Research Council which is also a one of the EURAXESS service centres in Estonia. Trainings are attractive among foreign researchers including researchers form EU.

Case 3 Examples of Dual career program

Germany

The Dual Career Network in Germany (DCNG)

DCNG is a network which carries out two important functions: the exchange of best practices between the service centres as regards operational and organisational aspects as well as the improvement of the international visibility of support programs for dual career couples. The participating institutions hold a variety of differing views and strategic targets concerning Dual Career Services. They are used to increase employer attractiveness as a recruitment instrument and as a means of implementing equal opportunities. These differences and recognition of the different ways in which Dual Career Services influence internal processes are considered mutually beneficial.

EUCOR Network

Dual Career Network of the EUCOR - The European Campus universities in the Upper Rhine region.

Founded in 2009, this support to dual career couples is provided in cooperation with the EUCOR universities in Basel, Freiburg, Karlsruhe, Upper Alsace (Mulhouse-Colmar) and Strasbourg.

ANNEX IV

The Federal Ministry for Economic Affairs and Energy supports university graduates, scientists as well as students to this end in preparing their technology and knowledge based start-ups. EXIST also promotes a lively and lasting entrepreneurial culture at public and private universities (http://www.exist.de/EN/Home/home_node.html).
The EXIST programme comprises three schemes:

- EXIST Culture of Entrepreneurship supports universities in formulating and implementing a comprehensive and sustained university-wide strategy for increasing entrepreneurial culture and spirit.
- EXIST Business Start-up Grant supports students, graduates and scientists in preparing innovative technology and knowledge based start-up projects.
- EXIST Transfer of Research funds both the resource development necessary to prove the technical feasibility of start-up ideas based on research and the preparation necessary to launch a business.

ANNEX V Members of the working group

Chairs:

Cecilia Cabello and Antonio Skarmeta – Spain

Members:

Isser Peer- Israel
Marie-Hélène Prieur and Vanessa Dumetier – France
Margarida M. Santos, Portugal
Maria Unger - Austria
Dimitrios Sanopoulos – Greece
Ursula Tubli - Estonia

ANNEX VI MANDATE

Outcome: A collection of recommendations concerning how to deal with the asymmetric flow of researcher mobility, particularly focusing on services for incoming researchers to Europe.

Operational Objective: A report covering:

- Overview of measures and innovative transnational mobility initiatives in order to take into account the asymmetry of researcher mobility brain drain within Europe including the issue of Diaspora researchers
- Discussion of welcoming issues on a European level and exchange of best practices and strategies of the Member States. Minimum standards and operational recommendations for countries as well as research organisations welcoming Third country researchers. Recognising that different approaches are needed for the two distinct groups,
    - Voluntary - researchers who are attracted to universities/research centres in Europe.
    - Involuntary - researchers who come to Europe as refugees
- Suggestions and strategies for implementation: these should be addressed at different levels (for example: EU, MS, Euraxess, RPOs, etc.) and in specific circumstances (science4refugees)

ANNEX VII Questionnaire submitted to BHOs

1. Third Countries:

1.1 In your country there are specific neighborhood countries with which there is a national police to strength relations?

1.2 Any measure provided at national level to create links for continue collaboration once the mobility is over and that will help researchers to see the return as a positive contribution to her careers?

1.3 Is there any measure in your country to support not only researcher's incoming but also support for family integration? What about not only researchers but also attraction of technologist and support to entrepreneurs that can provide innovation?.

2. Virtual Mobility and new forms of mobility:

2.1 Virtual mobility refers to new modes of mobility that implies that the period of mobility can be a combination of physical mobility and virtual one, but that globally allow virtual space of collaboration. Are you aware in your country of any initiative in this direction?

2.2 One relevant are of collaboration is the academia-industry mobility. What are the are actions in this direction at national level either for intra-EU mobility and for talent attraction in general?

3. Involuntary Mobility:

3.1. How do you face in your country Diplomas Recognition of scientists/refuges who have lost their documents? Describe possible methodologies like: standard tests, data provided by web, like papers published in scientific and recognized magazines, periodicals; patents; reports; books (monographs or chapters of books); announcements in Scientific Conferences, Symposia, International Congresses; bibliometric factors like citations; number of publications, etc.; membership in Scientific Networks, Unions, Associations, Societies, Chambers; Records of Universities he/she studied outside his/her country, etc.

3.2. Do you organize in your country language courses for refuges? If yes what language the local one or English? Report if in your country language courses addressed to refuges are systematically organized. Describe in detail relative national programs (Time frame, expected results, infrastructures, resources). Are foreseen specific programs for scientists/ refuges? Lessons for scientific terminology? (e.g. an engineer has different needs than a medical doctor)

3.3. Do you provide high quality specific and unique services as National EURAXESS Service Networks additionally to the minimum requirements? If yes, could you provide these services for scientists/refuges? During the mapping exercise for collection of good practices for the EURAXESS Manual (TOP I & TOP II) some good practices were identified like the mobile researchers card in France or free preliminary patent search to justify the state of art for an invention in Greece. Among these services some could be particular useful for refuges.

3.4. Do you have any provision for refuges/researchers training for additional skills? It is general accepted and it is priority within EU that training researchers in order to improve their additional skills capability and have better perspectives in the European Labor Market. Depending on the different target groups, different needs might arise. Therefore it is important to identify what needs for additional skills are linked with the scientists/refuges.

4. Diaspora:

4.1. What are the repatriation trends regarding your national diaspora researchers? Are there factors like careers stage or age influencing this type of brain gain? Are there national initiatives/ political funding tools supporting repatriation of diaspora researchers? How you evaluate the possibility of collaboration among diaspora researchers and European Institutions?

4.2. How Euraxess network can foster/assist researcher's reintegration in the nonacademic sector?

5. Intra-EU mobility:

5.1. What actions/programs do we have and what actions/programs can we still implement at an EU level more broadly, in order to develop incoming and outgoing academic mobility, especially at the doctorate level and afterwards?

5.2. What actions/measures do we have and what actions/measures can we still implement to support not only researchers, but also their families in order to have an intra-EU experience of mobility?

5.3. How can we develop intra-EU research mobility both from public to private sectors and from private to public sectors, in order to contribute to a higher innovative transnational research?