Working Papers on University Reform

Working Paper 25:

The mobile academic

A survey of mobility among Marie Skłodowska-Curie doctoral fellows

By Lisbeth Kristine Walakira and Susan Wright

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The mobile academic
A survey of mobility among Marie Skłodowska-Curie doctoral fellows

"I'm like a snail, I have everything with me, my entire house with me, I cannot leave anything behind (...) I needed to transfer myself completely 100% (...) so this was quite challenging" -Marie Skłodowska-Curie doctoral fellow in interview

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A special thanks to the previous and current Marie Skłodowska-Curie doctoral fellows who have provided the data, on which this report relies and by enriching the survey with their experiences of mobility.

Illustration on previous page: Word cloud of most common words mentioned in 12 interviews with Marie Skłodowska-Curie PhD fellows. Font sizes are equal to the proportion of the number of times a word has been mentioned.
Word cloud designed by Lisbeth Kristine Walakira at tagxedo.com.

Contents

Executive Summary

This report is an outcome of the UNIKE project (Universities in the Knowledge Economy), which is an EU-funded project under the Marie Skłodowska-Curie Actions. The report provides an insight into doctoral candidates' experiences of mobility in Europe. In recent years, EU policies have increasingly emphasised the mobile knowledge worker as a positive and beneficial employee. On EU-funded projects, the candidates selected for academic positions such as doctoral fellowships are encouraged, in many cases even required, to be geographically mobile between European nation states. But how do such candidates experience being a mobile knowledge worker? What are the professional and personal consequences of living a mobile life, from moving between countries on temporary and short-term visits to permanent resettlement?

Definitions of mobility in this report

The report focuses on 'mobility' as this is a term used by the EU in reports, policy documents, and guidance notes to applicants for funding. An analysis of EU documents supplemented by reports about mobility among students and doctoral fellows identified four main aspects of mobility. The report is organised around these:

1. Geographical mobility
2. Intersectoral mobility
3. Interdisciplinary mobility
4. Social mobility

Methodology

This report relies on data from 3,410 former and current Marie Skłodowska-Curie doctoral fellows. This particular survey population was identified as this group of doctoral fellows is required to have periods of diverse mobility types during their doctoral education. For six weeks from April to May 2016, an online questionnaire was distributed through the Marie Curie Alumni Association and the H2020 MSCA ITN Team of the Research Executive Agency (REA) at the European Commission to doctoral fellows taking part in Marie Skłodowska-Curie Actions. The quantitative results were supplemented with qualitative data from 12 interviews. The Marie Skłodowska-Curie doctoral fellows were selected for interviewing based on their participation in the questionnaire.

Of the 3,410 Marie Skłodowska-Curie fellows who replied to the questionnaire, 2,555 (75%) completed all the questions in the questionnaire. The remaining 855 (25%) respondents filled in parts of the questionnaire. The answers that have been filled in by respondents, who did not fully complete the questionnaire, are also included in the results presented in this report.

Main findings

The respondents overall said that they considered themselves to be privileged in having a Marie Skłodowska-Curie doctoral fellowship. They saw the challenges of the fellowship's diverse forms of mobility entailing international collaborations across nations and between sectors and disciplines as a benefit to their doctoral education, despite the personal and professional difficulties incurred. A mobile academic life has both positive and negative aspects. Doctoral fellows have to navigate personal relationships and reconcile their own and their partner's career aspirations as well as wishes and dreams for their private life.

Most fellows had their fellowship in the United Kingdom (18%), Germany (16%) or France (9%), while the majority of fellows originated from Italy (18%), Spain (8%), Germany (7%), and India (7%). Excluding the Indian fellows, the pattern is thus that most doctoral fellows come from Southern or Central Europe and they do their fellowship in a Western/Central European host country. The overall pattern is that very few do their fellowship in an Eastern European or non-EU host country. There is a risk of brain drain in this unequal pattern in which the most privileged countries attract the best talents from less privileged countries, but not vice-versa, unless the graduates return to their home country with enhanced education.

For fellows who are non-EU citizens or who have a partner who is a non-EU citizen, the requirements for visa and residence permits are often a great challenge. To many, the procedures of acquiring visa and residence permits constitute a considerable insecurity factor that causes delays in the research project and insecurity in terms of participation in conferences, workshops etc. and possibilities for future employment prospects.

Only 51% of fellows who had completed their PhD and 73% of fellows who were yet to complete their PhD stated that their doctoral education included collaborations with another sector, so in all, only 66% of fellows had intersectoral mobility during their doctoral education. Similarly, 57% of fellows who had completed their fellowship and 62% of those who were yet to complete had collaborated with another discipline (61% of all respondents). As a very positive and strong finding, 85% of fellows who had intersectoral mobility reported that they experienced no negative aspects of their intersectoral collaborations. Similarly, 92% of fellows who had interdisciplinary collaborations answered that they experienced no negative aspects of their collaborations. Where there were negative aspects of intersectoral and interdisciplinary mobility, these were for the greatest part in relation to badly organised collaborations and secondments that had little or no alignment with the PhD research, bureaucratic and administrative issues or that the collaboration involved a time-consuming process in order to establish a fruitful relationship.

This survey clearly shows that the doctoral fellows were pioneers of education within their family. The overall pattern was that fellows were the first in their family to reach an education at doctoral level. Many fellows came from families where their parents had received higher education as 45% of mothers and 47% of fathers had either a bachelor or master's degree, but only 4% of fellows' mothers and 8% of their fathers had an education at doctoral level. This shows some social mobility, although it has to be borne in mind that doctoral education has changed significantly in recent decades.

1. Introduction

This report is an outcome of a survey about mobility among doctoral fellows produced in the UNIKE project[1]. UNIKE (Universities in the Knowledge Economy) is a four-year collaborative research project funded by a Marie Skłodowska-Curie ITN Action in the EU's 7th Framework programme. The aim of UNIKE is to examine the relationships between universities and the knowledge economies in Europe and the Asia-Pacific Rim.

Throughout this report the terms doctoral fellow, PhD fellow, PhD candidate and Marie Skłodowska-Curie fellow are used with reference to doctoral fellows taking part in an EU-funded PhD project or programme under the Marie Skłodowska-Curie Actions.

1.1. The research team

The lead persons in administrating the questionnaire, analysing the research data, and writing this report was Lisbeth Kristine Walakira, UNIKE Research Assistant, along with co-author Professor Susan Wright, UNIKE Project Leader at the Danish School of Education (Aarhus University, Denmark), who has furthermore coordinated and supervised the survey process. The Advisory Group consisted of UNIKE partners Professor Pavel Zgaga (University of Ljubljana, Slovenia) and Professor Rebecca Boden (Roehampton University, the United Kingdom). UNIKE doctoral fellows Benedikte Custers (University of Porto), Corina Balaban (Aarhus University), Sina Westa (Ljubljana University), Katja Jonsas (Roehampton University), Que Anh Dang (University of Bristol), UNIKE associated doctoral fellows Sonja Trifuljesko (Helsinki University) and Christian Rogler (University of Vienna) and Eurodoc[2] Board Member Iryna Degtyaryova all contributed to the design of questions, the piloting of the questionnaire and conducting interviews. In addition, Professor Brigitte Bonisch-Brednich (Victoria University of Wellington, New Zealand) who researches academic migration and the globally connected tertiary education system joined the Advisory Board and contributed significantly to the design of the questionnaire.

1.2. Aims and objectives

The aim of the survey was to examine how policies from the EU regarding mobility as a part of doctoral training influences the studies – and not least – the lives of doctoral candidates. The research team was driven by the questions:

- How do doctoral fellows experience geographical, interdisciplinary, intersectoral, and social mobility as a part of their doctoral education?
- What do doctoral fellows emphasise as their gains and losses, both professionally and personally, as a result of their mobility experiences?
- To what extent does the academic output of doctoral fellows gain from mobility during their education?
- What are the hindrances and obstacles throughout the processes of mobility among doctoral fellows? – in terms of logistical challenges, visa and residence procedures as well as consequences of mobility for their private lives?

[1] Read more about UNIKE at www.unike.au.dk
[2] The European Council for Doctoral Candidates and Junior Researchers (www.eurodoc.net)

1.3. EU policy developments on mobility in doctoral education

Pavel Zgaga, Professor of Philosophy of Education at the Faculty of Education, University of Ljubljana and former Minister of Education and Sport in Slovenia has written about the history of the European Union's Higher Education policy and the role of mobility within it (2014, 2015 and 2017). In his paper on how mobility became central to the European Union's design and idea of doctoral education (2015), Zgaga explains that from the 1970s, education entered the "Europeanization" agenda among the member states of the European community (later the European Union). Where education had previously been seen as an exclusive national responsibility, it increasingly became important to provide the means necessary for a growing educational cooperation. As Zgaga, writes: "*The development of the common market opened up completely new questions, such as education of children of migrant workers or mutual recognition of vocational qualifications as well as issues related to scientific development and strengthening the knowledge base*" (Zgaga 2015: 1).

In 1987, the Council of the European Communities implemented the Erasmus programme. The Council Decision states that the objectives of the Erasmus programme were:

(i) to increase the number of students from universities [in various countries] (…)
(ii) to promote broad and intensive cooperation between universities of all the Member States
(iii) to increase the mobility of teaching staff as well as improve the quality of education and training with the aim of securing the competitiveness of the Community in the world market
(iv) to strengthen the interaction between citizens of the members states with a view to consolidating the concept of a People's Europe; and
(v) to develop a pool of graduates with direct experience of intra-Community cooperation, which could intensify cooperation in the economic and social sectors at Community level

(Council of the European Communities 1987: Article 2).

As Pavel explains, mobility became at this stage a focus within education as a way to promote a shared European identity. Mobility was furthermore seen as a way to heighten the quality of education and thereby ensure the competitiveness of graduates in the global world market.

Zgaga highlights that in the early 1990s a shift happened regarding the Commission's role and responsibility in the field education. From having quite limited responsibilities and powers in the field of education, the Maastricht Treaty in 1992 for the first time stated the Commission's responsibilities more explicitly than seen in earlier policies. As Zgaga writes, the stated responsibilities in the treaty proved to be strategically far-reaching in the following years as an opening to the next stage of European integration in the field of education (Zgaga 2015: 6). *The Memorandum on Higher Education and the European Community* from 1991 also underlined the importance of academic mobility as a way of creating greater Europeanization in the next steps of the European integration process: "*European involvement, including mobility, will be at its highest among people with advanced educational levels and the functioning of the Internal Market will require significant numbers of people who would have these extra European dimensions in addition to their normal professional qualifications* (…)" (Commission of the European Communities 1991: 6). The memorandum directly addressed mobility at doctoral level and highlighted interdisciplinary mobility:

> "(…) *it is important that there should be national and institutional policies comprehending the full range of research objectives in the higher education sector. These policies must encourage and permit the institutions to enter into partnership with economic life and to conduct projects on behalf of, or in conjunction with, public and private enterprise. They must stimulate and facilitate partnerships and networks within and across the boundaries of Member States so that the critical mass for effective research and for interdisciplinary developments can be attained. These partnerships are also important in the vital area of training researchers particularly at the doctoral level*" (ibid.: 7).

With this Memorandum, the bricks were laid that linked higher education, research, and postgraduate studies. In the following years, higher education policy documents increasingly emphasised post-graduate and doctoral studies (Zgaga 2015).

The Erasmus programmes have been the European Union's programmes for higher education, especially focusing on the mobility among students, but as Zgaga explains, the idea of mobility during the doctorate only entered the policy documents at a later stage, especially with the 'action lines' agreed in Bologna in 1999 (2017). The EU later developed framework programmes for doctoral programmes, which have always paid attention to the stimulation of the training and mobility of researchers in the Community (Zgaga 2015). Since 1996, the Marie Skłodowska-Curie Actions were initiated as a framework to provide financial support to early stage researchers who wanted to do their doctoral education abroad.

According to Zgaga, the signing of the Bologna Declaration in 1999 marked a transition into a new era of European higher education policies. The Bologna Declaration put mobility at the very centre of the European higher education policy. In the Berlin Communiqué it was stated: "*Mobility of students and academic and administrative staff is the basis for establishing a European Higher Education Area. Ministers emphasise its importance for academic and cultural as well as political, social and economic spheres* (…) *They reaffirm their intention to make every effort to remove all obstacles to mobility within the European Higher Education Area*" (Bologna Process 2003: 4). This document recognised the challenges to mobility and emphasised that they needed to be removed. The issues that were recognised at this point were mainly regarding the portability of grants and loans, visa and work permits, and full recognition of study periods abroad. There continued to be great emphasis on promoting mobility with the perception that periods of mobility would help students: "(…) *achieve their full potential for European identity, citizenship and employability*" (ibid.: 6).

From primarily focusing on mobility in education, Zgaga highlights that a big change occurred with the Bologna Process' Berlin Conference in 2003 (2017). From primarily focusing on mobility in the two main cycles of higher education, bachelor and master, the Ministers now considered it necessary to include the doctoral level as a third cycle in the Bologna Process and mobility as a part of doctoral education and at postdoctoral level became increasingly encouraged. In 2005, ten basic principles of doctoral training were adapted, called the Salzburg Principles, which were the results of 'An Official Bologna Seminar' held in Salzburg in 2005. Principles no. nine encourages increased mobility and here, mobility is furthermore defined as geographical, interdisciplinary and intersectoral mobility (Zgaga 2014). As Zgaga writes, this was the first document within the Bologna Process that explicitly linked mobility and doctoral studies (2017: 5).

As explained by Zgaga, the London Communiqué in 2007 made a visionary statement about the establishment of a European Higher Education Area (EHEA) covering the fundamental values: "*Building on our rich and diverse European cultural heritage, we are developing an EHEA based on institutional autonomy, academic freedom, equal opportunities and democratic principles that will facilitate mobility, increase employability and strengthen Europe's attractiveness and competitiveness*" (Bologna Process 2007: 1). Again at this point, mobility is in the core of the Bologna Process with the aim of creating an attractive and competitive field of higher education in Europe.

In the aftermath of the financial crisis, the Bucharest Communiqué from 2012 pledged to: "(…) *pursue the following goals: to provide quality education for all, to enhance graduates' employability and to strengthen mobility as a means for better learning*" (Bologna Process 2012: 1). It seems that after the financial crisis, the emphasis on mobility shifted from having a focus on strengthening European identity to put more emphasis on mobility as a way to heighten the employability of graduates and doctoral fellows.

Zgaga writes that the latest developments of the Bologna Process show signs of the European Union facing new challenges following the refugee crisis (2015). Few substantial statements about mobility were included in the Communiqué from the Ministerial meeting in Yerevan in 2015, but the document stressed that: "*Today, the EHEA faces serious challenges. It is confronted with continuing economic and social crisis, dramatic levels of unemployment, increasing marginalization of young people, demographic changes, new migration patterns, and conflict within and between countries*" (Bologna Process 2015: 1). Fostering employability of graduates throughout their working lives remains one of the great ambitions as well as making the system more inclusive: "*We will enhance the social dimension of higher education, improve gender balance and widen opportunities for access and completion, including international mobility, for students from disadvantaged backgrounds. We will provide mobility opportunities for students and staff from conflict areas, while working to make it possible for them to return home once conditions allow*" (ibid.: 2-3).

In summary, the Communiqués signal a shift from emphasising mobility as a means for increased quality of education and training and promoting a shared European identity, the recent Communiqués to a greater extent emphasise mobility as a means for strengthening scholar's competitiveness and employability. Further obstacles have also been recognised by researchers. A recent survey points to the issue that geographical mobility appears to be largely unidirectional in Europe – from peripheral to Northern European economies. As Zgaga argues, a lack of adequately funded doctorate and post-doctorate opportunities in peripheral countries and Southern Europe risks undermining the development by creating further asymmetries (Zgaga 2015: 23).

In future, mobility in doctoral education is expected to increase. In parallel to the Bologna Process, the call for more research mobility was also realised by the European Research Area Board that envisaged in 2009 that by 2030 mobility will have tripled: "with up to 20% of EU doctoral candidates working outside their home country" (Zgaga 2015: 20). According to the Council's decision on Horizon 2020, the current Framework for Research and Innovation (2014-2020), the future doctoral candidates have to be able to be very flexible – both across national borders between countries, across disciplines and between sectors: "*Europe needs a strong and creative human resource base, mobile across countries and sectors, with the right combination of skills to innovate and to convert knowledge and ideas into products and services for economic and social benefit*" (European Commission 2011: 31).

1.4. Earlier reports on mobility among doctoral holders

A review of reports on doctoral education was conducted to identify key issues on the topic of mobility among early career researchers as well as identify gaps in understanding the topic.

The European University Association (EUA) published the report *Mobility: Closing the gap between policy and practice* in 2012 as an outcome of the project MAUNIMO (Mapping UNIversity MObility of Staff and Students). The report was a response to the intensification of European-level policies, programmes, and targets concerned with mobility. The report focused on examining what mobility meant to universities in Europe from a strategic point of view. It also explored how mobility is managed and investigated the impacts of policy pressures on the mobility strategies devised by European universities. The project developed an institutional self-assessment tool, – the so-called Mobility Mapping Tool (MMT) – designed to be used across European universities to shed light on different types of mobility including short-term student mobility, academic, administrative staff mobility, and researcher mobility. The aim was to enable universities to compare opinions on mobility among students and staff and thereby generate information for management and strategic decision-making purposes. The report mainly considered geographical mobility among Bachelor and Master students, doctoral fellows, academic, and administrative staff.

The European Science Foundation (ESF) published in 2015 a report about doctorate holders' mobility patterns in Europe and beyond. The report, entitled *Career Tracking of Doctorate Holders* (ESF 2015), was based on a pilot questionnaire tracking the careers of doctoral holders. One of the aims of the report was to design a joint methodology and collaborative approach to career tracking and produce an online post-doctoral career progression and outcome instrument, which could provide data for monitoring, evaluation, and policy planning purposes. The report included geographical and sectoral mobility and it explored mobility from a variety of perspectives: 'physical/geographical', 'virtual', and 'intersectoral mobility' with a focus on especially doctorate holders' career paths after having finished their doctoral degree.

Auriol, Misu and Freeman published a paper called "Careers of Doctorate Holders: Analysis of Labour Market and Mobility Indicators" as a part of the *OECD Science, Technology and Industry Working Papers* (2013). This paper relied on large-scale surveys based on data sources at national levels in 25 countries[3] with the aim of better understanding the global labour market, career paths, and mobility of doctorate holders. An output of the survey is the web page www.oecd.org\sti\cdh. The survey focused on the careers of doctorate holders in a much more comprehensive way with mobility featuring as only one of several topics. The surveys investigated different aspects of mobility such as 'job-to-job mobility', 'intra-sectoral mobility', and 'international mobility' (geographical mobility between countries). It also considered 'social mobility' (although the term 'social mobility' was not actually used) by examining the growth of the doctoral population in relation to gender as well as figures of highly educated migrants (foreign-born population) associated with policies aimed at attracting the best talents.

[3] Belgium, Bulgaria, Croatia, Denmark, Finland, Germany, Hungary, Iceland, Israel, Latvia, Lithuania, Malta, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Slovenia, Spain, Sweden, Switzerland, Chinese Taipei, Turkey, United States.

The European Council of Doctoral Candidates and Junior Researchers (EURODOC) conducted a survey in 2008-2011 and published the report as *Eurodoc Survey 1: The First Eurodoc Survey on Doctoral Candidates in Twelve European Countries* (EURODOC 2011). The survey is a large-scale, quantitative study of doctoral candidates' experiences of their training and career. Aiming to address the lack of comparable data about the situation of European doctoral candidates, the goal of the survey was to provide a comprehensive analysis that could inform policy-making at European level. This study set out to answer two main questions: a) What is the real situation concerning present employment, social benefits and working conditions of doctoral candidates and junior researchers? and b) What are the differences regarding models of doctoral education across Europe? The topics included questions about qualification requirements, career paths, funding schemes, models of training and supervision, working conditions, expected and achieved results of scientific work, as well as mobility. In relation to mobility, the survey presented data concerning doctoral candidates and junior researchers' interest in mobility, either concerning their current situation, their future situation, their future plans or expectations as well as their previous mobility experiences. The aim was to provide data on respondents' reasons or motivations for going abroad, to identify the most common types of mobility, any perceived barriers to one's mobility, sources of funding, and the ways in which those who are mobile stay in contact with their home countries. The report mainly concentrated on physical/geographic mobility.

The four reports mentioned in the review shed light on mobility experiences among doctorate fellows from different perspectives; the projects behind the reports developed tools for assessing the extent of mobility in higher education and strategic decision-making purposes and they tracked doctoral fellows' mobility patterns in their careers beyond the doctoral training. While these reports covered a wide range of issues related to mobility, none of them discussed the professional and personal implications of living a mobile academic life as a doctoral fellow. In order to address this gap, and given the increase in EU policies promoting mobility in doctoral education, the UNIKE project initiated the survey behind this report to explore doctoral fellows' lived experiences of mobility in practice.

1.5. Definitions of mobility

Arising from the above discussion, it was clear that there was limited information about mobility among doctoral fellows *during* their doctoral education. Furthermore, there also seemed to be a lack of qualitative data about how doctoral fellows live and experience the mobile academic life during their doctorate. In this report we use the following four definitions of mobility:

1. Geographical mobility (physically movement between countries)
2. Intersectoral mobility (between universities and industry, policy making, and non-governmental organisations)
3. Interdisciplinary mobility (where doctoral candidates work with researchers from another discipline)
4. Social mobility (across social class or between lower and higher ranked universities)

2. Methodology

2.1. Survey population

The survey was designed to target previous and current Marie Skłodowska-Curie doctoral candidates. There are four main types of Marie Skłodowska-Curie actions (European Commission Marie Skłodowska-Curie actions 2016):

1. Research networks (ITN): Support for Innovative Training Networks that develop new researchers. These actions include European Training Networks (ETN), European Industrial Doctorates (EID), and European Joint Doctorates (EJD).
2. Individual Fellowships (IF): Support for experienced researchers undertaking mobility between countries, with the option to work outside academia
3. Research and Innovation Staff Exchanges (RISE): For international and intersectoral cooperation
4. Co-funding (COFUND): Of regional, national and international programmes that finance research training or fellowships involving mobility to or from another country

Common to the four types of actions is that they all encourage transnational, intersectoral, and interdisciplinary mobility. The Marie Skłodowska-Curie doctoral fellows were therefore identified as the target group for this survey as they represent a population that will have experienced mobility both in terms of geographical movement as well as intersectoral and interdisciplinary mobility as a part of their doctoral training. Due to contractual rules in the ITN actions, the doctoral fellow: " (…) *must not have resided or carried out his/her main activity (work, studies, etc. in the country of his/her host organisation for more than 12 months in the 3 years immediately prior to his/her recruitment*." (European Commission Research Executive Agency 2013: 3). In addition, several Marie Skłodowska-Curie actions promote involvement of industry and other sectors in doctoral research (European Commission Marie Skłodowska-Curie actions 2016). Marie Skłodowska-Curie doctoral fellows therefore undertake periods of secondments in a variety of sectors as a part of their doctoral training.

It has not been possible to access verified data on how many former and current Marie Skłodowska-Curie fellows there have been throughout the European Commission Marie Skłodowska-Curie actions. It is therefore not possible to state whether the data presented in this report is representative compared to the total number of Marie Skłodowska-Curie doctoral fellows.

2.2. Design of questionnaire and pilot study

The questionnaire was built in Survey Xact, which is an online tool designed by the Danish company Rambøll Management Consulting for creating online questionnaires. A pilot study of the questionnaire was conducted in February-March 2016 and included 11 pilot respondents, representing different nationalities, countries of host institutions, and disciplines. The pilot study was conducted by sending the pilot respondents an invitation to the survey including a link to the questionnaire via personal email addresses. Two of these pilot respondents were observed when filling in the questionnaire to get an insight into whether questions were

clearly formulated, how respondents perceived the options for answers, and how user-friendly they found the questionnaire system. The data produced in the pilot study led to further revising of the questions and answer options.

2.3. Data collection

2.3.1. Statistical data collection and dissemination of questionnaire

The questionnaire was initially distributed in collaboration with the Marie Curie Alumni Association from April to May 2016. The staff of the Marie Curie Alumni Association sent an invitation letter to participate in the survey[4] via their database of +7000 members by email.

Marie Skłodowska-Curie fellows could have taken part in any of the four different types of actions set out in section 2.1 Survey population. Members in the Marie Curie Alumni Association were researchers at different stages in their career and may not all be doctoral candidates or not active Marie Skłodowska-Curie doctoral fellows anymore.

Due to the system of the association's member database, it was not possible to send the invitation letter solely to doctoral fellows. Therefore, the invitation letter was sent to all members of the Marie Curie Alumni Association. It stated clearly that the target group of this questionnaire was past and present Marie Skłodowska-Curie doctoral fellows and that the aim of the survey was to investigate experiences of mobility as a part of doctoral education among this group.

In the first round of dissemination through the Marie Curie Alumni Association's member database, nearly 300 respondents completed the questionnaire. 176 respondents in this first phase of data collection were fellows under the IF (Individual Fellowships) programmes. However, researchers under IF actions have already acquired their doctoral degree prior to initiating their fellowship. IF Fellows may have gained their doctoral degree within an earlier Marie Skłodowska-Curie action, but they could also have acquired their doctoral degree elsewhere. As we could not ascertain whether they had experiences of mobility from their doctoral education, they did not fit into the target group of this survey. In order to ensure that the data in this report is based on doctoral fellows who have experienced mobility in their doctoral education, we have therefore excluded the group of fellows taking part in IF actions from the dataset.

With the aim of getting a larger number of respondents, a second phase of questionnaire data collection was launched by collaborating with the Directorate General for Education and Culture (DG EAC) and the H2020 MSCA ITN Team under the Research Executive Agency (REA) at the European Commission. However, the H2020 MSCA ITN Team did not have a database of all current and former Marie Skłodowska-Curie doctoral fellows; instead they offered to disseminate the questionnaire invitation through their database of current coordinators of Marie Skłodowska-Curie ITN projects. The questionnaire invitation letter was in this phase disseminated through the H2020 MSCA ITN Team at the REA to all current ITN coordinators with an

[4] Appendix 1 is an example of the invitation letter to participate in the questionnaire.

introduction asking coordinators to forward the questionnaire invitation to all present and former Marie Skłodowska-Curie doctoral fellows in their programmes.

In the second phase of the data collection, nearly 3,300 more respondents filled in the questionnaire. As all of the respondents in the second phase represented ITN programmes, the majority of respondents in the dataset, on which this report is based, have studied for their doctoral education under a Marie Skłodowska-Curie ITN action. Altogether, 3,586 people filled in the questionnaire. By excluding the 176 IF fellows this report relies on the data from 3,410 respondents. Throughout the first and second phrase of the statistical data collection, the questionnaire was available online for six weeks from April to May 2016.

2.3.2. Qualitative data collection and selection of interviewees

The statistical data from the questionnaire was supplemented by qualitative data through interviews. Out of the 3,410 Marie Skłodowska-Curie fellows who replied to the questionnaire, 872 respondents replied that they were willing to participate in an interview as a continuation of the questionnaire. 12 respondents were selected for interviewing on the basis of different criteria with the aim of collecting qualitative data from a diverse pool of interviewees. Six interviewees were male and six were female doctoral fellows. The fellows represented diverse nationalities. Four interviewees were selected as non-EU citizens (Indian, Colombian, Ukrainian and Chinese) and eight interviewees were EU citizens (French, Italian, Polish, German, Spanish, and Dutch). Nine of the interviewees were between 26-30 years, one interviewee below 25 years was selected; and two interviewees between 31-35 years were selected. Interviewees were also selected on the criteria of representing different family statuses: one of the interviewees was married, five interviewees were living together with a partner without official partnership agreement, and six were single or in a partnership, but not living together. Furthermore, doctoral fellows were selected as representing a variety of disciplines: Three interviewees represented Engineering and Technology, three were from Natural Sciences, two were from an Interdisciplinary background, two represented Medical and Health Sciences, one was from Humanities, and one interviewee had a background within the Social Sciences. The interviewees were in different stages of their Marie Skłodowska-Curie doctoral fellowship. Nine of the interviewees were still doing their doctoral fellowship and three fellows had finished their Marie Skłodowska-Curie fellowship. The latter were selected in order to get data from fellows with a broader time and career perspective with the aim of gaining data about their mobility experiences after completion of the PhD.

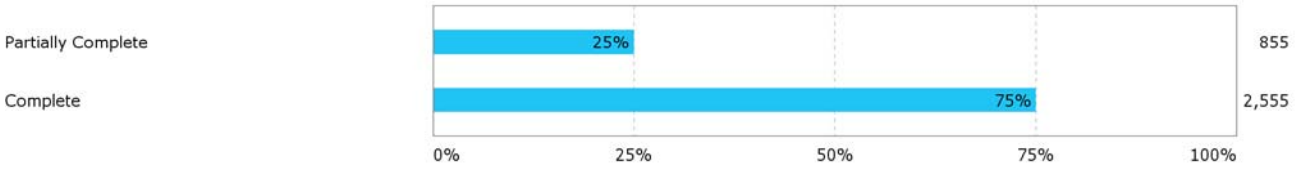
We also selected interviewees based on fellows' responses in the questionnaire such as extensive experience of geographical movement for example in the case of having moved country both between bachelor and master level and again between master and doctoral level. One fellow indicated not to have had experiences with geographical mobility of more than two weeks' time as a part of their doctoral training, therefore we were interested in how come. Other interviewees had stated that they had experienced negative aspects of intersectoral and interdisciplinary mobility and were therefore selected with the aim of getting further insights into their experiences. Some of the interviewees were identified based on their comments in the questionnaire such as doing a PhD while being a parent, experiences of settling in host country, visa processes, and experiences of secondment periods.

Seven interviewers, who were part of the research team, performed interviews. Each member interviewed between one and four Marie Skłodowska-Curie doctoral fellows. Each interview was performed with a semi-structured interview guide ensuring that interviews would cover the four types of mobility used in this survey (geographical, intersectoral, interdisciplinary, and social mobility). The interview guide highlighted certain topics, which were relevant to cover in the interview according to the specific criteria that each interviewee was selected upon.

3. Profile of respondents

The data in this report relies on the responses from 3,410 former or current doctoral candidates under Marie Skłodowska-Curie actions. Of the 3,410 Marie Skłodowska-Curie fellows who replied to the questionnaire, 2,555 (75%) completed all the questions in the questionnaire. The remaining 855 (25%) respondents filled in parts of the questionnaire. The answers that have been filled in by respondents, who did not fully complete the questionnaire, are also included in the results presented in this report, i.e. the number of responses varies per question throughout this report. Not more than one third of answer rates are missing per case compared to the total number of responses.

Figure 1 Overall status of questionnaire completion



3.1. Gender and age

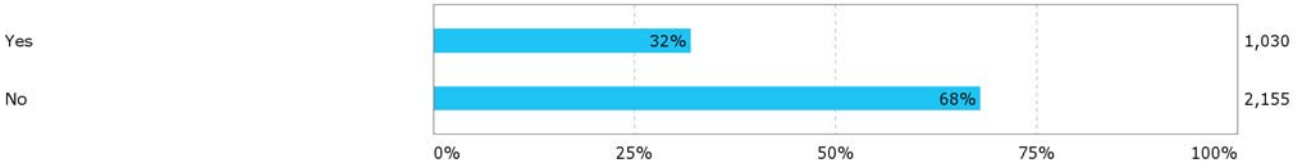
More men than women replied to the questionnaire. Male respondents account for 55% by 1,406 of the total number. Female respondents constitute 45% of the total respondent population, accounting for 1,171 respondents. It has not been possible to access information about how representative this data is in relation to the actual gender distribution among doctoral fellows under the Marie Skłodowska-Curie actions.

The respondents vary in age from below 25 to 65 years. The largest age group is 26-30 years, represented by 61%. 21% are 31-35 years old and 13% stated they were under 25 years old. Above 35 years, there are far fewer respondents. Only 4% were 36-40 years old and 1% was 41-45 years old. Only 5 respondents stated their age to be between 46-65 years, and no one was older than 65 years.

3.2. Completion of fellowship

Of all the doctoral candidates participating in this survey, 28% of respondents had finished their Marie Skłodowska-Curie fellowship and 68% had not finished their fellowship at the time of filling in the questionnaire.

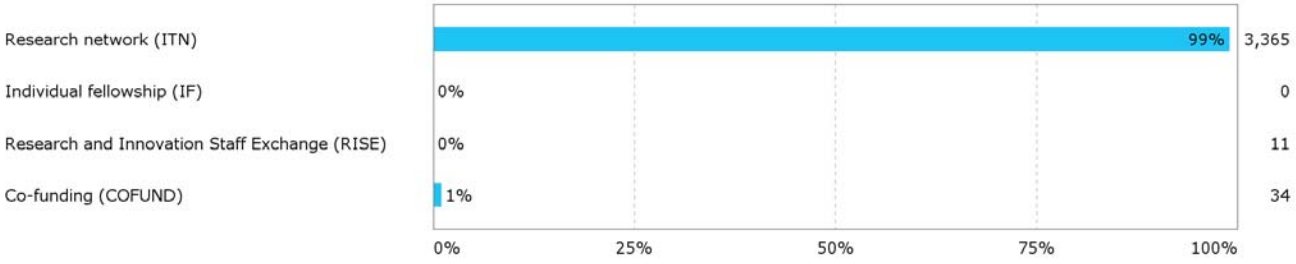
Figure 2 Completion of fellowship
Have you finished your Marie Skłodowska-Curie fellowship?



3.3. Respondents' type of Marie Skłodowska-Curie fellowship

99% of the respondents had taken part in an ITN (Innovative Training Network) project under the Marie Skłodowska-Curie actions. 34 people stated that they were taking part in a COFUND project, accounting for 1%, and 11 people belonged to a RISE project (Research and Innovation Staff Exchange), representing less than 1% of the total number of respondents.

Figure 3 Type of Marie Skłodowska-Curie fellowship
What type of Marie Skłodowska-Curie fellowship are/were you taking part in?

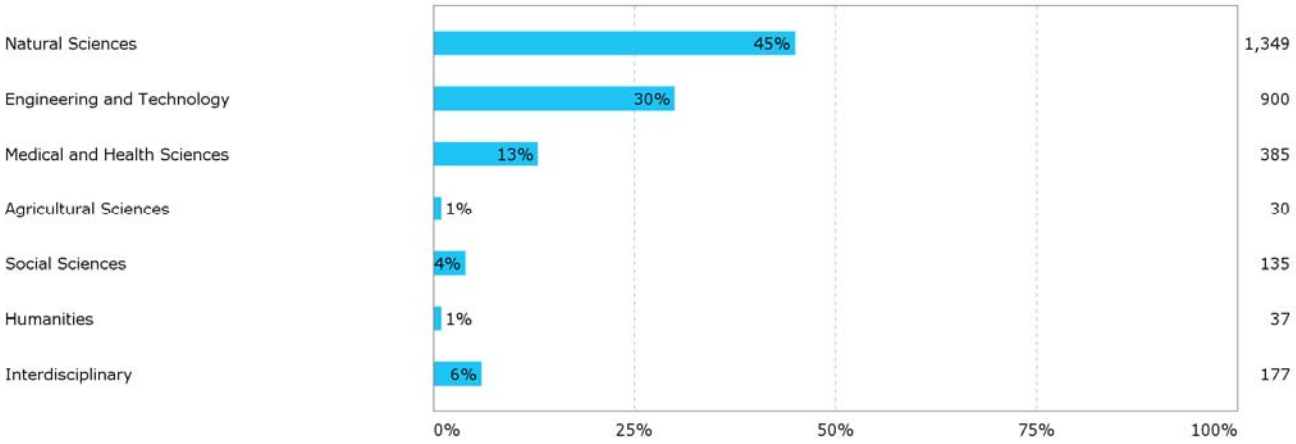


3.4. Scientific fields of doctoral fellows

45% of doctoral fellows in this survey were represented by the Natural Sciences. Engineering and Technology comprised 30%, Medical and Health Sciences 13%, Social Sciences 4%, Agricultural Sciences and Humanities accounted for 1% each. 6% of respondents stated that their field of doctoral study was Interdisciplinary.

Further information about the definitions of scientific disciplines is available via the EduTechWiki (2016).

Figure 4 Field of science
Please indicate the field of science of your doctorate:



3.4.1. Gender and scientific fields

The gender of respondents in scientific fields was largely the same as the above Figure 4. Natural Science was represented by nearly half of all respondents in both genders. 45% of male and 44% of female respondents represented Natural Sciences. The most significant difference was within Engineering and Technology.

37% of male respondents were within Engineering and Technology, whereas the same only accounted for 20% of the female respondents. In three fields of science, a higher percentage was women compared to the percentage among male respondents. 18% of female respondents were studying Medical and Health Sciences, whereas this science was only represented by 9% among male respondents. Social Sciences and Interdisciplinary Sciences were both represented by 7% among female respondents, but only by 2% and 4% among male respondents. In Agricultural Sciences the proportions were equal.

Figure 5 Field of science crossed with gender

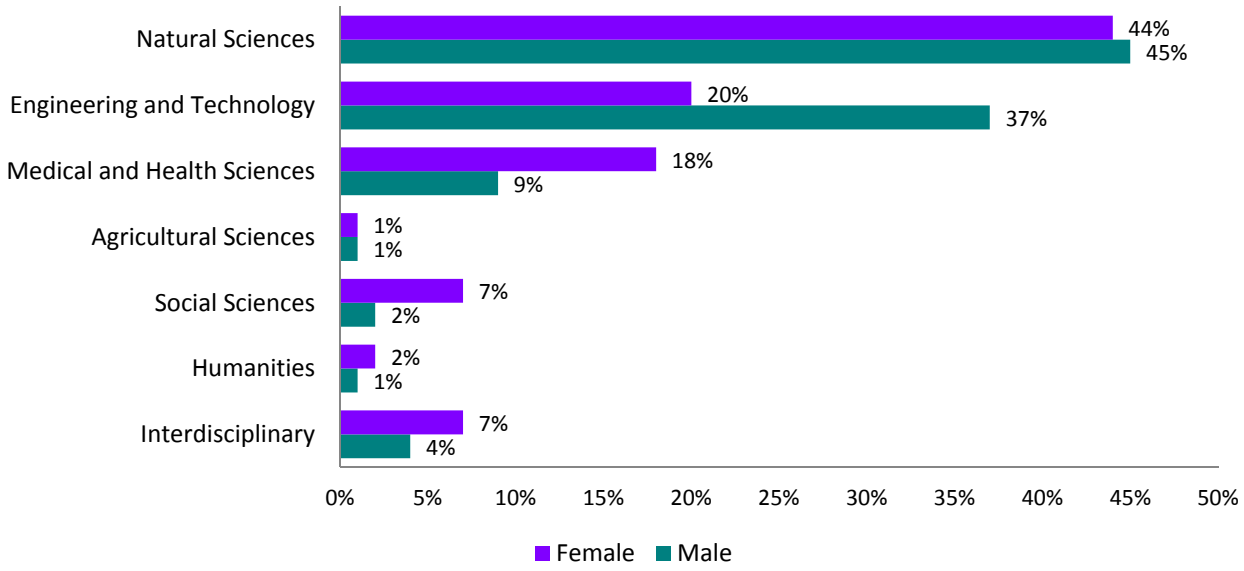


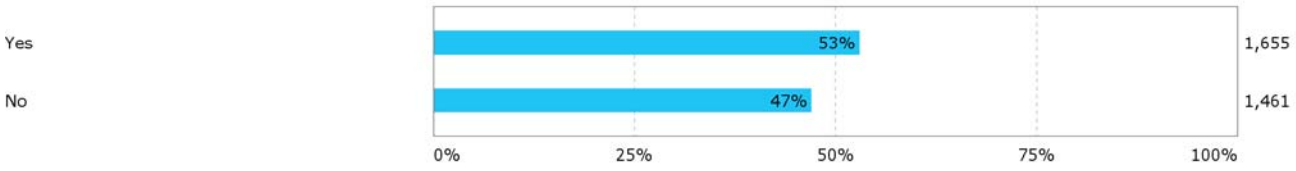
Chart percentage rounded up: Natural Sciences: Male 45.09%, Female 44.32%; Engineering and Technology: Male 37.48%, Female 20.41%; Medical and Health Sciences: Male 8.82%, Female 18.36%; Agricultural Sciences: Male 1.00%, Female 0.77%; Social Sciences: Male 2.42%, Female 7.09%; Humanities: Male 0.78%, Female 1.79%; Interdisciplinary: Male 4.41%, Female 7.26%.

3.5. Success in completing thesis within normative time

53% of respondents replied that they were able to, or expected that they would be able to finish their thesis within the normative time set for their doctoral fellowship. 47% answered that they were not able to, or did not expect to be able to finish their thesis within the time frame set for their fellowship.

Figure 6 Ability to finish thesis within normative time

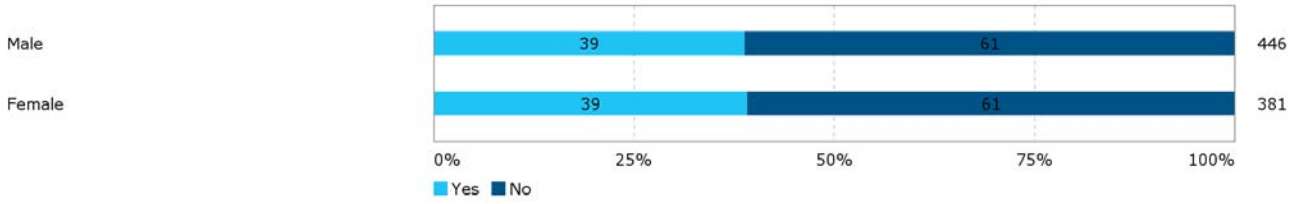
Will you be able/Were you able to finish your thesis within the normative time set for your doctoral fellowship?



Taking into account that 68% of the respondents to the questionnaire had not finished their fellowship (as stated in section 3.2 Completion of fellowship), there was quite a big difference between the answers of the doctoral candidates who had finished their fellowship and those who had not. For the Marie Skłodowska-Curie doctoral candidates who had not yet finished their fellowship, 55% of females stated that they expected to be able to finish their thesis within the normative time. Their male colleagues were bit more optimistic as 62% of these stated that they expected to finish within normative time.

In contrast, of the fellows who had finished their fellowship, only 39% were able to finish their PhD within the normative time for their fellowship. This percentage was the same for both male and female doctoral fellows.

Figure 7 Completed doctoral fellowship crossed with ability to finish thesis within normative time



3.6. Decision of thesis topic

52% of respondents reported that the broad topic of their thesis was decided for them and that they had developed the actual issue, approach and methods for their doctoral study. 41% answered that the topic of their thesis was already settled before they started and 7% answered that they chose the topic for their thesis themselves.

3.7. Conclusion

The results in this survey rely on the responses from 3,410 current and previous doctoral fellows taking part in Marie Skłodowska-Curie programmes. 75% of the respondents completed the questionnaire; however, the responses given by the respondents who only partially filled in the questionnaire are also part of the statistical findings of this report. 55% of the respondents were men and 45% were women. It has not been possible to identify whether this is representative for the actual gender distribution among Marie Skłodowska-Curie doctoral fellows. 68% of the respondents were current doctoral fellows whereas 32% had finished their fellowship at the time of filling in the questionnaire. The greatest proportion of respondents was doing their PhD within Natural Science, accounting for 45%. Engineering and Technology accounted for 30%. Comparing disciplines to gender, the greatest different was within Engineering and Technology, which was represented by 37% of male fellows but only by 20% by female fellows.

47% of all respondents answered that they were not able to or did not expect to be able to finish their PhD within the normative time set for their fellowship (usually 3 years for fellows enrolled at a university and 4 years for fellows doing an industrial PhD). Of the fellows, who had completed their fellowship (827 respondents); only 39% stated that they had been able to finish their PhD within the normative time of their fellowship.

4. Geographical mobility

Interviewer: *What were the effects on your personal life to move to another country to start the fellowship?*

PhD fellow: *(…) it's been difficult to stay in touch with friends that I left behind and I've made wonderful new friends forever that I'm still in touch with almost three years after finishing my PhD.*

(Polish doctoral fellow in Slovenia)

4.1. Country of host institution during doctoral fellowship

The largest proportion of respondents was based in the United Kingdom (18%) for their doctoral education. The second largest group was studying for a doctorate in Germany (16%), followed by France (9%), and the Netherlands (8%). Other countries were Spain and Italy (7%), Belgium (5%), Sweden and Switzerland (4%), Denmark (3%), Austria, Finland, Greece, Ireland, Norway, Portugal (2%), and Czech Republic, Israel, and Poland (1%).

4.2. Nationalities

The nationalities of respondents vary greatly. By far the largest group of respondents is Italian, accounting for 18% of all the respondents. 8% are Spanish. German and Indian nationals account for 7% each. 5% are French nationals. Chinese, Greek, Polish, and Portuguese nationals account for 4% each. American, British, Dutch, Iranian, Russian, and Turkish nationals are each represented by 2% of the total respondents. Austrian, Belgian, Brazilian, Bulgarian, Canadian, Colombian, Croatian, Cypriot, Czech, Hungarian, Irish, Mexican, Pakistani, Romanian, Serbian, Swedish, Swiss, Ukrainian, and Vietnamese are all represented by 1%, respectively. Many more nationalities are represented in the survey, mainly by non-European nationals; these each account for less than 1% of the total number of respondents. However, combined non-European nationals comprise roughly 30% of respondents and among these most are from India and China. Fellows from Eastern Europe comprise roughly 15% of all fellows participating in the questionnaire.

Comparing nationality to gender, male doctoral fellows were in a majority among Indians (70%), Chinese (64%), Greek (64%), Italian (56%), French (56%) and Spanish (53%). Women were in a slight majority among Germans (51%), and strongly represented among Polish (67%) and Portuguese (56%) fellows.

4.3. Experiences of moving to host country

By comparing nationalities of fellows and host countries, we understand that most fellows do their fellowship in the United Kingdom and Germany, while most fellows originate from Italy, Spain, Germany, and India. Excluding Indian fellows, the pattern was that the majority of doctoral fellows was Central or Southern European nationals and they did their fellowship in a Western European host country. The overall pattern was that very few did their fellowship in an Eastern European or non-EU host country.

What do fellows think about moving to a different country to start the Marie Skłodowska-Curie doctoral fellowship?

In light of the above statistics about the nationality of doctoral fellows, we asked the fellows participating in interviews how they experienced the move to their host country when starting their fellowship. Most fellows mentioned practical issues such as finding accommodation, paperwork, and learning a new language when moving from their home country (or the country in which they were living before starting their PhD[5]). A former doctoral fellow from Poland explained about her experiences of moving to Slovenia to start her Marie Skłodowska-Curie fellowship:

Interviewer: *How did you experience the move from your home country to another country? – You said you wanted to have this experience, but how did it feel in reality?*

PhD fellow: *The move to Slovenia was pretty difficult considering (…) that in Slovenia a lot of the documents and also the PhD programme are not exactly set in English, and I have not known or spoken Slovenian before coming to Slovenia, nor was I even given the options to get classes of Slovenian language, so it was hard from the linguistic point of view and the move itself has not been easy as it was hard to find the apartment (…) So I found that very difficult and frustrating at first. The bureaucratic aspect of the move was not easy (…) But the technician in our lab who has been acting like a secretary, has taught me a great deal and I don't think I would have had such pleasant memories from this entire experience had it not been for her because she put a lot of work and effort into actually making my life easier and help me out.*

(Former Marie Skłodowska-Curie doctoral fellow in Slovenia)

The story from this doctoral fellow above also shows that that she gained a lot of informal help from her colleague. This was a recurring aspect of interviews when fellows explained how they settled into the host country. Several of the interviewed fellows mentioned informal help from both scientific and administrative colleagues as a major contribution to their settlement in the host country. A particular issue arising from the interviews was the psychological aspects of moving to a new country and establishing a new network. A doctoral fellow doing his fellowship within a Danish company explained that to establish a new social network in Denmark affected him psychologically and that it took him a long time to settle in the new environment:

[5] I.e. not all doctoral fellows were living in their country of origin or a country, which they would identify as their home country. The term 'home country' is individually interpreted – some consider a home country their country of origin, whereas others consider their home country the country in which they have most recently been established on a more permanent basis.

Interviewer: *How did you feel moving to another country? How did this affect your personal life?*
PhD fellow: *Well there were definitely some psychological hurdles, especially since I didn't know the Danish language (…) On the emotional level it was definitely a bit harder and especially when your social life isn't quite installed then it's a bit more complicated to deal with the emotional side (…) Luckily enough it's something that sort of went away over time once I started connecting more to people, then the latent anxiety of not being integrated* [disappeared or faded away]. *So not really loneliness but anxiety of not mastering most of what was in the environment – that was definitely more of a challenge (…) In the beginning I wasn't so much aware of the strain that I was having, but after six months I got fully aware of the situation and then it took me more or less a year to sort it out.*
Interviewer: *How do you feel now that you've spent some time?*
PhD fellow: *Well it definitely went better over time but it was something I had to invest time and energy in (…) basically in some environments it's much easier to build up a social life than in others. I would say that if you are studying at university, sometimes it's a bit easier to bump into other people with your interest and that you can connect with. When you're working in a company it's sometimes a bit different, although I must admit that my company was also a great environment, but it's a small company and we quite vary in ages. I think the fact that I didn't sit at a university probably might have made it a bit more complicated.*

(Marie Skłodowska-Curie doctoral fellow in Denmark)

This doctoral fellow also points out that it may be harder to establish oneself in the host country when doing a PhD in a company as the company may offer a less diverse or smaller group of colleagues to socialize with. Other doctoral fellows said that the distance from close family and friends was one the greatest personal challenges when moving. A doctoral fellow originating from Colombia talks about how she felt she had to compromised her family relations in her home country after having lived many years abroad since she moved away from Colombia to do her master degree and later doctoral fellowship:

Interviewer: *What do you think they* [your parents] *think about you having moved so far away?*
PhD fellow: *In the beginning it was exciting, but now that so many years have passed, it has become more difficult for them and for me as well (…) So you compromise many things. I always think you must be where you are doing something you like, so I am clear that if I'm not doing something I like here, there is no reason for being abroad from people I love. Now it's a bit more complicated because my boyfriend is also abroad, which means that in any case everything becomes more complicated*
Interviewer: *Is he a European citizen?*
PhD fellow: *He's a non-European citizen - so yes, it's a mess…*

(Former Marie Skłodowska-Curie doctoral fellow from Colombia living in Italy)

This example also shows that some doctoral fellows are trying to reconcile career plans and their personal life with a partner. In an ever-globalising world people are to a greater extent connecting and building relationships transnationally. In the above-example, the doctoral fellow was Colombian, yet her partner was also a non-European citizen, but they have both found a way to settle in Italy between national laws of visa and residence permit requirements and in the pursuits of career for both partners while trying to live close to each other. Another doctoral fellow who is German explained why she chose to apply for a Marie Skłodowska-Curie fellowship:

PhD fellow: *Several things made me apply for this job – the money is really good and I like the place* [city of host university] *and also family issues because my husband, at that time my boyfriend, is Ecuadorian. So Spain is like the perfect place for him to start his European experience because he has no language issues here, while Germany is different*
Interviewer: *So that was also a part of your considerations?*
PhD fellow: *Yes, definitely*
Interviewer: *OK. Interesting that you were trying to combine several things, both your career and your private life*
PhD fellow: *Yes, always trying to reconcile.*

(Marie Skłodowska-Curie doctoral fellow from Germany living in Spain)

This example highlights how some doctoral fellows are navigating[6] between career possibilities and family situations with the aim of combining their professional and personal lives. At the same time, the case below shows just how intense the Marie Skłodowska-Curie fellowship is to some fellows in terms of geographical mobility as a part of the doctoral training and how this can make it hard for the fellow to settle in the host country:

PhD fellow: *I arrived in Denmark in September and then already in October I went to the UK for one month to stay at my co-supervisor's university, and in September I had already travelled to Birmingham and Seville because there we had the first opening events of the research group (…) So that was very busy; I hardly had time to settle down in Odense.*

The fellow furthermore explained that she had just started a relationship before initiating her doctoral fellowship. Despite being very positive towards all the benefits of traveling during her doctoral, she also explained that it had consequences in her personal life as well:

PhD fellow: *I actually met my boyfriend right before I left Germany* [when doing an internship for her master degree]*. So the first year I was in Denmark I had a long-distance relationship with my boyfriend in Germany*
Interviewer: *OK and how was that at the same time of doing a very busy PhD programme?*
PhD fellow: *That was super busy. The first year it was crazy. And it was in the end also too much because after one year I broke off the relationship with my boyfriend because it was too much travelling to Germany and all those trips for work, so it was too much*
Interviewer: *What did this mean to your personal life back here in Denmark – that you had to keep moving all the time? Did it have any personal consequences?*
PhD fellow: *Yeah it messes up your personal life of course. For example I could never take a yoga course because I knew I couldn't be there every week frequently. And also planning visits with friends in Holland or with family that was always also very challenging. It brings along a very messed-up schedule.*

(Former Marie Skłodowska-Curie doctoral fellow from Holland in Denmark)

[6] I.e. Vigh writes about 'social navigation' as describing: *"how people act in difficult or uncertain circumstances and (…) how they disentangle themselves from confining structures, plot their escape and move towards better positions"* (Vigh 2009 p. 419).

4.4. Visits to other countries during doctoral education

55% of doctoral fellows answered yes to having had visits of more than two weeks to another country during their doctoral training whereas 16% answered that they had not had visits of more than two weeks to other countries during their doctoral training. 30% answered that they had not yet had visits of more than two weeks, which is most likely because 68% or respondents had not yet finished their fellowship (as shown in Figure 2).

Figure 8 Visit to other countries during doctoral education
Have you had any visits of more than two weeks to any other countries during your doctoral training?

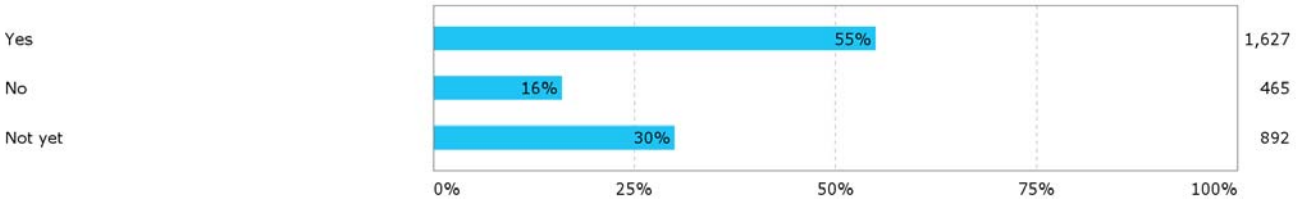
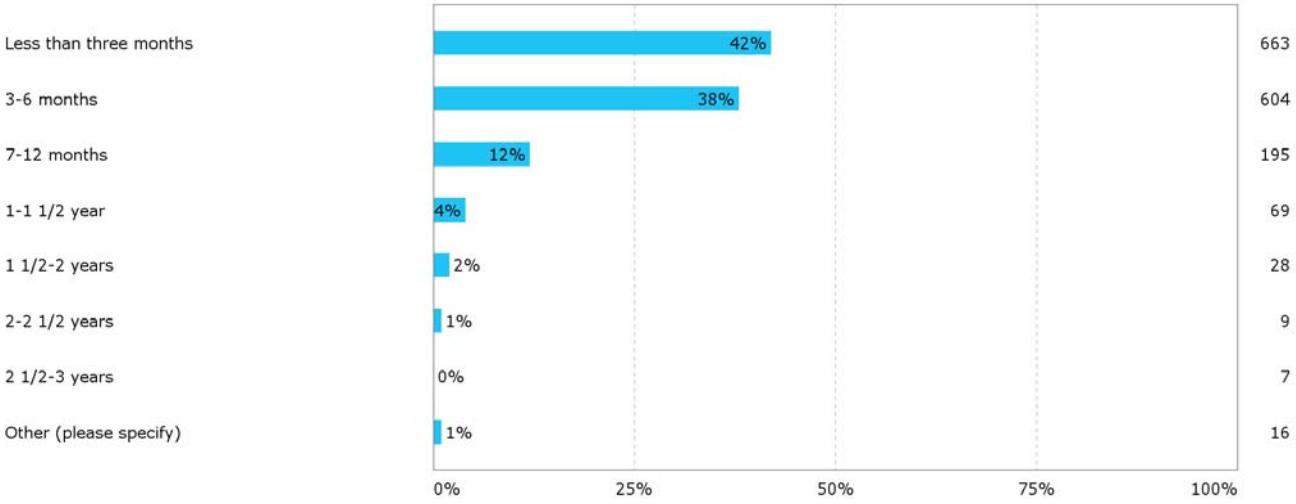


Chart percentage rounded up: Yes 54.5%; No 15.6%; Not yet 29.9%.

Of the 55% doctoral fellows who answered yes to having had visits of more than two weeks to any other countries during their doctoral training, 42% replied that the duration of visits abroad was less than three months in total. 38% said that that the total time of their geographical mobility was 3-6 months. 12% replied that the duration of their stays abroad as a doctoral fellow was 7-12 months in total. One person replied that he/she spent 50% of his/her time abroad as a doctoral fellow.

Figure 9 Time spent abroad during doctoral education
10.3. How much time did you spend in total on these visits in your capacity as a doctoral fellow?



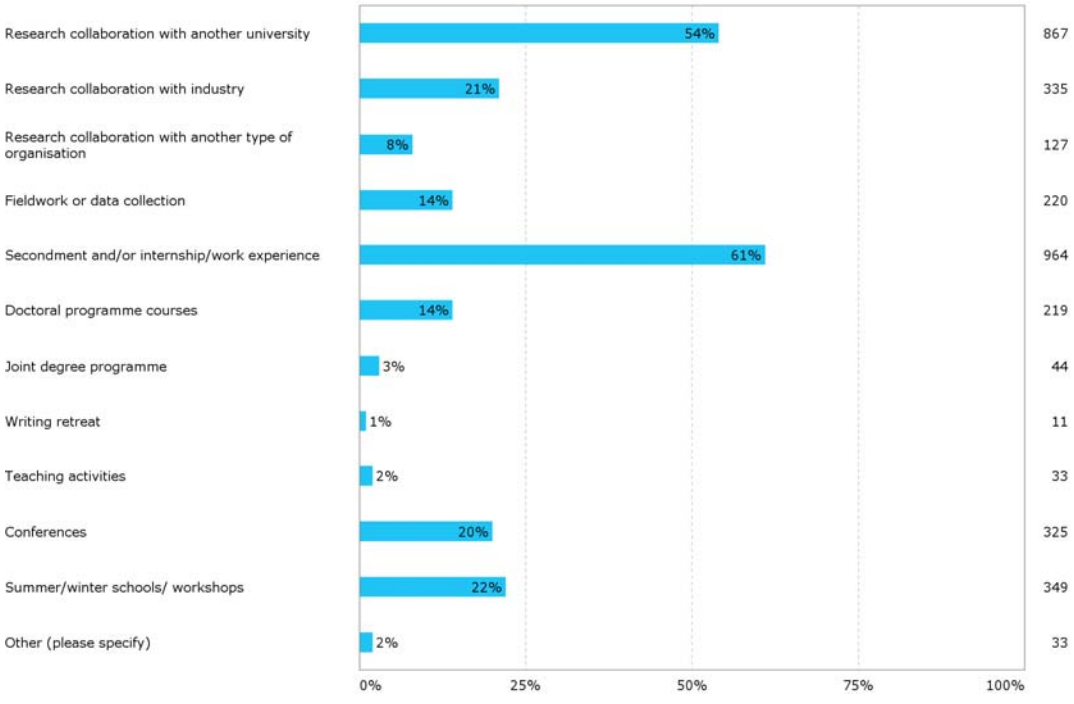
4.4.1. Countries being visited during doctoral education

Respondents showed that Germany was the most visited country during their doctoral education, accounting for 28% of the people who answered yes to having visited any other country for more than two weeks during their fellowship. 24% had visited United Kingdom, 20% France. Italy and Spain each accounted for 15%. 14 % had stayed in the Netherlands, and 10% had stayed in the United States, 9% Belgium, 8% Switzerland, 7% Denmark, and 6% have visited Sweden or Austria as a part of their doctoral training. Eastern-European and non-European countries scored 1% or less as countries in which doctoral fellows stayed for more than two weeks during their fellowship. Most fellows were thus visiting or staying in Southern or Western European countries or the United States as a part of their doctoral fellowship.

4.4.2. Purposes of visits abroad during doctoral education

61% replied that one of the main purposes of these visits was secondment and/or internship/work experience. 54% indicated research collaboration with another university as one of the main purposes for stays abroad. Summer/winter schools and workshops account for 22%. Research collaborations with industry for 21%, and conferences score 20% as being one of the main purposes for visits to countries other than the country of host institution. 14% of respondents said that Fieldwork/data collection and doctoral programme courses were one of the main reasons for stays abroad. Writing retreats only accounted for 1% and teaching activities as 2% as a main reason for stays abroad during the doctoral training. 'Other' reasons were different types of training (research training, ITN training and technical training) as well as project meetings/meetings with supervisor.

Figure 10 Purpose for visits abroad during doctoral education
What was your purpose for visiting these countries? (Multiple choices possible)



74% stated that a period abroad was a mandatory part of their doctoral education. 15% said that a period abroad was not mandatory in their doctoral training, and 11% answered that they weren't sure if a period abroad was mandatory or not.

4.5. Experiences of mobility during the doctoral fellowship

One of the interviewed doctoral fellows explained that as a result of periods of geographic mobility, he had built up a great network, which he saw as a very beneficial aspect of his doctoral education when compared to other doctoral students within his host university:

PhD fellow: *I can see that if I compare myself to other PhD students within the section, the network that I built and the projects that I'm involved in is much more built by myself rather than through my supervisors (…) I think the network that I've built (…) is probably bigger than average. That's definitely something that I couldn't have achieved if I hadn't been in such an environment.*

(Marie Skłodowska-Curie doctoral fellow in Denmark)

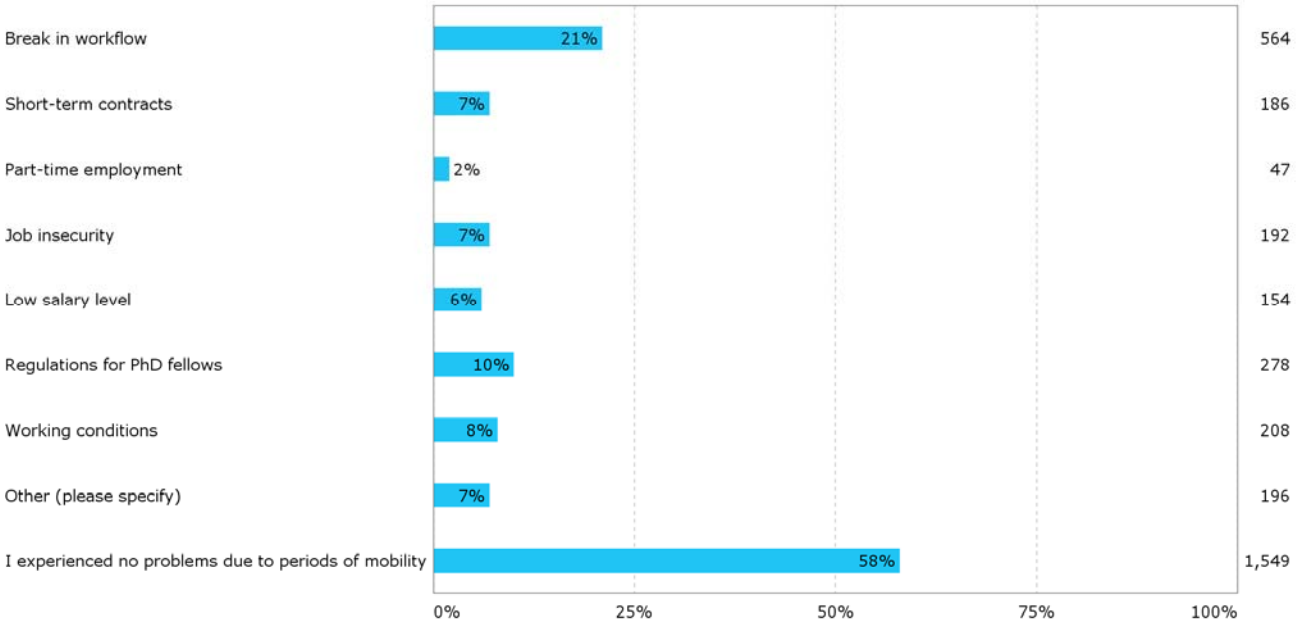
Another doctoral fellow who was from Ukraine, explained that half of the time of her PhD was spent within a company in Spain, yet her fellowship was hosted at a university in Belgium. As a result, she had to move first to Belgium to begin her fellowship and later to Spain for a one-and-a-half-year period to work in a private company. Besides practical issues of moving, she had had to learn a new language twice in the course of her PhD:

PhD fellow: *It's quite challenging when you're changing the country especially if you are not a native to this country. In my case I'm like a snail, I have everything with me, my entire house, I cannot leave anything behind. And as my period* [in Spain] *was quite long, one-and-a-half-years, indeed I needed to transfer myself completely 100%, so this was quite challenging (…) There are also language challenges every time of course. One of the issues, which I mean is a general presence in this mobility, is that it takes time to establish your scientific work. Every time I move I lose a lot of time to start work, to organise my work place, to finish my documents (…) to get all the materials.*

(Ukrainian Marie Skłodowska-Curie doctoral fellow in Belgium)

The doctoral fellow above also highlights that a lot of time is spent on practical or administrative issues when moving between countries, in this case to move to undertake her secondment. This point is backed by the statistical data from the questionnaire in which 21% of fellows stated that a 'break in workflow' was a negative aspect as a result of periods with mobility. From the doctoral fellows choosing 'other' as a response to the question about whether they encountered problems due to periods of mobility, the majority described registration and accommodation issues in the host country; a smaller number of respondents described issues related to tax, pensions, and social security. It is, however, a very positive reply that 58% of fellows did not experience any problems due to their periods of mobility.

Figure 11 Negative aspects as a result of periods of mobility
Did you encounter problems with any of the following due to periods of mobility?
(Multiple choices possible)



In interview, a former fellow explained how she had to travel between Germany and Spain to do secondments and perform tests. She already spoke German but she had to learn Spanish in order to be able to perform the tests. But her host university was in Denmark where she had lived during her fellowship. According to her it was very demanding that she had to take the Danish context into account in the daily life of doing her PhD and as she explained, it would have been better for her had she been hosted in one of the countries where she had to perform tests anyway:

PhD fellow: *I think that for me it would have been better if I had been placed in a country where I spoke the language, or at least a little. Because my project was in German and Spanish, so I had German and Spanish, and Danish in addition. It was really a lot to take in. It would have mattered so much if I didn't have the Danish context and the Danish language in addition (…) I had a colleague who was situated in the UK and he could test English people and he already spoke English (…) So if I compare my situation to his, I feel like there was a lot on my plate. To put it in general terms, it's OK to give people a challenge with travelling internationally but also keep it on a level that people can cope with.*

(Former Marie Skłodowska-Curie doctoral fellow from Holland in Denmark)

4.6. Visa and residence permit arrangements

The majority, 54% said that visa procedures were not applicable to them. A further 36% said they had no problems with visa procedures. However, a substantial minority (11%) said they did encountered difficulties with visa procedures.

Figure 12 Difficulties in visa procedures
Did you encounter any difficulties obtaining visas?

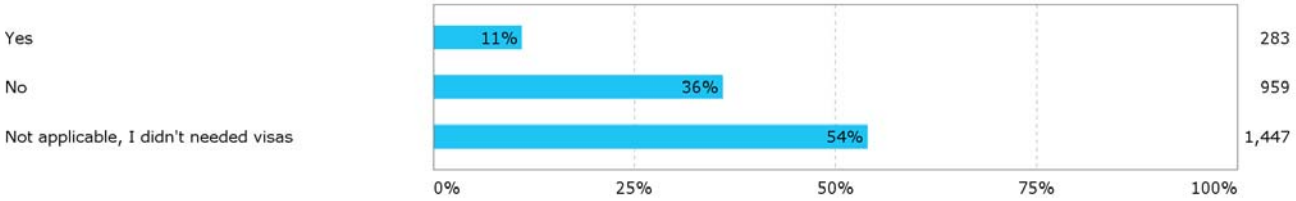
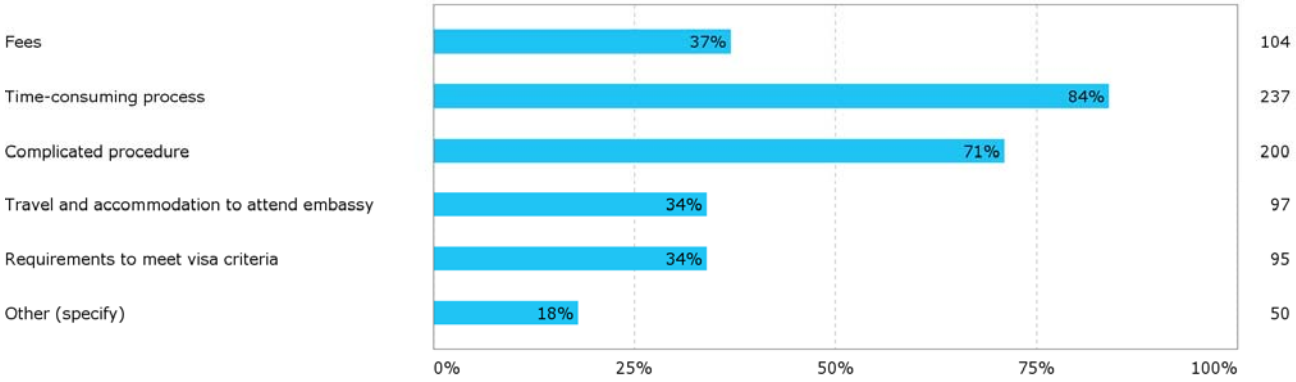


Chart percentage rounded up: Yes 10.5%; No 35.7%; Not applicable, I didn't need visas 53.8%.

Of the 11% who experienced problems in relation to visa procedures there were equal members of respondents who were in the process of doing the fellowship and who had finished their fellowship. The problem was not therefore that some people had less experience with geographical mobility in their doctoral education. Notably nearly all respondents who had problems with visa procedures were nationals of countries outside the Schengen area and the EU. The majority of respondents were European citizens or citizens within the Schengen area (as explained in section 4.2 Nationalities), but even the majority of respondents who were nationals of countries outside Europe and the Schengen area also replied that they had no difficulties with visa procedures.

> *"Now I think it's my hobby collecting documents for visas because it happens really regularly and really for a long time – at some point I was thinking of opening a bureau (…)"*
> (Doctoral fellow in interview)

Figure 13 Issues of obtaining visa
What were the difficulties of obtaining visas? (Multiple choices possible)



Of the 11% who reported difficulties with visa procedures, 84% said it was because of the time-consuming process of getting a visa. The other main issue was that visa procedures were very complicated. Roughly a third of the fellows experiencing visa issues had difficulties relating to fees and the need to travel and find accommodation in order to attend an embassy or difficulties relating to fulfilling the requirements to meet the visa criteria. 18% of the fellows having visa difficulties replied 'other' issues. These issues were in the

questionnaire mainly explained as lack of information from the host university, a strained relationship between nation states or an experience of being stuck in the system. One fellow explains:

> *"My passport is currently being held hostage by a subcontracting agency in Warszawa that does the consular work for UK's government. Since February I don't have my passport. Now it is May. They said it only lasts 15 working days. This is a bit more than 15 working days. Soon I will have to travel to a project meeting in Denmark but I don't have my passport with me. I cannot travel back to my country of origin. I am currently stuck in foreign country without the required documentation".*
>
> (Doctoral fellow's comment in questionnaire)

The qualitative data from interviews with fellows who were in situations where they needed to get a visa during their doctoral fellowship confirms the difficulties of visa procedures explained in Figure 13. A Ukrainian who needed a visa to do her doctoral fellowship in Belgium explained about the hassle she had to go through to first get her visa:

PhD fellow: *The biggest challenge for me was being Ukrainian …and bureaucracy to get the visa. Because of the organisation of the European Union, unfortunately the system of visas between countries is still not unified (…) I provided all the documents, nevertheless, from September to January I had no news from them* [the embassy] *, and I had no valid visa, that's why I couldn't move from country to country (…) Within this period of three months I had no visa and no permit to leave Belgium,* [could] *not to visit my friends outside, not visit my family, not move for work, in fact I missed a few scientific meetings of Marie Skłodowska-Curie because I couldn't attend them (…)The point is at that they gave me no visa at all; I was completely illegal as there was a mistake in the documents on their side. They were not dealing with them until my professor started calling them, because they didn't ask me as Ukrainian. So I cannot say I had a good experience with European bureaucracy.*

As this example portrays, some fellows have to go through an extensive period of bureaucracy to legalize their stay in the host country – some even experienced being forced to stay illegally or being prevented from participating in meetings within the project, relevant conferences etc. Another issue was that countries used different categories for doctoral fellows, e.g. 'student', 'researcher/employee', which had the consequence that fellows faced different visa procedures when moving to a new host country during the fellowship to undertake secondments:

PhD fellow: *(…) It would be more than logical to have one visa according to the contract (…) my big pain is visas. I applied for a visa in Spain but there I needed a different category of visa as in Spain I was a scientist so I needed a working visa – a worker's permit. Only the company can file this. We experienced some issues with communicating with the lawyer company who was providing the services for the company (…) In the end I got my permit one week before moving. So I didn't know if I would be deported to Ukraine together with my entire luggage or if I would be allowed to go to Spain in the last moment (…) People just do not know how to apply, where, and what is necessary. Sometimes the embassies themselves do not know which documents they want (…) Well now I think it's my hobby collecting documents for visas because it happens really regularly and really for a long time – at some point I was thinking to open a bureau in helping with this because honestly these things can be more automatized*

and they can be much easier, nevertheless, each embassy has their own requirements, which are changing within the application process.

(Marie Skłodowska-Curie doctoral fellow at University of Antwerp, Belgium)

Another doctoral fellow who was from Germany and whose husband was from Ecuador told the story of how her family decided to move to Europe after having lived together in Ecuador for a few years. This implied a lot of uncertainty for their family as she was pregnant with their first child. They again faced insecurity during visa processes when they had to move to Spain for her to begin her doctoral fellowship:

PhD fellow: *It's an absolute nightmare to be in Europe with a non-European husband and trying to stay with him (…) It* [the visa procedure] *was all a bit difficult and we never knew if he would get the visa and be there when I was going to give birth to my first daughter (…) If I didn't find my own paperwork too difficult, even though it also took a while for me to understand how I get health insurance here* [in Spain] *and how to register (…) but what really kept me busy for like the first year of my contract was my husband and my daughter and also arranging their residence permit and health insurance (…) So that was really a big problem for us to make sure to legalize his coming with me and then all the paperwork to get installed here as a family.*

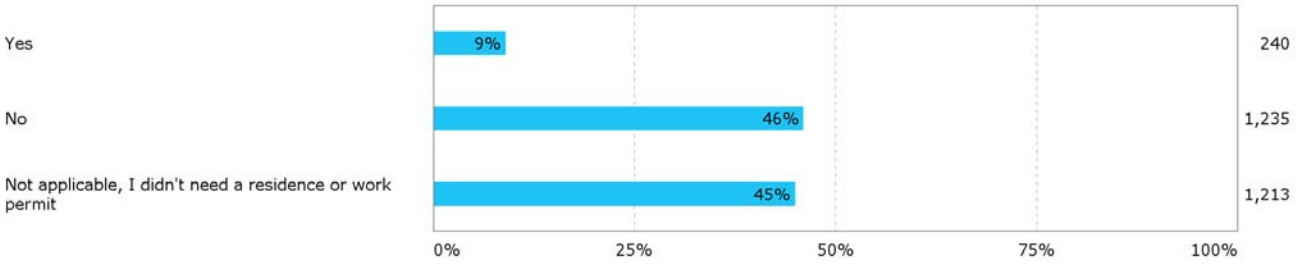
(German Marie Skłodowska-Curie doctoral fellow in Spain)

As we see in the above example, visa procedures are in many cases not just an issue doctoral fellows experience one time in the beginning of their fellowship. Many have a background in which they have already been mobile and living in different countries during their higher education, careers, and for other personal reasons. Visa processes, with long periods of waiting and insecurity, restrictions on travelling and expenditures for visa applications are thus a reoccurring issue in many people's lives.

Similar to difficulties of visa procedures, 9% of respondents reported having experienced difficulties with residence permit procedures. Likewise, the majority of all the respondents replied that they experienced no difficulties or did not need a residence or work permit (combined 91%).

Figure 14 Difficulties in residence permit procedures

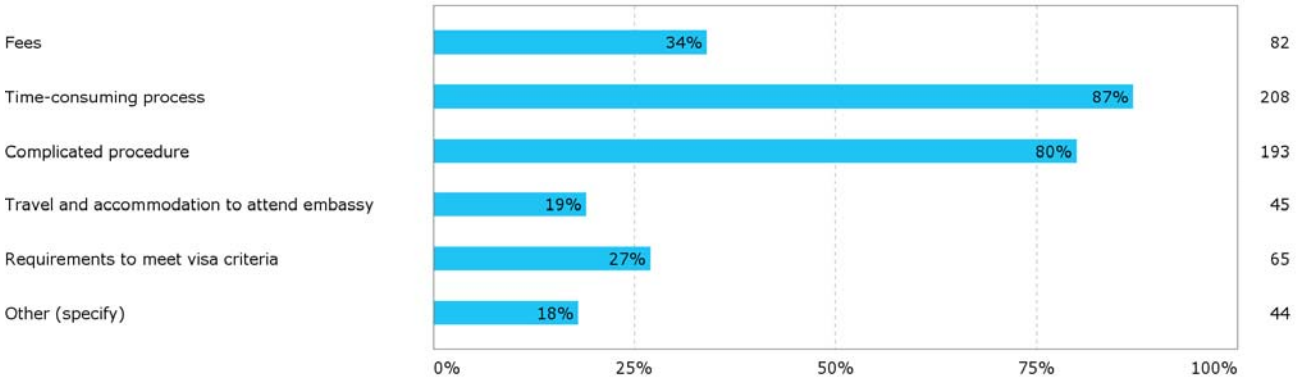
Did you encounter any difficulties obtaining a residence permit or work permit?



The issues creating difficulties with residence and work permit procedure are in broad terms the same as for visa procedures. Figure 15 shows that for the 9% of doctoral candidates that experienced difficulties with residence and work permit procedures, the main issues are the time-consuming process and the complicated procedures, which 87% and 80%, respectively, find difficulties with. 34% reported fees in relation to resi-

dence permit procedures to be an issue. Requirements to meet visa criteria is reported by 27%, and 19% reported issues of travel and accommodation to attend the embassy to be a difficulty in obtaining their residence or work permit.

Figure 15 Issues of obtaining residence permit
What were the difficulties of obtaining a residence permit/work permit? (Multiple choices possible)



From the people replying 'other', many explained that they met language barriers either in their communication with the international officers at their host institution or at the embassy or local authorities in the host country. Many also reply that they lacked more information about the procedures at their host university. Several of the fellows also explained that they had to renew their residence permit every six or 12 months, and each time was a time-consuming process that brought along periods of anxiety. One fellow elaborates on this in interview:

PhD fellow: *(…) In Italy you need to renew your residence permit every year, which means that through the three years, every year I was doing the same process. Which for me was absolutely worrying because I was renewing my residence permit three times and it takes time because most of the things I had to do personally.*
(Former Marie Skłodowska-Curie doctoral fellow from Colombia in Italy)

Beyond the insecure and disruptive period of getting a residence permit, the requirements of living and working in EU countries have much more far-reaching consequences for some fellows. An Indian fellow explained in interview how his stay in various European countries had been based on temporary study and residence permits for nearly a decade. He first moved from India to France to do his master degree. During his master he lived in three different European countries as his master was part of an Erasmus Mundus Programme. After the master he got a job at a university in Germany and lived here for two-and-a-half-years before moving to a different European country to start his doctoral fellowship. All of these stays implied temporary residence permits. As a consequence of his residence permit being conditional to his employment in the host country, he explained that he did not know if he would be able to stay in the host country after the completion of his PhD, or if he would have to move to another European country or back to his home country. Though the Indian fellow overall saw his mobility experiences from the countries he had lived in as a great benefit to both his professional and personal life, he also explained that the temporary residence permits had led him to postpone building a family as his situation was continuously on temporary

basis. His example displays how insecure career prospects as well as continuous and extensive periods of geographical mobility can have drastic personal consequences for fellows, when residence permits are tied to temporary study stays or temporary employment. In combination with an international job market that increasingly hires people on temporary contracts, this leads to widespread challenges – especially for non-EU citizens.

4.7. Arrangements for accompanying family members

When asked if they experienced any difficulties in making arrangements for a partner or children, 72% answered that this question was not applicable to them. As stated in 3.1 Gender and age, 61% of the respondents were 26-30 years old and the majority was single and did not have children (as seen in Figure 16 and Figure 17 below). 21% replied that they did not have any problems making arrangements for their close family. Only 8% of Marie Skłodowska-Curie doctoral fellows had experienced difficulties of making arrangements for their partner or children.

Figure 16 Family situation
What is your current family situation?

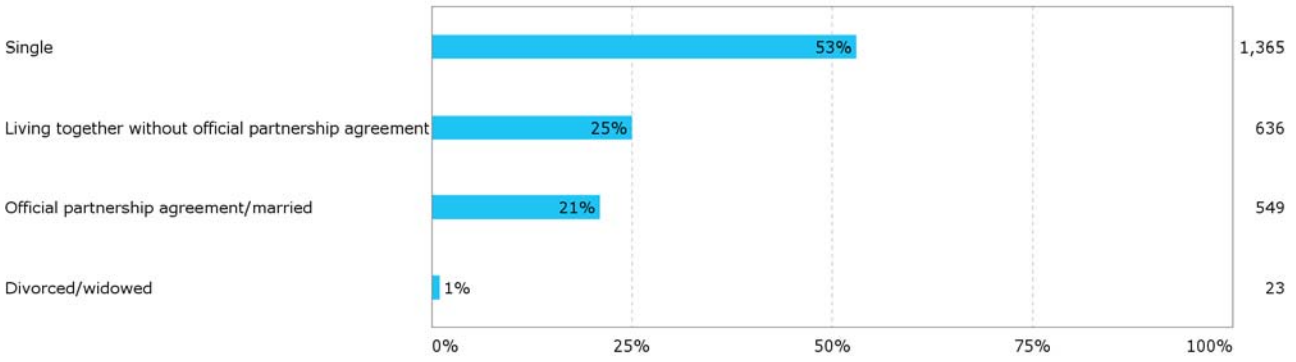


Figure 17 Dependent children
Do you have dependent children?

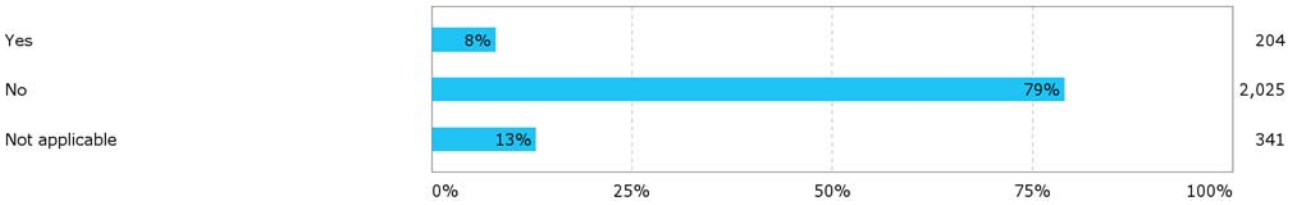


Figure 18 Difficulties in making arrangements for family members
Did you have any difficulties in making arrangements for your partner and/or children?

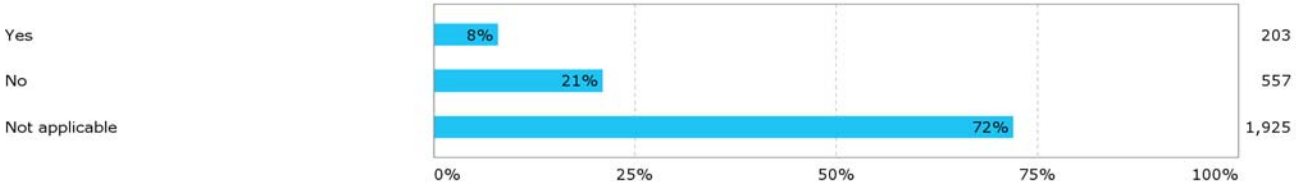
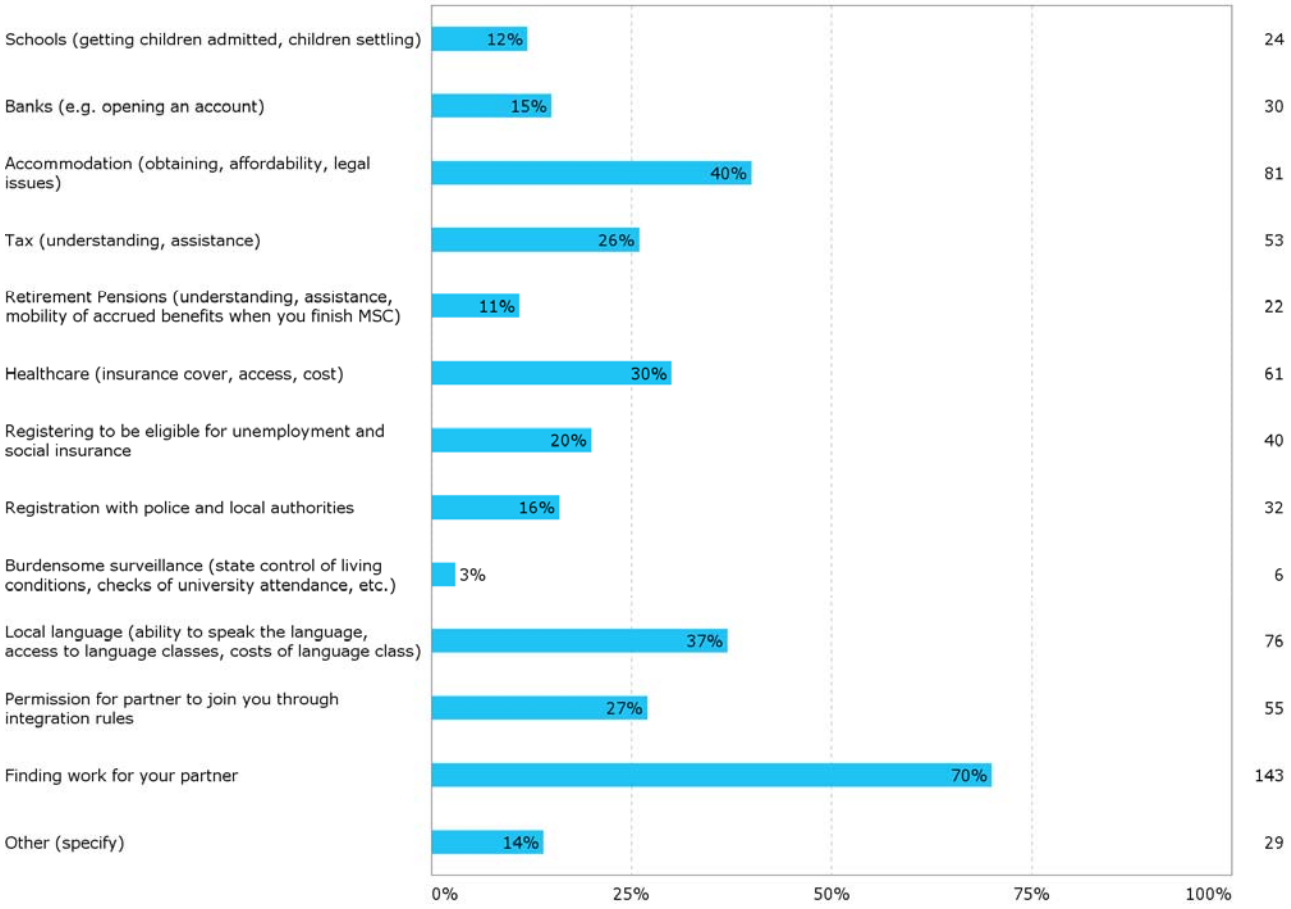


Chart percentage rounded up: Yes 7.6%; No 20.7%; Not applicable 71.7%.

For the 8% experiencing difficulties in making arrangement for their close family members, Figure 18 shows that the most significant obstacle was finding work for their partner 70% reported this as a difficulty. Finding accommodation was the second most identified difficulty, which was reported by 40%. Local language was another of the big issues in relation to making arrangements for partner and children. Healthcare including insurance cover was also an issue for many (30%). Only 12% of respondents stated schools (e.g. getting children admitted and settled) as a difficulty. However, difficulties in getting permission for a partner to join the doctoral fellows was alarmingly high, reported as a problem for nearly a third of the respondents experiencing difficulties with making arrangements for their family members.

Figure 19 Difficulties of making arrangements for family members
What were the difficulties of making arrangements for your partner and/or children? (Multiple choices)

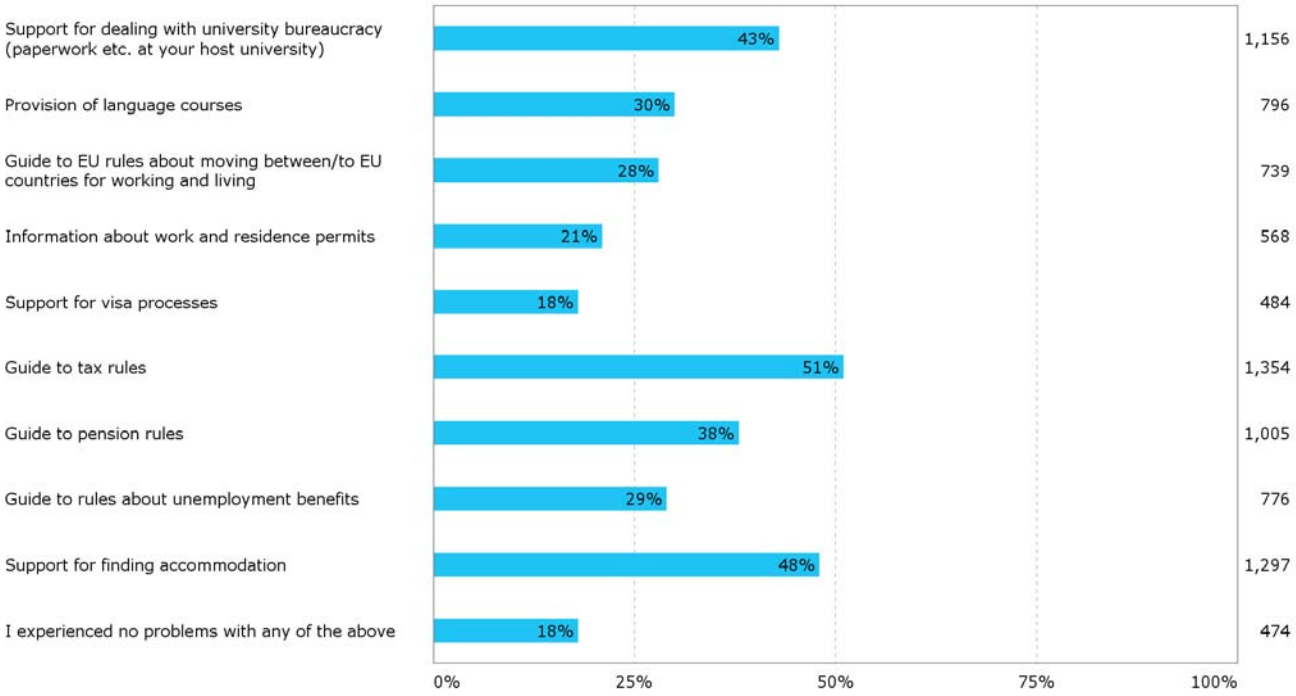


4.8. Factors that would improve geographic mobility experiences

Most respondents identified a guide to tax rules to be a factor that would have improved their mobility experience (51%). Another significant factor for improvement of geographical mobility was support for finding accommodation (stated by 48%). Many would clearly also benefit from support for dealing with university bureaucracy (paperwork etc. at host university), which was chosen by 43%. Also significant is that 38% of respondents identify a guide to pension rules as a factor that would make their mobility easier. This indi-

cates that many Marie Skłodowska-Curie doctoral candidates find it hard to navigate the national and transnational rules of pension and tax and there is a greater need for information and support about these.

Figure 20 Factors that would make geographic mobility easier
Would any of the following have made your mobility easier? (Multiple choices possible)



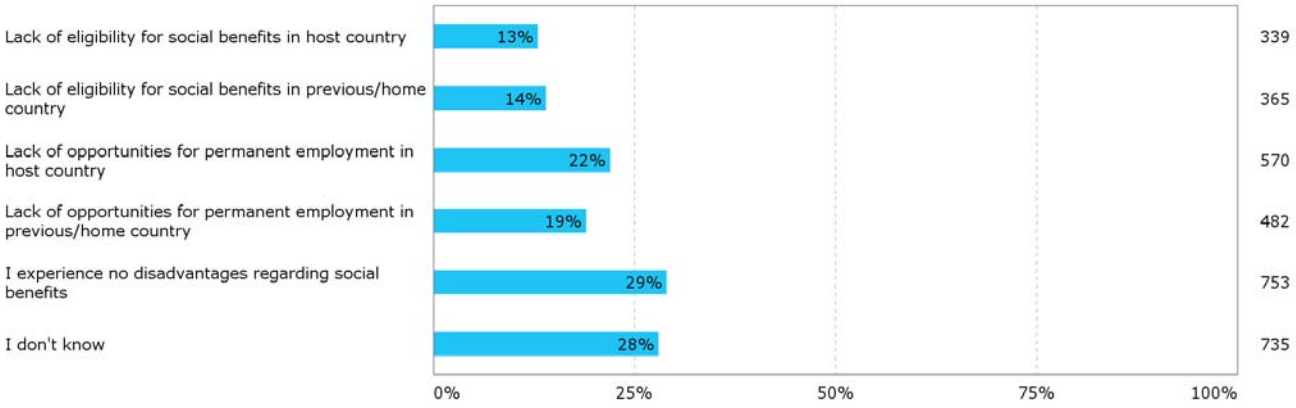
4.9. Disadvantages of geographical mobility for income and career

Under this topic, it is most significant that 28% of Marie Skłodowska-Curie doctoral fellows did not know if there were any disadvantages for their income and career of moving as a part of their doctoral education. 29% replied that they experienced no disadvantages regarding social benefits. The people who either did not know or experienced no disadvantages for their income and career as a result of their geographical mobility constituted nearly 60% of respondents. It is worth considering whether respondents in the beginning of their doctoral fellowship encountered fewer of the listed disadvantages. However, the data for the group of respondents who had finished their PhD fellowship revealed that the figures are more or less the same for these respondents.

Looking at it from another perspective, this also means that for certain, 40% experienced disadvantages for their income and career due to moving in connection with their doctoral education. 22% of respondents thought lack of opportunities for permanent employment *in the host country* to be a problem. 19% experienced lack of opportunities for permanent employment *in home country/or previous country* an issue. Lack of eligibility for social benefits in host country was identified by 13% and lack of social benefits in previous/or home country were chosen as one of the disadvantages of moving by 14%. The data thus showed that Marie Skłodowska-Curie doctoral candidates mainly experienced disadvantages for their income and

career in relation to job opportunities for permanent employment, whereas fewer people experienced disadvantages in terms of social benefits.

Figure 21 Disadvantages of geographical mobility for income and career
Are there any disadvantages of moving for your income and career? (Multiple choices possible)

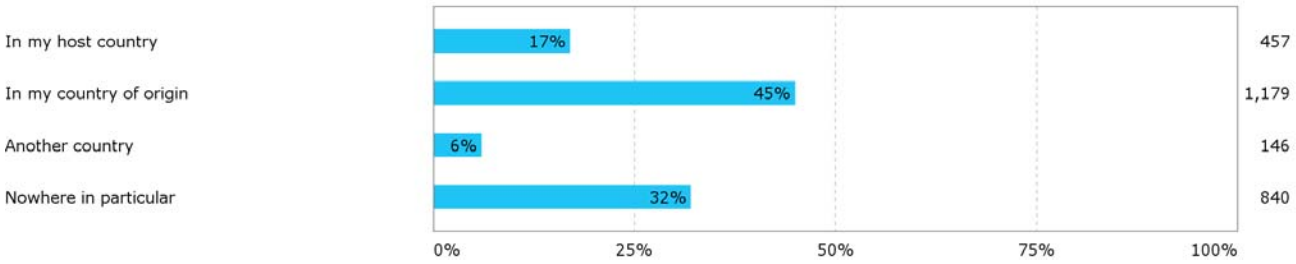


4.10. Feeling at home

In the questionnaire, the fellows were asked what makes them feel at home. Being aware that the term 'home' can have many different interpretations, we were trying to get an understanding of what determining factors people associate with the feeling of being home. 45% of respondents replied that they mostly feel at home in their country of origin. But, interestingly, 32% replied that nowhere in particular makes them feel at home. 17% replied that their host country is the place where they feel most at home.

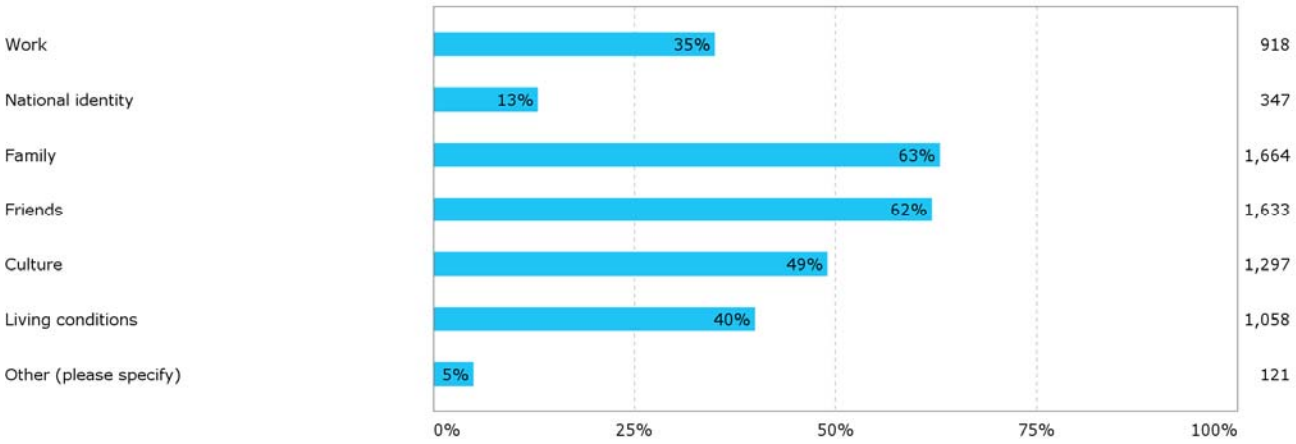
"Excessive amount of "mobility" means that I no longer feel at home in my home country, in the country that I am staying for the fellowship, or in the country I went for my secondment"
(PhD fellow in questionnaire)

Figure 22 Feeling at "home"
Where do you feel most at home?



In the question about what determines where someone feels most at home, most respondents placed family and friends as the key factors, chosen by 63% and 62%, respectively. Culture is also one of the most popular factors to make someone feel at home, chosen by nearly half of all the respondents in the survey. Living conditions and work are almost equally strong determining factors for the feeling of being home. Only 13% state national identity to be one of the main factors, indicating that our world has become more fluid and transnational in terms of identity creation and the feeling of belonging to a certain country.

Figure 23 Factors determining the feeling of being "home"
What determines where you feel most at home? (Choose max. 3 options)



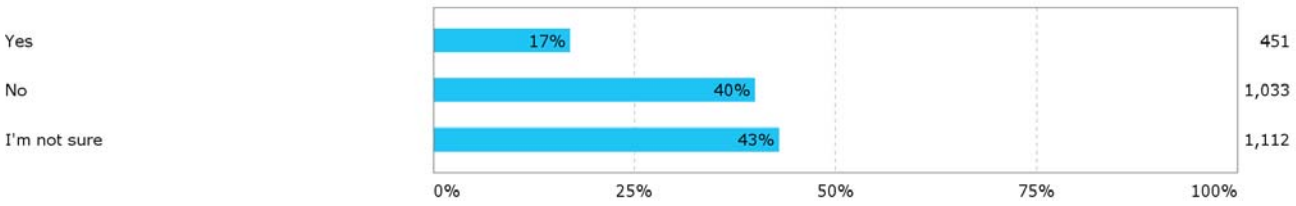
4.11. Geographical movement after ended doctoral education

We asked the question whether there would be negative consequences for the respondents' career if they returned to their home country after finishing their fellowship. 40% answered that they did not, or did not expect to experience negative consequences for their career. 43% answered that they were not sure, but 17% replied that there were, or they expected that there would be negative consequences if they returned to their home country or the country they were living in before the fellowship.

> *"Italy* [home country] *doesn't value* [a] *PhD degree at all. If you have a PhD you have fewer chances to get a job."*
> (Doctoral fellow in questionnaire)

4.11.1. Negative consequences for career life if returning home

Figure 24 Negative consequences for career if returning to home country
Will there be/Were there negative consequences for your career if you return/-ed to your home country or the country you were living in before the fellowship?



For the people who replied yes, their explanations are mainly in relation to job insecurity and lack of professional recognition, and some fellows also mentioned pension, taxation, and health insurance complications:

> "*I moved back to my country of origin. The result: a gap in my CV. I was unemployed with absolutely no benefits (no money, no social security, no access to health services). On multiple occasions, I have been STRONGLY advised to move elsewhere if I wanted to pursue a career in science*".
>
> (Comment in questionnaire by a Belgian doctoral fellow in the United Kingdom)

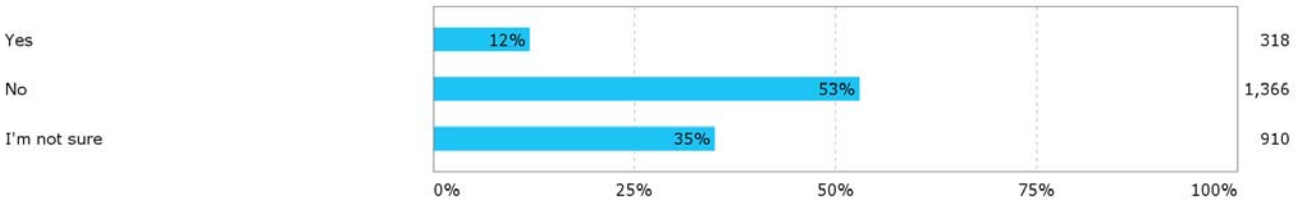
> "*There are no real investments in my home country for my field of expertise, so I expect all my training to be in vain if I return to Algeria*".
>
> (Comment in questionnaire by an Algerian doctoral fellow in France)

> "*Part of the pension will not be transferred and unless I stay in UK for at least 10 years I have no entitlement to it at pension age (…) Health insurance sometimes goes along with pensions, generally moving to another country has implications to what is covered, regardless of the high amounts paid (unless private) (…) Taxation; double taxation is an issue when changing countries, practically UK treats us as residents for tax purposes and we are liable for the year of moving (thus salary from the new country is liable for tax in UK). The same applies for the new country, salary earned in UK is either taxed or taken into consideration when identifying* [the] *tax band*".
>
> (Comment in questionnaire by a Greek doctoral fellow in the United Kingdom)

4.11.2. Negative consequences for personal life if returning home

Regarding negative consequences for personal life if a doctoral fellow wants to move back to his/her country of origin or to the country they were living in before the fellowship, 53% of respondents replied they don't experience any negative sides to this. 35% replied that they did not know, but 12% replied that they did experience, or expected to experience negative consequences.

Figure 25 Negative consequences for personal life if returning to home country
Will there be/Were there negative consequences for your personal life if you return/-ed to your home country or the country you were living in before the fellowship?



Also here, respondents report that job insecurity is a major factor affecting their personal lives. Considerations of pension rules and social security are likewise general factors affecting the personal life of fellows. Many fellows also mentioned that they have met their partner or built other social ties as a result of their geographical mobility and therefore now have personal restrictions on moving back to their home country or the country they were living in prior to the fellowship:

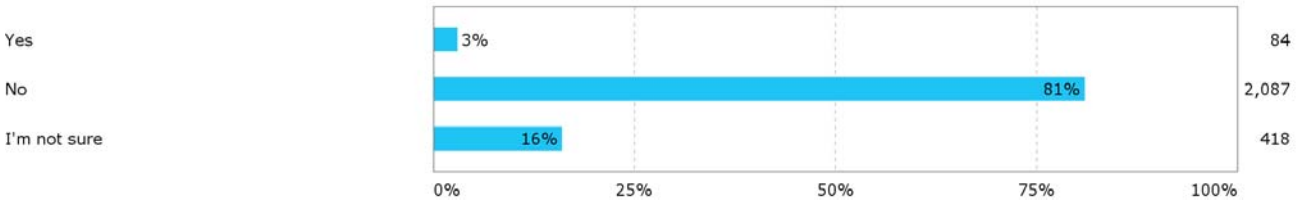
> "*My partner is from my host country. All of my friends are living in my host country. I have built my life from scratch, and I like* [the] *people I am surrounded with now. Going back would mean starting over again. Even though my family still lives in my country, visiting them from time to time is enough. My life is here now*".
>
> (Comment in questionnaire by a Serbian doctoral fellow in Spain)

> *"As a consequence of the issues listed before (fewer) career opportunities, lower salaries) I think this would turn into a frustrating life. I think I would struggle if I go back to Italy. This would affect my personal life as well. So issues not strictly related to family/friends but as a consequence of the bad job situation for high skilled workers".*
>
> (Comment in questionnaire by an Italian doctoral fellow in the United Kingdom)

4.11.3. Obliged to move due to funding regulations

To the question about whether funding regulations restricted fellows moving to another country after completing their fellowship, 81% replied that there are no funding regulations restricting them to move from the host country. However, 16% replied that they were not sure, indicating that there is a lack of knowledge regarding funding regulations. Only 3% replied that they were obliged to move due to funding regulations.

Figure 26 Obliged to move due to funding regulations
Are/were you obliged by funding regulations to return to another country when you finish/-ed your Marie Skłodowska-Curie doctoral education?



This 3% generally mentioned visa and residence permit restrictions being the reason why they had to leave their host country. Many had to leave the host country as their visa or residence permits end together with the termination of their fellowship.

The regulations of Marie Skłodowska-Curie actions (as explained in section 2.1 Survey population) is also a factor determining if a fellow will have to move country after completing their doctoral fellowship:

> "*I cannot apply for Marie Skłodowska-Curie fellowship to pursue post-doctoral programme in the current host country* [Spain] *as I am working here for more than 12 months in the last 3*

years. In case of non-availability of prestigious grants in the host country, mobility to other countries is extremely likely".

(Comment in questionnaire by an Indian doctoral fellow in Spain)

4.11.4. Mobility after the end of doctoral education

We asked the 32% of the total number of respondents who had finished their doctoral education whether it was possible for them to stay in their host country after finishing their doctoral education and build a career and life. 37% of these stated that they were able to stay in their host country and continue their career. 32% replied that they did not know it was possible for them to stay. But 12% reported that they had to move back to their home country or the country they were living in before the fellowship. Yet, the data also reveal that 18% of the fellows who had completed their doctoral education moved to yet another country to continue their career.

Figure 27 Obliged to move due to funding regulations

After finishing your Marie Skłodowska-Curie doctoral fellowship, was it possible to stay in the country of your host institution and build a career and life?

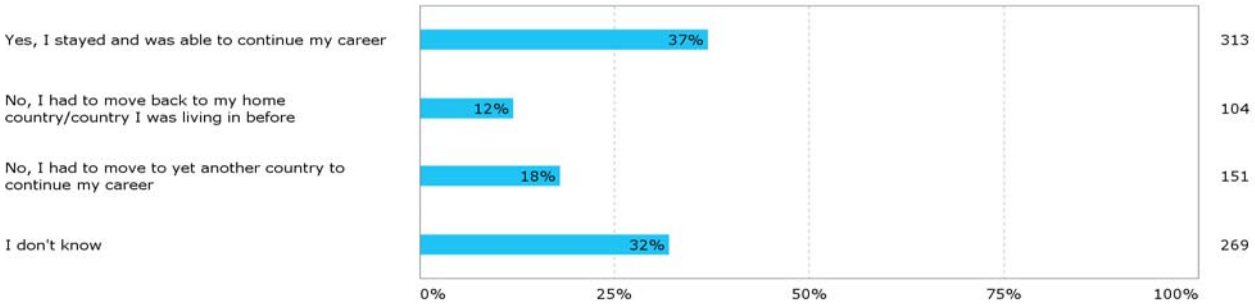
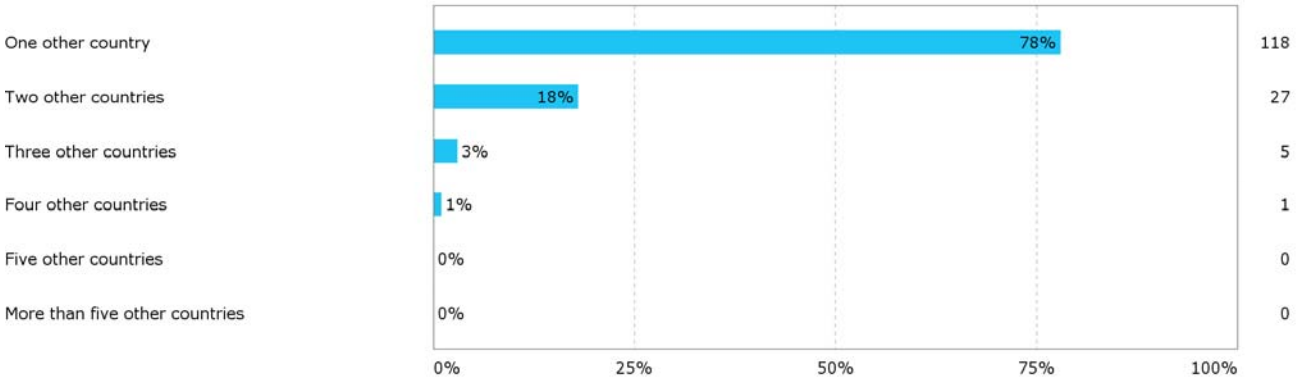


Chart percentage rounded down: Yes, I stayed and was able to continue my career 37.4%; No, I had to move back to my home country/country I was living in before 12.4%; No, I had to move to yet another country to continue my career 18%; I don't know 32.1%.

Of the 18% of respondents who stated that they had moved to yet another country, we asked how many countries they had moved to after completion of their doctoral education. The largest group of fellows had moved to one other country for more than three months (78%). 18% replied that they had lived in two other countries, and a few had lived in three or four other countries.

Figure 28 Number of countries lived in after completion of fellowship

You have indicated that you moved to yet another country after finishing your Marie Skłodowska-Curie doctoral fellowship. How many other countries have you lived in (for more than three months) since completing your doctoral fellowship?



Nearly 20% of fellows thus face the challenge of having to move to yet another country, which is neither their home country, nor their host country. This indicates that almost 20% of fellows need to prepare themselves for a continued mobile life and career, for whom almost 90% move to one or two other countries.

4.12. Conclusion

Most fellows held their fellowship in either the United Kingdom or Germany, while 18% of fellows originated from Italy, 8% from Spain, and 7% from Germany and India. Excluding the Indian fellows, the pattern was that the majority of doctoral fellows was of Central or Southern European nationality and did their fellowship in a Western European host country. Very few held their fellowship in an Eastern European or non-EU host country.

In keeping with the EU funding requirements, fellows could not be appointed in a country in which they had lived more than 12 months within the past 36 months. Therefore all fellows had moved country on appointment. In interviews, fellows expressed that there were many practical issues involved in moving to their host country, mainly in terms of bureaucratic paperwork. Informal assistance from close colleagues seemed to be one of the sources where fellows gained much of the information that they needed. Psychological hurdles of moving away from family and friends and establishing a new network in the host country were also highlighted – some fellows experienced a feeling of compromising between private life and professional aspirations. In interviews, it was also evident that some fellows, typically those who had a partner or a family, sought to reconcile their professional and private life. The fellows seemed to navigate between their own and their partner's aspirations for professional careers and practical considerations of how to be able to live together or close to one another. These challenges were further complicated by visa regulations and requirements to obtain residence permits if fellows and/or their partners were non-EU nationals.

Only fifty-five percent of respondents had visits of more than two weeks duration during their fellowship, which is surprising as the Marie Skłodowska-Curie Actions emphasise periods of secondment stays abroad

(away from the host country) during doctoral training. Of these, 38% had stays in another country of 3-6 months duration and 12% had stays abroad of 7-12 months duration. The fellows mainly had stays abroad in Germany, the United Kingdom, France, Italy, Spain, the Netherlands or the United States. Fellows thus mainly visited or stayed in Southern and Western European countries or the United States during trips abroad as a part of their fellowship. These trips were mainly for the purpose of secondments or research collaborations with another university. As a positive finding, 58% of fellows replied that they experienced no problems due to these periods of mobility. The main problem that other fellows experienced was a break in workflow.

Eleven percent of fellows experienced issues with obtaining visas. These issues were mainly concerning a time-consuming process, complicated procedures, and fees. The pattern is similar when it comes to residence permits. Here 9% of fellows had experienced difficulties, and the issues were also mainly in connection with the time-consuming process, complicated procedures, and fees to obtain a residence permit. In interviews it was clear that the fellows who faced obstacles with visa and residence requirements, mainly non-EU citizens, spent a lot of their time and energy of getting these procedures settled. Many fellows have to go through these procedures several times during their fellowship, either to prolong their residence permit or acquire a new visa when having stays abroad as a part of their doctoral training. One of the greater challenges was that different European countries have different requirements of obtaining a visa or residence permit. Another issue is that fellows were considered to belong to different visa and residence permit categories in different countries: In one country, a doctoral fellow was considered a student; in other countries an employee. These different categories demand different requirements and procedures for obtaining the visa or residence permit. To many doctoral fellows, visa and residence permit-related issues were a considerable challenge that they spent a lot of time and energy on sorting out. Furthermore, the visa and residence permit procedures were connected to extensive uncertainty in fellows' daily lives, both when planning trips and stays during their fellowship, when attempting to reconcile their professional and private life as well as when planning for future career paths. In fact, it was clear from the interviews in this survey that visa and residence requirements and regulations transcend the procedure for obtaining them and enter into many other aspects of the respondents' daily lives as doctoral fellows in terms of ability to travel for conferences and events as a part of their doctoral training, staying in another country for undertaking secondment periods/research stays/industrial collaborations etc., being able to live with their partner, and career possibilities in future.

Although the majority of fellows taking part in the survey was single (53%) and only 8% had dependent children, 8% had experienced difficulties with making arrangements for their partner and/or children. 70% of these had difficulty finding work for their partner. The other main issues of making arrangements for partner and/or children were related to local language and accommodation. The respondents also said that there was a general lack of information and guides to tax and pension rules. Many Marie Skłodowska-Curie doctoral fellows had found it hard to navigate the national and transnational rules of pension and tax and there is a greater need for information and support about these.

Seventeen percent of respondents stated that there would be negative consequences for their career if they returned to their home country after the fellowship (43% were not sure about this). These negative conse-

quences were mainly in relation to job insecurity, lack of professional recognition, tax, and health insurance complications. 12% stated that there would be negative consequences for their personal life if they moved back to their home country. Some fellows had met a partner in their host country or had built other strong networks, other fellows pointed out the connection between professional and personal life, for example that job insecurity would lead to unstable income and this would also affect their personal life.

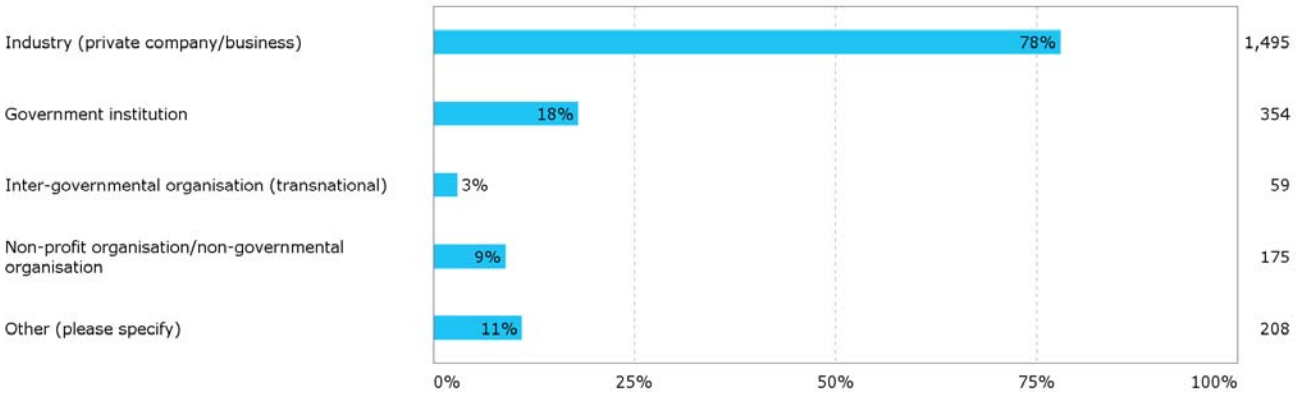
Of the fellows who had already finished their fellowship at the time of filling in the questionnaire, 37% replied that they were able to stay in their host country and continue their career. 18% of the completed fellows had moved to yet another country to continue their career. The geographically mobile life thus continued for these fellows after the completion of their fellowship.

5. Intersectoral mobility

51% of fellows who had completed their PhD and 73% of fellows who had not yet completed their PhD stated that their doctoral education included collaborations with another sector (altogether only 66% of all fellows had intersectoral mobility during their doctoral education). 67% of these respondents stated that an intersectoral collaboration was a mandatory part of their doctoral programme. However, 6% said that the intersectoral collaboration was at their own initiative, and 27% replied that their intersectoral collaborations were organised in different ways – some organised as a part of their doctoral training, others at their own initiative.

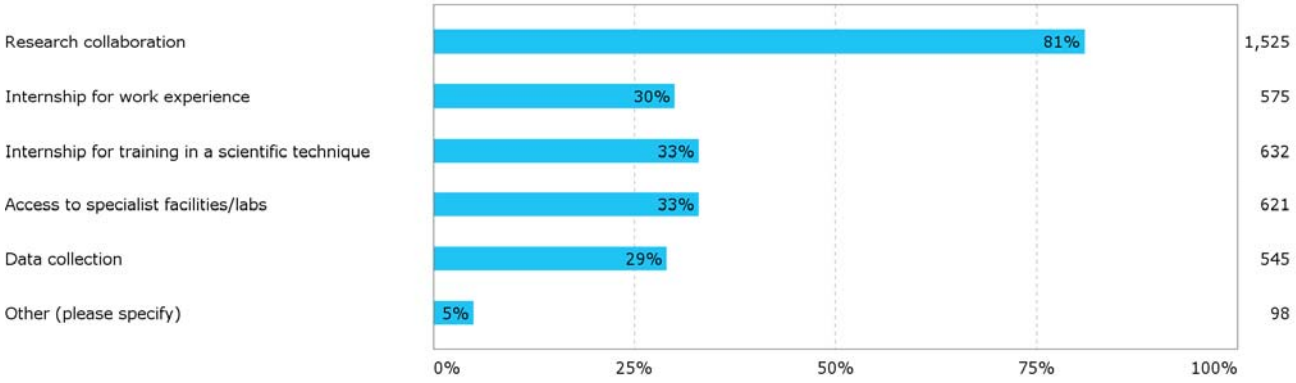
By far the largest type of intersectoral collaboration was with industry. 78% of the fellows who had intersectoral mobility, collaborated with industry (private company/business). 18% collaborated with a government institution and 9% with a non-profit/non-governmental organisation. Only 3% report that their intersectoral collaboration was with a transnational, intergovernmental organisation. For 11%, their intersectoral collaboration fitted an 'other' category. Many of the respondents who chose the 'other' category, explained that their fellowship was based at a company and that their intersectoral collaboration was therefore with a university or another research institute. Other respondents replied that they had been collaborating with research institutions, hospitals, immigration organisations/associations, a think tank, and a museum, which did not fit the categories suggested in the questionnaire.

Figure 29 Type of organisation for intersectoral collaboration
Please specify the type of organisation you were collaborating with: (Multiple choices possible)



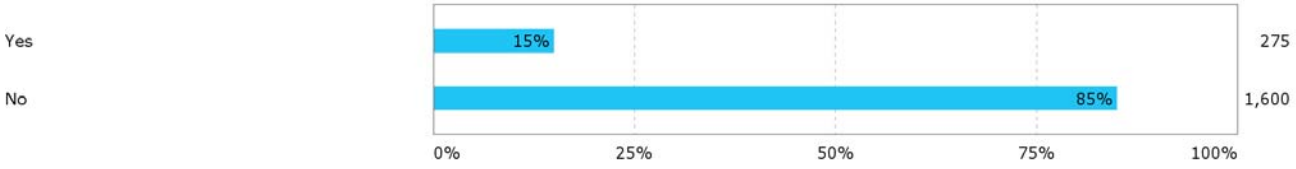
The main reason for intersectoral mobility is research collaborations, which 81% stated was a part of their intersectoral collaboration. Internship for work experience or training in a scientific technique, access to specialist facilities such as labs, and data collection seem to be equally important in periods of intersectoral mobility. These are all identified by around 30% of respondents as being included in their intersectoral collaborations.

Figure 30 Types of intersectoral collaborations
The intersectoral collaboration included...: (Multiple choices possible)



A significant finding was that generally Marie Skłodowska-Curie doctoral fellows had positive experiences and outputs from their intersectoral mobility experiences. 85% of fellows replied that there were no negative aspects of their intersectoral collaborations.

Figure 31 Negative aspects of intersectoral collaboration
Were there any aspects of this intersectoral collaboration, which were not beneficial to your doctoral training?



5.1. Gains from intersectoral collaboration

From the above statistic we see a clear picture that the majority of fellows have positive experiences from intersectoral mobility. The majority of doctoral fellows described their gains from collaborations with other sectors as great work experience outside academia and the benefit of learning new scientific qualifications and technical skills. Many also described getting new perspectives on their research, getting access to crucial data for their PhD project and benefitting of getting hands-on knowledge of their research in practice.

> *"I had the chance to experience working outside academia. It was refreshing, useful and fun. I realised that, despite the fact that what I did during my secondment was only remotely related to the Ph.D. topic, the training in the lab had given me the skills necessary to deal with more practical activities. Therefore, I would say that the industrial secondment was 1) a good test for my Ph.D. training in terms of attitude to problem solving and that 2) by getting a positive feedback from the employees in the industry I became more confident about my skill-set and how my expertise can be appreciated by the non-academic world".*
>
> (Comment in questionnaire by an Italian doctoral fellow in the United Kingdom)

More than 400 doctoral fellows described the positive gains from their intersectoral mobility, which can be summed-up as follows:

- Work experience outside academia
- Scientific and technical qualifications/skills
- New perspective, broader view of research field
- Research in practice
- New data
- Increased networking
- Experience of working in a different culture (country, language, work culture)
- Insight into different working environments
- Joint publications
- Career development

A fellow explained about her experiences of collaborating with a managing agency within the civil protection in Italy as a part of her PhD. The management agency had the function as end user of the research that the fellow was working on; therefore the fellow had many meetings with the agency during her doctoral training:

PhD fellow: *(…) I worked with them* [managers in civil protection] *so that what I did was useful for what they needed. I was trying to help them with their management issues, so I needed to understand what their problems were, how my research interests fitted into those problems and also look for an alignment (…) I gained as my research has a focus on the practice, how it can be applied and how it can be used (…) As it is research, whatever you do, it's not ready to use. So you should be clear about what you can expect because you are not doing a consultancy in which you are delivering a product, but you are doing research, which means the whole setup is different. So it was practical, it was not ready to use but still interesting for the authorities. It* [the intersectoral collaboration] *also shaped the focus of my PhD because I should align interests with the people I was collaborating with so that I made sure it was useful.*

(Former Marie Skłodowska-Curie doctoral fellow from Colombia in Italy)

The intersectoral experience in this case had the impact that the doctoral fellow could uncover needs in practice and align these with her research interests. As a result, the intersectoral mobility shaped the focus of the PhD project to become practice-oriented. At the same time, the fellow highlighted the importance of aligning expectations between the different parties in the collaboration and making it clear that the fellow was conducting research and not producing an actual product.

> *"I want to highlight all the good points – working in industry was really interesting for me, and it was one of the most valuable things of this project. (…) For me it is awesome"*
> (Doctoral fellow in interview)

5.2. Negative aspects of intersectoral collaboration

For the 15% who reported experiencing negative aspects of their intersectoral collaborations, the key issues were that the topic on which they worked at the secondment institution was not related to their PhD project or that it was a time-consuming process, or even an experience of wasting time, when establishing the intersectoral collaboration. Many respondents also problematized that secondment institutions (both company and university) were not prepared to be host or that there was a poor communication between the host institution and the place of secondment. 275 doctoral fellows described their issues with the intersectoral collaborations as follows:

- Little relevance or alignment with PhD project or academic career
- Bureaucratic challenges and time-consuming processes of resettling in new place
- Company or university not prepared to be host
- Loss or waste of time
- Poor coordination and communication between university and company
- Not able to publish due to confidentiality of research or intellectual property
- Unclear agreements and planning of secondment
- Company using PhD fellow as manpower or free labour
- Increased workload
- Not possible or difficult to access data
- No future job opportunities in company

Several doctoral fellows explained both in the questionnaire and in interviews that they experienced a gap between their host university and the industry or place of secondment. Some mentioned that their role during their secondment was not clearly defined from the beginning and that they therefore ended up wasting time on defining their work topic and other agreements relating to the secondment period. One fellow here explains how she experienced that the communication between her host university and host institute for secondment was poor and that she felt she was the main link between the two:

PhD fellow: *I think the idea* [of the Marie Skłodowska-Curie Project] *is good, but how it's conducted* [organised] *is really important. The most unique thing is that you combine university and company, but the key thing is that the linkage should already be there. The ESRs* [doctoral fellows in Marie Skłodowska-Curie projects] *cannot be the people who link these two because that is not possible (…) It's required that no one should live in the country for the past three years, so they are totally new to the country and we need to bridge between two totally different institutes who have totally different interests (…) Just to be practical – as a foreigner and student who is youngest you are expected to link these two* [actors]*, which you don't know and they don't know you – that is really time consuming because people don't trust each other or know how to work together at the first second. You really need time to know each other (…) So that's kind of a key* [issue].

(Chinese Marie Skłodowska-Curie doctoral fellow in Finland)

Several fellows problematized that that there was no clear agreement on the collaboration between their host university and their secondment institution. Some fellows experienced being put in a position where they were mediating between the two parties or that they had to spend considerable time defining their role and establishing what they should work on, which needed to both be aligned with the interest of the secondment institution and their PhD project. Despite overall having positive experiences from the intersectoral mobility in form of secondment periods, many fellows described contradictions between the research done in their intersectoral collaboration and their PhD topic, which were hard to align:

PhD fellow: *I think of it* [the intersectoral mobility] *as a really positive experience. My problem here is…well it's a criticism that I do…now that I can watch it retrospectively (…) the topic that I worked* [on] *at the industry was not a continuation of what I did in the research institutions, so I have separate projects in my PhD project, and that has been inconvenient*

Interviewer: *In what way?*

PhD fellow: *In the way that if I could have had continuous time working on the same project then it's much easier* [to] *produce results. (…) In the industry I do a separate topic; then it's much more difficult to achieve results. (…) When you want to produce something in research and develop, you need big periods of time because either I'm very lucky or a genius, and then I get results immediately in short periods of time, or…as it happens, I'm a normal person…and for me it's very difficult if you shorten this period of time and change topics, this is discontinuity. (…) So it's* [research topic in PhD and industry] *related of course, but it's different topics*

Interviewer: *OK so it's related but not related enough to make it continuous*

PhD fellow: *Exactly, and the other thing is when you're working in industry, my work there was like a worker (…) it was not as a PhD student, but as a worker and that also kind of hinders a little bit my* [PhD] *work*

Interviewer: *In what way?*

PhD fellow: *Because I wasn't assigned to a specific research project; I was involved in everything that was being done at the moment there. So I did my contribution in very differently projects in the industry, but I don't have development opportunities (…) The thing is the industry didn't assign me a specific project and then I was working as a worker there, which for me was great, it was interesting but…you think about the PhD thesis…then it's going to be difficult to present as a PhD thesis because I have like a mosaic* [of] *work, rather than a single-focus work (…) If they ask me "OK what did you produce in the industry", you know…I can say "well I was involved in this and this", very different things, but I cannot say "OK I was in this project and thanks to my work (…) we were able to produce this new thing or develop this new technique"*

(Spanish Marie Skłodowska-Curie doctoral fellow in Portugal)

One a the main issues of collaborations between sectors is a mentioned that it can be a time-consuming process both to establish a fruitful relationship between the two sectors as well as on a more practical level to organise the collaboration. Many fellows both move or travel to a new country for the intersectoral collaboration, which can demand the geographical mobility issues explained in section 4.5 to 4.10, but to many doctoral fellows, there was also a bureaucratic transition period within the company, e.g. in terms of getting access to data and arranging lab materials, which is perhaps a more invisible experience of intersectoral mobility, however, being a great issue to many fellows during a demanding doctoral training:

PhD fellow: *(…) If I arrive in a new place, I need the chemical materials and physically they tend to take time to be delivered, like from one week to one month and without them I cannot work. And it's very difficult to plan this in advance. I think this is one of the biggest challenges – how to organise our work before moving because in the perfect world this should have been done before we physically moved, but unfortunately it's not always very easy to predict what we need and* [what] *the procedure is; we have some administrative issues like for example we needed a permit to be in the laboratory, signed by some people who were on vacation. And this is a very difficult thing to coordinate between different organisations and different countries (…) For example, as I have industrial/academic collaborations, one of the issues is that I keep intellectual property, which takes a lot of bureaucracy, a lot of time, even to allow us* [to] *see the compounds, to see some information…even more documents for transferring the physical* [materials] *from one place to another. This is something I think should have some counselling before starting the project to estimate how much (…) and what we can do in advance. (…). So for example if I move for three months, it doesn't mean that I will be working three months. It means that I will work much less amount of time because most of the time will be taken by administrative issues and organising the work place. I think it's very important to take care* [of this earlier] *in the project, in the start of the project.*

(Ukrainian Marie Skłodowska-Curie doctoral fellow in Belgium)

5.3. Experiences of secondments

Many experiences of intersectoral mobility take place during doctoral fellows' secondment stays within a company or vice-versa if they are doing an industrial PhD and have secondments within academia. This chapter includes some of the experiences and lessons learned from secondments, which relate to intersectoral collaborations.

A number of fellows mentioned in comments in the questionnaire that their secondments did not take place for various reasons or that they expected that the secondment period would fail to take place. Some fellows explained that this happened due to poor communication between partners in the host university and the secondment institution or due to low prioritisation from supervisor's side. A Spanish fellow doing his PhD at a British university explained in an interview that he was supposed to do a secondment within a pharmaceutical company, but that the period failed to be organised as his supervisor expressed dissatisfaction with the plans for him to go abroad for six months as the supervisor thought he would lose time and not be able to finish his PhD within the three-year fellowship. The fellow attempted to organise the secondment himself, but did not get support from the company as they did not help him getting a visa. As a result, the fellow did not have any geographical or intersectoral mobility as a part of his doctoral education.

"(…) Somehow in the beginning of our network we could really see that everyone was excited about their secondments, me as well, and now as soon as we're in the second year of our PhDs, we're all like "oh I don't want to waste time doing this". So it is interesting how this changes over the course of time"

(Doctoral fellow in interview)

Another fellow explained his reasons for not doing a secondment during his doctoral fellowship:

PhD fellow: *(…) The issue with this company is that back when they wrote the whole thing* [grand project description of Marie Skłodowska-Curie project]*, they expected that the technological development would be quicker than it actually has been in the end, which means that they don't have anything to offer. So I could go there, but first of all, at least most technology companies are a little bit protective because many of them don't have patents. That means they are very protective about the knowledge that they have. So they don't want to have every person coming along for something like an internship, actually getting to know all the interesting details. So from that point of view it may not be the most interesting thing. (…) I would more or less get an experience, which is more like an office and sales experience, and I'm not sure how beneficial that would be, given that I'm doing a PhD. So I think the original secondment, which is meant to be two months, will probably be cut down to a few weeks. (…) They have the ridiculous idea that in the three years we have a total number of in average six months' secondment per ESR* [doctoral fellow]*, which is quite ambitious as far as I know. That's probably one of the reasons why they got all those applications granted, but in the end they cannot fulfil it. They then talk to the Project Officer in the European Union and they say, "yes, that's quite ambitious. It's understandable if you can't make it. It's OK if you cut it down to a reasonable amount". So it's a little bit of an odd thing. I mean if there would be a great opportunity to actually do a productive secondment, I probably would have* [gone] *for it.*

(German Marie Skłodowska-Curie doctoral fellow in the United Kingdom)

This example is in clear contradiction to the European Commission's policies of funding Marie Skłodowska-Curie doctoral fellowships with the aim of preparing doctoral students for employment outside academia. The example indicates that in some host universities or Marie Skłodowska-Curie-funded projects, a perception existed of secondments as less relevant or that the doctoral fellow would gain little or no knowledge relevant to them during a secondment. As a result doctoral fellows were not encouraged to do a secondment in these projects.

In contrast, another fellow reflected on the positives outcomes of her intersectoral collaboration within industry:

PhD fellow: *(…) When looking back,* [the intersectoral collaboration] *is actually a very valuable experience for me because nowadays in the medical sciences there is a huge focus on branching out, not only staying within the academic field but also branching out to pharma industry. (…) Being exposed to that and getting familiar with how the things are run, makes it easier for me now to kind of put my mind-set and manner of collaboration with the industry partners, not only within the academic ones.*

(Former Marie Skłodowska-Curie doctoral fellow from Poland in Slovenia)

As the fellow sees a shift within her discipline with greater importance of cooperation with industry, the secondment has helped make this clear to her. It is also clear from her experience that the secondment has prepared her for collaboration between sectors and for potential future jobs outside academia.

Whereas secondments are promoted by the European Commission, secondment periods can also have a great impact on doctoral fellows' personal lives as they often demand geographical movement. An Indian

fellow explained how the planning of his secondment had affected his family life. During his fellowship he had married and the couple were now living together in the host country. The fellow explained that since he was supposed to move to France for his secondment and that his allowance only covered expenses for him, the couple had decided that she should move back to India in order not to pay rent both in the host country of his fellowship and in the country of his secondment institution. As a result direct result of the secondment, the couple thus took the decision that she should move back to India, where she had soon found a job. But due to organisational issues, the fellow's secondment got delayed and his stay in the host country continued until another secondment was arranged in Belgium instead. At the time of the interview, the fellow did not know when him and his wife would be able to live under the same roof again. The example displays how doctoral fellows who have obligations towards their close family, seek to organise with their family life according to the planned stays abroad in relation to secondments. The example also highlights some of the implications it can have on fellows' personal lives when plans of stays abroad during the fellowship are changed without the fellow having considerable influence on the process. For fellows who are couples or have family obligations, stays of longer duration abroad can create considerable challenges that may be problematic to manage for the individual fellow and his close family. One solution that could ease these issues could be to offer fellows sufficient funds to cover the accommodation and living costs associated with bringing a spouse or children along in case of stays abroad of longer duration.

5.4. Conclusion

66% of fellows were collaborating with another sector as a part of their PhD. By far the largest type of intersectoral collaboration was with industry. Many also collaborated with government institutions. For industrial PhD fellows their collaboration was with a university. As a very positive and strong finding, 85% of fellows reported that they experienced no negative aspects of their intersectoral collaborations. Many stated that they gained from the collaborations by acquiring work experience outside academia, getting to know specific scientific and technical qualifications and skills and gaining from new perspectives and broader views of their research field.

For the fellows who did experience negative aspects of their intersectoral collaborations, these aspects concerned the collaboration had limited alignment with their PhD research or academic career or that they gained knowledge with little relevance to their PhD. Other issues were bureaucratic challenges and time-consuming processes of resettling in the new place. Many respondents commented in the questionnaire that the company or university was not properly prepared to host them. All of these issues were confirmed in the interviews, where fellows explained experiences with lack of proper communication or secondment arrangements between their host institutions. Some also found that the topics they were working on in industry were mainly relevant to the company, but not to their PhD research. Respondents also highlighted many bureaucratic and practical issues that took a lot of time, e.g. when acquiring chemicals, access to labs etc. that is time-consuming. Some fellows felt the secondment and intersectoral collaborations were a total waste of time and a few even expressed that their supervisors down-prioritised the collaborations. However, generally fellows expressed significant appreciation of their intersectoral collaborations as a way to establish a broader professional network for future employment benefits and insights into research used in practice.

6. Interdisciplinary mobility

57% of fellows who had completed their fellowship and 62% of those who were yet to complete had collaborated with another discipline as a part of their fellowship (on average 61% of all respondents). 39% of doctoral fellows replied that their doctoral education did not include collaboration with researchers from other disciplines.

Of the 61% of fellows who had interdisciplinary collaborations during their doctoral education, 50% stated that an interdisciplinary collaboration was a mandatory part of their doctoral programme. 13% indicated that the interdisciplinary collaboration was at their own initiative. However, 37% replied that their interdisciplinary collaborations were organised in different ways, meaning that some of their interdisciplinary collaborations were organised as a part of their doctoral training and other collaborations were organised at their own initiative.

Scientists from the biological sciences were the most popular interdisciplinary collaborators, as 35% of the asked fellows replied they were collaborating with researchers from the biological sciences. This is not surprising, considering that 45% of all the respondents were from natural sciences (described in section 3.4 Scientific fields of doctoral fellows). 30% collaborated with scientists from computer and information sciences. Again this corresponds to that the second largest proportion of the respondents were representing engineering and technology. Chemical sciences and physical sciences were also popular sciences to collaborate with, being indicated by 29% and 26%, respectively.

> *"I have learnt how to work with people speaking different technical languages, with a different background, and team working."*
> (Doctoral fellow in questionnaire)

From here, the score for disciplines that fellows were collaborating with goes steeply down: mathematics by 15%, materials engineering 14%, earth and environmental sciences, electric engineering and information engineering, mechanical engineering, and chemical engineering each being indicated by 10%. Health sciences and nano-technology are each indicated by 8%. A very small percentage (2-5%) was collaborating with scientists from economics and business, education sciences, sociology, law, political science, anthropology and history.

6.1. Gains from interdisciplinary collaboration

Responses from Marie Skłodowska-Curie fellows clearly show that many fellows gain much from collaborating with scientists from other disciplines. Among the many replies, the tendency is that fellows appreciate the different insights into another discipline, which this type of collaboration gives them. One of the other general benefits that fellows mentioned is achieving a greater understanding of a topic, being fed with new inputs from their interdisciplinary collaborations and how theories are applied or used in a different context. Many fellows also appreciate learning a different vocabulary or technical language. In the questionnaire, 408 doctoral fellows described the following gains from their interdisciplinary collaborations:

- Broader perspectives, more complete and strengthened knowledge
- Access to technologies and expertise, learning new skills

- New knowledge from other disciplines
- Understanding different approaches
- New data
- Larger scientific network
- Improved communication skills between disciplines
- Interdisciplinary and joint publications
- Experience of working with people speaking different technical languages
- Inspiration, new ideas and motivation
- Working in multilingual and international environment

A fellow, whose discipline is within the Medical and Health Sciences, explained how she experienced working with researchers from other disciplines in practice:

PhD fellow: *It was great, I really liked that and I think that's the future of research – interdisciplinary collaboration (…) I've done my secondment in a totally different lab (…) It was a very steep learning curve but it was great to be able to find the way to communicate your science with people who have no idea what you are doing. This very highly interdisciplinary aspect was for me very important and that's something I have pursued further on in my career as well.*

Interviewer: *What do you think are the benefits of the interdisciplinary work?*

PhD fellow: *(…) I think the science has put things into very small buckets and everybody is a great scientist within their very certain part of science and they know very much in-depth, but we've reached a point especially in the case of complex diseases* [where] *it's not enough to know perfectly well this very little small aspect because that's taking us nowhere. So reaching out to people who have different perspectives of it and could apply technology that has been widely used for totally different aspects of science, or not even science necessarily, can give us clues and answers to solving complex stuff. (…) So that's why I think it's so crucial to be able to work together because that is also advancing science much quicker. Obviously each of us could learn how to perform computer modelling of the disease you want to work with, but that would take you a few years to learn how to programme and run the algorithm – it's much easier to actually find a person (…) that you can explain the biological aspect to and they can technically put that in as a model. And you can work together because they have knowledge and expertise to making the algorithm run and you have the knowledge and expertise to biological aspects, and that will benefit everyone much faster than everyone on their own trying to learn it separately.*

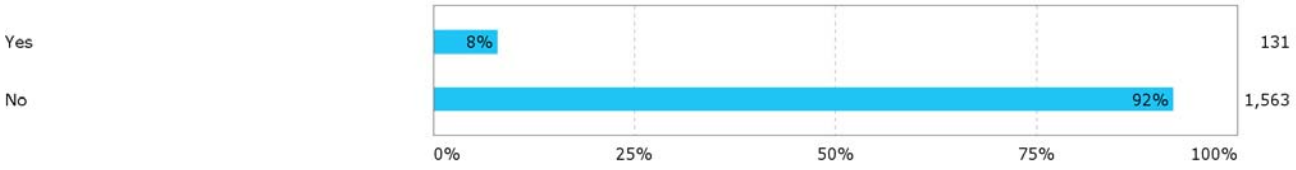
(Former Marie Skłodowska-Curie doctoral fellow from Poland in Slovenia)

Despite the fact that working across disciplines demands a very steep learning curve, according to the fellow's experience, the collaboration has the benefit of preparing the doctoral fellow to be more flexible with greater insights into other sciences and with the long-term result of more efficiently creating a better and more advanced science.

6.2. Negative aspects of intersectoral collaboration

One the most positive findings in the survey was that 92% of Marie Skłodowska-Curie doctoral fellows who had interdisciplinary collaborations did not experience any negative aspects by collaborating with colleagues from other disciplines.

Figure 32 Negative aspects of interdisciplinary collaboration
Were there any aspects of the interdisciplinary collaboration, which were not beneficial to your doctoral training?



Of the remaining 8% who experienced negative aspects from their interdisciplinary collaborations, the issues were mainly in relation to an experienced time-consuming process of establishing the collaboration with little short-term gains. Other respondents have experienced that it was hard collaborating together because of different standards and expectations. 129 doctoral fellows explained in the questionnaire which aspects of their interdisciplinary collaborations were not beneficial to them. Their replies are relating to the following issues:

- No or little contribution towards PhD research
- Loss of time, slowing down research progress
- Not clearly defined or poorly organised collaboration
- Time-consuming process to establish fruitful collaboration
- Difficult communicating in common technical language, lower scientific quality
- Too great gap between disciplines or expertise
- Too much planning and travelling

> *"Collaboration is mandatory in Marie Skłodowska-Curie fellowships, however my supervisor never intended to collaborate with any of the partners and actively discouraged collaboration. This left me in a conflict of loyalty and resulted in three unproductive years, waste of resources, and even affected my mental and physical health"*.
>
> (Comment in questionnaire by a German doctoral fellow in Switzerland)

A doctoral fellow explains below that one of the negative aspects of her interdisciplinary mobility was that her discipline (Linguistic) was a minority within her research group. This demanded that she had to cover a greater gap of knowledge, especially in the beginning of her PhD:

PhD fellow: *Most of the members in this group were psychologists and neuroscientists and then we were two or three linguists. We were definitely the minority and so it was challenging for us to keep up because neuroscientists talk about the human mind or the brain, which was something totally new to me, and then the psychologists were occupied with experimental design*

and how to design good experiments (…) So it was challenging to keep up with those people, but I learned a lot (…)

Interviewer: *Did that mean that you as a linguist had less impact?*

PhD fellow: *The others with backgrounds in psychology and neuroscience had much less new information than the people with a linguistic background. So I think it was easier for them to keep up. The linguists had to cover much more distance in terms of knowledge.*

(Former Marie Skłodowska-Curie doctoral fellow from Holland in Denmark)

Another fellow explained in an interview that a disadvantage in her interdisciplinary experiences was the fact that it took time to align the technical languages and make the scientists from diverse disciplines aware of the different perceptions of scientific terms:

PhD fellow: *The project was interdisciplinary – it means that the PhD students in the same project meet every six months for the first year-and-a-half. On one side, we had the opportunity to get to know what everyone is doing, so that helps towards interdisciplinarity. We had a lot of problems of understanding each other because same terms may have different meanings according to the discipline…if I say analysis of interview, you may understand something and a person from a different point of view may understand something completely different.*

Interviewer: *So you have the same terms but they actually mean different things?*

PhD fellow: *Yeah. So from the project perspective it was a bunch of people from different disciplines meeting and being exposed to talking to each other about what they do and why they do it. (…) Well it takes time. Basically, the negative aspect is that it takes time, it can be frustrating, you may not publish as fast as you want.*

(Former Marie Skłodowska-Curie doctoral fellow from Colombia in Italy)

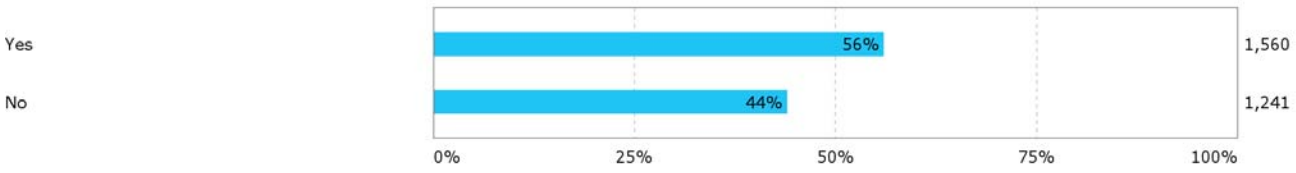
In the case of interdisciplinary collaborations, this example shows the importance of accepting that it takes time for the different researchers to talk the same scientific language. As a consequence, it can be more difficult for doctoral fellows taking part in an interdisciplinary project to publish during their fellowship.

6.3. Interdisciplinary movement in academic education

It is also interesting to consider if Marie Skłodowska-Curie doctoral fellows follow an interdisciplinary academic career. The results were clear on this topic; nearly half of all doctoral fellows had changed discipline throughout their academic education as seen below.

Figure 33 Interdisciplinary mobility throughout academic education

Have you stayed in the same academic discipline throughout your BA, MA and doctorate?



6.4. Conclusion

The findings regarding interdisciplinary collaborations are very similar to the findings about intersectoral collaborations. 61% of fellows collaborated with researchers from another discipline during their doctoral education. Also here, the prevailing responses are positive – 92% of fellows who had interdisciplinary collaborations answered that they experienced no negative aspects of their collaborations. The three most mentioned positive outcomes of their interdisciplinary collaborations were gaining broader perspectives and a more comprehensive knowledge, getting access to technologies and expertise and learning new skills, and gaining new knowledge from other disciplines. For the 8% who had experienced negative aspects of their interdisciplinary collaborations the problem was mainly that the collaboration had little or no contribution towards their doctoral research. The fellows felt that the interdisciplinary collaboration was a loss of time and that their research was slowed down, or that the collaboration was not clearly defined or poorly organised.

In interviews, fellows explained that collaborating with researchers from other disciplines involved a steep learning curve and that it takes time to establish a good collaboration, especially in the light of the different uses and interpretations of technical terms in various disciplines. This sometimes led to a slower progress of research and fewer publications.

7. Social mobility

Social mobility is in this survey used to get an insight into doctoral fellows' educational level compared to their social background – whether they moved across social classes and whether doctoral fellows' parents have also been geographically mobile.

7.1. Social mobility in relation to parents' educational background

Related to social mobility, we asked the question "What is the highest education of your mother and father?" The results show a relatively high rate of social mobility in the sense that many doctoral fellows answered that they were gaining a higher education compared to their parents' educational background.

Figure 34 Highest education of mother

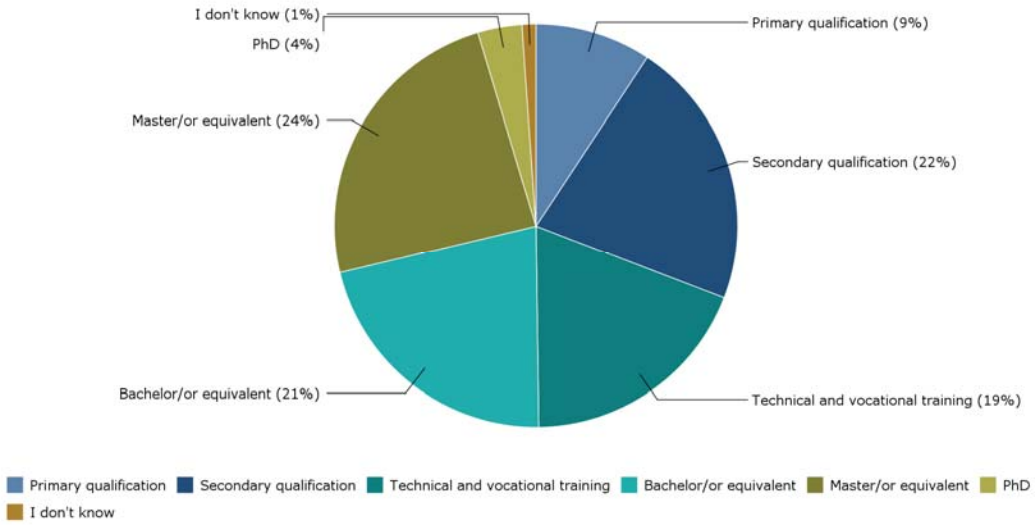


Figure 35 Highest education of father

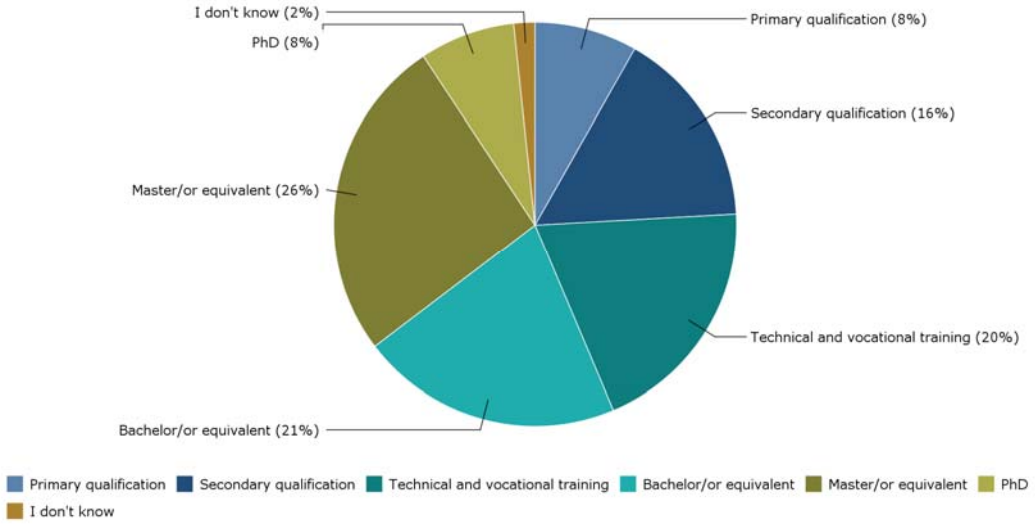


Chart percentage rounded up: Primary qualification 8.2%; Secondary qualification 15.9%; Technical and vocational training 19.5%; Bachelor/or equivalent 21.0%; Master/or equivalent 26.0%; PhD 7.6%; I don't know 1.7%.

Only 4% of respondents replied that the highest education of their mother was a doctoral degree. 8% of respondents answered that the highest education of their father was at doctoral level. Nearly half of mothers (50%) and fathers (45%) had a primary or secondary level of education or technical/vocational training.

The data thus showed a great deal of social mobility taking place among Marie Skłodowska-Curie fellows. Respondents replied that only 4% of their mothers and 8% of their fathers had the same level of education as them. This means that more than 90% of doctoral fellows were improving their social status in terms of educational background compared to the educational levels of their parents.

However, it is worth considering the development within higher education throughout the past generations in relation to social mobility. Concurrently with the "massification" of higher education and the fact that a much higher proportion of the general public acquires a university degree in Europe today, also the content of higher education degrees has changed. Fellows explained it as below:

Interviewer: *Do you consider yourself to have gained a higher education compared to your social background?*

PhD fellow: *Okay the question is kind of tricky. (…) Because it is* [a higher education] *as I am actually getting my PhD. But at the same time, you have to take into account the context. And the context where my parents come from it is not the same that I have. The relevance of the PhD, or the role of the PhD, back in their time, was quite different. The PhD was perceived a lot more like academic, you know. Both my parents have an industrial background. If you did a PhD* [it was] *because you wanted to do an academic career; you wanted to stay in the university and work there. (…) My mother is a chemist; she has worked in the industrial sector all her life. My father was also in a company. So they didn't require PhD (…) Nowadays, PhD is needed for both, academy or in industry. It allows you to get more qualified jobs. So, yes, I feel that I somehow have been able to reach a higher degree of education than my parents, but at the same time, I understand them* [my parents]*, if I could focus on the industry the way they did, maybe then I wouldn't be doing a PhD.*

(Spanish Marie Skłodowska-Curie doctoral fellow in Portugal)

As the context of higher education has changed, the doctoral degree is today less oriented towards direct employment within academia compared to earlier. On the other hand, as many more people have higher education, there is today also to a greater extent a demand to have a doctoral degree within the private sector. At the same time, the education and training needed to earn a doctoral degree has also changed significantly. Statistically, the data in this survey clearly showed that the Marie Skłodowska-Curie doctoral fellows were pioneers of education within their family. This finding was also backed-up in the interviews as most of the interviewed fellows explained that they were either the first or one among the few in their family to get a doctoral degree or even a higher education degree. However, the growing internationalisation within higher education also has impacts on the international and national job markets. A Chinese fellow showed this in her explanation below:

PhD fellow: *I have the highest educational level in my whole family*

Interviewer: *So do you feel you went ahead somehow* [compared to your social background]*?*

PhD fellow: *I quite have an international background* [of education]*, so I definitely experienced more things. Because I come from China, so perhaps not in one or two years, but still now people*

> *respect when you have international experience, especially when you're not only studying but also working. I have three years' work experience* [abroad]*, so that is a plus. But now in China, if you only went abroad to study and immediately came back, it's not as big a plus compared to earlier. Because now many go to the UK; it's just a matter of having money enough, so that's why it's not that well-respected as previously. But if you have work experience then it's different.*
>
> (Chinese Marie Skłodowska-Curie doctoral fellow in Finland)

In this example, the growth in China has resulted in many more Chinese citizens gaining a higher education abroad and, as the fellow explains above, it is no-longer considered "that big a plus compared to earlier" to have acquired a higher education degree abroad. Where this may have given good chances to pave the way for employment only a few years ago, the competition is now different as many more can offer the same experience.

7.2. Financial support and investment from parents

The survey did not include data on whether doctoral fellows benefitted from financial investment from their parents during their higher education. However, the qualitative data from interviews indicated that many doctoral fellows had travelled abroad for studying on a variety of scholarships, e.g. Erasmus Mundus exchange programmes, and therefore had received financial support from these types of programmes. However, one of the doctoral fellows interviewed clearly stated that her family had invested in her higher education financially:

Interviewer: *Was there anyone supporting you throughout your higher education?*
PhD fellow: *Before here* [before my Marie Skłodowska-Curie PhD]*, I think my whole family was supporting me*
Interviewer: *But since you came to Finland* [and started the Marie Skłodowska-Curie PhD fellowship] *the situation changed?*
PhD fellow: *Because then I had my own salary. In China, I'm the only child and as both my parents have kind of a good job, so it's quite fine for them* [to support financially]
Interviewer: *(…) And how about economically – do you feel that your situation improved compared to your family background?*
PhD fellow: *It would say that this one* [the Marie Skłodowska-Curie PhD] *doesn't hurt, but I'm not sure my economic situation will be better*

(Chinese Marie Skłodowska-Curie doctoral fellow in Finland)

One the other hand, all fellows interviewed in the survey expressed that their parents had supported them, not necessarily financially, but in terms of encouragement and practical help in their pursuits of higher education as seen in the example below:

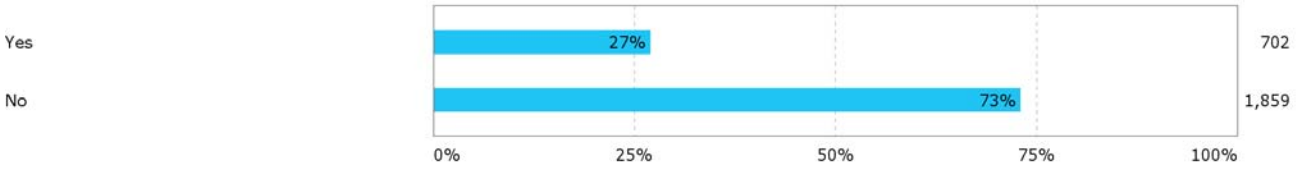
Interviewer: *What was the role of your parents? Have they ever invested in your educations, supported you going abroad pursuing higher education?*
PhD fellow: *Well, they have been supportive on the aspect of…you know…more or less family support of "yes try to do that, do it". But it's been hard for them that I've been away for quite a long time and the communication hasn't been that easy. It's gotten harder with me moving*

> *across the ocean, and one of the main reasons that I'm moving back to Europe is actually the proximity and communication with my family. So they have supported the idea of me going abroad. (…) I mean they were excited about me pursuing my education further and they still are and they are very proud of me (…) but it's not easy…it's definitely not easy to be away from your family for such a long time and such a long distance.*
>
> (Former Marie Skłodowska-Curie doctoral fellow from Poland in Slovenia)

7.3. Geographical mobility history of parents

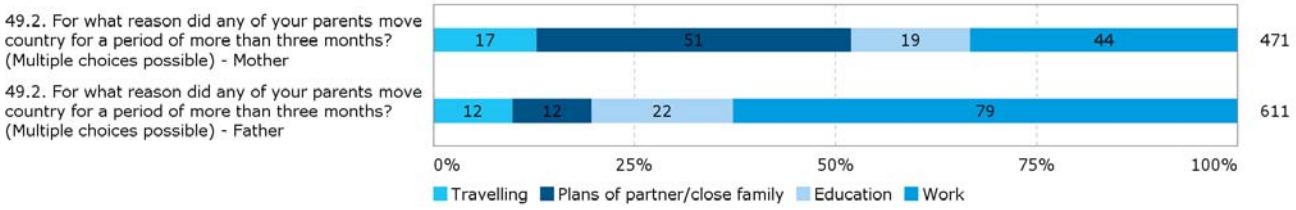
Looking at what sort of mobility backgrounds the respondents came from, and whether they had lived a family life in which geographical mobility was a significant influence, an important finding is that nearly ¾ of fellows came from a family background, which was not greatly impacted by geographical mobility. 73% of fellows replied that neither of their parents had moved country for more than three months.

Figure 36 Parents' geographic mobility history
Did either of your parents ever move country for a period of more than three months?



Of the 27% who stated that at least one of their parents had moved country for more than three months, respondents replied that for the fathers the mobility was mainly work related. For mothers the main reason was plans of partners or close family, indicating that mothers most likely moved because of their husband's job.

Figure 37 Reasons for parents' geographic mobility



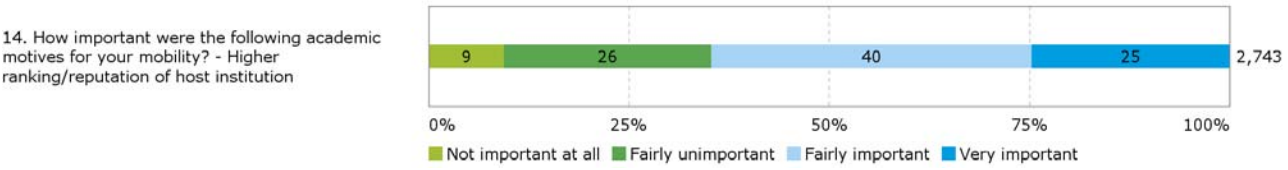
An important finding in the survey is that Marie Skłodowska-Curie doctoral fellows mainly people came from family backgrounds with a low degree of geographical mobility. But this is also a testimony of changing demands and needs for knowledge workers to be flexible in relation to geographical movement.

7.4. Importance of ranking and reputation of host institution

For 65% of fellows, the ranking of the host institution was a fairly important or very important motive for their mobility. However, 26% stated that the ranking of their host institution was fairly unimportant to them.

> *"(…) When I was applying, this was the programme, which fitted with my interests, so I was basing my choice of my research interest within my chemistry programme, which can be in industry and academia, which was the one"*
> (Doctoral fellow in interview)

Figure 38 Importance of ranking or reputation of host institution



In an interview, one of the fellows said that the choice of host university was quite important to him. He was well-aware of the ranking of his host university and indicated that he was strategic in selecting the country and ranking of the host university:

Interviewer: *Was it important for you to do your PhD at a good university? Did you for example look at the ranking of the university?*

PhD fellow: *When I looked for universities outside Germany I did definitely do that* [check the ranking of potential universities]. *Especially for countries where I wasn't particularly aware of how good the universities are. When I looked at Britain, there was apparently a huge difference, so it actually matters – at least when you get your bachelor and master degree. So I applied for thee positions at Exeter, Durham and Cambridge. (…) Of course the "Ox-bridge" construct has very much recognition on the international scene, but* [host university] *is often listed as number 3 in the UK and in top 40 in most international rankings, so I was like "well I'm not in a top 10 university, but in a top 40 university and that's way better than anything else". My old university in Germany is ranked around number 380, so I was like it's already a steep progression.*

Interviewer: *So you were aware of that your host university was ranked so well?*

PhD fellow: *Yes. It is a prestigious name; it is a brand name if you want to put it like that, which is nice to have (…) So having the prestige on your side at least once in life isn't the worst thing.*

(German Marie Skłodowska-Curie doctoral fellow in the United Kingdom)

However, several fellows explained in interviews that they had to a greater extent chosen the host university according to the research topic of the doctoral programme and that the personal connection with the rest of the research team was also a crucial factor in their choice:

PhD fellow: *For me it's not so much important whether it's a top-ranked university where I work, but more whether there's a nice department with good researchers. For me they don't need to be top-ranked; it's more important that I also enjoy where I work and that I enjoy working with people who I respect and that I work well with. I actually never checked the ranking of the* [host university]*. I know it's not a top university, but I went there because I really like my supervisor.*

(Former Marie Skłodowska-Curie doctoral fellow from Holland in Denmark)

7.5. Conclusion

When fellows' educational level was compared to their parents' educational background, the findings were quite positive. The results showed a relatively high level of social mobility among fellows as 95% gained a higher education than their mothers and 91% gained a higher educational level compared to their fathers. However, here it must be pointed out that doctoral education has in recent decades expanded to some level of 'massification' and doctoral education has changed significantly compared to a few decades ago. As one fellow highlighted in an interview, when his parents started their careers, they did not meet the same demands or requirements of having a PhD. Where doctoral education used to signal a career within academia, far more companies in the private sector now recruit employees with doctoral degrees. There is therefore also higher competition for employees to have a doctoral degree, especially within industry. At the same time, the education and training needed to earn a doctoral degree has also changed significantly. Statistically, the data in this survey clearly shows that Marie Skłodowska-Curie doctoral fellows were pioneers of education within their family; however the general pattern is that about half of fellows came from a family background with parents who had a higher education, as 45% of mothers and 47% of fathers had either an education at bachelor or master level.

When asked about the importance of the ranking and reputation of their host university, 65% of fellows replied that this was a fairly or very important motive for their mobility. But 26% replied that the ranking was fairly unimportant for them in their motives for being mobile. In interviews, fellows expressed different views on the topic. It was clear that fellows considered several aspects when applying for the doctoral fellowship and it seemed that the ranking of their host university was not a sole motive for moving to a new country. A high ranking of the host university was explained to be a clear benefit, but doctoral fellows also said that it was equally, if not more important, to be working on a topic that interested them and with colleagues with whom they had a good collaboration.

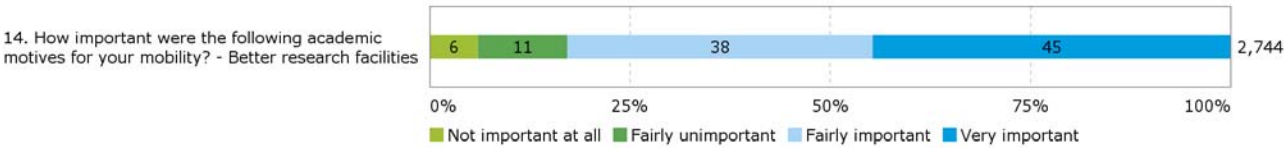
8. Overall motives for mobility

8.1. Academic motives

Regarding doctoral fellows' motives for being mobile – both in terms of moving to a new country to take on the PhD fellowship as well as of periods of geographical, intersectoral, and interdisciplinary mobility during their doctoral training – the statistical data from the questionnaire revealed that fellows were very career-oriented.

We asked fellows both about their academic motives and personal motives for being mobile. 83% of fellows replied that better research facilities were either fairly important or very important. 82% felt that better recognition of their research field or profession was fairly important or very important for their motive of being mobile, and 79% replied that cooperation with prominent scientists was fairly or very important. To work with a certain supervisor was a little less important as 65% replied that this was fairly or very important, whereas 12% answered that the aspirations of working with a certain supervisor was not important to them at all. In contrast, the combined learning offer of supervisor, particular research field, and courses offered was very important to most fellows – 79% stated that this was fairly or very important.

Figure 39 Motives for mobility – better research facilities



Facilities and services for international students (e.g. assistance with finding accommodation, processes of visa and residence permits, child care, and offers for spouse) were not prioritised very much as 27% replied this was not important at all and 30% replied that this was fairly unimportant for their motivation for mobility.

8.2. Personal motives

When asked about the personal motives for being mobile as a part of their doctoral fellowship and training, fellows showed that to build up personal and professional networks is very important. 92% replied that it is fairly or very important for their motivation for mobility to build a personal or professional network; only 8% replied that this is fairly unimportant or not important at all. Fellows also seem to be preparing themselves for employments abroad as 90% stated that enhancing future employment prospects abroad was very important or fairly important. In contrast, enhancing future employment prospects in home country was less prioritised in fellows' motives for being mobile; 19% answered that this was fairly unimportant and 11% replied that it was not important at all to them.

Figure 40 Motives for mobility – build up personal and professional network

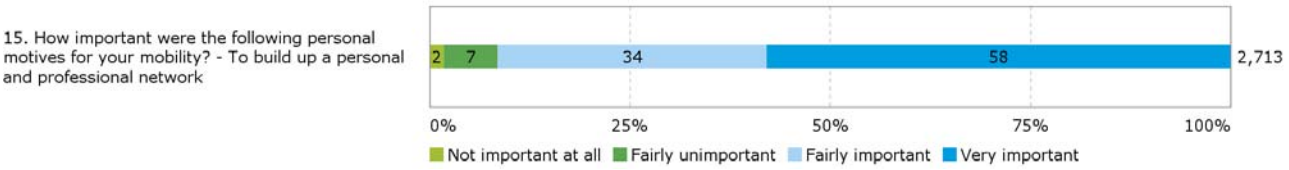


Chart percentage rounded up: Not important at all 1.77%; Fairly unimportant 6.71%; Fairly important 33.58%; Very important 57.94%.

Wanting to live and work in another culture and meet new people and to gain knowledge of another country or city is also one of the highest motives for being mobile. 83% replied that living and working and meeting new people was very and fairly important, and 81% that to gain knowledge of a new country or city was also fairly or very important. Good financial conditions likewise scored high in doctoral fellows' motives for being mobile – 75% replied that better financial conditions are either fairly or very important. Developing soft skills (such as adaptability) is also considered very valuable in the motive for mobility as 79% states this to be either fairly or very important. One of the greatest contrasts in fellows' personal motives for being mobile shows when it comes to the career plans of close family or partner. 43% replied that their partner or family member's career plans were not important at all in their motives for being mobile. In fact only 32% stated that the career plans of their partner of family member is fairly or very important.

Figure 41 Motives for mobility – career plans of partner of family member

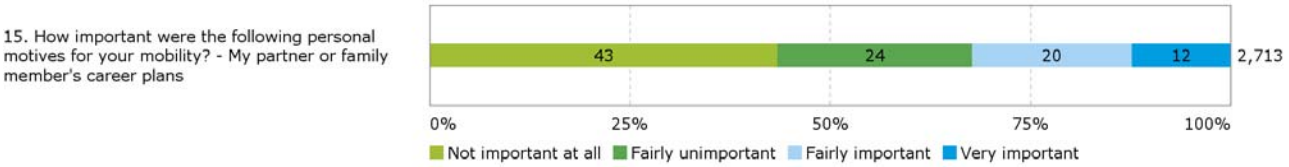
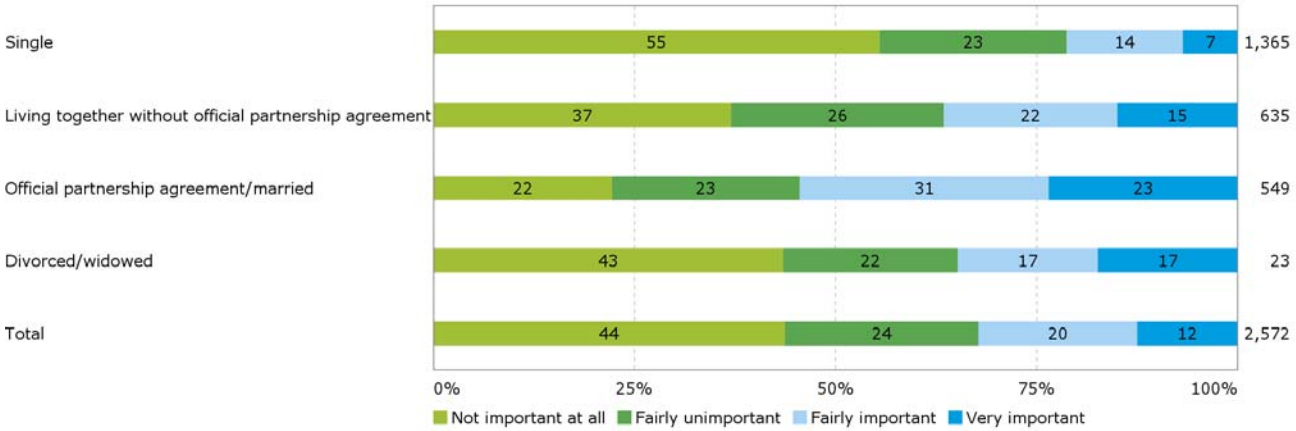


Chart percentage rounded down: Not important at all 43.38%; Fairly unimportant 24.33%; Fairly important 19.90%; Very important 12.39%.

Considering that most of the respondents in the questionnaire were between 26-30 years (as showed in section 3.1 Gender and age and that the majority of fellows participating in the survey were single (as described in Figure 49), the reason why fellows were not considering the career plans of their partner or family member more important, may be related to the fact that the majority of fellows were in their mid-twenties and that that they had not established a family yet. Not surprisingly, 78% of fellows who are single think that the career plans of partners or family members are fairly unimportant or not important at all.

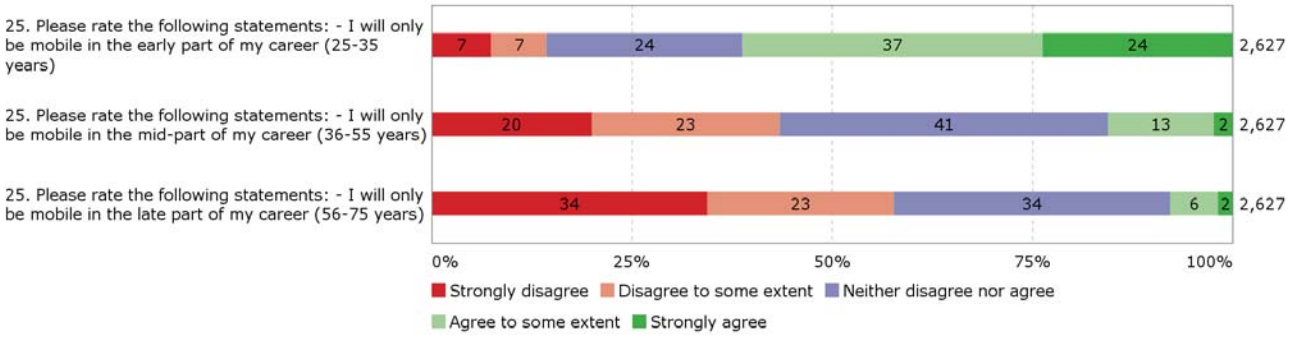
When comparing doctoral fellow's family situation to their statements regarding the importance of their partner's/family member's career plans in their motives, we see that more than half of the fellows who were married or in an official partnership agreement considered the career plans of their partner or family members as fairly or very important (but still 45% of married fellows considered the career plans of their spouse or family member either fairly important or not important at all in their motives for being mobile). However, it is worth noticing that fellows who were living together with a partner (without official partnership agreement) still did not seem to consider their partner's career plans as 63% of these replied that the career plans of their partners of family members were either fairly unimportant or not important at all.

Figure 42 Motives for mobility – career plans of partner or family member vs. family situation
How important were the following personal motives for your mobility? - My partner or family member's career plans



These results are interesting when considering in what stages of their career doctoral fellows assume they will be mobile. In Figure 43 below, we see that fellows think they will be less mobile the further they are in their career. Where 61% agree to some extent or strongly agree they will only be mobile in the early part of their career from 25-35 years, only 8% answer the same when it comes to the late part of their career from 56-75 years.

Figure 43 Mobile stages of career



One female fellow explained in an interview that she was hoping to stay in her host country after finishing her PhD as both her and her boyfriend were living in the host country. She explained that her aim was now to a greater extent to combine her ideal career future with her private life:

Interviewer: *OK. So you might move to a different European country* [for your next job]*?*
PhD fellow: *I will try not, but if it happens I will first discuss it with my partner. I have learned with the years that no matter how much you want in life, if you don't have your personal life some-how settled, everything becomes a mess as well*
Interviewer: *So do you think this is related to becoming older as well – that you start thinking differently?*
PhD fellow: *Maybe, I don't know. Yes (…) maybe it's because I'm becoming older. But being lonely is difficult, just moving everywhere and starting all-over every time, it's difficult. And being*

abroad you have passed through it, it's ups and downs; so one day is wonderful and the next day you just hate it (…) So I think that at some point I want to better match my dream job with my personal life.

(Former Marie Skłodowska-Curie doctoral fellow from Colombia living in Italy after completion of fellowship)

Another former doctoral fellow explained that during the course of her PhD she has changed her values of life/work balance. Where she used to be excited about traveling and working hard, after the completion of her PhD friends and family were of higher importance to her:

PhD fellow: *Now my mind has changed. Before my PhD I really enjoyed being busy, working hard and travelling, but now it's like "OK as long as I have a job and I can support myself then that's enough", then I can enjoy family and friends – that's also a good life. Now it's like I'm so busy, one week I'm in South America, next week I'm in the UK…and you do not have any personal life at all. That is kind of the big change in my mind. I want to have a good job within my field, but I don't want to spend all my time on work anymore. Definitely I will do what I am being paid for in my job; I will try to do my best in the job, but it's not my first priority anymore.*

(Chinese Marie Skłodowska-Curie doctoral fellow in Finland)

8.3. Conclusion

This chapter has elaborated on fellows' academic and personal motives for being mobile in their doctoral education. In the questionnaire findings it was evident that fellows were very career-oriented when asked about their motives for being mobile (in the sense of geographical, intersectoral, and interdisciplinary mobility). 83% of fellows replied that better research facilities were either fairly or very important to them. 79% stated that it was fairly or very important for them to work with prominent scientists.

Regarding the personal motives for being mobile, 92% replied that to build a personal or professional network was a high priority. Living, working and meeting new people, gaining knowledge of a new country or city, and good financial conditions all scored high among the personal motives for mobility – each was indicated by 75-83% of the respondents as either fairly or very important.

In contrast, respondents also said that the career plans of their partner or family member were not very important in their motives for mobility. Not surprisingly, 78% of single fellows stated this was not important at all or fairly unimportant. Also fellows who were living together with a partner without official partnership agreement (boyfriend/girlfriend) did not seem to be motived much in relation to their partner's career plans; 63% stated that their partner's career plans were either not important at all or fairly unimportant. Even fellows who were married did not seem to be motivated much by their partner or family member's career plans; among this group 45% of fellows stated that their partner's career plans were either not important at all or fairly unimportant in their motives.

When asked at which stages in their lives the fellows expected to be mobile, it was clear that fellows mainly expected to be mobile in the early stages of their career. This was also a general perception among the interviewed fellows. In contrast, we learned in section 4.11.4 Mobility after the end of doctoral education that after the end of their doctoral education, 18% of the fellows actually moved to yet another country to continue their career after their fellowship.

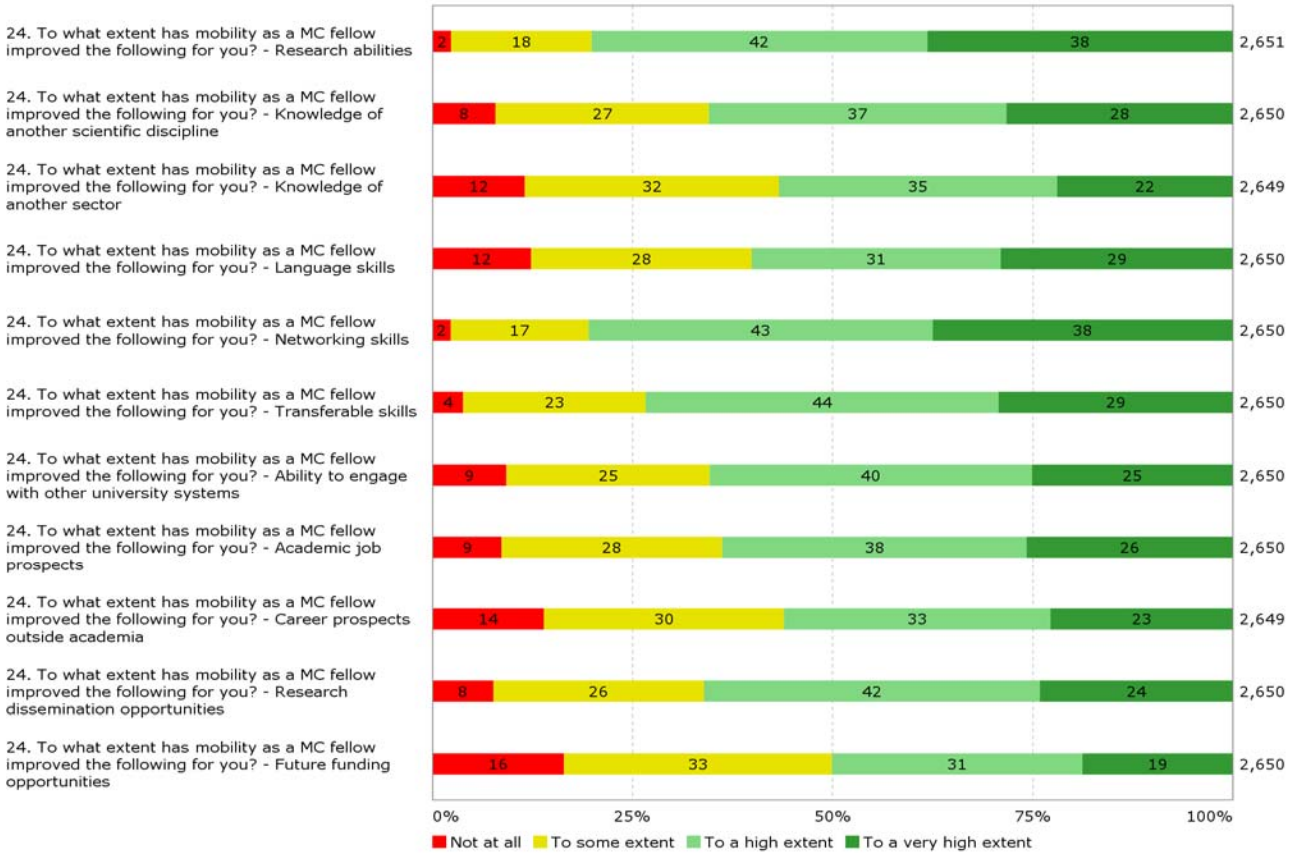
9. Consequences and effects of mobility

The following results are not connected to a specific type of mobility, but are answers relating to all the four definitions of mobility used in this survey (as explained in section 1.5 Definitions of mobility).

9.1. Improved factors due to periods of mobility

A very positive finding in the survey was that 81% of doctoral fellow believed that their networking skills had either improved to a high extent or a very high extent as a result of their mobility during their doctoral education. 80% replied that their research ability had improved to a high or very high extent, and 73% answered that their transferable skills had improved to a high or very high extent due to mobility as a part of their fellowship. On the negative side, nearly half (49%) did not believe that their opportunities for future funding have improved at all or only to some extent. 44% of fellows believed that their knowledge of another sector had not improved at all or only to some extent. This corresponds with the fact that only 66% fellows had intersectoral mobility experiences during their PhD education (described in section 5 Intersectoral mobility). This may also be the reason that 44% did not believe that their career prospects outside academia have improved at all or only to some extent. From this information, we get an indication of a strong connection between having intersectoral mobility and the prospects of future employment outside academia.

Figure 44 Improved factors due to periods of mobility

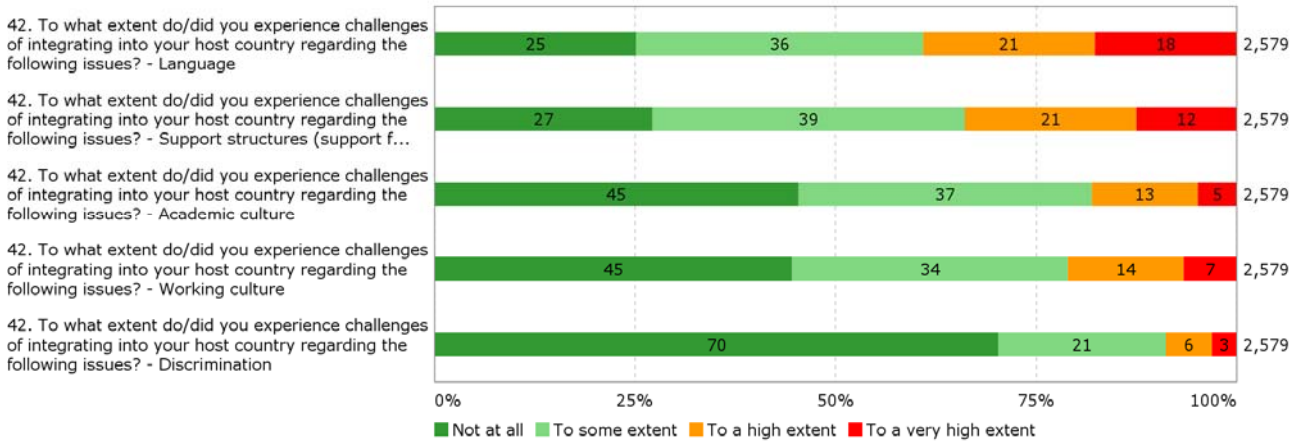


9.2. Integration in host country

One of the positive findings in the survey was the fact that 70% of doctoral fellows had not experienced discrimination at all while living in the host country during their fellowship. 21% replied that they experienced challenges with discrimination to some extent. Though this is one of the strongest findings in the survey, it may still be argued that the 9%, who experienced discrimination to a high extent or to a very high extent, is still a considerable amount.

Results were quite positive regarding the question of integrating into the local academic culture or working culture in host countries. 45% of doctoral fellows did not experience any challenges about being integrated into the local academic culture or working culture at all. However, still 18% and 21% experienced challenges to a high or very high extent regarding this. Language was the issue that created most challenges for doctoral fellows. 39% reported having experienced challenges to a high or very high extent regarding the language in the host country. In relation to support structures in the host country there was also room for improvement. 33% experienced challenges to a high or very high extent in relation to having access to or being offered support for finding accommodation or getting information about retirement and unemployment benefits. This showed that not all host countries had an efficient support structure to help doctoral fellows integrate regarding practical issues and social security when moving.

Figure 45 Challenges of integration into host country



A doctoral fellow from India highlighted in an interview the need for support structures for accompanying spouses. During the course of his fellowship, he married and his wife moved to the fellow's host country. After having lived in the host country for some time without being successful in finding a job, despite having an education as an Information Technologist and having worked for a bigger Indian company in India, the couple decided that she should move back to India, leaving their family situation in an unstable condition. The fellow therefore highlighted that it would have been very helpful in their situation if they had been offered assistance in terms of support structures for spouses in finding a job in his host country.

Another aspect of the same fellow's experience with integrating in his host country was related to his continuous resettlement in different countries throughout his higher education. The fellow had moved from India to Europe in order to study a master programme, which entailed moving to three different European

countries during the programme. After the completion of his master, he moved to yet another European country to start his doctoral fellowship. Previously, he had put a lot of time and energy into learning first French and later German in which he had taken extensive language courses. Now as he was living in yet another country and did not know if he would be able to continue staying in the country after his fellowship, he felt less motivated to study the local language. As he explained in an interview, his priority was to concentrate on the PhD project and he felt that investing time in his integration in the local community was down-prioritised as a result. The combination of a demanding doctoral fellowship with continuous geographical movement for secondment stays and with the prospect of losing his residence permit in the host country by the end of his PhD contract resulted in him feeling less motivated to invest time in integrating in the host country.

Another fellow also explained how the demands of extensive periods of geographical mobility during the doctoral training affected her ability to integrate into the host country in combination with personal future plans:

PhD fellow: *(…) It was too much for me to learn Danish and finish a PhD and then all these Marie Curie events and also maintaining relationships at a distance with my family and my old friends in the Netherlands and with my boyfriend. So then I made my choice to not invest my time in* [studying] *Danish (…) To be honest, I knew from the start when I came to Denmark that I wasn't going to stay there for the rest of my life.*

(Former Marie Skłodowska-Curie doctoral fellow from Holland in Denmark)

9.3. Integration at host university

> *"The first week I was at the university at my campus I saw two guys playing Mahjong* [Chinese/Japanese table game] (…) *I realized immediately what was going on because I like the game quite a lot. I was alone; I didn't know anyone and I see two guys playing a game that I love…what do I do? I go close to them, 40 cm of distance maybe, and I start chatting and they were Fins. I mean, I'm not kidding; one of them started shaking…start shaking a bit, looking down. I realized later how big the culture shock was for them* [for a stranger to address them]*."*
>
> (Doctoral fellow in interview)

The above quote illustrates how many doctoral fellows do not feel that they integrate very well in the host institution as a result of different social ways of interacting and different working cultures. Figure 46 displays that 45% of all doctoral fellows only felt integrated in their host university to some extent or not at all. On the positive side this also means that more than 50% felt integrated to some extent or to a very high extent.

Figure 46 Integration into host university

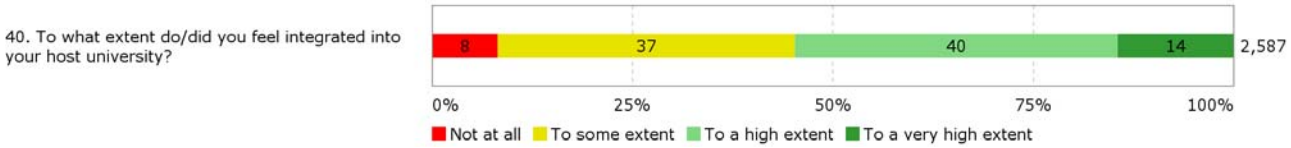


Chart percentage rounded down: Not at all 8.2%; To some extent 37.1%; To a high extent 40.2%; To a very high extent 14.5%.

One issue that arose in an interview with a fellow was how he experienced a different academic culture at his host university compared to the university in his home country. The fellow explained how the relationship between advisor and student/PhD fellow was different and created a situation with different expectations:

PhD fellow: *(…) Basically I feel totally on my own. So I don't really progress so much. I don't know even if I will graduate – that's like something a PhD student should never say (…) All his* [my supervisor's] *other PhD students were Finnish so far and I think that Finnish people are more used to working on their own. In Italy, a PhD student is almost just a master student with the keys of the department, I mean there is no real difference – you are still totally dependent on the professor. And so my approach was to do what he* [my supervisor] *told me to do. His approach is that I do things on my own….so we have this thing to work on a bit.*

(Italian Marie Skłodowska-Curie doctoral fellow in Finland)

As the fellow explains, in his home country he was used to doctoral fellows receiving close guidance or being told what to do, whereas in his host country it was expected that he would work more independently from his supervisor. Different academic cultures and expectations about the relationship between supervisor and doctoral fellow also affected how international fellows integrated into their host university. On the practical side, another fellow explained in an interview that she felt the assistance she received at her host university regarding settling in the host country was primarily received through informal networks and not through an established service at the host university:

PhD fellow: *(…) My feeling is that the one reason why there are European projects at these universities is fundraising. The money comes in from the European Commission and it's not to have international students here, though there are some but it's not like…*

Interviewer: *You mean that it's a source of income for the university?*

PhD fellow: *Yes, definitely. Because it's project money that allows the researchers here to do research*

Interviewer: *OK, so you're thinking it's with that aim – for the benefit of them to do their research?*

PhD fellow: *Yes, that's what I believe (…) I don't see that this university is very eager to attract international students*

Interviewer: *Why is it you don't think so?*

PhD fellow: *Because no one speaks English*

Interviewer: *Even though they might not be so motivated for having international students, you did feel that they were able to facilitate you with some help – with practical paperwork and so on?*

PhD fellow: *Definitely, but that was based on their voluntary* [help] *because one of them also has kids and I was pregnant and I was really desperate, so they took pity, I wouldn't say they felt obliged to help me*

Interviewer: *OK, so it wasn't necessarily because it* [the assistance] *was institutionalised but more because you were building a personal network with some of the employees?*
PhD fellow: *Yes, definitely…and also how often you show up at the European Office and get involved in the financial reporting and so on…*

(German Marie Skłodowska-Curie doctoral fellow in Spain)

Several aspects are shown in this quote. The fellow explained that she received help with sorting out bureaucratic paperwork because she engaged with colleagues on a personal level – not because the university had institutionalised support for international fellows. Another aspect is that she experienced that her host university was not well-prepared to facilitate international students as the members of staff at the universities did not speak English. Several other doctoral fellows also pointed out this issue in the interviews – many experienced that services, paperwork, and courses were not offered in English and it was therefore challenging and time-consuming to communicate with staff, fill in official papers, or even to take a mandatory PhD course. As another fellow expressed it: *"I know the scholar who has joined a year after me* [also a Marie Skłodowska-Curie doctoral fellow]*, she is from Macedonia, and one professor was like "oh the language is almost the same, you speak Serbian, so we are not going to bother translating slides for you into English, so you will just get them in Slovenian". So it was even harder for her to begin with and I think it's ridiculous that* [it] *was actually happening because if your institution is participating in exchange programmes and EU programmes that thing* [courses in English] *should be offered"* (Former Marie Skłodowska-Curie doctoral fellow from Poland in Slovenia). Several fellows also pointed out in interviews that they had a sense of being part of an early generation of international students/employees at their host university and that the host universities were still in the learning phase and evolving how to facilitate international students.

Another aspect of the above quote is that the fellow questioned the host university's or professor's motives for applying for funding from the Marie Skłodowska-Curie Actions. The fellow suggested that the main motivation may be to get funding for professors to be able to do research rather than to attract international doctoral fellows.

In contrast, from other fellows' responses in the interviews, doctoral fellows seem to have better experiences of integrating when a common language such as English is used: "*(…) the people of the group make it really easy to feel welcome (…) they* [my colleagues] *were willing to help if I needed anything, like they helped me with the social security registration in the centre too, so it was really easy to be there and (…) they always talk in English, so my experience there was great and nice (…)"* (Spanish Marie Skłodowska-Curie doctoral fellow in Portugal). Another fellow also said that having a common language and then being several international students together were key factors in feeling welcome and well-integrated into the host university: *"I think that* [the integration in host university] *was pretty OK because at the department everyone spoke English and I was at a quite large department with some international PhDs, so then maybe I did not feel I was on my own because there were people who were in the same situation as me"* (Former Marie Skłodowska-Curie doctoral fellow from Holland in Denmark). Several other fellows connected their integration with having colleagues who were also international. This may indicate that doctoral fellows tend to socialise more with their international colleagues at host universities.

A fellow said in an interview that his integration at the host institution was quite successful and as a result he had adapted some of the working culture of his host country:

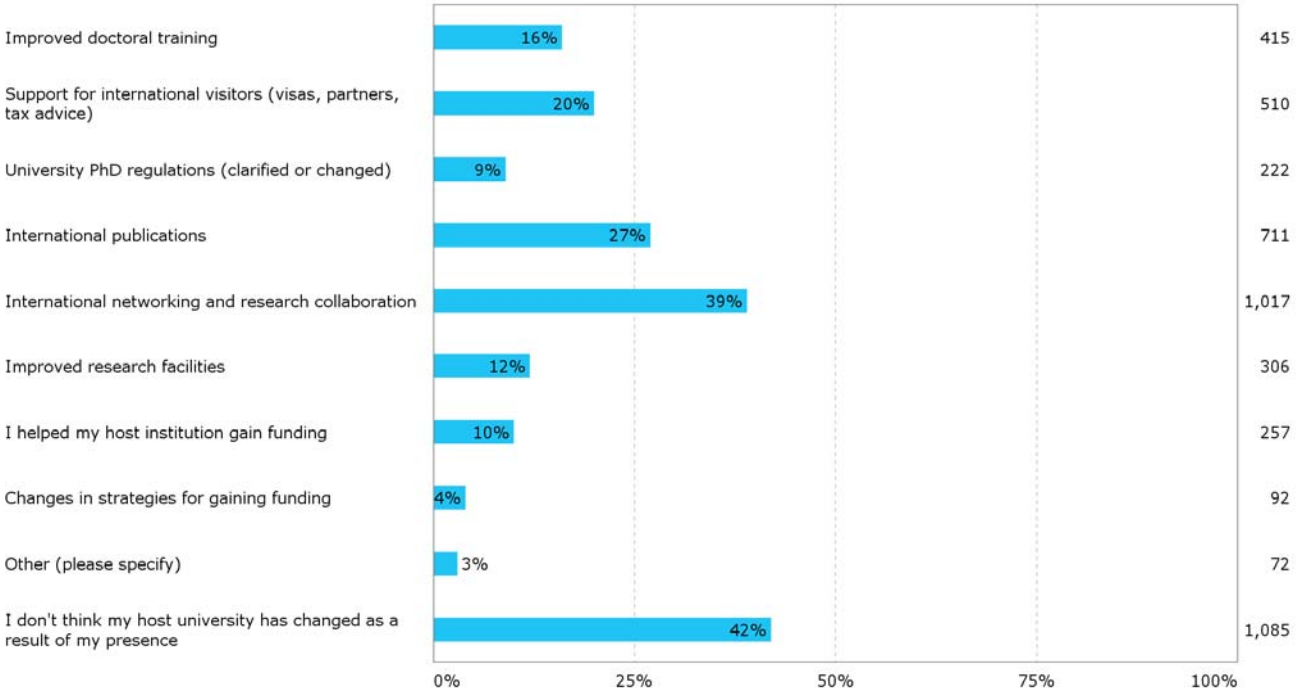
PhD fellow: *I would say that I'm integrated within the international community and a bit within the Danish community, but not that much and the language has been a very big part of that. Within the company I consider myself as fully integrated now, and even in terms of working habits, I think that my working culture is now more Danish than French now, that's for sure.*
(French Marie Skłodowska-Curie doctoral fellow in Denmark)

Besides having changed his working culture, which he described as a positive result of being integrated into his host institution, this example also shows that speaking a common language was a determining factor in his successful integration. But at the same time, the fellow also explained that not being able to speak the local language complicated social connections in the Danish society outside his host company and enhanced the feeling of distance from the local community.

We also asked whether any factors in their host institution had changed as a result of their presence. Quite disappointingly, 42% replied that they did not believe their host institution had changed due to their presence. More positively, 39% believed that their research institution had benefited from international networking and research collaborations. 27% saw a change in international publication at their host institution as a result of their presence, and 20% believed that the support structures for international visitors had changed, which is well in line with the point earlier in this chapter explaining how many doctoral fellows in the interviews said that their host universities were still in the phase of developing structures for international employees and students. Generally, the pattern was not very positive as respondents only scored a few of the factors highly (Figure 47). Only 4% of doctoral fellows thought that their host institution's strategies for gaining funding had changed.

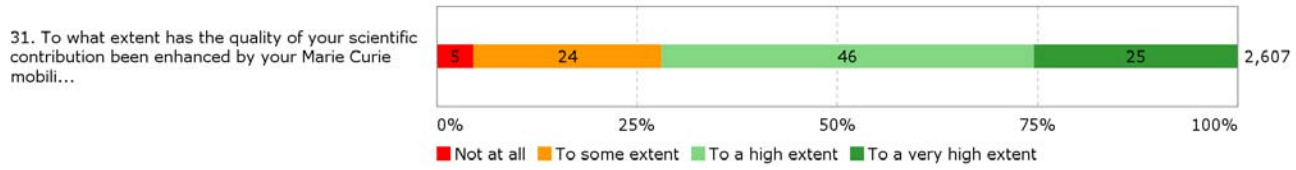
Figure 47 Change in host institution due to fellow's presence

How do you think your host university has changed as a result of your presence? (Multiple choices possible)



A quite positive finding of the survey (Figure 48) is that 71% of fellows felt that the quality of their scientific contribution was improved as a result of mobility (geographical, intersectoral, interdisciplinary, and social mobility) to a high or very high extent. Out of these 25% felt their scientific contribution was enhanced to a very great extent. Only 5% did not feel that their scientific contribution was enhanced at all.

Figure 48 Enhanced scientific contribution due to mobility



9.4. Family situation and family planning

In Figure 16 about the fellows family situation (page 35), only 53% of all respondents were single, 25% were in an unofficial partnership, and 21% were in an official partnership or married. Figure 17 on dependent children (page 35) showed that only 8% of all respondents had dependent children, must likely because the largest population group is 26-30 years (61% as explained in section 3.1 Gender and age).

Respondents were asked whether they had felt pressured to have children as a result of periods of mobility during their doctoral education. The greatest proportion of fellows answered 'not at all' regardless of their family situation. As Figure 51 illustrates 30-40% of all respondents answered 'not at all' to the question

about whether they had postponed having children due to mobility during their doctoral education. However, among the fellows who were either in relationships, married or divorced, more than 30% replied that they had postponed having children to a high or very high extent due mobility in their doctoral training.

Figure 49 Postpone having children due to mobility crossed with family situation
Have you felt pressured to postpone having children due to mobility in your doctoral training?

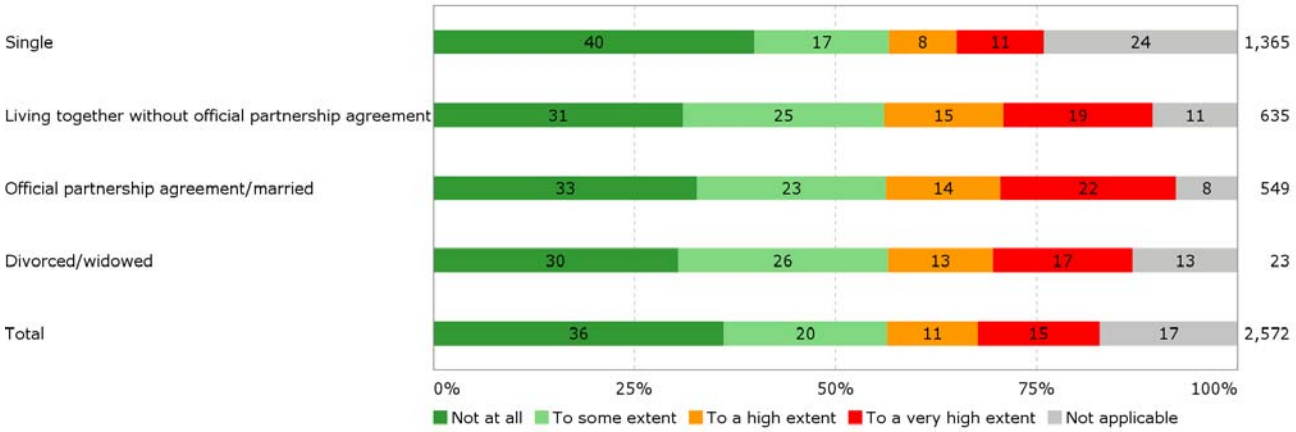


Chart percentage for the total numbers rounded down: Not at all 36.1%; To some extent 20.2%; To a high extent 11.4%; To a very high extent 15.0%; Not applicable 17.3%.

Several fellows explained in the interviews their reasons for postponing having children. A fellow from Colombia, who had recently completed her PhD, explained how she and her boyfriend decided to postpone having children until they both completed their doctoral degrees:

Interviewer: *Have you postponed having children until you have both finished your PhD?*
PhD fellow: *Yeah, one of the reasons is because it can be a bit complicated. I mean it's not impossible. If you want it, you can do whatever – this is not an excuse, let's say. If you really want to have kids at any moment of your life, you can always do it and try to make things work out. But we decided to do so because my partner also supported in my Italy trip, so he also wants his time and his space and a similar opportunity (…) This is sort of an agreement that we did.*
(Former Marie Skłodowska-Curie doctoral fellow from Colombia in Italy)

A fellow who had become a parent during her PhD explained in an interview how she experienced that she was discouraged from having children during the Marie Skłodowska-Curie doctoral fellowship:

PhD fellow: *If you get pregnant that means you have more expenses but the same money* [the income during the Marie Skłodowska-Curie fellowship] *(…) The very fact that everyone is young and has less responsibilities, no family obligations, makes you feel very much like an outlier case (…) It does take a lot of courage to sit in a seminar and listen to the professor while you're breastfeeding, or for example to speak up at one of the annual meetings to discuss the future of the project if you have a child sitting on your lap playing (…) I always saw how much other people were making progress and in this way I would say it's discouraged because I kind of knew that it would mean that I would be slower, I would have to work harder and I also feel more obliged to show that I can live up to the standards. I feel like I can't be the last*

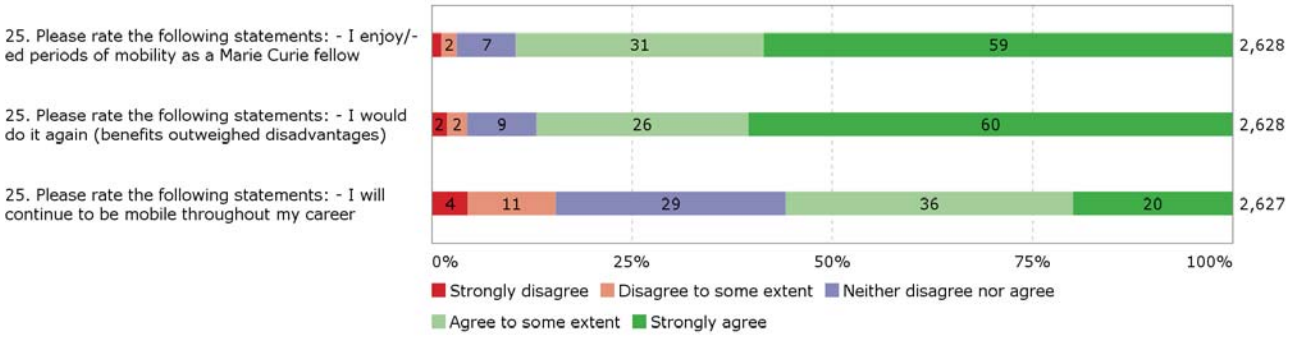
> *one to hand in* [the PhD thesis] *because then everyone can say "ah see, she's not managing" (…) I always try not to disappoint people: my boss, my fellows, whoever, you know. I always felt pressure to show that I can manage, that I can write a decent draft even though I can't sit all night on it (…) At academic conferences or at seminars, I never saw a woman with a child in a baby carrier or on her arms – or a female professor giving a talk with a baby in her arms or sleeping in the back. I said to one of my fellow ESRs* [Marie Skłodowska-Curie doctoral fellow] *"I really need an example, I need someone to look up to, someone to show me how it's done" and she told me – "you are the example".*
>
> (German Marie Skłodowska-Curie doctoral fellow in Spain)

Marie Skłodowska-Curie doctoral fellows receive a monthly living allowance during their Marie Skłodowska-Curie fellowship. In addition, fellows get a monthly mobility allowance for expenses linked to the personal household, relocation and travel expenses of the researcher and her/his family in the host country. The mobility allowance varies according to family situation and whether the fellow is single, married and has children. In the example above, the fellow also problematized the fact that the mobility allowance is fixed upon signing the contract and cannot be adjusted to a changing family situation during the fellowship. In her example, she explained that she was engaged and pregnant at the time when she signed her contract. Despite having married and given birth to two children during her fellowship, she still received the same monthly mobility allowance as a single person. This was one of the reasons why she felt that having children during the Marie Skłodowska-Curie doctoral fellowship was discouraged, in combination with an experienced pressure of work expectations and a working culture where breastfeeding mothers were absent. A policy recommendation would therefore be to allow a salary adjustment during the fellowship in case the family situation of the fellow changes.

9.5. Would you do the Marie Skłodowska-Curie doctoral fellowship again?

Overall, doctoral fellows' experiences with the four different types of mobility (geographical, interdisciplinary, intersectoral, and social mobility) are quite positive. 90% of Marie Skłodowska-Curie doctoral fellows either agreed to some extent or strongly agreed when asked to rate the question: I enjoy periods of mobility as a Marie Skłodowska-Curie fellow. 86% stated that they agreed or strongly agreed that they would do the doctoral fellowship again and that the benefits outweighed the disadvantages. These two replies show a widespread satisfaction with the diverse forms of mobility during the doctoral education.

Figure 50 Conclusion of mobility periods and future prospects



A fellow expressed her overall mobility experiences during her doctoral training as follows:

PhD fellow: *When you do such a Marie Skłodowska-Curie project, the world opens up to you because if I had done a PhD in the Netherlands or not a PhD at all,* [I wouldn't] *discover how much is out there: different universities, different researchers. And when you discover that of course I would like to remain active internationally by collaborating with people abroad.* [It has] *become natural now-a-days within science; you travel to conferences abroad and make collaborations, so that's something I definitely would like to keep doing. For me it's definitely a plus. I mean, it has pros and cons, but for me the pros outweigh the cons.*
(Former Marie Skłodowska-Curie doctoral fellow from Holland in Denmark)

With the prospects of yet new mobility experiences waiting after the completion of the doctoral programme, 56% of the fellows agreed to some extent or strongly agreed that they will continue to be mobile throughout their career. However, almost a third (29%) neither disagreed nor agreed with this question. Only 4% strongly disagreed that they will continue to be mobile throughout their career. To some, the doctoral fellowship is even seen as a life-changing event:

PhD fellow: *(…) From my perspective it was an amazing experience…I mean the possibility to work both in academia and industry; I think this is indeed a very good improvement of the PhD. In my case, the PhD means that I have more exposure to industry. (…) I wanted to try the industry and academia, but at the moment I see more clearly that I would like to continue in industry than before starting the PhD. I would say for me* [the] *Marie Skłodowska-Curie was a unique opportunity, which gave me a lot of insights into what I would like to do with my life. What is research? How do I see myself in research? And it was indeed a very nice opportunity to work in industry and it was a positive life changing* [event].
(Ukrainian Marie Skłodowska-Curie doctoral fellow in Belgium)

9.6. Conclusion

A very positive finding in the survey was that 81% of doctoral fellows believed that their networking skills had either improved to a high extent or to a very high extent as a result of their mobility during their doctoral education. 80% replied that their research ability had improved to a high or very high extent. On the negative side, nearly half (49%) did not believe that their opportunities for future funding had improved at all or only to some extent. 44% of doctoral fellows believed that their knowledge of another sector had not improved at all or only to some extent. This corresponds with the fact that on average only 66% of fellows had experiences with intersectoral mobility during their doctoral education. As a quite positive finding in the survey, 71% of doctoral fellows felt that overall the quality of their scientific contribution had improved as a result of their mobility.

One of the strongest findings in the survey was the fact that 70% of doctoral fellows had not experienced discrimination when living in the host country during their fellowship. However, 21% replied that they experienced challenges with discrimination to some extent, and alarmingly high, 9% reported experiencing discrimination to a high or to a very high extent. One of the main challenges of integrating into the host country was the local language. Regarding integration into the host university, fellows were roughly 50/50 divided on the positive and negative side – 37% only felt integrated to some extent and 8% did not feel integrat-

ed at all into their host university. Quite disappointingly, 42% replied that they did not believe their host institution had changed due to their presence.

The greatest proportion of fellows answered that they had not postponed having children due to mobility in their doctoral training. This was the general result regardless of the fellows' family situation. However, more than 30% of the fellows who were either in a relationship, married or divorced, replied that they had postponed having children to a high or very high extent due to mobility in their doctoral training. In interviews, the theme of parenthood also came up. The many short travels, e.g. for conferences, workshops etc. were a considerable challenge for the fellows and their families, especially when having younger children. One fellow directly expressed that she felt becoming a parent during the doctoral training was discouraged and that is was a problem that once a fellow had signed the contract for the fellowship, the allowance for family and/or children could not be changed even if the fellow got married or had children during the fellowship.

Overall, doctoral fellows' experiences with the four different types of mobility (geographical, interdisciplinary, intersectoral, and social mobility) were quite positive. 90% of Marie Skłodowska-Curie doctoral fellows either agreed to some extent or strongly agreed that they enjoyed the periods of mobility as Marie Skłodowska-Curie fellows. 86% stated that overall the benefits outweighed the disadvantages. These two replies show widespread satisfaction with the diverse forms of mobility during fellows' doctoral education. In the interviews, it was likewise evident that generally the fellows considered themselves to be in a privileged position of being able to do a Marie Skłodowska-Curie doctoral fellowship, however, many experienced diverse obstacles, challenges and hurdles as a part of the journey. Statistically, the data in this survey clearly showed that fellows were pioneers of doctoral education within their family, although about half of fellows came from families with parents who had higher education at either bachelor or master level.

10. Conclusion

Overall, Marie Skłodowska-Curie doctoral fellows enjoyed many benefits from periods of geographical, intersectoral and interdisciplinary mobility, most significantly from work experience outside academia as well as international work experience and networks. But the extensive periods of geographical movement had consequences for many – as one fellow explained in interview: "You compromise many things". Many doctoral fellows compromise in terms of personal relations with close friends and family and face many challenges on their path to gain a doctoral degree under Marie Skłodowska-Curie action programmes. The challenges are to a large extent related to settling in a host country, learning a new language, and studying at a university, which is not well-prepared to host international students for varying reasons. Many fellows experienced similar challenges during periods of intersectoral mobility in the form of secondments. Some found relationships between their host university and the institution of their secondment were not well-organised and some fellows experienced that their secondment institution was not prepared to host them in terms of offering relevant research tasks. Some also experienced a major problem in combining the work during their secondment with their PhD research – and some experienced that the secondment period was not prioritised by their host university/supervisor or was even considered a waste of time. All fellows interviewed in this survey said that the Marie Skłodowska-Curie doctoral fellowship was very challenging and hardly possible to finish within the set norm of three years. This point is supported by the statistical data, which showed that of those who had finished their Marie Skłodowska-Curie doctoral fellowship, only 39% had done so within the normative time set for the fellowship.

However, most doctoral fellows participating in this survey stated that the benefits by far overweighed the challenges or disadvantages both in terms of geographical, intersectoral, and interdisciplinary mobility. Fellows participating in interviews said that overall they considered themselves to be privileged in doing a Marie Skłodowska-Curie doctoral fellowship and saw the fellowship with its diverse forms of mobility as a benefit to their doctoral education, despite the personal and professional challenges that they met as a result of the different types of mobility.

In situations where Marie Skłodowska-Curie doctoral fellows needed visa or residence permits, they generally faced a different level of challenges during their fellowship. These fellows experienced the same challenges as those mentioned above in relation to the different types and periods of mobility. However, the fact that they continuously faced processes of obtaining visa and residence permits tended to permeate their experience. The fellows obstacles they faced were typically whether they were permitted to stay or work in their host country and whether they were able to live together with their family. The risks of not being able to meet the national requirements to obtain a residence permit after the end of their doctoral fellowship put them in a more vulnerable situation when facing a job market with temporary and short-term contracts. Visa requirements for some fellows even prevented them from participating and taking part in elements of their Marie Skłodowska-Curie doctoral programme. In addition, fellows fell into different visa/resident categories in different European countries, which meant that they had to meet different requirements in different countries to obtain a residence or work permit for secondment or research stays. This was time consuming and problematic when the doctoral fellow was for example hosted at a university

in one country, where he/she was categorised as 'student', yet doing his/her secondment within a company in another country in which the same person was categorised as 'employee'.

Generally, Marie Skłodowska-Curie doctoral fellows who were in their mid-twenties or single were more mobile and faced fewer challenges as a result of having fewer commitments to family or partners. Doctoral fellows who were married or lived together with a partner to a greater extent sought to navigate between job opportunities and the needs of close family to reconcile personal life and their aspirations for their career. In was established in the data that fellows perceived the mobile life as mainly taking part in their early career. In contrast, the current trends are that mobility is promoted to greater extent throughout academic careers.

In terms of social mobility, a very positive finding in the questionnaire concludes that the greatest proportion of fellows gain a higher educational level than their parents (95% gain a higher education than their mothers and 91% gain a higher educational level than their fathers). However, it is important to see this in the light of the development of doctoral education in the past decades. Where the doctoral education was previously training candidates for careers within academia, doctoral education is increasingly aiming the candidates for employment outside academia and in the private sector.

This survey has not analysed the movement of fellows compared to the ranking of the universities. However, there is a clear pattern that fellows for the greatest part undertook their doctoral education in Western or Central European countries (United Kingdom (18%), Germany (16%) and France (9%), while the majorities originate from Italy (18%), Spain (8%), Germany (7%), and India (7%). Not many fellows held their fellowship in Eastern Europe or outside the EU. There was a risk of brain drain in this unequal pattern where the most privileged countries attract the best talents from less privileged countries, but not vice-versa, unless the graduates return to their home country or country of origin with enhanced education.

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List of figures

Appendix 1 Invitation letter to survey

Survey about your mobility experiences during your PhD

Are you a current or former PhD fellow in one of the Marie Skłodowska-Curie actions?

If you are, then we would like to hear from you about your experiences of mobility as a part of your doctoral training.

The EU places great importance on mobility in doctoral education. But how do doctoral fellows themselves actually experience mobility? This questionnaire is being sent to you by the UNIKE project, which is a Marie Curie ITN project.

We hope that you will answer this questionnaire to give us an understanding of how mobility during your doctoral training had an impact on your life and studies.

The survey will take approximately 20 minutes.

Thank you in advance. The survey is open until 18 May 2016.

Click here to begin the questionnaire.

If you know anyone else who is a current or former Marie Curie PhD fellow, please forward this invitation as we are hoping to get answers from as many Marie Curie doctoral fellows as possible.

Best regards,

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Mobility in doctoral education

The EU places great importance on mobility in doctoral education. But how do doctoral fellows themselves actually experience mobility? This questionnaire asks Marie Curie PhD fellows about the impact that periods of mobility during the doctoral training had on their life and studies.

In this questionnaire, we are interested in four kinds of mobility:

- Geographical/physical mobility (between countries)
- Intersectoral mobility (between universities and industry, policy making, and non-governmental organisations)
- Interdisciplinary mobility (where doctoral candidates work with researchers from another discipline)
- Social mobility (across social class, between South and North of the world, across parts of Europe, or between lower and higher ranked universities)

The overall results of the survey will be presented to the Mare Curie Alumni Association, the EU and other relevant organisatons.

We would be very grateful if you would fill in the questionnaire - it should take 20 minutes.

Your data will be made anonymous and will be treated as confidential at all times.

The UNIKE Project

Susan Wright
Project Coordinator

Lisbeth Kristine Walakira
Research Assistant

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