

IRPWIND

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on Wind Energy

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Definitions

EERA: European Energy Research Alliance	JP: Joint Programme	SP: Sub Programme	CP: Core Project.
R1: First Stage Researcher – Ph.D. training	R2: Recognised Researcher (PhD holders or equivalent - not yet fully independent),	R3: Established Researcher (independent level of research)	R4: Leading Researcher
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1. Executive Summary

In this document, we present a mid-term analysis of the outcome from the IRPWind mobility scheme based on the first two years of the programme in terms of difference and similarities with previous or active European programmes.

From the baseline analysis of existing reports and published articles, we found that previous or active programmes mainly address training, early stage career, or “migration of researcher”. “Brain drain” and “brain gain” papers are more oriented toward new work opportunities in the European job market

The innovative aspect of the Mobility programme in IRPWind is that it is neither educational nor offering job opportunities but it aims to enforce cooperation and transfer of knowledge (ToK) through exchange of established scientists primarily within the IRPWind partners and then extended to the EERA JP Wind Energy members.

In this report, where possible, we compare underlying considerations from previous studies to the emerging mobility patterns in IRPWind and analysed in order to capture main features that could be compared with mobility implemented in IRPWIND and would give suggestions to implement the best possible mobility scheme within Europe.

Mobility patterns have been analysed in the frame of e-mail exchanges, personal contacts and discussions at mobility sessions at IRPWIND annual conferences. An emerging obstacle to mobility is the difference of financial rules between countries and even in departments of the same institution with respect to IRPWind Rules. This points out the still missing alignment to the H2020 financial rules within EU.

Finally, we outline the process that has generated the adjustment of the original pilot scheme to the actual one and introduce new measures to incentivize the mobility within the IRPWind programme. Keeping in mind the goal of instilling a mobility culture for increasing cooperation within the wind energy community, we propose to launch discussions through professional social network such as LinkedIn or Twitter to collect useful information to outline of best practices for the exchange of researchers in Europe.

2. Introduction

During the last few years, a huge amount of time and energy was spent in order to implement policies on the mobility of researchers in the European Union, (1) and (2).

The motivation for this effort is the implementation of the policy “to make Europe the most dynamic and competitive knowledge economy in the world”, arising from the EU’s Lisbon Strategy in order to improve European levels of productivity and growth via innovation and learning. (1)

The exchange of knowledge, experience and practice encouraging ‘brain circulation’ via a permanent or temporary return, or migrants from their home countries are the underlying idea to benefit the scientific community in both the ‘sending’ and ‘receiving’ countries.

This is more usual as academic exchange allowing individuals to engage in professional development and networking, representing an investment in human capital by the institution to bring returns in the form of innovation in teaching and research.

Existing literature, regarding mobility, deals mostly with the EU Marie Curie Programme and several programme, generally for training and early stages and facilities regarding mobility with a higher duration than here proposed schemes.

The Bologna and Lisbon processes, have been especially oriented to higher education, and attribute great importance to international mobility for both students and for academic staff.

Report (3) deal with an extensive analysis of the policies, motivation and analysis of obstacles to mobility.

Parallel to EU mobility programme, at the national level, governments have established-related policy objectives and bi-lateral schemes are running for international mobility.

The EU2020 Strategy builds on Europe's strongest (knowledge) asset, human capital i.e. Europe's researcher population. Creation of a European Research Area (ERA), is one of the milestone of the EU 2020 strategy (and the Innovation Union initiative in particular) and future economic competitiveness of Europe.

Recent evaluation of the European Commission's scientific mobility programme, give evidence of significant differences in the geography of current intra-EU flows (1). Italy, Spain, France, Germany and Greece are the five most important sending countries, contributing more than 75% of applicants and the United Kingdom is the most popular destination, attracting 36% of applications, followed by France (20%) and Germany (10 %). Are such differences meaningful to conceptualise them in terms of 'brain drain' or 'brain gain'?

Focusing on Italy, Pelizon (4) reports on the mobility of researchers underlining the importance of distinguishing between two separate phenomena:

- The mobility of human resources, e.g. those who leave Italy temporarily to broaden their knowledge of research and other cultures, and
- Loss of brains forever; a one-way process that is not balanced by repatriations or by attracting foreign scientists due to economic constraints.

Analysis of correlation between migration and the ToK explains that the investment at home country or home organization level is expected to be rewarded with transfer of knowledge and/or gained skills spendable at the home institution for generating knowledge and excellence.

In (5) a set of definitions of mobility is presented as follow:

1. International mobility versus inter-sectorial mobility: moving to another country versus moving to another sector (though both can occur in the same move);
2. Mobility of Ph.Ds versus post-doc mobility: mobility of researchers enrolled in a Ph.D. programme during their R1 career stage versus mobility in any of the post-doctorate R2 stage of the career;
3. Mobility to obtain a Ph.D. in another country versus mobility of three months or more during the Ph.D. in the home country;
4. Mobility period longer than 3 months versus mobility periods shorter than 3 months: mobility including the change of employer, employer mobility;

6. Virtual mobility: web-based or virtual technology used to collaborate internationally;
7. Non-mobility or never-mobile researchers: researchers who have never been staying to another country.

The IRPWIND project proposes an innovative approach because offers short-term mobility grants, up to one month for top managers of research institutions and from 1 month to 3 months directed to experienced researcher. The intent is to support the creation of synergy for the former and new collaborations and strengthen the existing ones for the latter, within the EERA JPWIND participants. In this view, the programme it is innovative because, though it falls within definition 4, it does not involve young researchers.

Regarding Best Practice, in mobility of researchers, Deloitte (2) selected around 50 criteria considering:

- National context;
- Geographical distribution;
- Maturity of the country in the research profession; and
- Potential exploitation of the example (transfer to other countries and contexts).

They define a “Good Practice as a measure and/or policy representing the most effective way of achieving a specific objective”.

In order to be considered a Good Practice, a measure and/or policy must be:

- Well developed, implemented and evaluated;
- Successful (showing positive results in relation to a specific objective);
- Verifiable (showing evidence of effectiveness and/or success achieved);
- have a possible multiplier effect or potential for transferability to other (policy) areas.

Issues emerged from the literature, together with the experience gained during two years of IRPWIND project can support the identification at the end of the project, of the best scheme between “mobility longer than 3 months versus mobility shorter than 3 months ” in which is effective the transfer of knowledge and when the investment in skills is a brain gain and where it is ‘expended’

3. Obstacles to mobility and their impacts on the academic staff mobility.

(5) describes a category of obstacles to the mobility of staff at universities; and according to whether the perspective of the individual or the Home Higher Education institution is adopted. (5) suggests that great care should be taken in the definition of obstacles. Here, the synthesis of analysed literature is given considering obstacle connected to family reasons, duration together with opportunities and impacts.

3.1. Obstacles

Regarding all types of international mobility, (see previous section) there is an indication that female researchers are, to some extent, less mobile than their male counterparts. In IRPWIND female researchers applied less than male counterparts (section 4.3). For non-mobile researchers: personal and family reasons are the most important ones. The top three barriers to mobility were in order: personal, family and logistics reasons. Clearly, researchers with children find logistics and personal/family reasons more important, whereas those without children indicate the potential loss of professional network at home especially for long mobility impacting on their career. The above, are likely to be the reason why the IRPWIND six-month scheme has never been considered.

3.2. Impact of mobility on international cooperation

In (5) the impact of mobility is also analysed in the frame of ToK and enhancing collaboration in line with general expectations,

- >3 month mobility is interlinked with other forms of mobility and collaboration.
- Long-term (>3 months) and short term (< 3 months) mobility profiles are strongly interrelated.

Moreover, long-term international mobility is positively related to international collaboration: researchers who have been away longer than 3 months have also collaborated more frequently with research partners abroad and outside the EU. Therefore, Mobility is positively correlated with collaboration activities.

Around three quarters of the mobile researchers who collaborate internationally indicate that these relationships are the result of their mobility experience.

The gender factor makes a difference in terms of mobility effects. Overall, women are much more positive in recognising the effects of their mobility experience than men. Men only score slightly higher than women in terms of the citation impact of publications and quality of life, but the difference for these issues is very marginal.

For all the other factors, women seem to benefit more from international migration than men.

Most notably, women score higher on network effects such as 'recognition' in the research community, international and national contacts/ networks. Another factor in favour of women is their ability to obtain national research funding, salary, job options in academia, patents, and advanced research skills.

For male researchers, the share for mobility amounts to 28% compared to 21% for female researchers.

In IRPWIND, our case benefit for 3 months scheme demonstrates positive effect above described, as example, in the context of IRPWIND a female researcher applied three times for three-months mobility scheme. She clearly declared impact of international collaboration of first benefit of mobility experience.

3.3. Career levels and mobility

Here, a synthesis of analysis in (5) is given the percentages of mobility at different career stages 2013 are respectively: R3 researchers are the majority (32%), followed by R4 (29%), R2 (21%) and R1 (18%).

During the last ten years, it is shown that female researchers are less inclined to international mobility longer than 3 months in post- PhD career stage, with respect to their male counterparts (25% versus 34%).

The gap is greater for those at the higher career stages:

- 7 % difference in R2,
- 10 % difference in R3, and
- 11 % difference in R4.

Considering that a gender gap concerning >3 month mobility is nearly non-existent during the Ph.D. phase, this may point towards an improvement of the gender gap in mobility over time if logistic issues are somehow mitigated.

Figure 1 shows that overall data indicates that researchers consider international mobility in post-PhD career stages to have largely positive effects.

The outcomes i.e. quality of output, citation impact, patents, number of co-authored publications, are the most important factors during their entire mobility experience.

On average, 60% perceive these factors as having (strongly) increased. However, a significant share of around 25% of researchers still perceive the quality and the number of co-authored publications as (strongly) decreased and 15-17% cite patents and citation impact as (strongly) decreased. This leaves around 14-21% of researchers who see no change by these factors.

Other important impacts are the advancement of research skills (80% increased, 11% neutral and 9% decreased) and the development of international contacts and networks (74% increased, 7% neutral and 19% decreased).

Although overall career progression has increased according to 55% of researchers, a significant group of 31% sees a decrease in career progression as an effect of mobility (compared to 14% neutral).

The ability to obtain international research funding has neither increased nor decreased for the same share of researchers (39-40%). Surprisingly, job options in academia (33% increase versus 48% decrease) or outside (27% increase versus 47% decrease) as well as progression in remuneration (17% increase versus 43% decrease) tend to have decreased for the majority of researchers.

Finally, around 40% of researchers consider their recognition in the research community to have decreased compared to around 45% who considered it was increased.

The pattern is very similar for the researchers who were internationally mobile longer than 3 months in the last 5 years.

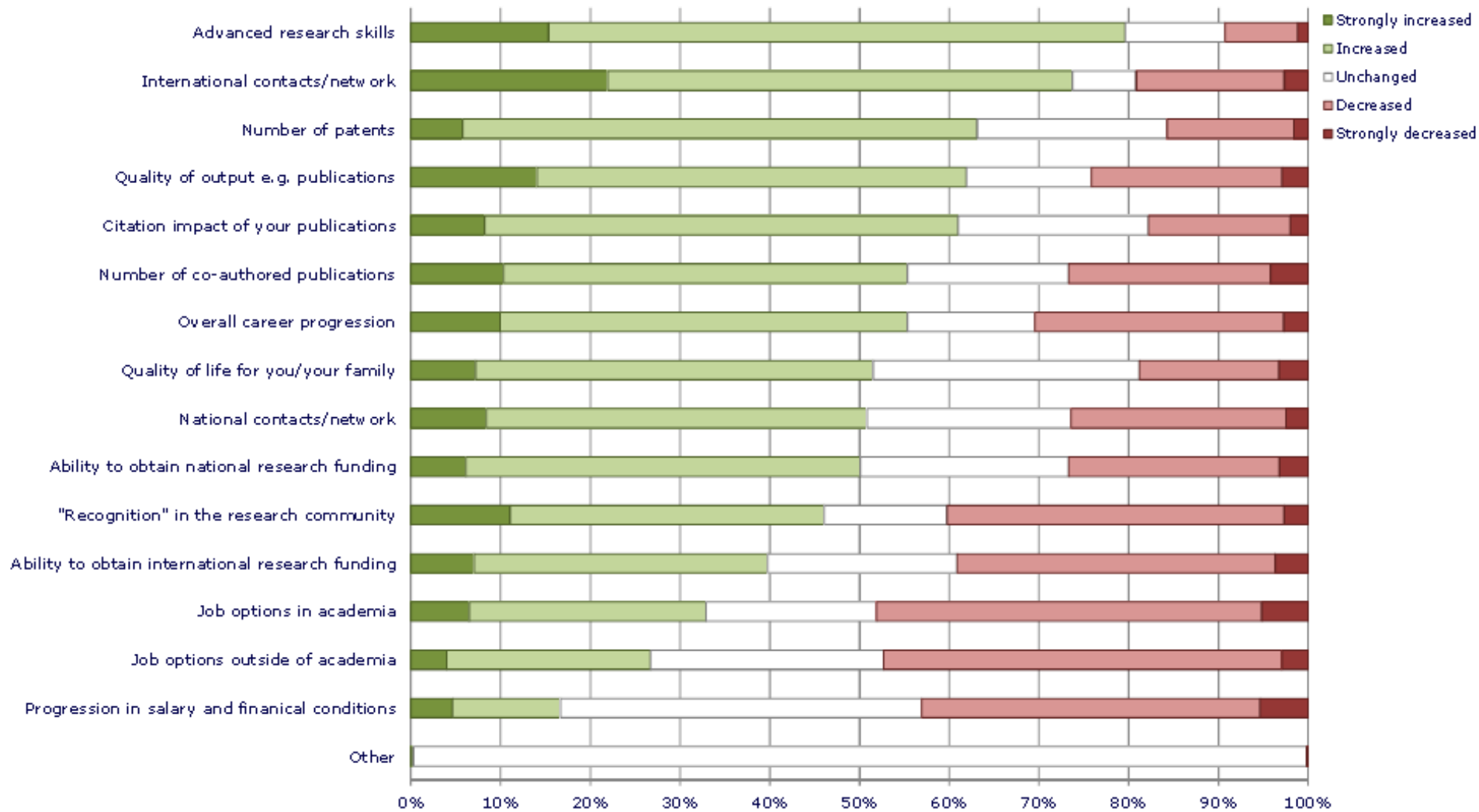


Figure 1 Effects of the entire mobility experience on the research career for different criteria.

3.4. Networking

A large number of studies have found strong positive relationships between mobility and networking.

An extended survey in (6) describes improvements of researchers' career, measured empirically, in the sense that it increases diversification of their research and effect of brain gain on their home institution. In two-fold both in return of collaboration and in expertise.

Specifically, mobility is recognised to improve visibility, contacts, the amount and diversity of co-authorships, access to new international/global knowledge networks and communities of practice, etc.

In (5) is showed that more than 50% of the R2, R3 and R4 mobile researchers currently working in the EU think that their national contacts/network get improved due to their entire mobility experience (nearly 10% thinks that it strongly increased), 20% perceive that it did not change and 25% thinks that it decreased.

Furthermore, as discussed earlier, more than 50% perceive that their number of co-authored publications increased as a result of the entire mobility experience.

The majority of the >3 months internationally mobile researchers feels that mobility has had positive effects on several aspects of their career as a researcher. The output effects (quality of research outcome, citation and impact indices, patents, number of co-authored publications) are indicated as having increased the most as a result of their mobility experience. Acquiring new skills and network building are also notable effects.

4. Analysis of the first two years of the IRPWind mobility programme

In this section, we describe the IRPWind mobility programme and show the analysis of Mobility patterns for the first two years of the project.

The mobility programme has the following objectives:

1. To ensure an efficient implementation of the CPs and in general of the research activity in EERA;
2. To facilitate the cooperation between EERA research organizations and the broad scientific community to fill gaps in the ERA in the wind energy sector;
3. To connect relevant National projects/Initiatives to the IRPWind core projects and generally to the EERA JP Wind Energy Joint Sub Programmes, keeping an eye to future emerging technologies and scientific topics; and
4. To conduct actions oriented to promote the concept of mobility of researchers as brain gain and foresight schemes to enable effective mobility.

At the beginning the mobility programme consisted of 39 Grants for a period length of 1 month; 18 Grants for a 3-month period and 16 grants for a 6-month period. A lump sum covers travel expenses from/ to home institution.

For the first 3 calls we received 10 applications, much less than foreseen in the programme. Starting from the 4th call all EERA partners were included and a more flexible scheme in the choice of the grant duration was adopted according to several requests:

1. A mobility scheme from 2 to 4 weeks for IRP Wind and EERA Managers aiming at stimulating the mobility of managers in the IRPWind and EERA organizations including EERA SP leaders and Management Committee members and CP project managers and IRPWind management board members to meet and discuss for laying down strategic action plans and other collaborative efforts.
2. A mobility scheme from 4 to 26 weeks for all scientists.

Following, we show the statistics elaborated on the applications concerning length of the grant, gender and country.

4.1. Length of the grant

Regarding the length of the grants, Figure 3 shows the application numbers in months. Here emerges that the three-month period was the preferred choice. We also note that increasing flexibility is also increasing the number of application, so this has been the right choice to take.

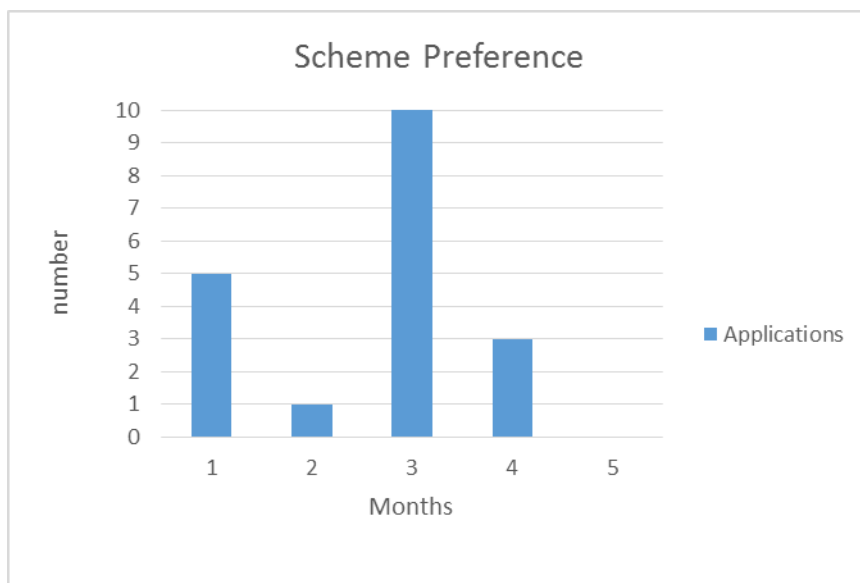


Figure 2 Scheme preference during two year. Note that from the 4th call the period length is expressed in weeks.

4.2. Country

Figure 3 shows the involvement in the mobility programme by country (top) and by each IRPWind/EERA organization as host or home. The social economical situation in each country impacts on this criterion (1). Spanish researchers have been the most active in applying and CENER researchers were the most active travellers, followed by the German, Danish and Finnish researchers. However, it should be pointed out that the three Finnish applications were from the same female researcher (see 4.3). Spanish high mobility emerged also in (1) but the mobility of the Northern European is a new element that will be investigated at the end of the project when more cases will be available and/or with ad-hoc questionnaires (section 5)

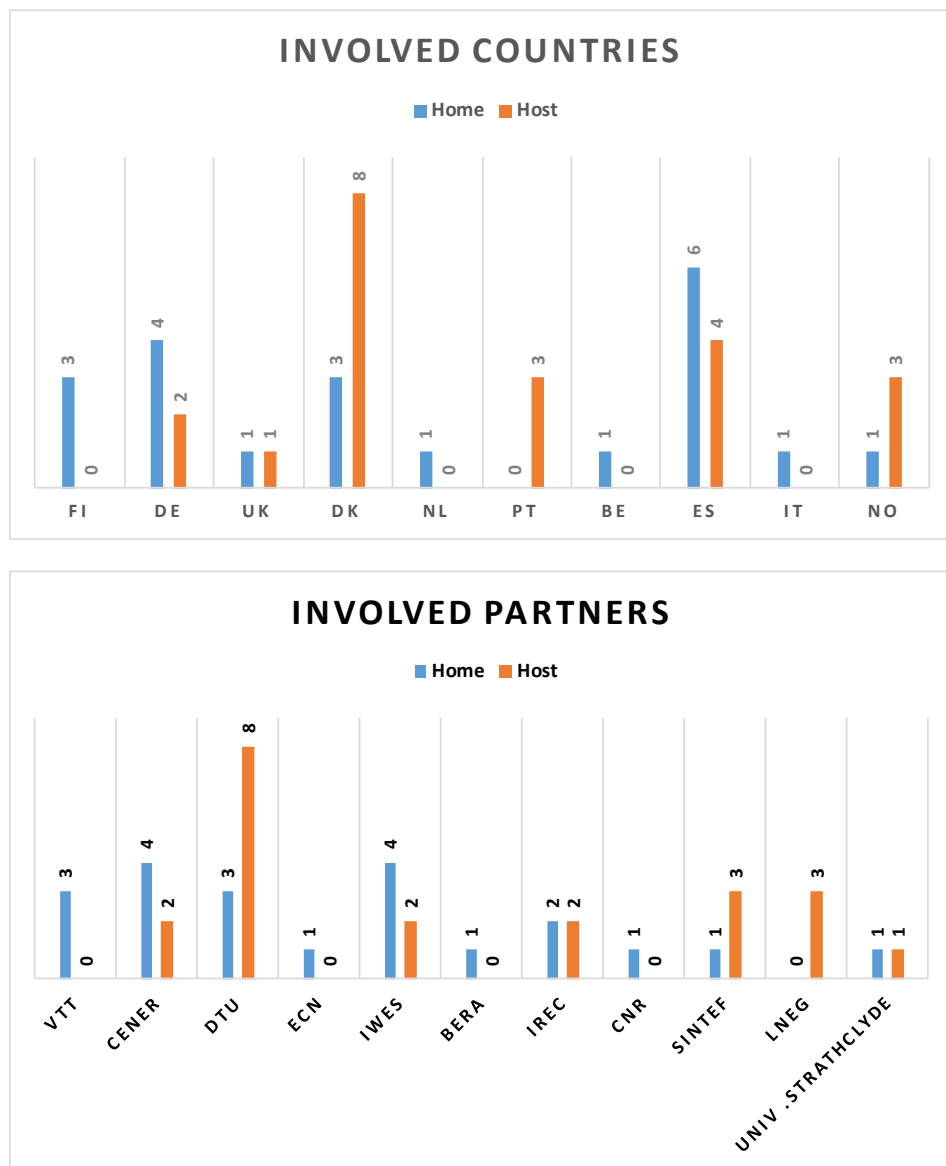


Figure 3 Mobility per country (top) and involvement of Institutes as Home or Host (bottom).

4.3. Gender

Concerning gender, Figure 4 presents the sharing of the applications between male and female researchers.

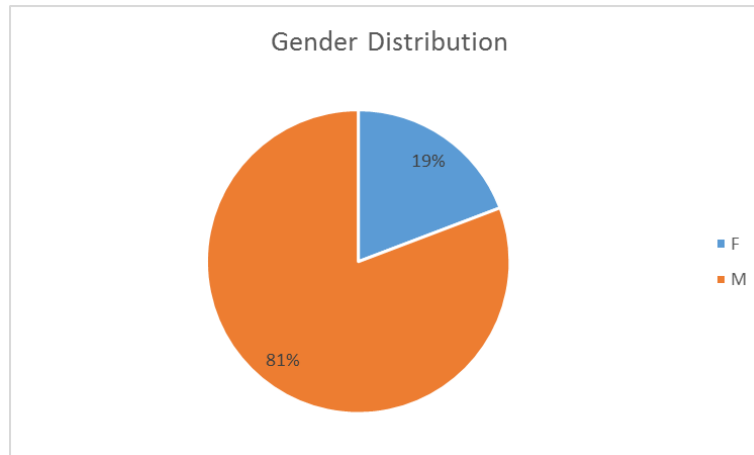


Figure 4 Percentages of male and female applications.

We received 5 applications from female scientists, but we must mention that three applications were from the same female researcher who applied to stay at different Institutions for three different periods of three months each. All three female researchers are married and this would make us argue that motivation to be mobilised overcome general personal obstacles. However, mobility was allowed by the following reasons:

- Possibility for husbands to join during the mobility for certain periods.
- Possibility for husbands come along for the whole period
- Possibility to bring along a baby child.

Therefore it seems that a “portable” family is a necessary condition for mobility. Similar conclusions can be drawn for man researchers.

5. Conclusive remarks and actions for the future.

We presented results of the first two years of the IRPWind Mobility Programme. It is too early to give final best practices on the type of mobility supported in this project i.e. established researchers. However, patterns emerge (e.g. time length choices, no choices of long periods) that gave a guideline to try new more flexible schemes. These patterns are supported by reports on previous European mobility programmes.

To introduce new types of flexibility in the whole process, we envisaged:

- Continuous open calls;
- Possibility to fraction at least the longer grants in shorter periods;
- Action from host institution to facilitate the individuation of logistic solution for families; and
- Agreements to facilitate overcoming obstacles given by different administrative rules in different countries.

A discussion on the topic of mobility of established researchers' topic will be launched and kept alive on LinkedIn and Twitter in collaboration with EWEA and ECN that are the responsible of the IRPWind WP3 Dissemination. From the indications emerged from section 3, a questionnaire is under elaboration containing questions on the following issues:

- Perception on impact of own mobility on career and personal development;
- Conditions that would drive frequent mobility;
- Obstacles from marital status;
- Prioritization of reasons for applying for a mobility grant;
 - Enlarge own Network;
 - More cooperation;
 - Knowledge sharing;
 - Transfer of knowledge;
 - New job opportunities;
 - Explore other research fields;
 - Prepare proposals for projects;
 - To find inspiration from border sectors/disciplines; and
 - Personal development.

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