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8th September 2010

Ex-post Impact Assessment study concerning the ‘Marie Curie Actions’ under the Sixth Framework Programme

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Lot 3: Provision of external evaluation studies of an interim and ex post nature
Ex-post Impact Assessment study concerning the ‘Marie Curie Actions’ under the Sixth Framework Programme

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<tr>
<th>ACRONYM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEROSPACE</td>
<td>Thematic area: Aeronautics and space</td>
</tr>
<tr>
<td>AS</td>
<td>Associated State(s)</td>
</tr>
<tr>
<td>C&amp;C</td>
<td>Charter and Code (shortened form of words for European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers)</td>
</tr>
<tr>
<td>CHE</td>
<td>Chemistry thematic panel</td>
</tr>
<tr>
<td>D5 report</td>
<td>Marie Curie Other Actions Report - Deliverable D5 – 11 January 2010</td>
</tr>
<tr>
<td>D6 report</td>
<td>Draft Final Report – Deliverables 6.1 (presentation) and 6.2 (draft final report)</td>
</tr>
<tr>
<td>D7 report</td>
<td>Final Report</td>
</tr>
<tr>
<td>ECO</td>
<td>Economic Sciences thematic panel</td>
</tr>
<tr>
<td>ENG</td>
<td>Information Science and Engineering thematic panel</td>
</tr>
<tr>
<td>ENPI</td>
<td>European Neighbourhood and Partnership Initiative</td>
</tr>
<tr>
<td>ENV</td>
<td>Environment and Geosciences thematic panel</td>
</tr>
<tr>
<td>EPWS</td>
<td>European Platform of Woman Scientists</td>
</tr>
<tr>
<td>ER</td>
<td>Experienced Researchers</td>
</tr>
<tr>
<td>ERA-Link</td>
<td>European Researchers Abroad Link</td>
</tr>
<tr>
<td>ERA-MORE</td>
<td>European Network of Mobility Centres</td>
</tr>
<tr>
<td>ERC</td>
<td>European Research Council</td>
</tr>
<tr>
<td>ERG</td>
<td>FP6 European Re-integration Grant (ERG) for individual experienced fellows</td>
</tr>
<tr>
<td>ERMP</td>
<td>European Researcher's Mobility Portal</td>
</tr>
<tr>
<td>ESR</td>
<td>Early Stage Researchers</td>
</tr>
<tr>
<td>EST</td>
<td>FP6 Host Fellowship for Early Stage Training (EST)</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>EU10</td>
<td>Member States that joined the EU just after 2004: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia</td>
</tr>
<tr>
<td>EU15</td>
<td>Member States prior to the 2004 enlargement, namely Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom</td>
</tr>
<tr>
<td>EURAXESS</td>
<td>ERA-MORE Network was rebranded the EURAXESS Services Network in June 2008</td>
</tr>
<tr>
<td>EXA</td>
<td>FP6 Excellence Awards (EXA)</td>
</tr>
<tr>
<td>EXC</td>
<td>FP6 Marie Curie Chairs</td>
</tr>
<tr>
<td>EXT</td>
<td>FP6 Excellence Grants (EXT)</td>
</tr>
<tr>
<td>FOOD</td>
<td>Thematic Area: Food quality and safety</td>
</tr>
<tr>
<td>FP4</td>
<td>4th Framework Programme of Research and Technological Development of the EU (1994-1998)</td>
</tr>
<tr>
<td>FP5</td>
<td>5th Framework Programme of Research and Technological Development of the EU (1998-2002)</td>
</tr>
<tr>
<td>FP6</td>
<td>6th Framework Programme of Research and Technological Development of the EU (2002-2006)</td>
</tr>
<tr>
<td>HRM</td>
<td>Human Resources and Mobility</td>
</tr>
<tr>
<td>ICPC</td>
<td>International Cooperation Partner Country</td>
</tr>
<tr>
<td>IEF</td>
<td>FP6 Intra-European Fellowship (IEF) for individual experienced fellows</td>
</tr>
<tr>
<td>IHF</td>
<td>FP5 Industry Host Fellowship</td>
</tr>
<tr>
<td>ACRONYM</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>IIF</td>
<td>FP6 International Incoming Fellowship (IIF) for individual experienced fellows</td>
</tr>
<tr>
<td>IMPAFEL</td>
<td>Impact Assessment of Marie Curie Actions under FP4 and FP5</td>
</tr>
<tr>
<td>IMPAFEL2</td>
<td>The previous impact assessment study (1994-2002) is sometimes referred to as “IMPAFEL2&quot;¹</td>
</tr>
<tr>
<td>IOF</td>
<td>FP6 International Outgoing Fellowship (IOF) for individual experienced fellows</td>
</tr>
<tr>
<td>IRG</td>
<td>FP6 International Re-integration Grant (IRG) for individual experienced fellows</td>
</tr>
<tr>
<td>ISE</td>
<td>Initiative for Science in Europe</td>
</tr>
<tr>
<td>IST</td>
<td>Thematic area: Information Society Technologies</td>
</tr>
<tr>
<td>LCF</td>
<td>Marie Curie Large Conferences</td>
</tr>
<tr>
<td>LIF</td>
<td>Life Sciences thematic panel</td>
</tr>
<tr>
<td>LIFESCIHEALTH</td>
<td>Thematic area: Life sciences, genomics and biotechnology for health</td>
</tr>
<tr>
<td>MAT</td>
<td>Mathematics thematic panel</td>
</tr>
<tr>
<td>MCA</td>
<td>Marie Curie Action</td>
</tr>
<tr>
<td>MCFA</td>
<td>Marie Curie Fellowship Association</td>
</tr>
<tr>
<td>NERE-Link</td>
<td>Non European Researchers in Europe Link</td>
</tr>
<tr>
<td>NIGHT</td>
<td>European Researcher Night</td>
</tr>
<tr>
<td>NMP</td>
<td>Thematic area: Nanotechnologies and nano-sciences, knowledge-based multifunctional materials and new production processes and devices</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>PHY</td>
<td>Physics thematic panel</td>
</tr>
<tr>
<td>RTN</td>
<td>Research Training Network</td>
</tr>
<tr>
<td>S&amp;T</td>
<td>Science and Technology</td>
</tr>
<tr>
<td>SCF</td>
<td>Marie Curie Series of Events</td>
</tr>
<tr>
<td>SESAM</td>
<td>Socio-economic and impact questionnaires responses from MC Actions in FP5 and FP6</td>
</tr>
<tr>
<td>SG</td>
<td>Steering Group</td>
</tr>
<tr>
<td>SOC</td>
<td>Social and Human Sciences thematic panel</td>
</tr>
<tr>
<td>SSA</td>
<td>Scientific Support Actions (ERA-Link, ERA-MORE, NIGHTs, NERE-Link, MCFA and European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers)</td>
</tr>
<tr>
<td>SUSTDEV</td>
<td>Thematic area: Citizens and governance in a knowledge-based society</td>
</tr>
<tr>
<td>TEP</td>
<td>The Evaluation Partnership</td>
</tr>
<tr>
<td>ToK</td>
<td>Transfer of Knowledge</td>
</tr>
<tr>
<td>ToK-DEV</td>
<td>FP6 Development Host Fellowship (ToK-DEV)</td>
</tr>
<tr>
<td>ToK-IAP</td>
<td>FP6 Industry-Academia Partnership (ToK-IAP)</td>
</tr>
<tr>
<td>TOR</td>
<td>Terms of Reference</td>
</tr>
<tr>
<td>TSF</td>
<td>FP5 Training Site Fellowship (for Doctoral Students)</td>
</tr>
</tbody>
</table>

¹ IMPAFEL2: Impact assessment of the Marie Curie fellowships under the 4th and 5th Framework Programmes of Research and Technological Development of the EU (1994-2002). June 2005 (Contract No IHP-D2-2003-01)
1.0 EXECUTIVE SUMMARY

The scope of the ex-post impact assessment covers the Marie Curie Actions (MCAs) under FP6. These are shown by placing these actions in the context of the continuity of the Actions since FP4 and highlighting the particular focus of the present study (i.e. the FP6 actions in the 3rd column).

<table>
<thead>
<tr>
<th>FP4 - Training and Mobility of Researchers (TMR)</th>
<th>FP5 - Improving Human Potential</th>
<th>FP6 - MC Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC Individual Fellowships</td>
<td>MC Individual Fellowships</td>
<td>MC Individual Driven</td>
</tr>
<tr>
<td>Category 20</td>
<td>Category 30</td>
<td>• Intra-European Fellowships (EIF)</td>
</tr>
<tr>
<td>Category 30</td>
<td>• Return &amp; Reintegration</td>
<td>• Outgoing International Fellowships (OIF)</td>
</tr>
<tr>
<td>Category 40</td>
<td></td>
<td>• Incoming International Fellowships (IF)</td>
</tr>
<tr>
<td>Return &amp; Reintegration</td>
<td></td>
<td>Return &amp; Reintegration</td>
</tr>
<tr>
<td>Research Training Networks</td>
<td></td>
<td>• Europ. Reinteg. Grants (ERG)</td>
</tr>
<tr>
<td>Euroconferences, Summer Schools and Practical</td>
<td>High Level Scientific</td>
<td>• Intern. Reinteg. Grants (IRG)</td>
</tr>
<tr>
<td>Training Courses</td>
<td>Conferences</td>
<td>MC Host Driven</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Host Fellowships for Early Stage Training (EST)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Host Fellowships for Transfer of Knowledge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• TOK-DEV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• TOK-IAP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Research Training Networks (RTN)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conferences and Training Courses (SCF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excellence promotion (New)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Chairs (EXC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Excellence Awards (EXA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Excellence Grants (EXT)</td>
</tr>
</tbody>
</table>

Source: DG RTD, the European Commission

Within the boundaries of the specific objectives and implementation modalities of the different actions, MCAs were open to all fields of research which contributed to the objectives of the Community as defined in article 163 of the EC Treaty. Actions were open to individual researchers as well as organisations active in research or research training, including industrial researchers and SMEs.

Individuals: Actions were open to individual researchers from the EU Member States, as well as from countries associated with FP6 and from third countries. In order to take part in most of the MCAs, researchers must be prepared to move countries, either within Europe or internationally. In turn, trying to enhance networking between researchers, the EU also provides funding for researchers coming from third countries to train in Europe. The applicability for the various funding schemes is based on research experience and expertise of the individual researchers, not age.

Two main categories of researchers were eligible for funding in FP6: (1) early-stage researchers (ESRs), at the beginning of their research career with less than four years’ active research experience, and (2) experienced researchers, who had more than four years of active research experience or who hold a doctoral degree. Researchers with more than ten years of experience were not eligible for some Actions. Researchers could either apply directly to an institution that had been selected by the European Commission for a Host-Driven Action, or they could prepare a project together with a host institution of their choice and submit it to the Commission.
Host organisations were research organisations that could apply to the European Commission for funding to provide different types of training for researchers of any age or nationality, such as initial training, transfer of knowledge, advanced training or other facilities. Once selected by the Commission to carry out these kinds of training opportunities, the host institutions were usually free to select the researchers who would benefit from the training or who would participate in the transfer of knowledge.

1.1 THE IMPACT ASSESSMENT

The Research Directorate-General (DG RTD) has a legal obligation to assess the impacts of all FP6 actions. By July 2008, when this study was initiated, some 35 studies had been conducted across the research spectrum dealing with different aspects of FP6.

The objectives of this study were to answer 30 key questions about the MCAs in FP6 in order to improve actions for FP7. After 2010, the resources allocated to MCAs are set to increase and the findings from this study are important for future planning and budget allocation.

This impact assessment follows an earlier impact assessment (IMPAFEL2), with similar objectives to the current study, and carried out in relation to the Marie Curie fellowships of FP4 and FP5.

The scope of the current study is wider and comprises an assessment of the impact of MCAs under FP6. In addition, elements of continuity across FP4, FP5 and FP6 have been assessed by building on the results of the previous IMPAFEL2 study and by doing a follow-up survey among the respondents in IMPAFEL2 with an FP4 fellowship.

The task set out for the impact assessment was to evaluate the impact of MCAs in the context of the core European Research Area (ERA) objectives (scientific excellence, competitiveness and innovation) and support this through three distinct analytical components:

- By addressing **30 key evaluation questions** with regard to the Programme;
- By comparing impacts across FP4, FP5 and FP6, as well as looking at FP6 on its own,
- By examining the way the behaviours and impacts vary between the **8 thematic panels**.

Specific suggestions that would accelerate the attainment of Marie Curie goals, or those which have the potential to ameliorate any difficulties encountered, were to be included as part of the current study.

The methodology used to undertake the impact assessment was first mooted in the original proposal of the contractor and modified in agreement with the Steering Group (SG). Six main sources of information and data were used to gather relevant evidence: an online survey of FP4 fellows, surveys of FP5 Fellows remaining, as well as former and current FP6 Fellows, an online survey of FP6 supervisors, six case studies covering thematic issues under FP6 and desk research. The work included a literature review, analysis of SESAM data and perusal of previous evaluations under FP6.

A **pilot study** was undertaken of unsuccessful applicants to IEF under FP6, with a view to undertaking a wider survey, but the SG decided not to pursue this part of the work.

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2 TOR, version 15\textsuperscript{th} Nov 2007: Chapter 3.2: Evaluation Questions, pages 11 & 12.
All evidence gathered was brought together to address the three analytical components of the study, referring in particular to the evaluation framework matrix, which served as a reference for the triangulation of the evidence.

The quantitative analysis in support of the 30 key questions in the matrix was conducted through a mix of descriptive cross-tab analysis and simple linear regression analysis, using EXCEL analysis and SPSS software, to draw out impacts of statistical significance with a confidence level of 95%.

In summary, the approach used to undertake the impact assessment study started with the 30 questions identified, lining up of the evidence available behind each of these questions and embedding the analysis in the report structure. Whilst there was a large volume of interesting evidence available to the study, and much was drawn out through cross comparisons, trends over time, comparisons with IMPAFEL and relevant policy related impacts, there were limits to the robustness of the assessment because counterfactuals were not fully embedded in the evidence gathering design and proxies were not available against which to determine true additionality and undertake sophisticated statistical analysis. However, multivariate analysis and cluster analysis could be undertaken and supporting actions (such as case studies and study tradeoffs that allowed limited additional evidence gathering) served to mitigate the risks of undermining the value of the study.

1.2 CONCLUSIONS AND RECOMMENDATIONS

The summarised conclusions of the impact assessment are presented in the same order as the main report. Recommendations which have the potential to accelerate the attainment of Marie Curie goals, or to ameliorate difficulties encountered, are inserted after the relevant paragraphs.

<table>
<thead>
<tr>
<th>Impact assessment summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>The main conclusion is that the Marie Curie Fellowship Scheme continues to make a significant impact and positive contribution to researcher training, particularly early stage researchers (ESRs), which make up the large majority of its fellowship beneficiaries. Continuing to contribute to those factors that supervisors believe are crucial to working effectively in science remains a major challenge, but the Scheme has shown itself capable of adjusting to changing needs over the years and its impact on final outcomes has improved. Overall additionality is difficult to ascertain, but is probably in the order of 2/3rds (67%).</td>
</tr>
<tr>
<td>In terms of types of impact, science, training, career development and international impacts have all proved to be robust. However, innovation and knowledge impacts could be strengthened and, although many Supervisors report positive impacts on the types of contract awarded and in the working conditions of those at their institutes, the Scheme has yet to demonstrate substantive structural impacts across the European Research Area. There are some horizontal issues which, if addressed, promise to improve the impact of the Scheme, including more customisation in the case of those in family situations and through rolling out best practice across the member countries.</td>
</tr>
<tr>
<td>Finally, this is a complex Scheme which would benefit from greater integration in its design, comprising fewer separate action lines, with greater unity of criteria and commonality of rules, and more continuity through the successive</td>
</tr>
</tbody>
</table>
Impact assessment summary

Framework Programmes. In addition, programme managers could be better served by developing a common database of all actions under the Marie Curie label which captures key characteristics of the programme’s beneficiary population, so that evidence can accumulate about the extent to which the Actions are attaining desired targets and achieving certain policy goals.

The remaining sections of this Executive Summary present more detailed aspects of the impact assessment summary, differentiating the main areas of impact, comparing the statistically most significant impacts and identifying relevant recommendations.

1.2.1 The main areas of impact

The conclusions and recommendations of the assessment study by main categories of impact are as follows:

- The science impacts of the MCAs, in the form of the quality and quantity of research outputs are rated highly. Publication outputs have eased since FP5, particularly for ESRs. The extent of scientific impacts correlates with Fellowship duration. Interdisciplinary knowledge transfer has been strong, particularly in industry, and the engagement in research with a higher interdisciplinary component has been high; ESRs in particular indicated their appreciation for the fact that the research they did was highly interdisciplinary. Dissemination has been consistently positive in FP5 and FP6. Longer term impacts are underpinned by the large number of new and durable research and professional contacts made by Fellows.

- Significant positive training and development impacts have been seen in the form of advanced research skills, enhanced researcher autonomy, the development of complementary skills and the quality of supervision, contributing to the ERA skills base and boosting career prospects. The MCAs have allowed researchers, including ESRs, to be better trained in the most advanced methods. Fellows rate highly the fact that they are in an international cultural environment where they can work with multi-disciplinary teams and acquire a wider social and cultural base. The impact on research careers improves with Fellowship duration. Recent changes have made it easier for those with partners and children and improved career options. In terms of professional responsibility level expectations, these have not increased with length of service, but there is an increased perception of success relative to peers amongst FP5 Hosts and FP6 Fellows. ESRs are fully engaged in the transfer of interdisciplinary knowledge between research fields and the impact on their channels of knowledge and information exchange is considerable.

Recommendation: training and career development

To improve the effectiveness of Marie Curie Fellowship training through a higher frequency of supervision and better career planning, particularly in the case of ESRs.

- The innovation and knowledge transfer impacts are affected by the different characteristics of Fellowships in industry and academia, both in terms of training benefits and in terms of future collaborations: some 80% of respondents who were at a company host site during their Fellowships indicated that they collaborate with industrial partners in their current job, whereas the same was indicated by only 25% of respondents at academic host organisations. Innovative activities, including patenting, commercial exploitation and new company creation were mainly
found with industry Fellowships, especially Transfer of Knowledge (ToK) Fellowships, but there were low expectations of innovation impacts.

**Recommendations: innovation and knowledge transfer**

<table>
<thead>
<tr>
<th>To encourage training and knowledge transfer within a <strong>wider range of commercial activities</strong> from industry-academia collaboration, including patents, IPR, licensing, start-ups and corporate venturing, acknowledging to a greater extent the distinct mission and strengths of each sector (e.g. academia for training, industry for broader experience which involves the application of skills learnt in academia).</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>To hold a <strong>consultation with recent research and Industry hosts</strong> to understand the factors which would lead to robust innovative impacts in industry-academia cooperation.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>To encourage the targeting of a <strong>wider range of commercial outcomes</strong> from industry-academia collaboration, including patents, IPR, licensing, start-ups and corporate venturing.</th>
</tr>
</thead>
</table>

- Network formation has already been mentioned as a science output, but it is also a component of the **international impacts** through researcher engagement with leading world class teams. The evidence suggests there has been a net international “brain circulation” with Europe being central along with the underpinning of transnational impacts through the development of research contacts, particularly in academia. The evidence for the greater internationalisation of research is positive. The incidence of new researcher contacts was at least as high as in the previous study and an increasingly high level of contacts in more recent Fellowships has been secured or is expected.

- The **structuring impacts** are mixed. On the one hand, significant impacts relating to contract permanence, salaries and working conditions were reported by Fellows and career progression impacts were positive. This was especially true in Associated and OECD countries, where salary progression was high on average and contrasted with the low impact in the EU 10, EU 15 and Candidate countries as a whole. On the other hand, involvement with the MCAs has not improved the administration and employment of researchers, except in some smaller Member States, and poor grant administration appears to be the most prominent of several negative views which emerged from those Fellows who commented on management and supervision at the host institution. However, a good number of those supervisory respondents who gave an opinion reported more than a small improvement in the types of contract awarded (53%) and in the working conditions of workers at their institute (31%), with some of these reporting a significant improvement and this is evidence of the positive structuring impact of the Scheme:
Supervisors’ perspectives on the impact of the Scheme on research careers: employment contracts, salaries and working conditions:

<table>
<thead>
<tr>
<th>Supervisors’ perspectives</th>
<th>To a significant extent</th>
<th>To a certain extent</th>
<th>To a small extent</th>
<th>Not at all</th>
<th>Neutral</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>An improvement in the types of contract awarded to researchers in your institute</td>
<td>171</td>
<td>381</td>
<td>60</td>
<td>435</td>
<td>427</td>
<td>113</td>
</tr>
<tr>
<td>An improvement in the salaries offered to researchers in your institute</td>
<td>107</td>
<td>170</td>
<td>51</td>
<td>778</td>
<td>403</td>
<td>74</td>
</tr>
<tr>
<td>An improvement in the working conditions of researchers in your institute</td>
<td>76</td>
<td>260</td>
<td>130</td>
<td>630</td>
<td>428</td>
<td>62</td>
</tr>
<tr>
<td>An improvement in the employment procedure in your research institute</td>
<td>34</td>
<td>157</td>
<td>95</td>
<td>735</td>
<td>474</td>
<td>88</td>
</tr>
</tbody>
</table>

Source: Deliverable D3, page 62, Figure 61

Many structures for ESR supervision and mentoring are more informal than formal, as interdisciplinarity requires more fluid and flexible approaches.

- The characteristics of the Marie Curie population, all of which has been affected by horizontal issues, is made up of a majority of ESRs, from 60% (Former FP6 Fellow respondents) to 82% (Former FP5 Host Fellow respondents), and was about 40% female. Having a spouse or partner applied to about 50% of Fellows, but having children under the age of 18 years was much less common. The obstacles facing researchers with relationships or parental obligations were seen to more potential than actual and conditions have continued to improve, whilst still remaining a challenge. Supervisory respondents pointed out that Fellowship salaries were often higher than those of the researchers with whom they have to work and salaries took up too high a proportion of the project budget (they would prefer to see more spent on research and equipment). However, some Fellows were unhappy about the way in which the net value of the salary and allowances is calculated differently across beneficiary countries. Awareness of ethical issues and the social impact of research is still low, but both have been increasing in FP6. Evaluation criteria were seen to be transparent and fair by supervisory respondents, but there were concerns about efficiency and user friendliness in the application process, candidate quality, reviewer selection and the speed of response of the evaluation process, all of which have the potential to improve impacts. Help systems were viewed positively, but analysis of the open commentary suggests that there are several places where they could be improved. The administration burden is seen to be high and was the subject of much negative open comment, contrasting with the overall positive view of the programme. The awareness and prestige of the MCA made an award attractive to aspire to. Marie Curie brand awareness in Europe was strong, but not in the US, where domestic priorities dominate. Peer awareness was high and nearly all were prepared to recommend the Scheme to others.

**Recommendations: horizontal issues**

- To examine the feasibility of shorter term mobility schemes where relevant to make it easier to combine the often competing demands of family and fellowship

- To consider the introduction of types of ‘shuttle mobility’ which permit a greater amount of contact for Fellows with partners and children who are not able to move from their home base along with the opportunity not to abandon their original place of work for such a long period.
### Recommendations: horizontal issues

<table>
<thead>
<tr>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>To review the degree of ‘tolerance’ of emerging life course events with respect to the timing of planned return phases within the Fellowship with a view to recognising the needs of the partners of Fellows and children.</td>
</tr>
<tr>
<td>To consider the feasibility of reserving a budget line which permits the allocation of partner and child related maintenance grants when these events occur during the Fellowship.</td>
</tr>
<tr>
<td>To consider partial funding to encourage the spread of good practice, to pilot test an alumni network, to facilitate the exchange of knowledge and experience and to develop proposals that will help to attain long term sustainability of the impacts achieved by the Fellowship programme.</td>
</tr>
</tbody>
</table>

#### 1.2.2 A comparison of significant impacts across Marie Curie Actions

The following conclusions are drawn from a comparison of impacts across the MCAs, focussing where possible, on those which are statistically significant:

- There has been **consistency of many impacts across FP4, FP5 and FP6**, including several where there have been increases. However, the gap between performance and overall need has widened since the previous impact assessment study (1994-2002): i.e. on the basis of the evidence of supervisory respondents, the more recent Marie Curie Fellowship Scheme has contributed less in % terms to those factors that supervisors believe are essential to working effectively in science than the former Scheme did. At the same time:

  Supervisors believe that the most significant contributions of MCA to working effectively in science are particularly the good facilities / equipment / infrastructure made possible, followed by financial resources and transnational research networks.

  Fellows place transnational impacts as the most important delivered by the MCA, followed by inter-disciplinary and training & mobility impacts. Career impacts are seen to be a weaker feature, although FP6 Current Fellows report increases for all three type of impact: career progression, job options and salary progression.

  The overall view of Fellows about the Fellowship is sufficiently positive for nearly 100% of them to indicate that they would recommend it to others. They also indicate a very high level of awareness of the Fellowship amongst peers and colleagues.

- Regarding the **FP5 to FP6 trends amongst statistically significant impacts**, which were identified through linear regression analysis, several scientific outputs were weaker in FP6 (time with supervisor, quantity of research outputs, quality of publications) but a few career impacts were stronger in FP6 (salary progression and job options available).

- Regarding the **early/later career stage emphasis amongst statistically significant impacts**, two scientific outputs (quantity and publications quality) were strongest with later stage researchers, as was inter-sectoral mobility, but skill development, research output quality, transnational mobility and job options impacts were stronger in the case of ESRs.

- When the **statistically significant impacts are differentiated by stages in the intervention logic**, it can be seen that, whilst FP5 results were stronger on inputs and outputs, favouring longer
term researchers as much as ESRs, FP6 results are seen to be stronger on expected outcomes, favouring ESRs on transnational mobility and job option outcomes.

- The largest variation in statistically significant thematic panel impacts was in the Economic Sciences which, although weaker in several respects Fellows saw themselves as stronger in research output quantity and in developing networks. Chemistry panel Fellows reported stronger “access to facilities” inputs and stronger salary progression and job options outcomes than those in other panels.

- The very sparse evidence for additionality (based on the views of supervisors and IRG Fellows feedback) suggests that the overall additionality of the Marie Curie Fellowship Scheme is about two thirds (67%), either in terms of returnees to the EU or in terms of projects being funded which otherwise would not have been. There is evidence of some “leakage” in transnational mobility Fellowship targeting, both in terms of outflows and inflows, where a minority of researchers have indicated that they would have made the moves anyway, sometimes in the leading EU Member States.

**Recommendations: Marie Curie programme design and delivery**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>To design and maintain a common database of all actions under the Marie Curie label</strong></td>
<td>which captures key characteristics of the programme’s beneficiary population so that evidence can accumulated about the extent to which the Actions are attaining desired targets and achieving certain policy goals. Key characteristics could include type of Action/Fellowship, career stage, gender, nationality, sector, type of host institutions, start year, course duration, thematic panel, etc.)</td>
</tr>
<tr>
<td><strong>To increase programme coherence and visibility</strong></td>
<td>by providing a more integrated Marie Curie Fellowship Scheme, comprising fewer separate action lines, with greater unity of criteria and commonality of rules, and more continuity through the successive Framework Programmes.</td>
</tr>
<tr>
<td><strong>Greater flexibility in the choice of Fellowship options</strong></td>
<td>(deadlines, duration, possibility of shuttle mobility, etc.) to allow for a better fit with the researchers’ needs, faster response times, and reliable start dates.</td>
</tr>
<tr>
<td><strong>Offer a wider choice of implementation options</strong></td>
<td>to suit the diverse situations of researchers and host organisations, rather than a “one-size-fits-all” approach.</td>
</tr>
</tbody>
</table>

The impact assessment team would like to thank all those who made time to contribute to the work of the study through completing on-line surveys, providing data, attending discussions and/or undertaking telephone interviews.
2.0 INTRODUCTION

The introduction begins with a description of the Marie Curie Programme and its objectives within FP6. It identifies the objectives of the study and describes the approach made and the way in which the results are presented.

2.1 THE MARIE CURIE PROGRAMME

Based on the Treaty establishing the European Union, the 6th Framework Programme (FP6) served two main strategic objectives: Strengthening the scientific and technological bases of industry and encouraging its international competitiveness while promoting research activities in support of other EU policies. These two objectives defined the general scene for choosing priorities and instruments.

Major political objectives and strategies since FP5 influenced the design of FP6, making it an attempt to close the gap between the EU and its major competitors. Two thirds of the new investment in R&D was expected to come from the private sector which invests proportionately less than that in its major global competitor countries. These political objectives were:

- **The Lisbon strategy**: the Lisbon European Council Summit held on in March 2000 set an objective to ‘make the European Union the most competitive and dynamic knowledge-based economy in the world by 2010’. This has since been interpreted as requiring focused community-wide investment in research, and the improvement of innovation and entrepreneurship.

- **The European Research Area**: the European Research Area (ERA) was proposed by the Commission in January 2000. It has since been endorsed by the Heads of State and Government, and is now the major research policy debate in Europe.

- **Increasing R&D investment (the Barcelona summit)**: EU Heads of State and Government, when they met in Barcelona in March 2002, agreed the objective of boosting R&D and innovation in the EU by increasing expenditure to approach three per cent of GDP by 2010.

With a budget of 17,883 Million euro, compared to a budget of 14,960 Million euro for FP5, FP6 represented a significant increase of funding for RTD activities.

In the past the EU has had 15 individual research programmes, all with a similar set of priorities, and the Framework Programmes were in effect a 16th programme. In this situation the EU suffered duplication of effort and dissipation of resources and it was difficult to talk about “European” research as a single entity, in the same way that American research or Japanese research was perceived.

Where previous Framework Programmes were divided into “vertical” programmes around research topics and “horizontal” programmes that cut across research areas, **FP6** was divided into just two Specific programmes, the first having two objectives, “Integrating and Strengthening” the ERA,” and the second having the objective of “Structuring” the ERA. The new instruments introduced in **FP6** (**Integrated Projects, Networks of Excellence and Article 169 cooperation**) were driven by the concepts of the ERA and were also characterised by the structuring and integrating effects that they could have on European research. New and traditional instruments were wisely “mixed” in FP6 in a wider range of instruments than was available in FP5. This mix, driven by the concepts of the ERA, clearly increased the potential for generating, demonstrating and validating new knowledge through
research and development, increased durable integration of the participants’ activities and capacities, and supported collaboration and coordination.

**Seven thematic areas** were designed to cover issues where the EU in the medium term intends to become the most competitive and dynamic, knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion:

1. Life sciences, genomics and biotechnology for health (LIFESCIHEALTH)
2. Information society technologies (IST)
3. Nanotechnologies and nano-sciences, knowledge-based multifunctional materials and new production processes and devices (NMP)
4. Aeronautics and space (AEROSPACE)
5. Food quality and safety (FOOD)
6. Sustainable development, global change and ecosystems (SUSTDEV)
7. Citizens and governance in a knowledge-based society (CITIZENS)

**Cross-cutting research activities** complemented research within the 7 thematic areas, in fields such as research for policy support, new and emerging science and technology (NEST), specific SME activities, international co-operation activities (INCO) and JRC activities.

In parallel, and in order to stimulate the coherent development of research and technology policy in Europe, a supporting programme of **co-ordination and joint actions** conducted at national and regional levels, as well as among European organisations and activities, was implemented in the form of the co-ordination of research activities and development of research/innovation policies.

Finally, with the aim of fighting structural weaknesses of European research, a “**Structuring the ERA**” programme was set up and covered areas such as research and innovation, human resources and mobility (MCAs), research infrastructures and science and society related activities.

FP6 was the first Framework Programme that took the ERA objective explicitly into account with the introduction of new instruments, which are understood to have a structuring effect on research and technological development in Europe. Such innovation in European research and technology policy generated important debates within the EU institutions and within the scientific and technological communities and clearly inspired the **FP7 Capacities, Ideas, People and Cooperation** programmes.

### 2.1.1 Researcher mobility in FP6

Even though researcher mobility had been a thriving **feature of successive EC Framework Programmes**, it was not until the launch of FP6 that structured training and mobility schemes became part of an integrated and more ambitious plan financing training and other career development opportunities for researchers.

The **Human Resources and Mobility** (HRM) activity has a budget of 1.58 billion Euro under FP6, representing almost 10% of the overall budget. The funds allocated to human resources, which were double those under FP5, represented the strongest single increase among all priorities from FP5 to FP6.\(^3\) This renewed emphasis on training and mobility actions was **intended to enhance the ERA** by

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\(^3\) While the overall budget for FP6 has increased by 17% with respect to FP5, the budget for Human Resources and Mobility has increased by more than 50%. 

increasing the transfer of scientific knowledge, making Europe a more attractive place for talented researchers to train and work, while also recognising excellence in European research.

The aim was for this set of actions to be seen as a reference point for implementation of the ERA and for them to be followed up by similar actions at national or regional levels.

In addition to the budget increase, a number of new elements were added in FP6:

- All HRM actions directed towards training, mobility of researchers and the promotion of excellence were grouped under the common Marie Curie brand name.
- Participation in most MCAs was opened to researchers from third countries and to researchers from countries associated with FP6.
- The previous age limit of 35 years for researchers participating in some of the MCAs no longer applied. Researcher eligibility was linked instead to the number of years of active experience in research.
- A new type of fellowship was introduced to allow researchers from EU Member States or Associated Countries to benefit from a period outside Europe with a mandatory return period.
- Several new measures were introduced to encourage researchers from EU Member States or Associated Countries to continue their careers in Europe. After a long period in a third country, researchers could benefit from most of the MCAs. Alternatively, they could benefit from the new international return and reintegration mechanisms.
- The European return and reintegration grants were set up to support the reintegration of mobile researchers to gain the greatest benefit from their mobility period.
- Three new initiatives were set up to increase the visibility and attractiveness of European research across the world.
- In addition to the above features inherent in the renewed programme, in 2004 the number of Member States in the EU increased from 15 to 25. Researchers from the new Member States and Associated countries were eligible to take part in FP6 MCAs on equal terms to those from former EU countries.

A series of actions were also launched at other levels to provide researchers with more practical support when taking part in MCAs, including:

- The development of a European network of mobility centres that provide personalised assistance to researchers and their families when moving from one country to another. The network was launched in June 2004 with the intention of facilitating the life of “mobile” researchers by offering them tailored assistance in all matters related to their professional and daily lives. The network, made up of dozens of organisations which provided concrete assistance to researchers and their families before, during and after their move abroad, helped to create a more favourable environment for researcher mobility in Europe.

- The development of the “Researchers’ Mobility Web Portal” an electronic information system on employment opportunities for researchers and including the legal and administrative provisions in EU countries. The web portal provided information on a wide spectrum of fellowships and grant

4 These are countries that signed association agreements to FP6, by virtue of which they were eligible to participate (Iceland, Norway, Liechtenstein, Israel, and later on in the FP6 programme also Switzerland). Candidate countries for EU membership were also entitled to take part.
schemes offered at European, national or regional level. Open vacancies published by the research community such as academia, industry, research organisations and foundations were also listed.

2.1.2 Overview of the Marie Curie Actions under FP6

Within the boundaries of the specific objectives and implementation modalities of the different Actions, MCAs were open to all fields of research which contributed to the objectives of the Community as defined in article 163 of the EC Treaty. Actions were open to individual researchers as well as organisations active in research or research training, including industrial researchers and SMEs.

Individuals: Actions were open to individual researchers from the EU Member States, as well as from countries associated with FP6, and from third countries. In order to take part in most of the Actions, researchers had to be prepared to move countries, either within Europe or internationally. In turn, trying to enhance networking between researchers, the EU also provided funding for researchers coming from third countries to train in Europe. The applicability for the various funding schemes was based on research experience and expertise of the individual researchers, not age.

Two main categories of researchers were eligible for funding: (1) the early-stage researchers (ESRs), at the beginning of their research career with less than four years’ active research experience, and (2) experienced researchers, who had more than four years of active research experience or who held a doctoral degree. Researchers with more than ten years of experience were not eligible for some Actions. Researchers could either apply directly to an institution that has been selected by the European Commission for a Host-Driven Action, or they could prepare a project together with a host institution of their choice and submit it to the Commission.

Host organisations were research organisations that could apply to the European Commission for funding to provide different types of training for researchers of any age or nationality, such as initial training, transfer of knowledge, advanced training or other facilities. Once selected by the Commission to carry out these kinds of training opportunities, the host institutions were usually free to select the researchers who would benefit from the training or who would participate in the transfer of knowledge.

2.2 THE OBJECTIVES OF THE STUDY

The Research Directorate-General (DG RTD) has a legal obligation to assess the impacts of all FP6 Actions. By July 2008, when this study was initiated, some 35 studies had been conducted across the research spectrum dealing with different aspects of FP6.

The objectives of this study (the ex-post Impact Assessment study concerning the ‘Marie Curie Actions’ under the Sixth Framework Programme) are to answer 30 key questions about the MCAs in FP6 in order to improve Actions for FP7. It was requested that special emphasis should be placed on gender distribution, the impact on 3rd countries which are OECD members and the impact on the S&T agreement countries, European Neighbourhood Policy countries and related groupings. One of the advantages of the study results is to be able to take a longer-term view over the life of several Framework Programmes (FP4, FP5 and FP6). After 2010, the resources allocated to MCAs are set to increase and the findings from this study will be important for future planning and budget allocation.

This impact assessment follows an earlier impact assessment (IMPAFEL2), with similar objectives to the current study and carried out in relation to the Marie Curie fellowships of FP4 and FP5. Aspects
taken into account included the impact of the fellowship on the careers of individual scientists, on host institutions, on the general development of European science and technology and the broader impact outside the Framework Programme. It had its challenges and limitations: the databases used for the study were rather incomplete; supervisors of Marie Curie projects had to be contacted to identify researchers benefiting from MCAs and 6,149 out of 11,000 fellows were found. In addition, as in the current study, the IMPAFEL study did not reach fellows who had stopped research completely. The outcomes included a final report, a contact database of supervisors and fellows and various presentations on the topic. The current study has been able to compare some of its findings with those from this earlier study with a view to a better understanding of the impact of the Marie Curie Fellowship Scheme.

The scope of the current study is wider than before and comprises an assessment of the impact of the following MCAs under FP6:

- FP6 Research Training Networks (RTN);
- FP6 Host Fellowships for Early Stage Training (EST);
- FP6 Development Host Fellowship (ToK-DEV);
- FP6 Industry-Academia Partnerships (ToK-IAP);
- Marie Curie Series of Events (SCF);
- Marie Cure Large Conferences (LCF);
- FP6 Intra-European Fellowships (IEF) for individual experienced Fellows;
- FP6 International Incoming Fellowship (IIF) for individual experienced Fellows;
- FP6 International Outgoing Fellowships (IIF) for individual experienced Fellows;
- FP6 European Reintegration Grants (ERG) for individual experienced Fellows;
- FP6 International Reintegration grants (IRG) for individual experienced Fellows;
- FP6 Excellence Actions (Chairs, Grants and Awards – EXC, EXT and EXA);
- The relevant Scientific Support Actions under FP6 (SSAs).

A residual group of fellowships from FP5 Marie Curie host Actions were also included, since they started too late to be considered under the previous impact assessment study (1994-2002).

In addition, elements of continuity across FP4, FP5 and FP6 have been assessed by building on the results of the previous IMPAFEL2 study and by undertaking a follow-up survey among the respondents in IMPAFEL2 with an FP4 fellowship.

The task set out for the impact assessment was to evaluate the impact of MCAs in the context of the core ERA objectives (scientific excellence, competitiveness and innovation) and support this through three distinct analytical components:

- By addressing 30 key evaluation questions, which included 22 direct Fellowship impact issues and an additional 8 “structural” issues with regard to the Marie Curie Fellowship Programme;
- By looking at the longitudinal impact of Marie Curie, comparing impacts across FP4, FP5 and FP6, as well as looking at FP6 on its own, especially the new Actions;
- By examining the way the behaviours and impacts vary between the 8 thematic panels.

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Specific suggestions that would accelerate the attainment of Marie Curie goals, or those which have the potential to ameliorate any difficulties encountered, were to be included as part of the current study.

2.3 THE APPROACH TO THE STUDY

The methodology used to undertake the impact assessment was first mooted in the original proposal of the contractor, was modified in agreement with the SG. Six main sources of information and data were used to gather relevant evidence:

- A follow-up online survey of FP4 fellows;
- Surveys of the FP5 Fellows remaining, as well as former and current FP6 Fellows;
- A brief online survey of FP6 supervisors;
- Six case studies covering thematic issues under FP6;
- Desk research, including a literature review, consultation of SESAM data and previous evaluations under FP6.

A pilot study was undertaken of unsuccessful applicants to IEF under FP6, with a view to undertaking a wider survey, but the Steering Group decided not to pursue this part of the work.

All evidence gathered from the above was then brought together to address the three analytical components of the study, referring in particular to the evaluation framework matrix, which served as a reference for the triangulation of the evidence.

The approach to the impact assessment is detailed in ANNEX I and includes a chart that shows how the different sources of evidence were brought together to support the final report conclusions and recommendations. The chart is also presented as APPENDIX C to this report (the final page).

2.3.1 Statistical analysis

The quantitative analysis in support of the 30 key questions in the matrix was conducted through a mix of descriptive cross-tab analysis and simple linear regression analysis, both using SPSS software:

- Cross tabs: a simple multivariate crosstab, looking at 2+ variables, broken down by at least 1 other variable. For example, the extent to which respondents believe MCAC helped them getting access to research equipment, by the respondents’ disciplines, broken down by FP5/FP6. This type of analysis was carried out for FP5 as well as FP6; however FP6 current Fellows were only included in around 50% of the analysis as their lack of perspective on certain aspects of the benefits made them unable to respond to some of the key questions. The significance of the relationship was established through common sense identification of trends.

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7 Deliverable D2. Baseline report. The FP 4 survey results are presented in Chapter 4.2 and ANNEX 4.
8 The FP 5/6 fellows survey results were presented as working documents and many of the results are to be found in the main chapters of Deliverable D3, the Long Term Schemes report.
9 As per the note on the FP 5/6 fellows survey results.
10 Six case studies were agreed with the Steering Group and these are presented in ANNEX 7.
Regression: simple linear regression, identifying the relationship between 1 dependent variable (e.g. improvements in career prospects thanks to the MCAs), and 1 explanatory variable (e.g. length of the fellowship), using a range of other control variables and explanatory variables to isolate the correlation between the 2. This analysis was only carried out for FP5 and FP6 Former Fellows, thereby leaving out FP6 Current Fellows, for which many of the key variables had too many blank cells for any regression to make econometric sense. The relationships and correlations reported were all significant statistically at the 95% confidence level (SPSS calculates automatically the significance of a coefficient through so called “t-values”)11.

2.3.2 Confidence intervals used to give 95% confidence levels

It was only possible to gather information on the overall population of FP6 Fellows and the distribution of this population by gender, by Fellowship type and by thematic Panel. In each case it was therefore possible to calculate confidence intervals to give a 95% confidence level. The following table shows what these confidence levels are in the case of gender and Fellowship type.

<table>
<thead>
<tr>
<th>Survey population</th>
<th>Confidence intervals for a 95% confidence level</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL FP6</td>
<td>± 1.27%</td>
</tr>
<tr>
<td>By Gender</td>
<td></td>
</tr>
<tr>
<td>FEMALE FP6</td>
<td>± 1.96%</td>
</tr>
<tr>
<td>MALE FP6</td>
<td>± 1.67%</td>
</tr>
<tr>
<td>By Fellowship type</td>
<td></td>
</tr>
<tr>
<td>RTN-ESR</td>
<td>± 2.04%</td>
</tr>
<tr>
<td>RTN-ER</td>
<td>± 4.72%</td>
</tr>
<tr>
<td>EST</td>
<td>± 2.78%</td>
</tr>
<tr>
<td>ToK</td>
<td>± 4.76%</td>
</tr>
<tr>
<td>IEF</td>
<td>± 3.69%</td>
</tr>
<tr>
<td>IOF</td>
<td>± 7.2%</td>
</tr>
<tr>
<td>IIF</td>
<td>± 7.15%</td>
</tr>
<tr>
<td>ERG</td>
<td>± 13.06%</td>
</tr>
<tr>
<td>IRG</td>
<td>± 7.8%</td>
</tr>
</tbody>
</table>

11 The use of regressors adds robustness to the model by controlling for variables which may impact on the dependent variable, and without which the Beta coefficient would be misleading as over or underestimated, and would lose part of their statistical significance. The alternative would be to run simple correlation coefficients, but the omitted variable bias would be considerable. If the “x” loses its contribution to “y” after we include control variables and statistically significant regressors, it simply means that this “NET” contribution would be overstated if we were to run a simple correlation coefficient.

Although it has been argued that in many cases multiple regression analysis fails to clarify the relationships between the predictor variables and the response variable when the predictors are correlated with each other and are not assigned following a study design, it should be noted that the inter-correlated variables were not included in the same model at the same time; rather, these were used successively as alternative explanatory or control variables to obtain the highest explanatory power possible. Indeed, statistical packages detect such things and it was taken into account when doing the modelling. It is also important to note that regression modelling does not indicate causal effect, but only a statistical relationship. For a model to inform on the causal effect of one variable onto another, a time series would need to be introduced lag effects would need to be investigated.
Thematic panel confidence intervals were available, but not used directly, as the SPSS cross tab and linear regression analysis identified all thematic information of significance to the study at the same 95% level of confidence.

2.3.3 The strength and limitations of the impact assessment methodology

The overall methodology contained many of the strengths and inherent limitations of the methodology used in IMPAFEL2, which itself was preceded by a special study in 1998, referred to as the IMPAFEL study, to elaborate an appropriate methodology to measure the impact of the MCAs.

With regard to the strengths of the methodology, the evidence collected includes material that lends itself to both quantitative and qualitative analysis and allowed triangulation of the different sources in the final stage of the impact assessment work. In addition:

- The design allowed for a degree of comparability across the material collected, which was stored in different formats (EXCEL, SPSS, Survey Monkey, etc.). Question structures across FP5 and FP6, along with the separation of Current and former Fellows permitted comparison with different research populations.

- Given the volume of the response across the different Fellows and different MCAs, it was possible to differentiate impacts with a reasonable degree of confidence, although attaining confidence limits of 95% when looking at more delineated segments of the research population became more difficult as the relevant population data was not provided for FP6.

- When the responses elicited were weighted against the actual populations of Individual Fellows in these discreet groupings, an ex-post representativity could be brought to the final evidence, although this did not always ensure that the findings were not biased to any particular population.

- It was possible to undertake statistical analysis of a proportion of the evidence, such as multivariate and cluster analysis, making it possible to look at patterns that do not emerge from conventional analysis.

- Through comparison across the different report (IMPAFEL2 and deliverables D1 to D5) it was possible to examine certain trends over time, starting with FP4, even though the structure of the Marie Curie programme has changed significantly over the years.

- Partly due to the examination of such trends, there were opportunities to assess some relative net impacts in the sense of there being a marginal advance or retreat over the life of the initiative.

- It was possible to access the questionnaire responses for those who gave an email address and who were happy to be involved in case study support. Whilst this was only in a few cases, the additional evidence from such respondents helped to interpret the results of the assessment.

There were also several limitations and constraints on what could be done in the analysis:

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12 ToR Annex VII: A methodology for assessing the impact of the Marie Curie Fellowships: In 3 volumes (Conceptual Framework, Methodology and Implementation Plan, Annexes).
• The method of gathering evidence agreed with the Steering Group did not lend itself to a robust analysis of **additionality**, as the questions that pertain to the isolation of such variables as deadweight, substitution or displacement were not built into the original question design. The unsuccessful applicants’ survey gave a limited amount of material, and there were occasional questions built into the questionnaires that offered “counterfactual” evidence (e.g. Q6 to supervisors “In your experience as a supervisor, to what extent has the Marie Curie scheme led to the funding of projects that would not be otherwise covered under FP6”) but not enough for a thorough analysis across the full body of evidence.

• Taking the **3 components of additionality** singled out in the original IMPAFEL methodology:\(^\text{13}\):

  *Input additionality* is based on the assumption that defined inputs are necessary in order for defined results to be generated. Provided an assumption of causality is accepted, the implication could be drawn that a measurable increase in input could be assumed to have a corresponding effect on output.

  *Output additionality* is linked to input factors (i.e. there has to be a cause in order for there to be an effect). But the link is seldom linear; some outputs may increase or decrease spontaneously in response to factors that are not yet identified, incorrectly identified, or that cannot be controlled directly.

  The concept of **behavioural additionality** is more useful in a policy context and, with respect to the subject of post-graduate research and training, more amenable to the identification of metrics that reflect the relationship of causes and effects. Behavioural additionality concerns the effects of policy on the actions of individuals and institutions and on the interactions between them (how actions and interactions are motivated, organised and managed).

Although the basis for any measurement of additionality is extremely limited in the study, every effort has been made to highlight areas where it is felt that such considerations can draw on relevant evidence, however slight.

• It was not possible to undertake a true **probit model** analysis, as the dependent variable assumed to be a proxy for a true underlying continuous normal distribution could not be isolated on the basis of the kind of evidence available.

• One of the fundamental problems of the study, as it was in IMPAFEL, was identifying **causation** and attempting to isolate variables that are inherently interconnected. It is impossible to establish how far the impacts observed were caused by the Marie Curie Fellowship specifically.

• It was not possible to effect full **traceability** of lines of evidence from the questionnaires back to specific FP Fellows who participated in MCAs. There was no unique number or code that could establish a link between individual participant responses and the participants themselves. Respondents gave very little in the way of a unique identifier (such as an email address) that would have made this possible.

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\(^{13}\) IMPAFEL: A methodology for assessing the impacts of the Marie Curie Fellowships: Final Report: Vol 1 Conceptual Framework, Chapter 3.3.4 Types of additionality indicators, pages 28 & 29
• Whilst an effort has been made to ensure that all Marie Curie elements were covered during the impact assessment, the balance of evidence was not even across the Programme. However, to compensate for the omission from the on-line survey of those receiving Excellence Grants, as agreed with the Steering Group, evidence was collected through an additional case study (making 6 case studies in total).

• The changes in the Programme over time also meant that trends in impact were not easy to isolate and quantify. The final analysis of the evidence needed to rely on judgement and interpretation to a higher degree than desirable.

The implications for the analysis and reporting are summarised as follows:

• Assessment of the net impact of the Actions was based more on respondents’ views about changes in impact trends over time and less on the use of proxies or counterfactuals for each of the researched populations.

• Case studies were focused on issues of importance to the Commission and, where possible and relevant, to ensure that gaps in evidence could be closed.

• Beyond the case studies themselves, small cost-effective additional evidence gathering was initiated to mitigate the risks that emerged from the above constraints, in order to make the assessment as robust as possible.

The main framework for the final impact assessment analysis was the evaluation framework matrix, where the 30 key questions of the study were identified and the supporting evidence determined. The way in which this complex task was undertaken is shown in Annexes VI and VII.

In summary, the approach used to undertake the impact assessment study started with the 30 questions identified, lining up of the evidence available behind each of these questions and embedding the analysis in the report structure. Whilst there was a large volume of interesting evidence available to the study, and much was drawn out through cross comparisons, trends over time, comparisons with IMPAFEL and relevant policy related impacts, there were limits to the robustness of the assessment because counterfactuals were not fully embedded in the evidence gathering design and proxies were not available against which to determine true additionality and undertake sophisticated statistical analysis. However, multivariate analysis and cluster analysis could be undertaken and supporting actions (such as case studies and study tradeoffs that allowed limited additional evidence gathering) served to mitigate the risks of undermining the value of the study.

2.4 THE PRESENTATION OF THE RESULTS OF THE STUDY

The final report is presented in 2 volumes, the main report and a separately bound set of ANNEXES

2.4.1 The main report chapters

The main report is structured around seven main chapters, supported by APPENDICES A, B and C:

• Science impacts (Chapter 3)
• Training and development impacts (Chapter 4)
Innovation and knowledge transfer impacts (Chapter 5)
The international dimension (Chapter 6)
Structuring effects (Chapter 7)
Horizontal issues (Chapter 8)
A comparison of key impact findings (Chapter 9)

This is then followed by a presentation of the conclusions of the study. The way in which the main strands of the evidence from the key questions are allocated to the six chapters is shown in the table below:

<table>
<thead>
<tr>
<th>REPORT CHAPTERS</th>
<th>Key questions</th>
<th>Impact of MCA on or contribution of MCA to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 SCIENCE IMPACTS</td>
<td>1 Quantity and quality of knowledge produced</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Time spent with Supervisor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Quality of research outputs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 Scientific outputs and outcomes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 Research within ethical guidelines</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18 Research which has a higher social ROI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19 Doing more interdisciplinary research</td>
<td></td>
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<td></td>
<td>20 Research than cannot be done elsewhere in FP</td>
<td></td>
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<tr>
<td>4 TRAINING AND CAREER DEVELOPMENT IMPACTS</td>
<td>2 The ERA skill base</td>
<td></td>
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<td>4 Career options for researchers</td>
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<td>5 Attractiveness of science as a researcher career</td>
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<td>10 Career benefits</td>
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<td>13 Acquisition of wider social &amp; cultural base</td>
<td></td>
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<td>24 ESR supervision &amp; monitoring</td>
<td></td>
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<tr>
<td>5 INNOVATION AND KNOWLEDGE TRANSFERS IMPACTS</td>
<td>15 Knowledge channels &amp; information exchange</td>
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<td>26 Helping knowledge flow to innovation</td>
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<td>27 ERA oriented industry involvement</td>
<td></td>
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<tr>
<td>6 THE INTERNATIONAL DIMENSION</td>
<td>6 Brain drain momentum</td>
<td></td>
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<td></td>
<td>7 Brain gain momentum</td>
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<td></td>
<td>14 International work and networks</td>
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<td></td>
<td>16 Better internationalisation of research</td>
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<tr>
<td>7 STRUCTURING EFFECTS</td>
<td>9 Balanced research flows</td>
<td></td>
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<td></td>
<td>21 Researcher administration and employment</td>
<td></td>
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<tr>
<td>8 HORIZONTAL ISSUES</td>
<td>8 Gender balance objectives</td>
<td></td>
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<td></td>
<td>22 Consistency of impacts across FP4, 5 &amp; 6</td>
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<td></td>
<td>23 Evaluation &amp; selection</td>
<td></td>
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<td></td>
<td>25 Appropriate programme targets for impact</td>
<td></td>
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<td></td>
<td>28 HELP system sufficiency</td>
<td></td>
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<td></td>
<td>29 Family obligations</td>
<td></td>
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<td></td>
<td>30 Brand awareness sufficiency</td>
<td></td>
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<tr>
<td>9 A COMPARISON OF KEY IMPACT FINDINGS</td>
<td>&quot;Working effectively in science&quot; factors</td>
<td></td>
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<tr>
<td></td>
<td>Statistically significant impact variations since FP5</td>
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<td></td>
<td>Statistically significant thematic impact trends</td>
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<tr>
<td></td>
<td>Key impacts by overall sector (industry-academia)</td>
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<td></td>
<td>Differentiation of impacts by country</td>
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<td></td>
<td>Additionality considerations</td>
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</tr>
</tbody>
</table>

Sometimes, evidence from the analysis of the 30 key questions is split across different chapters (occasionally repeated) to ensure that this evidence is allocated to the most relevant chapter.

Each of the chapters 3 to 8 begins with a short introduction to the content and following this by the same structure to present the evidence for each of the six categories of impact above:
• Evidence from the main supporting reports and analysis;
• Evidence from the longitudinal comparisons: FP4 to FP6
• Evidence from the analysis of open comments (figures in brackets are the number of “mentions”)
• Evidence from the case studies (the evidence is taken from the 6 case studies)

Each chapter then draws out the main impacts and summarises these by way of short paragraphs (in bold), which are then taken to Chapter 10 (Conclusions). Chapter 9 captures key impacts that have emerged during the study by way of comparisons of differentiated impacts, particularly those that have been identified as having statistical significance, and its short summary paragraphs are also taken to Chapter 10. The final summaries of each of these chapters also include related recommendations, where these are made.

Chapter 10 draws out the final conclusions of the study by way of its own paragraphs (in bold) which are included as part of the Executive Summary. The “evidence” trail through the report makes it possible to refer back to more detailed information and data which support the various analyses and judgements but which would be too detailed to repeat in the overall conclusions of the study.

2.4.2 The supporting APPENDICES

APPENDIX A to the main report is structured around the key tasks described in the terms of reference (TOR) and APPENDIX B (Impacts by type of FP6 Fellowship), where comparisons are made between the summary evidence of Former and Current FP6 Fellow respondents, is structured around the main headings of the related FP6 survey questionnaires. APPENDIX B also presents summary results from the body of FP6 Fellow respondents, along with related upper and lower limits of the range within which the level of confidence is 95%. The way in which the different components of evidence, analysis and reporting are brought together to support final deliverables is presented in the chart of APPENDIX C.

2.4.3 The supporting ANNEXES

The 10 ANNEXES to the report\(^\text{14}\) (presented in a separately bound volume) are as follows:

ANNEX I The approach to the Impact Assessment
ANNEX II List of those met during the fieldwork
ANNEX III The characteristics of the Marie Curie populations
ANNEX IV Analysis of the open comments made in the surveys
ANNEX V The six case studies
ANNEX VI Analysis of the main impact questions (Q 1 to Q 22)
ANNEX VII Analysis of the main impact questions (Q 23 to Q 30)
ANNEX VIII Statistical testing of variables to address key questions
ANNEX IX Analysis of FP6 survey evidence by Fellowship type
ANNEX X Summaries of the earlier reports.

A working appendix exists, but is not presented as part of the official reporting, as its sole purpose was to form a bridge between the evidence of the separately bound ANNEXES and the APPENDICES to the main report.

\(^{14}\) Draft Final Report: Deliverable D 6-2 - ANNEXES.
3.0 SCIENCE IMPACTS

The chapter on science examines the research outputs of the MCAs, the impact of networking, interdisciplinary and the impact on further funding on science. It includes consideration of the impact of the Marie Curie Fellowship Programme on the ERA skills base and on researcher engagement with more inter-disciplinary research.

3.1 THE STUDY FINDINGS

The findings are presented through Relevant findings from the analysis of the 30 key questions set for the study are taken from APPENDIX A and summarised as follows:

3.1.1 Evidence from the main supporting reports and analysis

Relevant findings from the analysis of the 30 key questions set for the study are taken from APPENDIX A and summarised as follows:

- Q1: Supervisory respondents rated “time to do research” as a key factor in working effectively in science (and hence no doubt to quality), but although the Fellowship contribution is appreciated, it does not quite match up to these high expectations. However, the quality of research is rated highly by respondents (the higher the longer the Fellowship), and to be generally higher in academia than industry.\(^{15}\)

- Q1: With regard to time spent with a supervisor, the longer the duration of the fellowship the less time a fellow will spend the supervisor (correlation coefficient 0.151). FP6 fellows spent on average less time/week with their supervisors than FP5 fellows and this is observed across the sectors: universities, public/private research or private companies. FP5 fellows were more likely to be satisfied with the hours spent with their supervisors than those in FP6; the longer the fellowship, the lower the probability that the fellows will be satisfied with the number of hours; both findings being consistent through all sectors and across both ESRs and mid-career researchers.\(^{16}\)

- Q1: More experienced fellows were less likely to find a significant impact of the fellowship on the quality of their research outputs. The duration of the fellowship seems to impact slightly but significantly on the quality of the research outputs: for both FP5 and FP6 fellows the longer the fellowship, the larger the impact.\(^ {17}\) For FP6 Fellow respondents for instance, “significant and very significant impacts” together increased from 61.6% (60.82% to 62.38) (< 6 months) to 71.3% (70.39% to 72.21%) (25-36 months).\(^ {18}\)

- Q3: The impact on the rate of senior author publications appears to have dropped since FP5, particularly in the case of ESRs, although publication outputs tend to increase with the length of the Fellowship and FP6 outputs have yet to reach maturity. Fellows in Economic and Social and Human sciences were the most likely to report a significant impact on publication volume (over

\(^{15}\)APPENDIX A: Research Outputs: Q1 summary paragraph

\(^{16}\)APPENDIX A: Research Outputs: Q1 summary paragraph

\(^{17}\)APPENDIX A: Research Outputs: Q1 summary paragraph

\(^{18}\)ANNEX VI: Q1: 2nd Table: Length of Fellowship (figures in brackets to give 95% confidence levels)
60%), while those in Life Sciences were the less likely to do so (less than 50%). ESRs in FP6 were less likely than FP5 fellows to report a significant impact in the quality of the journals in which their publications appeared, but mid-career FP6 fellows report a higher impact than those in FP5\(^{19}\).

- Q19: There has been a high engagement with interdisciplinary research during FP4 and FP5 (above 70%) and the evidence from both Fellows and Supervisors is that it is stronger in industry than academia. There is evidence that interdisciplinary teams which involve ESRs are widespread\(^{20}\).

Relevant findings from the analysis of impacts by type of fellowship are taken from APPENDIX B and summarised as follows:

- FP6 Fellows ratings of the importance of scientific and other impacts are low. The view that Individual Fellows are likely to have more durable research and professional contacts is reinforced (25% vis a vis 16% for host Fellows), and they hold a stronger view than host Fellows about their success in having articles published in journals of a high standard (35% vis a vis 25% for host Fellows). Increases in the number of publications are seen to be a function of becoming a more experienced researcher (59%) and of the skills and knowledge gained (45%)\(^{21}\).

- Although the skills and knowledge development impacts as reported by FP6 Fellow respondents are particularly strong across all types of instrument in terms of multi-disciplinary research (72-80%), the Fellowship impact on the ability to engage in inter-disciplinary research is more moderate (48%), as is its impact on Fellows’ research on society (63%). Awareness of ethical issues (33%) and the ability to take ethical issues into account in research was low (also 33%) was marginally higher amongst FP6 Current Fellows\(^{22}\).

3.1.2 Evidence from the longitudinal comparisons: FP4 to FP6

In the Long Term Schemes Report:

- Both Supervisors and Fellows see significant scientific output impacts of the scheme\(^{23}\) in terms of the volume and quality of research and the volume of publications, although the standard of the publications is not seen to be high. The majority of FP6 respondents believe that the skills learnt and developed during their Marie Curie fellowships have contributed to their success in obtaining research funding. This represents a marked increase from FP4.

- Some 35% to 40% of Supervisory respondents see interdisciplinary collaboration, diversification of researchers’ skills base and the funding of projects that would not be otherwise covered under FP6 as significant interdisciplinarity impacts of the scheme, with another 30% to 40% reporting “a certain impact”.68.7% of supervisors responded that projects are implemented which would not otherwise be funded under FP6 (38.1% significant extent; 30.6% certain extent). Levels of engagement with inter-disciplinarity or multi-disciplinarity research during the fellowship are high (average 56.2%) or very high (average 16.9%) for respondent Fellows impact is also seen to be

\(^{19}\) APPENDIX A: Research Outputs: Q3 summary paragraph
\(^{20}\) APPENDIX A: Researcher Training and Skill Development: Q19 summary paragraph
\(^{21}\) APPENDIX B: Scientific and Other Outputs
\(^{22}\) APPENDIX B: Skills and Knowledge Development
\(^{23}\) ANNEX X: The Long Term Schemes Report (D3) #4
slightly more important by recent FP6 Fellows when compared with earlier Fellows. Most Fellows reported either a significant (average 45.9%) or moderate (average 42.9%) effect on their ability to engage in inter-disciplinary research as a result of the scheme\textsuperscript{24}.

3.1.3 Evidence from the analysis of open comments

The views of supervisory respondents on the scientific and related outputs impacts also lines up with the overall positive view of the programme by the same respondent supervisors, with 29 of the 34 comments being positive (85%). Marie Curie scientific and related impacts mentioned by respondent supervisors is summarised as follows\textsuperscript{25}:

- The contribution of Fellows to researcher outputs was seen to be positive, sometimes extending to the team around them and the host institution.
- The impacts on the host organisation of hosting a Fellow were mentioned by several (10)\textsuperscript{26} and were all positive. They ranged from wider organisational impacts to stimulating the research team, forcing the pace on the use of English and being good value for money.
- There were also project related impacts (4) and mentions of IP (1) and dissemination (1) as a result of hosting Fellows.

The negative comments in this area included the lack of enthusiasm of a particular Marie Curie Fellow (1) and the loss of impact when a Fellow leaves, particularly after such a big training effort (1).

The views of former FP6 Fellow respondents on the scientific output impacts line up with the overall positive view of the programme by the same respondent Former FP6 Fellows, with 15 of the 18 comments being positive (83%). The more frequent scientific output impacts cited were\textsuperscript{27}:

- Publications, actual or promised (6), but with a minority frustrated by the lack of opportunity (2)
- The value of the research support in advancing the research undertaken by the Fellow (3).
- The professional assurance and confidence experienced by the Fellow (2).
- The acquisition of new techniques during the Fellowship (2).

In addition, the flexibility to switch from one sector to another was mentioned (1), the motivation given to undertake high quality research (1) and the significance of the results achieved (1), except in one case (1).

Comments about scientific and related output impacts by current FP6 Fellow respondents are summarised in the table below:

\textsuperscript{24} ANNEX X: The Long Term Schemes Report (D3) #3
\textsuperscript{25} ANNEX IV: Analysis of Open Comments made in the surveys: The views of FP6 Supervisory respondents.
\textsuperscript{26} Open comments: When figures appear on brackets in the open comment evidence, this signifies the number of “mentions” by respondents in support of this particular viewpoint or finding.
\textsuperscript{27} ANNEX IV: Analysis of Open Comments made in the surveys: The views of Former FP6 Fellow respondents.
### Nature of the comments about scientific outputs

<table>
<thead>
<tr>
<th>Nature of the comments about scientific outputs</th>
<th>Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good scientific impact in general</td>
<td>2</td>
</tr>
<tr>
<td>Good opportunities for comparative research</td>
<td>1</td>
</tr>
<tr>
<td>More research funding needed</td>
<td>1</td>
</tr>
<tr>
<td>Actual research undertaken needs to reflect initial plans</td>
<td>1</td>
</tr>
<tr>
<td>There was no added value to what I already brought to the institution</td>
<td>1</td>
</tr>
<tr>
<td>There is no need to hire researchers where no research is required</td>
<td>1</td>
</tr>
</tbody>
</table>

Those former FP6 Fellow respondents who commented on the **length of the Fellowship** (7) asked for a longer time: the 3 individual fellowship respondents suggested at least 3 years and the 3 ESR scheme Fellows holders either the possibility of extending or a full 4 years. An experienced researcher (ER) was looking for more than one year.

#### 3.1.4 Evidence from the case studies

Beyond the hard outputs of publications, case study evidence (which included a range of researchers at different career stages) points to many international, inter-disciplinary and inter-sectoral collaborations which have led to innovation and knowledge outcomes.

**Q3: Have the Actions increased both scientific output and outcomes?**

- There is no doubt that many international, inter-disciplinary and inter-sectoral **collaborations** have developed, which have resulted in innovative ideas and new applications of knowledge. In many cases, the key benefit was to establish a new line of research or to develop new networks. Nearly all of the people interviewed highlighted valuable outcomes.

- Probably the most important outcome was the development of **new networks**. In some cases this helped to launch the research careers of the fellow; often networks continued over time. In many cases new networks also resulted in new research directions. It is not possible to assess longer term impacts based on outputs such as publications alone, although fellowships have, of course, produced outputs in terms of publications, discussed both in terms of quantity and quality of publications, patents and new research projects.

**Q22: Have the Actions developed any effects which are persistent across FP4, FP5 and FP6?**

- Many had used the experience they gained to establish **new lines of research elsewhere**. Networks from the postdoctoral phase were often maintained and developed. These effects could be observed over time in the case of fellowships under FP4 and FP5. Fellows talked of different ways of developing and passing on what they had gained and some went on to achieve success in...

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28 ANNEX IV: Analysis of Open Comments made in the surveys: The views of Former FP6 Fellow respondents.
29 ANNEX II: List of those met during the field work: Case Studies 1 to 4:
30 APPENDIX A: Research Outputs: Q3 summary paragraph
31 ANNEX V: Case Study 1: Continuity dimensions (long term impact).
32 ANNEX V: Case Study 1: Continuity dimensions (long term impact).
obtaining European funding. However, the low success rates have been a deterrent to applying for European funding\textsuperscript{33}.

In addition, the following summarises the relevant case study evidence following interviews with Marie Curie Excellence beneficiaries\textsuperscript{34}:

- Contributions to leading peer reviewed publications and the delivery of papers at conferences were a strong feature of the research outputs of all Marie Curie Chairs and research outcomes sometimes went beyond this, including patent applications and occasional influences on national policy and practice.

- All Chairs had been active in the dissemination of their research outputs through conferences, seminars and networks that they belonged to, but one or two had also seen articles in the national press and one had engaged in public debate.

- In the area of network building, Chairs were typically already well placed and in a good position to broaden the networks of the teams they led.

- The main research outputs of Team Leaders were in publications and related rates. Longer term outcomes could include spin-offs where the research field was sufficiently close to market.

- For Team Leaders there was evidence that interdisciplinary teams were the norm and, given the fact that the large majority of research results were published in leading peer reviewed journals, sometimes in different fields, it was clear that leading edge research was being undertaken.

- It is clear that dissemination efforts were being made by Team Leaders and their teams, although methods were quite varied and the proportion directed towards the wider public not always mentioned.

- Network development was a natural feature of grant activity for Team Leaders and promised to be increasingly important for grant holders over the longer term.

### 3.2 THE SCIENCE IMPACTS

The scientific output impacts which emerge from the analysis are as follows:

- D3: Respondents report significant scientific output impacts in terms of the volume and quality of research and the volume of publications, although the standard of publications is not seen to be high.
- Q1: The quality of knowledge produced through the MCA is rated highly, particularly in academia, but “time to do research” impacts do not match supervisory expectations.
- Q3: Publication outputs have eased since FP5, particularly in the case of ESRs, but increase with Fellowship duration; evidence of worldwide knowledge outcomes is widespread.

\textsuperscript{33} ANNEX V: Case Study 1: Continuity dimensions (long term impact).
\textsuperscript{34} ANNEX V: Case Study 6: The Excellence Actions: case study evidence.
Q3: ESRs in FP6 were less likely than FP5 fellows to report a significant impact in the quality of the journals in which their publications appeared, but mid-career FP6 fellows report a higher impact than those in FP5.

The scientific output impacts include the quality of knowledge produced, which is rated highly, particularly in academia (although “time to do research” impacts do not match supervisory expectations), the execution of research that would not be covered elsewhere in the FP and significant scientific output impacts in terms of the volume and quality of research and the volume of publications (although the standard of publications is not seen to be particularly high). Publication outputs have eased since FP5, particularly for ESRs and supervisors would like more time to do research.

Regarding the duration of the Marie Curie Fellowships:

- Q1: The duration of the fellowship impacts slightly but significantly on the quality of the research outputs: for both FP5 and FP6 fellows the longer the fellowship, the larger the impact.
- Q1: The longer the duration the less time a fellow will spend with the supervisor and the longer the fellowship, the lower the probability that the fellows will be satisfied with the number of hours.

The longer the Fellowship duration, the larger the impact, both for FP5 and FP6 Fellows. However, in general, the longer the duration the less time a fellow will spend with the supervisor and the lower the probability that Fellows will be satisfied with the number of hours.

The interdisciplinary impacts which emerge from the analysis are as follows:

- D3: Supervisors and Fellows see the most significant interdisciplinarity impact of the scheme to be that projects are implemented which would not otherwise be funded under FP6.
- Q15: Channels for researcher knowledge and information exchange have increased, particularly in international fellowships. Interdisciplinary knowledge transfer in industry has been strong.
- Q19: The engagement in research with a higher interdisciplinary component has been high and typically involved ESRs. Industry has fared better than academia in this respect.
- Interestingly, the Fellowship impact on the ability to engage in inter-disciplinary research is seen to be more moderate (48%) than several other impacts by FP6 Fellow respondents, but multidisciplinary research (72-80%) is seen by them as a strong impact.

The interdisciplinary impacts include increased channels for researcher knowledge and information exchange, particularly in international fellowships. Interdisciplinary knowledge transfer has been strong, particularly in industry, and the engagement in research with a higher interdisciplinary component has been high; ESRs in particular indicated their appreciation for the fact that the research they did was highly interdisciplinary. Supervisors and Fellows also indicated an important impact of the scheme to be that projects are implemented which would not otherwise be funded under FP6, although this might involve mono-disciplinary projects also.

The networking impacts which include an increase in the international component of researchers’ work, along with their networks, which augur well for long term impacts and the large number of new and durable research and professional contacts made by Fellows. This underpins the significant network formation impact of the Scheme, along with Cross border networks, which are reported to show reasonable sustainability.
Dissemination impacts were also consistently positive, both for supervisory and FP5 and FP6 Fellow respondents.

<table>
<thead>
<tr>
<th>SKILL AND KNOWLEDGE DEVELOPMENT (N = 3,126 FP6 Fellows)</th>
<th>FP6 Lower (95% confidence)</th>
<th>FP6 Higher (95% confidence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My Marie Curie fellowship.... (agree and totally agree responses)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>allowed me to deepen my knowledge of my field of research</td>
<td>93.1%</td>
<td>95.5%</td>
</tr>
<tr>
<td>allowed me to learn more advanced research methods</td>
<td>86.6%</td>
<td>88.8%</td>
</tr>
<tr>
<td>What level of inter-disciplinarity or multi-disciplinarity did the research you were doing during your Marie Curie fellowship have?</td>
<td>74.5%</td>
<td>76.4%</td>
</tr>
<tr>
<td>allowed me to do research for which it is usually difficult to find funding</td>
<td>65.7%</td>
<td>67.4%</td>
</tr>
<tr>
<td>made me more aware of the impact of my research on society</td>
<td>61.9%</td>
<td>63.5%</td>
</tr>
<tr>
<td>What impact, if any, has the fellowship had on your ability to engage in inter-disciplinary research?</td>
<td>47.6%</td>
<td>48.8%</td>
</tr>
<tr>
<td>made me more aware of ethical issues related to my research</td>
<td>32.1%</td>
<td>32.9%</td>
</tr>
<tr>
<td>increased my ability to take ethical aspects into account in my research</td>
<td>31.5%</td>
<td>32.4%</td>
</tr>
</tbody>
</table>

Source: Appendix B, Figure 63

3.3 RECOMMENDATIONS RELATING TO SCIENCE

There are no recommendations that relate directly to science.
4.0 TRAINING AND CAREER DEVELOPMENT IMPACTS

This chapter examines training and career development impacts, including career, salaries, diversity and supervision quality. It includes consideration of the contribution of MC to advanced methods learning and deepening research fields. Other aspects include the impact on the ERA skills base, the impact from allowing researchers to access better research facilities, the impact on allowing researchers to be trained in the most advanced methods, the impact on the structures for ESR supervision and monitoring and the impact of researchers acquiring a wider social and cultural base.

4.1 THE STUDY FINDINGS

4.1.1 Evidence from the main supporting reports and analysis

Relevant findings from the analysis of the 30 key questions set for the study are taken from APPENDIX A and summarised as follows:

- Q2: The MCAs have had a significant positive impact on the acquisition of both advance research skills and complementary skills by Fellows, particularly those in industry. However, the most experienced fellows are less likely to experience significant impacts and the longer the Fellowship the larger the impact. Fellowship duration, the intensity of the supervision as well as the ability to make new contacts all seem to impact heavily and significantly on the respondent's probability of reporting an impact. Associated countries (advanced skills) and ENPI countries (complementary skills) report the highest impacts and supporting Actions have been active in supporting skills diversification.35

<table>
<thead>
<tr>
<th>Advanced research skills</th>
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</thead>
<tbody>
<tr>
<td>Study figures compare favourably with the findings of the 2009 UK PRES study36, where 85.9% of postgraduate research students thought the opportunities to develop a range of research skills met or exceeded their expectations.</td>
</tr>
</tbody>
</table>

This illustration should be seen in context of the current study findings, where some 95% of respondent FP5 and FP6 Fellows either ‘agree’ or ‘totally agree’ with the suggestion that the scheme “allows me to learn more advanced research methods” 37. In the case of FP4 Fellows 94.8% agreed that the fellowship had had at least ‘some impact’ on their methods training.38

35 APPENDIX A: Researcher Training and Skill Development: Q2 summary paragraph
37 Deliverable D3: Chapter 3: Training and Mentoring: 3.1 Advanced Methods Training and Figure 3
38 Deliverable D3: Chapter 3: Training and Mentoring: 3.1 Advanced Methods Training and Figure 4
Gaining complementary skills

The same survey in the UK\textsuperscript{39}, though with a differently formulated question, found that 84.8\% of postgraduate research students (18,644 respondents, representing a 28.6\% response rate) thought the opportunities to develop a range of transferable skills met or exceeded their expectations.

In contrast to the table above, the results from the MCAC FP5 and FP6 Fellows’ survey show that more that 70\% of respondents report that the Fellowship has a very significant or significant impact on the development of complementary skills\textsuperscript{40}.

- Q2: Most respondents reported a significant impact in terms of developing advanced research skills; although economists (ECO) were the least likely to report such impact\textsuperscript{41}.

- Q4: The impact on career options improves with the duration of the Fellowship, although it is also lower the more advanced fellows are in their careers. The perceived impact has improved substantially from FP5 to FP6, at all career stages. Chemistry and Environment and Geosciences scientists report a larger impact on average than social scientists. The impact appears to be stronger in certain Southern Europe countries (Spain, Romania, Italy and Greece)\textsuperscript{42}.

- Q5: No direct measurement of the attractiveness of a research career was made during the study, but it could be said to be a function of how Fellows find their early stage researcher experience and how the career prospects look to them during the Fellowship. The study evidence shows that the longer the fellowship, the more likely the respondent to report a significant career impact. Those in the chemistry panel seem to report a larger impact on their salary progression than most, while those in social sciences are much less likely to report an impact\textsuperscript{43}.

- As for the impact on job opportunities, the fellowship’s impact on career progression seems to have improved from FP5 to FP6. 57\% of FP5 respondents reported a significant impact, a proportion that went up to 63\% for FP6 respondents, who are in much higher numbers, making the trend all the more robust. The fellowship’s duration is again positively correlated with the significance of the impact perceived: the longer the fellowship, the more likely the respondent to report a significant career impact\textsuperscript{44}.

\textsuperscript{39}PRES, The Research Student Experience, The Higher Education Academy, 2009, \url{www.heacademy.ac.uk}: page 12

\textsuperscript{40}Deliverable D3: Chapter 3: Training and Mentoring: 3.3 The impact of the Fellowship on developing Complementary Skills and Figure 6

\textsuperscript{41}APPENDIX A: Researcher Training and Skills Development: Table before Q2 summary: Second row.

\textsuperscript{42}APPENDIX A: Attractive Careers: Recruitment and Retention: Q4 summary paragraph

\textsuperscript{43}APPENDIX A: Attractive Careers: Recruitment and Retention: Q5 summary paragraph

\textsuperscript{44}WORKING APPENDICES: From statistical analysis (all based on 95\% confidence level)
Overall, 77% of fellows from candidate countries reported a significant impact in terms of career progression, compared with just over 60% for EU fellows.

- Q10: Fellow respondents report several moves in their career progression over time. Career and job option impacts are beneficial, but are not as strong as other impacts reported by Fellows.\(^45\)

- Q11: The impact on accessing better research facilities is positive and reported to be stronger for those in the chemistry panel (in contrast to the mathematics panel) and in candidate countries than in the EU as a whole\(^46\).

### Access to appropriate facilities

<table>
<thead>
<tr>
<th>Fellowship duration</th>
<th>% of respondents who felt a significant impact in terms of career progression</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 6 months</td>
<td>49%</td>
</tr>
<tr>
<td>7-12 months</td>
<td>61%</td>
</tr>
<tr>
<td>13-24 months</td>
<td>66%</td>
</tr>
<tr>
<td>25-36 months</td>
<td>69%</td>
</tr>
</tbody>
</table>

The 2009 PRES study\(^47\) found that 80.5% of interviewed postgraduate research students in the UK thought that the access to appropriate facilities met or exceeded their expectations. The mean rating out of a score between 1 and 5 was 3.75, making it the fifth most positively rated factor out of eight.

- Q12: The impact on allowing researchers to be trained in the most advanced methods has been substantial, even though it has eased slightly since FP5. There is evidence that ESRs have been involved with leading edge teams.

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\(^45\) APPENDIX A: Researcher Training and Skill Development: Q10 summary paragraph  
\(^46\) APPENDIX A: Researcher Training and Skill Development: Q11 summary paragraph  
\(^47\) PRES, The Research Student Experience, The Higher Education Academy, 2009, [www.heacademy.ac.uk](http://www.heacademy.ac.uk); page 12 and 14
Advance methods training

The overwhelming majority of Fellows believe the Scheme to have had a very strong impact on advanced methods training. Some 95% of respondent Fellows either ‘agreed’ or ‘totally agreed’ with the suggestion that the Scheme, ‘allows me to learn more advanced research methods’. There appears to have been a decline in the extent of this impact since FP5, but according to Fellow respondents, it remains high in absolute terms. These figures compare favourably with the findings of the 2009 UK PRES study where 85.9% of postgraduate research students thought the opportunities to develop a range of research skills met or exceeded their expectations.

- Q13: Fellow respondents clearly appreciated the international cultural environment in which they were placed, affording opportunities to work with multi-disciplinarity teams in different research cultures and enabling fellows and their host groups to take more risks and develop innovative approaches and a wide range of complementary skills.

- Q13: Here too, economists (ECO) were the least likely to report an impact of the fellowship on acquiring complementary skills.

- Q24: There is evidence that appropriate structures for ESR supervision and monitoring are in place, but more through informal rules and procedures than through formal structures. Interdisciplinarity puts pressure on formality and more fluid and flexible approaches are more in evidence.

Relevant findings from the analysis of impacts by type of fellowship are taken from APPENDIX B and summarised as follows:

- The skills and knowledge development impacts as reported by FP6 Fellow respondents are particularly strong across all types of instrument in deepening knowledge in their research field (94%), advanced research methods (87%) and in multi-disciplinary research (72-80%).

- The highest career development and job satisfaction impacts as reported by FP6 Fellow respondents included international experience (80%), autonomy and independence (73%) and the development of advanced research skills (70%). In the centre ground were developing complementary skills (66%), developing contacts with researchers (65%), career progression (65%) and improving research output quality (65%). Lower impacts included accessing high quality research infrastructure (55%), making more career progression than their peers (53%) and increasing the number of job options (51%). The latter was higher for Current Fellows (57%), as it was for salary progression (48% Current; 32% Former).

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49 APPENDIX A: Knowledge Transfer: Networks and Collaboration: Q13 summary paragraph

50 APPENDIX A: Knowledge Transfer: Networks and Collaboration: Table before Q13 summary.

51 APPENDIX A: Researcher Training and Skill Development: Q24 summary paragraph

52 APPENDIX B: Skills and Knowledge Development

53 APPENDIX B: Career Development and Job Satisfaction
• FP6 Fellows respondents are very positive about making significant new research and professional contacts through the Fellowship (85%) and demonstrate strong intentions to continue active research links with home country researchers (72.5%). Intentions to stay in contact in general is a little weaker (66%) and overall, individual Fellows give firmer indications than host Fellows about maintaining their contacts and networks\(^{54}\).

Relevant findings from the separately presented ANNEXES to the report are summarised as follows:

• In general, the Marie Curie Conferences and training courses received ratings which showed a high level of satisfaction by respondents. In the case of the Marie Curie Conferences, the majority of researchers/respondents showed their level of satisfaction by asserting that they planned to participate, if possible, in future conferences\(^{55}\).

• Also, participation at the Marie Curie Series of Events (e.g. training courses) has been much appreciated, not only in terms of content and new knowledge acquisition, but also in providing new contacts for the majority of respondents and new ideas for plans to work abroad in the future\(^{56}\).

The following summarises the evidence from interviews with Marie Curie Excellence beneficiaries regarding training, supervision and mentoring\(^{57}\):

• Although Marie Curie did not provide Chairs with any particular funding for training, supervision and mentoring, apart from one or two rather focused researchers, all were active in ensuring that the post graduate researcher and doctoral students under them were trained in the wider skills of project management, how to structure a research paper, presentation and communications.

• Team Leader (grant holder) interviewees also reported several training, supervision and mentoring measures, both one-to-one and in groups and with a focus on both the science and supporting complementary skills development. Improved practices had been transferred from various sources (they were not just as a result of the Marie Curie grant) but the grant structure had meant that more time could be devoted to such measures.

4.1.2 Evidence from the longitudinal comparisons: FP4 to FP6

In the Long Term Schemes Report, the significant training and mentoring impacts of the scheme include\(^{58}\):

• advanced research methods,
• enhanced researcher autonomy,
• the development of complementary skills and
• the quality of supervision in particular.

\(^{54}\) APPENDIX B: Contacts and Networks
\(^{55}\) ANNEX X: The Other Actions Report (D5): The Marie Curie Conferences and Training Courses.
\(^{56}\) ANNEX X: The Other Actions Report (D5): The Marie Curie Conferences and Training Courses.
\(^{57}\) ANNEX V: Case Study 6: The Excellence Actions: case study evidence.
\(^{58}\) ANNEX X: The Long Term Schemes Report (D3) #1
There is little difference in the views of current and former fellows, although overall training and mentoring impacts are marginally more significant for current fellows (e.g. access to research equipment, awareness of and engagement with ethical issues, on-the-job training), whilst the quality of formal training has diminished in significance. A lower proportion of current fellows start with a Doctorate, so the opportunities for training impacts can be seen to be high and the impact on researcher “capacity building” is appreciated.

4.1.3 Evidence from the analysis of open comments

The views on the impact on careers lines up with the overall positive view of the programme by the same respondent supervisors, with 26 of the 30 comments being positive (93%). Marie Curie career impacts mentioned by respondent supervisors is summarised as follows:\(^59\):

- The impact on the development of career and jobs (11)\(^60\) included better prospects back in the Fellow’s home country (4), in the host institution (2), academia (1) industry (1) as well as a more general mention (4).

- The wider impacts (8) can be characterised by the statements from 4 different respondents:
  - “the MS scheme is probably the single most important contribution that the EU makes to science”
  - “a very positive program . . . be conscious of its benefits for generations of researchers in Europe”
  - “exceptionally important for young scientists in Europe aiming to do high quality science”
  - “The scheme is . . . helping us close the gap on the USA”.

- The next most frequent comments related to the great opportunity being offered to researchers (6) and its education and training value (6). They were closely related and are more by way of general comment than on the impact of Marie Curie.

- Several commented on the growth in researcher reputation through Marie Curie (5), particularly mentioning that this would go with them to their home country on next post and the importance of the international experience gained was mentioned (4).

The very few negative comments (2) related to poor relations with the particular Fellow; one was seen to have just used the scheme for personal financial advantage.

The views of former FP5 Host Fellow respondents on the impact on careers lines up with the overall positive view of the programme by the same respondent Former FP5 Host Fellows, with 10 of the 13 comments being positive (77%). Marie Curie career impacts mentioned by Former FP5 Host Fellows are summarised as follows\(^61\):

- There is broad agreement that the Fellowship has had a positive impact on professional (4), personal (3), intellectual (2) and social development (2) for FP5 Host Fellows and that it was important for ESRs (2).

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\(^{59}\) ANNEX IV: Analysis of Open Comments made in the surveys: The views of FP6 Supervisors

\(^{60}\) Open comments: When figures appear on brackets in the open comment evidence, this signifies the number of “mentions” by respondents in support of this particular viewpoint or finding.

\(^{61}\) ANNEX IV: Analysis of Open Comments made in the surveys: The views of the former FP5 Host Fellows
• The main negative career impacts have been in relation to job options in the home country as a result of taken a Fellowship in another country (2), although one mentioned the lack of any job guidance from their supervisor.

Also, in the case of the former FP5 Host Fellow respondents:

• The positive quality of training impacts were in relation to the lining up of the research content with the Fellow's interests (2). One did not find any post Fellowship support in continuing his research interests and considered this a negative aspect.

• There were examples difference experiences of supervision and host organisations, one very positive, one very negative (no support at all) and another who would liked to have had the opportunity to chose a better research institute.

The views of former FP6 Fellow respondents on career impacts line up with the overall positive view of the programme by the same respondent Former FP6 Fellows, with 56 of the 68 comments being positive (82%). The more frequent career impacts cited were:

• Gaining a new (often permanent) job position, either back home or in the host organisation.
• Benefitting from ongoing networks set up during the Fellowship.
• New career opportunities presenting themselves after the Fellowship.

Some mentioned starting their own team (4), being on a new funded scheme (4), the positive influence of supervisors and hosts (4), beginning research in new fields (3), new research funding (3), scientific outputs (3) and attaining some autonomy and independence (2).

Most of the career impacts cited by current FP6 Fellow respondents centred on personal, professional and research benefits, including social and cultural knowledge and skills (2) 64.

Amongst former FP6 Fellow respondents, there were only 5 views on quality of training and skills learnt impacts and 60% were positive, particularly in relation to network building and skills development 65.

An examination of the more negative aspects starts with the views of former FP6 Fellow respondents on the management by supervisors and hosts, where the impacts line up with the overall negative view of the programme by the same respondent Former FP6 Fellows, with 34 of the 44 comments being negative (i.e. only 23% positive). The more frequent supervision and host management views cited were:

• Administration at the host institution which, when it was mentioned, was always negative. In the main, respondents pointed to the fact that host institutions cannot organise themselves well to cope with the Fellowship grant administration and its related rules and fund flows.

62 ANNEX IV: Analysis of Open Comments made in the surveys: The views of the former FP5 Host Fellows
63 ANNEX IV: Analysis of Open Comments made in the surveys: The views of former FP6 Fellows respondents.
64 ANNEX IV: Analysis of Open Comments made in the surveys: The views of current FP6 Fellows respondents.
65 ANNEX IV: Analysis of Open Comments made in the surveys: The views of former FP6 Fellows respondents.
66 ANNEX IV: Analysis of Open Comments made in the surveys: The views of former FP6 Fellows respondents.
• Whilst only 35% of the views on the standard of **project coordination or supervision** were positive, those who were positive were very positive and those who were negative were very negative, sometimes mentioning individuals.

• The **level of guidance** during the Fellowship was closely related to the quality of the supervision and these two factors can be seen to have a close correlation in the results above.

• There were more negative views on **host institute reputation** (4) than positive ones (2), with some wanting to see more control on the choice of host institution to which they are allocated.

There were few positive mentions regarding the acquisition of skills (1) and relations formed with institute researchers (1) and these were cancelled out by the more negative views.

Some 63% of the 35 views of current FP6 Fellow respondents on **management by supervisors and hosts** were from ESR respondents with RTN-ESR and EST Fellowships and, although views were predominantly negative, their overall support for the Marie Curie Fellowship programme as a whole was strong (79% positive).

In summary, the views about Fellow and Fellowship **management by supervisors and host organisations** were as follows:

• **Poor support by the host organisation** was the most consistent theme (10/10 negative);
• This was closely followed by the **poor support of the supervisors** (9/9 negative);
• Comments relating to **inadequate assessment of host institutions** also figured (5/5 negative);
• Also, there were negative comments about the **preparation of some host institutions** (4/4).

Two commented negatively about the degree to which they were integrated in the host team and one ESR mentioned the resistant of the supervisor to considering an extension of the grant.

### 4.1.4 Evidence from the case studies

The case study evidence suggests that the conditions and prestige of the Marie Curie Fellowships make an award attractive although some insecurity can be found in terms of future career progression and there are clearly extraneous factors operating on research career attractiveness.

**Q5: Have the Actions made the scientific career as a researcher more attractive overall?**

• Marie Curie fellowships are prestigious and the conditions of the Marie Curie Fellowships were mostly regarded as highly attractive and for their duration, they certainly made research careers more attractive. The main problem identified was the general insecurity of research careers. Marie Curie Fellowships worked very well for their duration; but the extent to which it enabled fellows to progress in a research career varied. Many academics developed their research careers and have progressed to academic positions, which allowed them to contribute to fostering the next generation of researchers, although some established researchers pointed to the increasing difficulty in obtaining EU funding, highlighted also in a recent study of Social Science and

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67 ANNEX IV: Analysis of Open Comments made in the surveys: The views of current FP6 Fellow respondents.
68 APPENDIX A: Attractive Careers: Recruitment and Retention: Q5 summary paragraph
Humanities research (Ackers and Millard 2009). Others were struggling to establish themselves following a Marie Curie Fellowship, due to the short-term and insecure nature of research posts.

Q12: Have the Actions allowed researchers to be better trained in the most advanced methods

- There is evidence to suggest that EST allowed researchers to be better trained in the most advanced methods. It is clear that ESRs were involved with research teams from the start and that many of these teams were at the leading edge in their field. Supporting mentoring approaches were such that the scientific progress of ESRs was being constantly monitored and adjustments made.

The following summarises the evidence from interviews with Marie Curie Excellence beneficiaries:

- For most, the career benefits of being a Chair were very significant and positive, both during the period of the grant, when the freedom to pursue research interests was so strong, and after, when the prestige of the award had beneficial effects on the opening up of new research opportunities.

- Career impacts on researchers under the leadership of the Chairs, which included post graduate and doctoral students and sometimes, but not always, some early stage researchers (ESRs), was also a positive feature and included promotion to more responsible roles and ongoing collaborations in the same field.

- One of the main career benefits for the team leaders interviewed was that the grant offered an attractive route back into the mainstream of European research, supported by a degree of recognition, better career prospects and sometimes significant promotion, underpinning the continuity of the research.

- The career benefits for supporting research team members were also positive, with a full 4 years to focus on leading research topics, the opportunity to strengthen contacts, to grow in research capabilities and to enhance employability.

- Amongst external peers in other institutes, there was awareness and appreciation of the Marie Curie brand and it was seen as a mark of excellence and carried with it prestige. This was reported to be strongest in Europe, extending to all countries eligible for Marie Curie support, but less so in the US where the focus is much more on the national scene.

- Prize winner interviewees reported tangible career impacts in the form of research field recognition amongst scientific peers or in terms of job promotion.

- There was no obligation to use prize money in any particular way and, although two interviewees reported that it went to personal savings for future expenditures, one used most of the funds for dissemination, which culminated in the writing of a book in his research field.

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69 ANNEX V: Case Study 1: Continuity dimensions (long term impact).
70 ANNEX V: Case Study 5: EST and the structuring effect.
71 ANNEX V: Case Study 6: The Excellence Actions: case study evidence.
• The prize winner interviewees rated the prize as very important for their research through the increased recognition of their field of research and the motivation to aim for even more innovative research goals with more prestigious researchers.

4.2 THE TRAINING AND CAREER DEVELOPMENT IMPACTS

The training and mentoring impacts which emerge from the analysis are as follows:

• D3: Significant training and mentoring impacts of the scheme include advanced research methods, enhanced researcher autonomy, the development of complementary skills and the quality of supervision in particular.
• Q2: A significant positive impact on the acquisition of both advanced research skills and complementary skills by researchers has contributed to the ERA skills base.
• Q2: The most experienced fellows are less likely to experience significant impacts; the longer the Fellowship the larger the impact. Fellowship duration, the intensity of the supervision as well as the ability to make new contacts all seem to impact heavily and significantly on the respondent's probability to report an impact.
• Q11: The impact on accessing better research facilities is positive and reported to be stronger for those in the chemistry panel (in contrast to the mathematics panel) and in candidate countries than in the EU as a whole.
• Q12: The impact of the MCA on allowing researchers to be better trained in the most advanced methods has been substantial, including ESRs.
• Q13: MCA Fellows clearly appreciate being placed in an international cultural environment where they can work with multi-disciplinary teams and acquire a wider social and cultural base.
• Marie Curie Conferences and training courses received ratings which showed a high level of satisfaction by respondents. They planned to participate in future conferences and Series of Events (e.g. training courses) providing new contacts for the majority and new ideas for plans to work abroad in the future.
• Marie Curie Excellence Actions helped post graduate researcher and doctoral students to be trained in the wider skills of project management, how to structure a research paper, presentation and communications.

The training and mentoring impacts include significant positive impacts on advanced research skills, enhanced researcher autonomy, the development of complementary skills and the quality of supervision, contributing to the ERA skills base and boosting career prospects. Accessing better research facilities, which is also positive, is a more significant consequence of the fellowship for researchers from candidate countries than for those from the EU as a whole. The MCAs have allowed researchers, including early stage researchers (ESRs) to be better trained in the most advanced methods, and Fellows appreciate being placed in an international cultural environment where they can work with multi-disciplinary teams and acquire a wider social and cultural base. Whilst the awareness of ethical issues remains low, it is increasing and mid-career researchers have experienced the most significant impacts. The MCAs have delivered an increased awareness of the social impact of research, especially amongst industry Fellows. Structures for ESR supervision and mentoring are more informal than formal as interdisciplinarity requires more fluid and flexible approaches.

The research career impacts which emerge from the analysis are as follows:
• D3: In terms of professional responsibility level expectations, these have not increased with length of service, but there is an increased level of perception of success relative to peers amongst FP5 Hosts and FP6 Fellows.

• Q4: The impact on research careers improves with Fellowship duration and is stronger in Southern Europe.

• Q4: The perceived impact on research careers has improved substantially from FP5 to FP6, at all career stages. Chemistry and Environment and Geosciences scientists report a larger impact on average than social scientists.

• Q5: The attractiveness of a research career may be a function of how Fellows find their ESR experience and how the career prospects look to them during the Fellowship.

• Q5: The longer the fellowship, the more likely is the Fellow respondent to report a significant career impact.

• Q10: Fellow respondents report several moves in their career progression over time. Career and job option impacts are beneficial, but are not as strong as other impacts reported by Fellows.

• Several career benefits are reported by those benefitting from the Marie Curie Excellence Actions, including the opening up of new opportunities for Chairs, routes back to mainstream careers for Team Leaders and peer recognition for Prize winners.

The research career impacts include publication outputs, which have eased since FP5 but increase with Fellowship duration, and evidence of worldwide knowledge outcomes is widespread. The impact on research careers improves with Fellowship duration and is stronger in Southern Europe. Recent changes have made it easier for those with partners and children and improved career options. Public research institutes and industry have been the employers to gain most from employment sector mobility in the most recent period, at the expense of the university sector. The MCAs have not improved the administration and employment of researchers, except in some smaller Member States, but most former fellows are now on permanent contracts. In fact, a significant impact on contract permanence, salaries and working condition is reported by Fellows and on career progression as a whole. In terms of professional responsibility level expectations, these have not increased with length of service, but there is an increased perception of success relative to peers amongst FP5 Hosts and FP6 Fellows.

Factors affecting the impact of the Marie Curie scheme in the case of early stage researchers include the following:

• Q15: ESRs seem to be fully engaged in the transfer of interdisciplinary knowledge between research fields and the impact on their channels of knowledge and information exchange is considerable.

• Q12: ESRs have participated in the substantial advanced methods training impacts.

• Q24: Appropriate structures for ESR supervision and monitoring are in place, but more through informal rules and procedures than through formal structures.

• Some ESRs share the negative view about supervisory and host management; others are very positive.

The evidence shows that ESRs are fully engaged in the transfer of interdisciplinary knowledge between research fields and the impact on their channels of knowledge and information exchange is considerable. They have also participated in the substantial advanced methods training impacts. ESR supervision and monitoring is sometimes informal and ESR views about supervisory and host management competence are mixed.
Please rate for each of the following, the degree of impact that your Marie Curie fellowship has had so far/will have on your career.

<table>
<thead>
<tr>
<th>Impact Area</th>
<th>FP6 Lower (95% confidence)</th>
<th>FP6 Higher (95% confidence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>International experience</td>
<td>79.5%</td>
<td>81.5%</td>
</tr>
<tr>
<td>Autonomy / independence</td>
<td>72.1%</td>
<td>74.0%</td>
</tr>
<tr>
<td>Developing advanced research skills</td>
<td>69.0%</td>
<td>70.8%</td>
</tr>
<tr>
<td>Developing transnational research contacts / networks</td>
<td>68.0%</td>
<td>69.7%</td>
</tr>
<tr>
<td>Developing complementary skills, such as language skills, management, communication skills etc.</td>
<td>64.9%</td>
<td>66.6%</td>
</tr>
<tr>
<td>Developing contact with and/or knowledge of other research disciplines</td>
<td>64.3%</td>
<td>66.0%</td>
</tr>
<tr>
<td>Improving the quality of research outputs</td>
<td>64.3%</td>
<td>66.0%</td>
</tr>
<tr>
<td>Career progression</td>
<td>62.6%</td>
<td>64.3%</td>
</tr>
<tr>
<td>Access to high quality research equipment / infrastructure</td>
<td>53.4%</td>
<td>54.7%</td>
</tr>
<tr>
<td>Increasing the number of job options available to you</td>
<td>49.9%</td>
<td>51.2%</td>
</tr>
<tr>
<td>Salary progression</td>
<td>37.8%</td>
<td>38.8%</td>
</tr>
</tbody>
</table>

Source: Appendix B, Figure 65

4.3 RECOMMENDATIONS RELATING TO TRAINING & CAREER DEVELOPMENT

Statistical analysis of the survey results give some pointers as to why many of the FP5 impacts were stronger than those in FP6, particularly when comparing former fellows in FP5 with those in FP6:

- **Supervision time** used to be longer and more intense and there was a higher level of satisfaction with this aspect, although it has to be born in mind that the FP5 group of Fellows were mostly ESRs who would be expected to receive more supervision. There is room for more structuring of, and commitment to, adequate supervisory time within the MCAs.

- The quality of research outputs and the development of advanced and complementary skills are correlated to course duration, but it is the ESRs who report the greatest impacts from them. A greater focus on ESRs in the design of the MCAs promises to enhance overall impacts.

- Former FP6 Fellows’ view on the impact on job options was lower than that of former FP5 Fellows. Current FP6 Fellows indicated that they have high expectations about an increase in the number of job options available but it may be because the timing of their experience that such a difference exists. However, assistance with career opportunities at the end of a Fellowship promises to enhance impacts.

Specific recommendations of the impact assessment are as follows:

**Recommendation: training and career development**

To improve the effectiveness of Marie Curie Fellowship training through a higher frequency of supervision and better career planning, particularly in the case of ESRs.
5.0 INNOVATION AND KNOWLEDGE TRANSFER IMPACTS

This chapter deals with impacts relating to innovation and the transfer of knowledge, such as patents, commercial exploitation and enterprise creation. It also addresses the contribution of Marie Curie to academia-industry collaboration and the impact on industrial involvement that directly addresses ERA objectives.

5.1 THE STUDY FINDINGS

5.1.1 Evidence from the main supporting reports and analysis

Relevant findings from the analysis of the 30 key questions set for the study are taken from APPENDIX A and summarised as follows:

- Q4: Although inter-sectoral mobility has been growing, it has somewhat decreased from FP5 to FP6, albeit more so for fellows in their mid-careers (83% of FP5 and 68% of FP6 reported an impact) and the net flow is away from industry and towards academia.\(^{72}\)

- Q15: Channels of knowledge and information exchange have continued to strengthen in FP5 and FP6 and have been particularly noticeable amongst international Fellowship respondents. The transfer of interdisciplinary knowledge between research fields was rated by industrial supervisory respondents to be some 6% higher than those in academia. ESRs seem to be fully engaged with this process and the impact on their channels of knowledge and information exchange is considerable. Economic Sciences panel fellows tend to develop more interdisciplinary and transnational networks than all other fellows, but are also those who develop the least interdisciplinary knowledge as a result of their fellowship.\(^ {73}\)

- Q26: The MCA examples that have enabled knowledge to flow through to innovation include patenting, commercial exploitation and new company creation and are much more prevalent with industry based hosts that with those based in academia by a factor of 3 to 4 times. Fellowships relating to the Information Science and Engineering panel were more likely than any other to lead to a patent owned by the host. Fellowships relating to Information Science and Engineering (ENG) and Chemistry (CHE) were more likely than any other to lead to a patent owned by the Fellow. A general lack of appreciation of industry by some in academia emerges from the evidence.\(^ {74}\)

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\(^{72}\) APPENDIX A: Attractive Careers: Recruitment and Retention: Q4 summary paragraph
\(^{73}\) APPENDIX A: Knowledge Transfer: Networks and Collaboration: Q15 summary paragraph
\(^{74}\) APPENDIX A: Researcher Training and Skill Development: Q26 summary paragraph
Industrial-academia collaboration

The Fourth Community Innovation Survey (February 2007) indicated that between 2002 and 2004, only 9% of innovative European companies had established collaborations with universities, and only 6% with governments and research institutes. These figures have been confirmed by the 2008 OECD study *Open Innovation in Global Networks*, which highlights that large companies are four times more likely than SMEs to collaborate on innovation.  

898 supervisors (56% of the supervisory respondents) to the MCA survey indicated that they or members of their research group directly collaborate on research with industrial/commercial partners (researchers working in the industry sector were not considered).  

- **Q27:** Although the evidence that Fellows placed in industry experience more enhanced skill acquisition, a more multi-disciplinary research and greater innovation impacts, **the extent of industrial involvement** in the MCA programme is limited (18%). A reluctance to engage with industry seems to be because this is often given a low priority by academia. Information Science and Engineering related fellowships that led to patents were the most likely to be seen as (at least partly) the result of the MCAs.

Relevant findings from the separately presented [ANNEXES](#) to the report are summarised as follows:

- It is clear from FP6 Fellow respondent replies that the focus of any **industrial-academia impacts** is within the ToK-IAP type of Fellowships. The hopes of Current Fellows far exceed the expectations and experience of Former Fellows when it comes to internships. However, views about the training provided are convergent in ToK-IAP (Former and Current Fellows both 47%) and Former FP6 ToK-IAP Fellows report a higher incidence of specific training on industrially relevant issues that Current ToK-IAP FP6 Fellows are expecting. There are low expectations of patents, commercialisation and enterprise creation and even collaboration with industry emerging from respondents' views, but the level of experience (79%) and expectation (97%) of involvement in collaborations with industrial/commercial partners is very high in ToK-IAP.

- The previous impact assessment study (1994-2002) showed that only 8% of Marie Curie fellowships were carried out in an **industrial host organisation** (mostly via the FP5 Industry Host fellowships, but also some FP5 Training Sites and individual fellowships), and whilst there has been no increase in this proportion in the present study, there are some interesting features to be noted about Marie Curie impacts from industry hosting. The survey answers from researchers in industry were compared with those in academia, which evidenced some interesting differences, which can be summarised from the analysis made.

The following observations are made from the analysis of the **industry dimension**:

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75 Collaborative Doctoral Education, University-Industry Partnerships for enhancing knowledge exchange, 2009, European University Association
76 Deliverable D3: Chapter 7: Inter-Sectoral Collaboration: 3.1, Figure 42
77 APPENDIX A: Researcher Training and Skill Development: Q27 summary paragraph
78 APPENDIX B: Industry-Academia Knowledge Transfer and Collaboration
79 ANNEX X: The New Schemes Report (D4): The Industry Dimension
5% of all respondents to the fellows’ questionnaire carried out the fellowship at a company. Data on the total population for FP6 are not available to the research team. Preliminary data for the total population of FP4 and FP5 showed that 8% of all fellowships were carried out at an industrial host.

On the average of total respondents, only 4% of fellows had an internship in industry, 8% collaborated with industry, and 6% received industry specific training. This represents no noteworthy increase in involvement from and collaboration with the private sector compared to the previous study period.

Compared to universities, respondent supervisors from companies declared a more positive impact of the presence of the fellows in their groups in relation to time for research and possibility to fund projects which could not otherwise have been funded. In fact, the Marie Curie fellowship allowed companies to undertake more medium or long term research activities, often in collaboration with universities or public research centres, than would normally have been acceptable for company management.

The research at companies was also more interdisciplinary compared to the projects that took place at a university or a public research centre, both according to the respondent FP5 and FP6 fellows (very significant impact: 26.9% industry; 24.3% academia) and the supervisors (very significant impact: 30.4% industry; 18.6% academia).

Relatively more fellow respondents with academic supervisors (67.3%) as compared to those in industry (57.6%) indicated good or very good satisfaction with the quality of the supervision. In the previous IMPAFEL study, the satisfaction of fellows in industry as positive in 54% of cases, and those of academic fellows in 74%.

To the question 'To which extent the skills learnt and developed during the fellowship contributed to your success in obtaining research funding?' less than half of respondents from industry (47.7%) indicated some extent of impact, while 66.3% of respondents from academia noted a positive impact in this field.

Respondents who carried out their Marie Curie fellowship at a company were less likely to maintain active research links, both with the home country during the fellowship and with the supervisor/host group after the fellowship.

Respondents who carried out the fellowship in an industrial setting more frequently returned to or gained permanent employment contracts after the fellowship, whereas for fellows in academia the majority went to studying or temporary contracts after the end of the Marie Curie fellowship.

Respondents in an academic setting gained benefit from the training mainly via deepening their knowledge of the field and gaining advanced research skills. Respondents at a company, on the other hand, ascribed slightly less impact in this respect, but more frequently thought the fellowship had contributed to learning how to deal with ethical issues, and gained more awareness of the societal relevance of their research.

The impact of the fellowship on career progression, on the other hand, was felt to be more positive by respondents in academia, while those who went to an industrial host for their Marie Curie fellowship more often reported little or no impact.
• Respondents who carried out their Marie Curie fellowship in academia more frequently indicated a positive impact on both the quality and the quantity of their research output and publications than those who had an industrial host.

• 7.6% of all fellowships completed by respondents resulted in a patent, which represents a similar level to the previous findings from IMPAFEL (7%). Within the group of fellows in industry, 21.6% of projects led to a patent, and fellows said in 26.1% of cases that their research results had been commercialised.

• 80% of respondents who were at a company host site during their fellowship indicated that they collaborate with industrial partners in their current job (so after the Marie Curie fellowship). The same was indicated by only 25% of respondents at an academic host organisation. Almost three-quarters of the fellows who had carried out their Marie Curie fellowship in a company setting and half of those who did the fellowship in academia thought that the fellowship had contributed to their currently being engaged in industry-academia collaboration.

5.1.2 Evidence from the longitudinal comparisons: FP4 to FP6

In the Long Term Schemes Report, private sector contacts are not seen to be important or significant in terms of the inter-sectoral collaboration impact of the Scheme, with little evidence in the way of industrial or commercial results. At the same time:

• Supervisors report a high degree of collaboration with industrial/commercial partners and some degree of knowledge transfer and some progress in the development of new technologies.

• There is seen to be a general trend away from academia to the research centres and industry through the period of Marie Curie participation.

• The impact of the scheme on inter-sectoral mobility is seen to be important.

<table>
<thead>
<tr>
<th>Inter-sector mobility – comparisons</th>
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</thead>
<tbody>
<tr>
<td>Moguerou and Di Pietrogiacono (2007) found that in the EU25, 48.7% of researchers worked in the business sector.</td>
</tr>
</tbody>
</table>

UK study among postgraduate research students found that the preferred career of 44% of this group was an academic career in higher education (either research and teaching or teaching only). One in seven (13.9%) aspired to a research career in higher education, and a further one in seven wished to pursue a research career outside higher education.

In the current study, collaboration with industrial and/or commercial partners is part of ToK-IAP, so high expectations (97%) and experience (79%) in this MCA are to be expected. Average figures for Former FP6 Fellow respondents (41%) are higher than those for Current FP6 Fellow...

81 ANNEX X: The Long Term Schemes Report (D3) #5
82 Moguerou, P. and Di Pietrogiacono, M.P. (2007), Table 2, based on 2005 OECD data
respondents (36%); Current FP6 individual international Fellowship holders in particular (IEF, IOF, IIF) had low expectations of any collaboration.

- Industry training or experience impacts are not yet seen as significant, nor are patents.
- The trend from FP4 to FP6 for former Fellows is for increased collaboration with industry, but starting from a low level.

5.1.3 Evidence from the analysis of open comments

The views on the industry/academia impacts were mixed, with 7 of the 13 comments being positive (54%). The number of comments is small, but industry collaboration is an important issue. There were several comments (5) to the effect that networking with industry is an asset for the Marie Curie Programme and much appreciated by those engaged in this way. However, some contrary views were expressed about factors affecting industry/academia impacts:

- Industry prefers less bureaucracy (2)
- SMEs find MCA hard to deal with (2)
- MCA collaboration is not appropriate for industry (1)
- It is difficult to see the benefits for industry (1)
- It is difficult to find a suitable industrial Fellow (1)

It can be seen that the positive views converge on networking with industry being an asset, whilst the negative views are divergent.

Although only 25% of the 12 views of former FP6 Fellow respondents on industry/academia aspects were positive, the overall direction of the views of the same respondents was evenly balanced. Two reported that the Fellowship led to valuable knowledge about working in industry, but another two found the opposite; one saw likely patent outcomes; in another case, these had been abandoned.

The views of current FP6 Fellow respondents on industry/academia aspects included one who mentioned that the industrial partner can have difficulty in understanding the nature of the fellowship and their role in the partnership. Another said that the CV of applicants for a Marie Curie project with Industry as Host should be evaluated, especially if they show lack of experience in managing/supervising projects and/or scientific output. Finally, another that, although the Fellowship provided the opportunity to go to an industry research organisation after his PhD, the contract would be time-limited, making it more stressful than a 'normal' industry position.

5.1.4 Evidence from the case studies

Q26: Do the Actions have appropriate strategic actions to enable knowledge to flow into innovative activities?

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84 ANNEX IX: Analysis of FP6 survey evidence by Fellowship type: Figures 41.
85 ANNEX IV: Analysis of Open Comments made in the surveys: The views of former FP5 Host Fellow respondents.
86 ANNEX IV: Analysis of Open Comments made in the surveys: The views of former FP6 Fellow respondents.
87 ANNEX IV: Analysis of Open Comments made in the surveys: The views of current FP6 Fellow respondents.
The case studies identified several international, inter-disciplinary and inter-sectoral collaborations have developed, which have resulted in innovative ideas and new applications of knowledge. The main purpose of a fellowship in another country is to stimulate new co-operations and innovation. This worked very well in the cases of most of the fellows interviewed. Novel ideas arise when people from different disciplines, different sectors or different countries collaborate. Based on the interviews, most fellowships were successful in terms of opening the eyes of partners to new perspectives. Collaboration between academics and industry has the potential to contribute to the knowledge economy through knowledge transfer. However, although fellowships often involved inter-disciplinary collaborations, only a minority of the interviewees collaborated with industry.

Q27: Do the Actions have sufficient industrial involvement for the ERA objectives to be addressed directly?

Collaborations with industry identified worked well on an individual basis, and tended to be dependent on pre-existing networks, often involving people who had experience of working in both sectors. In many cases identified here they were mediated by individuals rather than institutional or corporate policies. In the case of the industry supervisor interviewed, he had two posts, in a company and in a university, which is fairly common practice in some countries, such as the Netherlands, where he was based. These types of arrangements could be useful to develop industrial-academic links on a more institutionalised basis.

There are also some disciplines, such as particle physics where spin-offs and industrial collaborations are common. Greater collaboration with industry may also be linked to inter-disciplinary collaboration, maybe with fields such as particle physics or pharmaceuticals, where applications are more obvious. Other academics have not sought to develop the application of their work in industry, although, as suggested by some academics (for example the third quote above), there is potential to do so. In some cases, there may be little incentive to develop industrial applications, if this is not rewarded financially or in terms of career progression. Academics may not take the time to develop this aspect of their work, or they may prefer to focus on theory and leave development of applications to others. In other cases, the networks may not have been developed which would expose academics and business to the options for collaboration.

The case study evidence from the EST actions suggests that the contribution to industry is not substantial and, when it exists, it is difficult to sustain. The same case study took note of the contribution that researchers crossing into the public research institutions from industry often bring good practice with them and are able to have an influence on the ERA agenda when in partnership through networks created by Marie Curie initiatives.

Q15. Have the Actions increased the channels by which researchers can exchange knowledge and information?

88 ANNEX V: Case Study 1: Continuity dimensions (long term impact).
89 ANNEX V: Case Study 2: Industry-Academia Cooperation.
90 ANNEX V: Case Study 2: Industry-Academia Cooperation.
91 ANNEX V: Case Study 2: Industry-Academia Cooperation.
92 ANNEX V: Case Study 5: EST and the structuring effect.
Through their contributions to publications and their involvement in conferences and similar events, ESRs were given many opportunities to exchange knowledge, experience and information. New contacts with peer group researchers at different levels developed during their EST tenure and there is evidence of sustained working relationships from supervisors as well as the appreciation of the beneficiaries themselves. The following summarises the evidence from interviews with Marie Curie Excellence beneficiaries about engagement with industry:

- Only a few Chairs were engaging directly with industry; those with patented opportunities being the most active.
- Any engagement with industry by grant holders was patchy and only important when the research field was close enough to application.

5.2 INNOVATION AND KNOWLEDGE TRANSFER IMPACTS

The characteristics of Fellowships in industry and academia are often quite different in terms of the benefits of the training (e.g. Academia was stronger on maintaining research links and Industry experience more likely to result in a permanent contract). Some 80% of respondents who were at a company host site during their fellowship indicated that they collaborate with industrial partners in their current job, whereas the same was indicated by only 25% of respondents at an academic host organisation.

The inter-sectoral collaboration impacts which emerge from the analysis are as follows:

- D3: Private sector contacts are not seen to be significant in terms of the inter-sectoral collaboration impact of the Scheme, with little evidence of industrial or commercial results, but Supervisors report progress in industrial collaboration, knowledge transfer and innovation.
- Q4: Inter-sectoral mobility has decreased from FP5 to FP6, albeit more so for fellows in their mid-careers (83% of FP5 and 68% of FP6 reported an impact) and the net flow is away from industry and towards academia.
- Q15: Interdisciplinary knowledge transfer in industry has been strong. The research at companies was also more interdisciplinary compared to the projects that took place at a university or a public research centre.
- Q16: Academic contacts are more durable and of a different nature than those in industry. Supporting Actions have allowed ongoing contact development.
- Q26 Information Science and Engineering panel fellowships and those in large or international firms were more likely to lead to a patent related work and outcomes.
- Q27: The extent of industrial involvement in the MCA programme is limited (18%) which may be due to a reluctance to engage with industry; often given a low priority by academia.

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93 ANNEX V: Case Study 5: EST and the structuring effect.
94 ANNEX V: Case Study 6: The Excellence Actions: case study evidence.
95 APPENDIX A: Attractive Careers: Recruitment and Retention: Q4 summary paragraph
96 APPENDIX A: Other wider impacts: Q16 summary paragraph
• Q27: It is unlikely that the MCA stimulates sufficient industrial involvement for the ERA objectives to be addressed directly as this is given a low priority in academia as a whole.
• In the previous impact assessment study only 8% of Marie Curie fellowships were carried out in an industrial host organisation and there has been no increase in this proportion in the present study.

The inter-sectoral collaboration impacts include the fact that MCAs have enabled knowledge to flow into innovative activities, including patenting, commercial exploitation and new company creation. However, this is mainly in industry and it is unlikely that the MCA stimulates sufficient industrial involvement for the ERA objectives to be addressed directly as collaboration with industry is given a low priority in academia as a whole. Although private sector contacts are not seen to be significant in terms of the inter-sectoral collaboration impact of the Scheme, with little evidence of industrial or commercial results, Supervisors report progress in industrial collaboration, knowledge transfer and innovation and the case study evidence supports this.

INDUSTRY-Academia knowledge transfer and collaboration (N = 3,126 FP6 Fellows)

<table>
<thead>
<tr>
<th>Did your Marie Curie fellowship provide you with training in industry-related issues, or did it allow you to gain experience in this area? (Please tick as many as apply)</th>
<th>FP6 Lower (95% confidence)</th>
<th>FP6 Higher (95% confidence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, not at all</td>
<td>42.8%</td>
<td>43.9%</td>
</tr>
<tr>
<td>No, not significantly</td>
<td>34.0%</td>
<td>34.9%</td>
</tr>
<tr>
<td>Yes, I received specific training on industry-relevant issues</td>
<td>7.8%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Yes, I was involved in collaborations with industry</td>
<td>14.2%</td>
<td>14.5%</td>
</tr>
<tr>
<td>Yes, I spent an internship or fellowship in an industrial setting</td>
<td>6.7%</td>
<td>6.9%</td>
</tr>
</tbody>
</table>

Source: Appendix B, Figure 67

The evidence for innovation impacts, now or in the future, includes:

• Q26: The MCA have enabled knowledge to flow into innovative activities, including patenting, commercial exploitation and new company creation, but mainly in industry.
• Q27: Information Science and Engineering related fellowships that led to patents were the most likely to be seen as the result of the MCA, at least in part.
• The level of experience (79%) and expectation (97%) of involvement in collaborations with industrial/commercial partners is very high in ToK-IAP, but there are low expectations of patents, commercialisation and enterprise creation and even collaboration with industry emerging from respondents’ views.

Overall, the flow of knowledge into innovative activities has been reported as the strongest by those Fellows hosted in industry, particularly Information Science and Engineering panel Fellowships. However, although the experience and expectations of involvement in collaborations with industrial/commercial partners are very high in ToK-IAP, there are low expectations of innovation impacts such as patents, commercialisation and enterprise creation and even collaboration with industry emerging from respondents’ views.
INDUSTRY-ACADEMIA RESEARCH AND COLLABORATION IMPACTS (N = 3,126 FP6 Fellows)

<table>
<thead>
<tr>
<th>Have or will the results of your research as a Marie Curie fellow...</th>
<th>FP6 Lower (95% confidence)</th>
<th>FP6 Higher (95% confidence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>...led to a patent owned by the host / by you?</td>
<td>8.7%</td>
<td>8.9%</td>
</tr>
<tr>
<td>...been in any way commercialised?</td>
<td>8.5%</td>
<td>8.7%</td>
</tr>
<tr>
<td>...led to the creation of new commercial enterprise?</td>
<td>3.1%</td>
<td>3.2%</td>
</tr>
<tr>
<td>...led to a patent owned by the fellow?</td>
<td>2.0%</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

Source: Appendix B, Figure 68

5.3 RECOMMENDATIONS RELATING TO INNOVATION & KNOWLEDGE TRANSFER

Fellows hosted by industry acquired more multi-disciplinary and complementary skills and were more likely to think that the fellowship had allowed the realisation of projects which would not otherwise be funded. Research projects in industrial hosts are more likely to result in a patent and more importance is given to industry-academia collaboration. These findings suggest that:

- Industry hosting and later industry-academia collaboration promise robust innovative impacts and could benefit from more encouragement in the light of the lack of prioritisation by academia.

- A wider range of commercial outcomes from industry-academia collaboration could also be encouraged and supported, beyond patents to IPR, licensing, start-ups and corporate venturing.

Recommendations: innovation and knowledge transfer

To encourage training and knowledge transfer within a wider range of commercial activities from industry-academia collaboration, including patents, IPR, licensing, start-ups and corporate venturing, acknowledging to a greater extent the distinct mission and strengths of each sector (e.g. academia for training, industry for broader experience which involves the application of skills learnt in academia).

To hold a consultation with recent research and industry hosts to understand the factors which would lead to robust innovative impacts in industry-academia cooperation.

To encourage the targeting of a wider range of commercial outcomes from industry-academia collaboration, including patents, IPR, licensing, start-ups and corporate venturing.
6.0 THE INTERNATIONAL DIMENSION

This chapter engages with the international dimension of the MCAs, where possible by scheme. The focus is on mobility between the EU and other international countries and groupings. It includes the impact of spending time in a different 3rd country, the impact on the researchers’ international work and their networks, brain drain and brain gain effects and the impact on researcher flows.

6.1 THE STUDY FINDINGS

6.1.1 Evidence from the main supporting reports and analysis

Relevant findings from the analysis of the 30 key questions set for the study are taken from APPENDIX A and summarised as follows:

- Q6: The brain drain to countries outside Europe seems to be modest among the group of respondents, with only 4% of respondents from the EU living outside Europe after the Marie Curie fellowship. Many current FP6 fellows are still unsure about their future location. However, it seems more useful to look at brain circulation as a whole and in a “virtual” way where considerable benefits accrue to both individuals and sending institutions. The probability of an impact of MCAC on fellows’ transnational mobility decreases as the fellow’s experience increases (significant at the 5% level).97

<table>
<thead>
<tr>
<th>EU scholars in the US</th>
</tr>
</thead>
<tbody>
<tr>
<td>The US is a main destination for EU scientists. In 2005-06, nearly 25,000 scholars hosted in the U.S. come from the EU-27. They account for about 29% of the total number of foreign scholars in the U.S, and correspond to about 25,000 EU-born scholars (or 2.3 scholars, on average, for every 100 in the EU).98</td>
</tr>
</tbody>
</table>

The study only collected anecdotal data from some of the case studies regarding US mobility by Marie Curie Fellows, which is insufficient to make a relevant comparison with the US experience presented in the box above.

- Q7: The brain gain appears to be stronger than the brain drain in the context of the Fellowship, with the EU retaining circa 25% of incomers. The IRG was instrumental in the case of more than 65% of beneficiary respondents, encouraging them in their return to Europe. Supporting Actions, such as the Excellence Actions, have also been a positive brain gain influence. However, lack of resources and prohibitive recruitment systems often combine to encourage a ‘remigration’99.

- Q14: The MCA brings international experience for Fellows, who then get engaged in networks and build new and durable research and professional contacts. These in turn become the channels through which long term impacts are underpinned. The impact of the MCAs on the international research component is particularly significant in Fellows from the ENPI countries and

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97 APPENDIX A: Attractive Careers: Recruitment and Retention: Q6 summary paragraph
98 Moguérou and Di Pietrogiacomo (2007), Indicator 6 ‘Number of researchers leaving Europe’.
99 APPENDIX A: Attractive Careers: Recruitment and Retention: Q7 summary paragraph
IOF and IEF respondents report strong knowledge transfers. Econometric analysis suggests that making new contacts increases dramatically and very significantly the probability of improving Fellows' career prospects. Q16: The evidence for the greater internationalisation of research is positive. The incidence of new researcher contacts was at least as high as in the previous impact assessment study (1994-2002); job securing effects were reported by some 40% of FP4 Fellows and an increasingly high level of contacts in more recent Fellowships have been secured or are expected. Academic contacts are more durable and of a different nature than those in industry. Supporting Actions have allowed ongoing contact development.

Relevant findings from the analysis of impacts by type of fellowship are taken from APPENDIX B and summarised as follows:

- The mobility impacts as reported by FP6 Fellow respondents are clearly in the following order of importance: enabling trans-national mobility (81-82%), enabling inter-research organisation mobility (75%) and sectoral mobility (55-60%). There was convergence between Former and Current Fellows regarding trans-national impacts, and a slightly stronger rating by Current Fellows for the other two types of mobility impacts.

The following summary observations are made from the analysis of the international dimension:

Mobility aspects

- Almost 80% of respondents to the Fellows' survey valued the support of the Marie Curie fellowship in enabling their move to a different country. The additional impact of the Marie Curie fellowship on enabling a researcher to gain experience in a different country seems to be particularly felt by respondents from ICPC and OECD countries (87.5% and 87.1% respectively thought the impact had been important or very important), whereas respondents from the EU 15, from Associated countries, and from countries with an S/T agreement with the EU are slightly more convinced that they would have been able to go abroad in any case, even if they had not received a Marie Curie fellowship.

- Of all respondents who obtained an IRG grant, 65.4% thought that they would not, or with a lower probability, have returned without the help of the grant, 21% answered that they would have returned to Europe anyway, and 13.6% had a neutral opinion.

- Roughly two-thirds of all respondents were living in their home countries before the Marie Curie fellowship. The least likely to have been living in the home country, were respondents from ICPC and ENPI countries (only 49% and 43% respectively compared to 80% of EU10 respondents). These two groups of respondents also were working in a still different country more frequently than the other groups (35% both, compared to 10-21% for the other groups.

100 APPENDIX A: Knowledge Transfer: Networks and Collaboration: Q14 summary paragraph
101 APPENDIX A: Other wider impacts: Q16 summary paragraph
102 APPENDIX B: Mobility
except OECD respondents, which had 28%). Between 4% and 15% of all groups were already living in the host country for a short duration.

- The phenomenon of the **brain drain** to countries outside Europe seems to be modest among the group of respondents. Less than 6% of respondents from European Member States were living outside Europe after the Marie Curie fellowship. The percentage of respondents from ICPC and ENPI countries that moved to a third country was 26% and 24% respectively.

- **Retention in the host country** was highest for third country researchers (OECD 47%, ICPC 40% and ENPI 33%) and lowest for respondents from EU 10 (20%). 28.8% of respondents from EU 15 were still in the host country at the time of answering the questionnaire. In this light, there does not seem be a brain drain from the EU10 to the EU15.

- Of all respondents with an **International Reintegration Grant**, 71% (N=62) were in their home country at the time of answering the survey (during or after the fellowship).

**Knowledge transfer and networking**

- The Marie Curie fellowships seem to make a significant contribution to forming research collaborations in Europe and between Europe and the rest of the world because there are very few cases where the contact between the fellow and the supervisor and the host group did not continue after the end of the fellowship. Respondents from third countries with an S/T collaboration agreement with the EU maintained contacts to a greater extent than the other nationality groups, whereas the respondents from the new EU 10 Member States reported fewer cases of continuing collaborations.

- Third country researchers from all groups (S/T agreement, ENPI, ICPC, OECD and other) maintained **links with their home countries** during the Marie Curie fellowship more frequently than their European colleagues.

- As for the individual fellowships, supervisors associate a stronger knowledge transfer between researchers to the Intra-European Fellowships (92.4%) than to International Outgoing Fellowships (83%) and International Incoming Fellowships (86.3%).

- Among the individual fellowships, the Marie Curie International Outgoing fellowships appear to facilitate knowledge transfer between organisations to a greater extent. IOF supervisors reported in 73.2% of cases a positive impact on knowledge transfer between organisations, against 66.7% of IEF supervisors and 64.4% of IIF supervisors.

- 64.8% of supervisors who had supervised an **IOF fellow** (N=71) reported a significant or very significant impact of the grant on their transnational research networks, compared to 61.4% of IEF supervisors (N=277) and 58.9% of IIF supervisors (N=146).

**Career aspects**

- The nationality group which is **most frequently still engaged in science and research after the fellowship** are the respondents from EU10, whereas the lowest frequencies of continuing scientific and research activities after the fellowship are indicated by researchers from ICPC and OECD countries.
Respondents from the EU10 and Candidate countries were most frequently on permanent work contracts after the fellowship (43% and 42% respectively). Respondents from the EU15 more often indicated that they were on temporary contracts (17% from 1 to 12 months and 34% between 1 and 3 years).

‘Significant’ or ‘very significant’ impact on salary progression after the fellowship was indicated most frequently by respondents from Associated and OECD countries. A higher share of ‘little’ or ‘no’ impact answers were given by EU 10, EU 15 and Candidate countries.

The impact on career progression was thought to be positive by the majority. Candidate and OECD country respondents thought most frequently that the impact had been significant, whereas respondents from ENPI countries, and also from EU 15, EU 10 and Associated countries more frequently answered there had been little or no impact, and also gave the ‘significant impact’ answer less frequently.

77% of OECD respondents and 74% of EU15 respondents were currently at either a significantly higher or incrementally higher career level than before the Marie Curie fellowship. Values for the other country groups were between 60% and 65% who were working at a higher career level.

Research output

Supervisors’ answers differed in relation to the quantity of research output they ascribed to the work carried out by the Marie Curie fellow. A very significant or significant impact was indicated by 73.1% of supervisors of IEF fellows, 80.3% of those who had supervised IOF fellows and 73.3% of IIF supervisors.

As to research output since the Marie Curie fellowship, the most positive impact on both volume of publications and quality of journals in which they publish was shown by respondents from Candidate countries and S/T Agreement countries.

It would be a mistake to rely too much on the differences between IOF, IER and IIF impacts, as the confidence intervals to attain a 95% confidence levels imply that these differences could disappear.

The findings from the analysis regarding the Marie Curie Excellence Actions are summarised as follows

Respondents indicate a high level of appreciation for the Marie Curie Chairs (EXC) along with success in attracting leading researchers back to Europe, improved skill sets and strengthened contacts for future research activities. Younger researchers showed satisfaction with the knowledge acquired through their Chairs. The EU and Associate States were found to be favoured locations for future work plans.

Beneficiaries of Marie Curie Excellence Grants (EXT) reported that these grants have contributed to attracting researchers back to Europe from places like the USA and this has been followed by a high level of success in keeping respondents in their home country, the EU or an AS

ANNEX X: The Other Actions Report (D5): The Marie Curie Excellence Actions.
for their next job. As in the case of the Chairs, respondents reported improved skill sets and strengthened contacts for future research activities.

- The Marie Curie Excellence Awards (EXA) were rated as important in increasing the visibility of prize holders through travel and participation in conferences.

- Although Marie Curie Excellence Actions have been very popular under FP6 and there were clearly some positive results, these Actions were closed after FP6 due to the launch of the European Research Council (ERC). In addition, visiting scientists could be catered for through other programmes\textsuperscript{105}.

Whilst some issues still need to be addressed, ERA-MORE has proved to be powerful in lowering the existing barriers connected to recognising researchers’ careers and their mobility needs. In a similar way, ERA-LINK has shown itself to be a powerful tool against the brain drain and towards the brain gain in Europe\textsuperscript{106}.

### 6.1.2 Evidence from the longitudinal comparisons: FP4 to FP6

In the Long Term Schemes Report, the views of Supervisors about significant transnational impacts of the scheme\textsuperscript{107} include the international experience that this brings and, to a slightly lesser extent, transnational networking. Fellows are of the same view, with current Fellows attributing an increased impact on both aspects compared with former Fellows from FP4 to FP6. In terms of transnational mobility and inter-research organisational mobility, the impact of the scheme is seen to be important, with a hint that Fellows would have gone abroad or moved organisation or sector otherwise. Former FP6 fellows were more likely than FP5 hosts to remain at the host institute after a Fellowship. Many current FP6 fellows are still unsure about their future location; some expected to return to their previous institution and a similar proportion expected to remain at the host institute.

In the Long Term Schemes Report, the large number of new and durable research and professional contacts made by Fellows underpins the significant network formation impact of the Scheme\textsuperscript{108}. The following impacts can be seen over the life of the Scheme:

- An increase in the impact of the exchange of knowledge;
- The development of new ideas and joint projects;
- The maintenance of a high level of existing and planned contacts with fellow researchers.

Cross border networks are reported to show reasonable sustainability and the retention of researcher linkages with home country networks can be seen to have strengthened significantly since FP4.

### 6.1.3 Evidence from the analysis of open comments

The views on the mobility, networking and collaboration impacts also lines up with the overall positive view of the programme by the same respondent supervisors, with 21 of the 25 comments

\textsuperscript{105} ANNEX X: The Other Actions Report (D5): The Marie Curie Excellence Actions.
\textsuperscript{106} ANNEX X: The Other Actions Report (D5): The Scientific Support Actions (SSAs)
\textsuperscript{107} ANNEX X: The Long Term Schemes Report (D3) #2
\textsuperscript{108} ANNEX X: The Long Term Schemes Report (D3) #6
being positive (84%). Marie Curie mobility, networking and collaboration impacts mentioned by respondent supervisors is summarised as follows:\(^{109}\):

- The transnational collaboration impact was mentioned by several (7), with the sense that these were being (or would be) sustained when the Fellow(s) had left.

- Closely related to this were the comments about impacts on networking (5), mobility (5) and international experience. These reinforced the benefits of collaboration, pointing to the benefits that these bring to the institution as well as the Fellow.

- Under the exchanges of researchers and knowledge (2) one spoke very highly of the Marie Curie Fellows; the other underlined the value of scientific exchange.

The negative comments (4) focussed on the fact that mobility is also time consuming and detracts from the contributions that Fellows could make if there was less travel. One pointed out that less formality would promote better networking.

In the case of the FP5 Host Fellow respondents, the positive mobility, networking and collaboration impacts were all expressed by TSF-PhDs in terms of the benefits and privileges of working internationally (2) and meeting leading researchers in the Fellow’s own field (1). In the case of one Fellow, the mobility impact was very small as he was already very experienced internationally\(^{110}\).

The views of the FP6 Fellow respondents on the mobility impacts line up with the overall positive view of the programme by the same respondent Former FP6 Fellows, with 26 of the 33 comments being positive (79%). The more frequent mobility impacts cited were\(^{111}\):

- The benefits coming from the international experience (11).
- The development of new contacts (10).
- The Fellowship facilitated a return to Europe (3 with different Fellowship types)

Also mentioned were improved links with home institutions (2), the potential of future collaborations (2), multidisciplinary team benefits and the chance of a different perspective (1). On the negative side, mobility is seen to bring partner and family pressures (1) and sometimes the development of contacts did not happen (2).

Although some 34% of the 29 views of current FP6 Fellow respondents on mobility, networking and collaboration impacts were negative, most of these are deal with elsewhere in the analysis. The more frequent mobility impacts cited were\(^{112}\):

- The networking and contact building opportunities that this is leading to (8);
- Travel benefits (2) were offset by mobility problems (2), e.g. social security, travel restrictions
- Related friendship, learning, lab visiting and collaboration benefits were mentioned (1 each).
- Facilitating a return to the EU was mooted by one respondent (1)

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\(^{109}\) ANNEX IV: Analysis of Open Comments made in the surveys: The views of FP6 Supervisors

\(^{110}\) ANNEX IV: Analysis of Open Comments made in the surveys: The views of FP6 Supervisors

\(^{111}\) ANNEX IV: Analysis of Open Comments made in the surveys: The views of Former FP6 Fellow respondents

\(^{112}\) ANNEX IV: Analysis of Open Comments made in the surveys: The views of Current FP6 Fellow respondents
6.1.4 Evidence from the case studies

Q6: Have the Actions reduced the brain drain momentum?

- The interviews with Marie Curie fellows generally support that position. Many fellows are leaving the new Member States and other countries because of the lack of scientific positions and opportunities. If they did not leave they may well have to leave scientific research altogether (as our Romanian respondent has) or work for no pay (as our Italian respondent). This is not a sustainable alternative to mobility\(^\text{113}\).

Q7: Have the Actions improved the brain gain momentum?

- The same factors inhibit return. Our sample illustrates very well the commitment to return amongst scientists. Other groups of migrants often express a long term desire to return (sometimes referred to as the ‘myth of return’) often on retirement. Individuals in our sample have gone beyond that to actually return and actively seek to reintegrate but the combination of lack of resources and prohibitive recruitment systems often combine to encourage a ‘remigration’\(^\text{114}\).

The following summarises the evidence from interviews with Marie Curie Excellence beneficiaries\(^\text{115}\):

- A broad international mobility was a strong characteristic of the environment in which all Chairs were working, not only for themselves but also for the teams that they were leading.

- Grant holders’ research teams came from many locations, including both the EU and beyond, leading to high levels of mobility amongst teams led by grant holders. The factors affecting brain-drain/brain gain balance varied from one EU Member State to another, but Marie Curie grants are attractive to those who want to relocate back to Europe from the US.

6.2 INTERNATIONAL IMPACTS

The networking impacts which emerge from the analysis are as follows:

- D3: The large number of new and durable research and professional contacts made by Fellows underpins the significant network formation impact of the Scheme and Cross border networks are reported to show reasonable sustainability.
- Q14: The MCA have increased the international component of researcher’s work, along with their networks, which augur well for long term impacts.
- Q14: Econometric analysis suggests that making new contacts increases dramatically and very significantly the probability of improving Fellows’ career prospects.

The networking impacts which include an increase in the international component of researchers’ work, along with their networks, which augur well for long term impacts and the large number of new and durable research and professional contacts made by Fellows. This

\(^{113}\) ANNEX V: Case Study 4: New Member States and the issue of inclusion and brain circulation.  
\(^{114}\) ANNEX V: Case Study 4: New Member States and the issue of inclusion and brain circulation.  
\(^{115}\) ANNEX V: Case Study 6: The Excellence Actions: case study evidence.
underpins the significant network formation impact of the Scheme, along with Cross border networks, which are reported to show reasonable sustainability.

<table>
<thead>
<tr>
<th>CONTACTS AND NETWORKS (N = 3,126 FP6 Fellows)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>&quot;Yes&quot; answers to 2 questions about contacts; &quot;All or most of them&quot; answers to question about staying in contact</strong></td>
</tr>
<tr>
<td>Did you make any significant new research and/or professional contacts during your Marie Curie fellowship?</td>
</tr>
<tr>
<td>If you are not currently working in your &quot;home&quot; country, do you continue to maintain active research links with researchers in your &quot;home&quot; country?</td>
</tr>
<tr>
<td>To what extent have you stayed in contact with these research and/or professional contacts? (or I am still in contact with...)</td>
</tr>
</tbody>
</table>

Source: Appendix B, Figure 66

Regarding mobility\(^{116}\) and brain circulation impacts:

- Q6: The brain drain to countries outside Europe is modest with (only 4% of respondents from the EU live outside Europe after their fellowship), although many current FP6 fellows are still unsure about their future location.
- Q6: Transnational mobility decreases as the fellow's experience increases (significant at the 5% level).
- Q7: The brain gain appears to be stronger than the brain drain with the EU retaining circa 25% of respondent incomers, the IRG being instrumental in encouraging a return to Europe in more than 65% cases,.
- Supporting Actions, such as the Excellence Actions, have also been a positive brain gain influence.
- Lack of resources and prohibitive recruitment systems often combine to encourage a ‘remigration’.
- Of all respondents who obtained an IRG grant, 65.4% thought that they would not, or with a lower probability, have returned without the help of the grant, 21% answered that they would have returned to Europe anyway, and 13.6% had a neutral opinion.
- A broad international mobility was a strong characteristic of the environment in which all Chairs were working, both for themselves and the teams that they were leading.
- The factors affecting brain-drain/brain gain balance varied from one EU Member State to another, but Marie Curie grants are attractive to those who want to relocate back to Europe from the US.

The transnational impacts include a net “brain circulation” in favour of the EU, although with some lack of resources and prohibitive recruitment that could combine to encourage ‘remigration’, the greater internationalisation of EU research through the development of research contacts, particularly in academia, and greater transnational mobility and inter-research organisational mobility with just a hint that some Fellows in leading EU countries might have gone abroad or moved organisation or sector otherwise.

\(^{116}\) Much of the mobility evidence collected relates to movements within the EU and Associated States, which is outside the definition of International in the context of this chapter of the study.
The evidence for the greater internationalisation of research is positive. The incidence of new researcher contacts was at least as high as in the previous study; job securing effects were reported by some 40% of FP4 Fellows and an increasingly high level of contacts in more recent Fellowships have been secured or is expected.

### 6.3 RECOMMENDATIONS RELATING TO THE INTERNATIONAL DIMENSION

There are no recommendations that relate directly to the international dimension.
7.0 STRUCTURING EFFECTS

The structuring effects focus on the impact which the Marie Curie Fellowship scheme has had on the type of contract, researchers’ salaries and work conditions. It includes any impacts that there might have been on administration improvements at host organisations.

7.1 THE STUDY FINDINGS

7.1.1 Evidence from the main supporting reports and analysis

Relevant findings from the analysis of the 30 key questions set for the study are taken from APPENDIX A and summarised as follows:

- **Q5:** Those in the chemistry panel seem to report a larger impact on their salary progression than most, while those in social sciences are much less likely to report an impact\(^\text{117}\).

- **Q9:** The flows between countries has not been measured, but public research institutes and industry were the employers to gain most from employment sector mobility from the university sector, especially Former FP5 Host Fellow respondents. Although the majority of FP4 fellows continued to work in the university sector, the results indicate there a greater degree of inter-sectoral experience and exposure to the private/industrial sectors compared with FP5. It seems that the Fellowships have not reduced the brain drain momentum or improved the brain gain momentum as such. Neither can they, in themselves, generate balanced flows between Member States\(^\text{118}\).

- **Q21:** Supervisory respondents gave a strong indication that the Fellowship has had little impact on improving the administration and employment of researchers. With regard to improvements in contract conditions, most former Fellows reported that they had moved from temporary to permanent contracts. A few examples were found where MCA has improved the administration and employment of researchers, but mainly in the smaller EU Member States\(^\text{119}\).

### Job mobility

| Eurostat data\(^\text{120}\) found that 25-34 year olds were most likely to move from one job to another in 2006. In relative terms, 45% of the human resources in science and technology that changed jobs in 2006 were aged 25-34, whereas only 26% were found in the 45-64 age group |

- **Q24:** There is evidence that appropriate structures for ESR supervision and monitoring are in place, but more through informal rules and procedures that through formal structures. Interdisciplinarity puts pressure on formality and more fluid and flexible approaches are more in evidence\(^\text{121}\).

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\(^{117}\) APPENDIX A: Attractive Careers: Recruitment and Retention: Q5 summary paragraph  
\(^{118}\) APPENDIX A: Other wider impacts: Q9 summary paragraph  
\(^{119}\) APPENDIX A: Other wider impacts: Q21 summary paragraph  
\(^{120}\) Science, Technology and Innovation in Europe, 2008, Eurostat.  
\(^{121}\) APPENDIX A: Researcher Training and Skill Development: Q24 summary paragraph
Relevant findings from the analysis of impacts by type of fellowship are taken from APPENDIX B and summarised as follows:

- There is a consensus view (82%) from FP6 Fellow respondents that as part of research and supervision impacts, the amount of supervisory time is sufficient and the time spent per week for about 72% of FP6 Fellows was less than 4 hours, although slightly fewer Former Fellows reported the lower number of hours (70%). The quality of supervision was similar between Former (63%) and Current Fellows (60%), as was the average rating for the quantity (40%) and quality (50%) of formal training received and the quantity (55%) and quality (60%) of “on the job” training. Training quality scores higher that quantity and “on the job” scores more highly than formal training.

A relevant finding from the separately presented ANNEXES to the report is summarised as follows:

- The European Charter for Researchers and the Code of Conduct for the recruitment of Researchers at EU and national level, adopted by a number of research organisations, has paved the way to start applying the same kind of working conditions and career progression rights for researchers all over Europe.\(^{122}\)

7.1.2 Evidence from the longitudinal comparisons: FP4 to FP6

In the Long Term Schemes Report, the impact of the Scheme on research careers\(^{123}\) is summarised as follows:

- The impact of the Fellowship on employment contracts, salaries and working conditions is not seen to be high by Supervisors. In the free text comments and the interviews, some Supervisors attributed this to the problems of equal remuneration within the group that the attractive salary levels of the Scheme bring, though this conclusion cannot be generalised.

### Supervisors’ perspectives on the impact of the Scheme on research careers: employment contracts, salaries and working conditions:

<table>
<thead>
<tr>
<th>Supervisors’ perspectives</th>
<th>To a significant extent</th>
<th>To a certain extent</th>
<th>To a small extent</th>
<th>Not at all</th>
<th>Neutral</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>An improvement in the types of contract awarded to researchers in your institute</td>
<td>171</td>
<td>381</td>
<td>60</td>
<td>435</td>
<td>427</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>16.36%</td>
<td>36.36%</td>
<td>5.76%</td>
<td>41.52%</td>
<td>Excluded</td>
<td>Excluded</td>
</tr>
<tr>
<td>An improvement in the salaries offered to researchers in your institute</td>
<td>107</td>
<td>170</td>
<td>51</td>
<td>778</td>
<td>403</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>9.74%</td>
<td>15.33%</td>
<td>4.58%</td>
<td>70.34%</td>
<td>Excluded</td>
<td>Excluded</td>
</tr>
<tr>
<td>An improvement in the working conditions of researchers in your institute</td>
<td>76</td>
<td>260</td>
<td>130</td>
<td>630</td>
<td>428</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>6.95%</td>
<td>23.73%</td>
<td>11.87%</td>
<td>57.45%</td>
<td>Excluded</td>
<td>Excluded</td>
</tr>
<tr>
<td>An improvement in the employment procedure in your research institute</td>
<td>34</td>
<td>157</td>
<td>95</td>
<td>735</td>
<td>474</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>3.26%</td>
<td>15.35%</td>
<td>9.30%</td>
<td>71.94%</td>
<td>Excluded</td>
<td>Excluded</td>
</tr>
</tbody>
</table>

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\(^{122}\) ANNEX X: The Other Actions Report (D5): The Scientific Support Actions (SSAs)

\(^{123}\) ANNEX X: The Long Term Schemes Report (D3) Chapter 9: Research careers, page 62, Figure 61
At the same time, a good number of those supervisory respondents who gave an opinion reported more than a small improvement in the types of contract awarded (53%) and in the working conditions of workers at their institute (31%), with some of these reporting a significant improvement.

- All categories of Fellow report that the impact on career progression is significant, with the current FP6 Fellows being most optimistic about the expected beneficial impacts on the number of job options and salary progression.
- The Scheme impact on salary comparisons in the follow-up survey amongst researchers who had received a Fellowship under FP4 was not significant.
- Most Fellows move from temporary to permanent contracts following involvement in the Scheme. In the case of former FP4 Fellows, almost 80% now have permanent contracts, with nearly 50% being in their present position for 5-10 years.
- Levels of responsibility have not increased beyond expectations with length of service, but there is an increased level of perception of success relative to peers amongst FP5 Hosts and FP6 Fellows.

### 7.1.3 Evidence from the analysis of open comments

The views on the early stage researcher impacts shows very little divergence from the overall positive view of the programme by the same respondent supervisors, with 25 of the 33 comments being positive (76%). There were many positive mentions about the Marie Curie impact on ESRs (22) including the quality of the team of young scientists produced, with several mentioning how well suited the Marie Curie Programme is for the ESR group.  

All other comments tended towards the negative (8), such as:

- Lack of readiness to contribute to the research group (1);
- Complexities in the scheme for hiring ESRs (2);
- ESRs chosen from 3rd countries is too small (1)
- Lack of support from local ESR tutors (1)
- Too high a % of the MC budget allocated to ESRs (and ERs) (1)
- Process too slow for ESRs on tight budgets (1)

The very positive views (83% of 12) of former FP6 Fellow respondents on early stage researcher impacts focussed on the opportunity for professional and personal development, along with some expressions of delight at it being an amazing experience. The fact that the work also contributed to the PhDs of ESRs was appreciated (3) and the likelihood of future collaboration (3) was mentioned.

### 7.1.4 Evidence from the case studies

**Q9: Have the Actions led to appropriately balanced flows between participating countries?**

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124 ANNEX IV: Analysis of Open Comments made in the surveys: The views of FP6 Supervisory respondents.
125 ANNEX IV: Analysis of Open Comments made in the surveys: The views of Former FP6 Fellow respondents
126 Question 9 also refers to stakeholders but on reflection conflating this form of mobility with geographical mobility seemed problematic. The issue of inter-sectoral mobility is discussed in Case Study 2. Question 25 is
The patterns of repeat and shuttle mobility identified in the sample coupled with the continued value of international networks take the emphasis away from the mobility dimension of the fellowship itself to consider its impact on the building and exchanging of scientific expertise. This encourages us to examine the whole concept of ‘embodied’ forms of brain circulation and think instead about the cumulative effect of mobility combined with disembodied flows. Viewed in this way the Marie Curie fellowship scheme can be seen to have a very positive impact on both the individuals concerned but also on the ‘sending countries. A 3 year study on post-enlargement scientific mobility recently concluded that, rather than exacerbating brain drain processes, ‘mobility is the life blood of science in Bulgaria’ (Ackers and Gill, 2008)\(^ {127}\).

The prestige of the Marie Curie Fellowships coupled with the status of the host institutions plays an important role in the CV-building process opening doors to fellows where local circumstances permit. In these situations and particularly when fellows return at a fairly senior level and, where possible with research funding, return moves facilitate critical capacity-building opportunities. In practice many of these are sustained by and reliant upon continued European funding of one form or another\(^ {128}\).

Q21. Have the Actions engaged stakeholders to improve the administration and employment of researchers (the EST contribution to researchers’ administration and employment)?

The evidence from EST supervisors suggests that the MCAs improved the administration and employment of researchers, but mainly in the smaller EU Member States and through some transfer of knowhow from industry in one case. At least one organisation overhauled its administrative system to handle the funding and employment of researchers, although this no doubt went beyond Marie Curie to include other EU funded programmes\(^ {129}\).

Q24: Do the Actions have appropriate structures for early stage researchers, supervision and mentoring in place?

There is evidence that appropriate structures for ESRs are in place, but more through informal rules and procedures that through formal structures. Interdisciplinarity puts pressure on formality and more fluid and flexible approaches are more in evidence. However, mentoring is still well controlled and typically involves both a scientific mentor and a personal tutor both at the receiving and sending institutions\(^ {130}\).

7.2 STRUCTURING IMPACTS

There are some important research management and supervision factors that affect the impact of the Marie Curie Scheme:

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\(^ {127}\) ANNEX V: Case Study 4: New Member States and the issue of inclusion and brain circulation.

\(^ {128}\) ANNEX V: Case Study 4: New Member States and the issue of inclusion and brain circulation.

\(^ {129}\) ANNEX V: Case Study 5: EST and the structuring effect.

\(^ {130}\) ANNEX V: Case Study 5: EST and the structuring effect.
• The consensus view (82%) of FP6 Fellow respondents is that the amount of supervisory time is sufficient (the time spent per week for about 72% of FP6 Fellows was less than 4 hours).
• Formal training quality (50%) scores more highly than formal training quantity (40%) and the quality (60%) and quantity (55%) of “on the job” training scores more highly than formal training.
• The majority of those Fellows who commented on the management by supervisors and hosts had a negative view (34 of 44 comments). The more frequent views cited were poor host grant administration, the standard of project coordination or supervision, the level of guidance given or host institute reputation. 65% of the views given were from ESRs.

Poor grant administration appears to be the most prominent of several negative views which emerged from those Fellows who commented on management and supervision at the host institution. Whilst supervisory time is reported as sufficient by FP6 Fellow respondents, training quantity was not rated particularly highly. “On the job” training is perceived to be better than formal training and training quality is rated more highly than quantity in each case.

<table>
<thead>
<tr>
<th>How would you rate the following aspects of the training (i.e., both formal training and training received &quot;on the job&quot;) you have received during your Marie Curie fellowship? (% good and very good)</th>
<th>FP6 Lower (95% confidence)</th>
<th>FP6 Higher (95% confidence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of &quot;on the job&quot; training</td>
<td>59.7%</td>
<td>61.2%</td>
</tr>
<tr>
<td>Amount of &quot;on the job&quot; training</td>
<td>55.4%</td>
<td>56.9%</td>
</tr>
<tr>
<td>Quality of formal training</td>
<td>50.6%</td>
<td>51.9%</td>
</tr>
<tr>
<td>Amount of formal training</td>
<td>40.2%</td>
<td>41.2%</td>
</tr>
</tbody>
</table>

Source: Appendix B, Figure 69

The structuring impacts which emerge from the analysis are as follows:

• Q9: More recently, public research institutes and industry have been the employers to gain most from employment sector mobility, at the expense of the university sector
• Q21: Although the MCAs have not improved the administration and employment of researchers, except in some smaller Member States, most former fellows are now on permanent contracts.
• Q24: Structures for ESR supervision and mentoring are more informal than formal as interdisciplinarity requires more fluid and flexible approaches.

In terms of structuring impacts, public research institutes and industry have been the employers to gain most from employment sector mobility, at the expense of the university sector. Whilst involvement with the MCAs has not improved the administration and employment of researchers, except in some smaller Member States, most former fellows are now on permanent contracts. A good number of those supervisory respondents who gave an opinion reported more than a small improvement in the types of contract awarded (53%) and in the working conditions of workers at their institute (31%), with some of these reporting a significant improvement. Structures for ESR supervision and mentoring are more informal than formal as interdisciplinarity requires more fluid and flexible approaches.

Regarding salary progression impacts:
• D3: A significant impact on contract permanence, salaries and working conditions is reported by Fellows and on career progression as a whole.
• Q5: Those in the chemistry panel seem to report a larger impact on their salary progression than most, while those in social sciences are much less likely to report an impact.

A significant impact on contract permanence, salaries and working conditions is reported by Fellows and on career progression as a whole. Fellows in the chemistry panel seem to report the largest salary impact and those in the social sciences panel the least.

7.3 RECOMMENDATIONS RELATING TO STRUCTURING

There are no recommendations that relate directly to structuring.
8.0 HORIZONTAL ISSUES

This chapter covers all horizontal issues, such as the bottom-up approach, gender, the family friendliness of the Marie Curie Fellowship Scheme, administration and evaluation, the prestige of the Scheme and awareness raising. It includes the contribution of the Scheme to the awareness of the impact of research on society, on taking ethical issues into account in research, on allowing researchers to undertake research within EU ethical guidelines and the sufficiency of stakeholder support to create brand awareness.

8.1 THE STUDY FINDINGS

8.1.1 Evidence from the main supporting reports and analysis

Relevant findings from the analysis of the 30 key questions set for the study are taken from APPENDIX A and summarised as follows:

- Q4: Provisions for maternity leave, the removal of age criteria, and the provision of support for family mobility coupled with more flexible approaches to fellowships together improve the career options to these groups of researchers who are often ill-catered for in traditional schemes\(^{131}\).

- Q8: The population analysis shows that the MCAs in FP6 fell slightly short of the targeted 40% female researcher participation at 37%. Amongst respondents the % has risen significantly between Former and Current FP6 Fellows. It is encouraging to note that 47% of FP6 Current Fellow respondents were female and, interestingly, these FP6 Current Fellows as a whole reported that having a family was more of an obstacle than FP6 Former Fellows. There were even more female respondents in the Candidate countries (63.3%) and an even balance in the OECD countries (46.9% male). Case study evidence suggests that innovative and flexible approaches to mobility and internationalisation are still required to avoid the kind of “indirect discrimination” which limits the opportunities of those with caring responsibilities\(^{132}\).

When gender confidence intervals (FP6 female: ± 1.96) are applied to the gender balance in the level of participation in the MCA Fellowship schemes (each with their own confidence levels), the differences in female respondent participation can be seen to be in the following ranges\(^{133}\):

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\(^{131}\) APPENDIX A: Attractive Careers: Recruitment and Retention: Q4 summary paragraph
\(^{132}\) APPENDIX A: Attractive Careers: Recruitment and Retention: Q8 summary paragraph
\(^{133}\) ANNEX IX: Analysis of FP6 Survey evidence by Fellowship type. Figure 54 is converted in female participation figures and female confidence levels (± 1.96%) are applied to the adjusted individual Fellowship types (after 95% confidence levels were established) to give the figures in this table
<table>
<thead>
<tr>
<th>Female participation in FP6</th>
<th>FP6 Higher (95% confidence)</th>
<th>FP6 Lower (95% confidence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTN-ESR</td>
<td>45.92%</td>
<td>41.91%</td>
</tr>
<tr>
<td>RTN-ER</td>
<td>35.57%</td>
<td>27.87%</td>
</tr>
<tr>
<td>EST</td>
<td>48.02%</td>
<td>43.21%</td>
</tr>
<tr>
<td>ToK-DEV</td>
<td>35.99%</td>
<td>28.27%</td>
</tr>
<tr>
<td>ToK-IAP</td>
<td>28.00%</td>
<td>19.81%</td>
</tr>
<tr>
<td>AVERAGE-ALL</td>
<td><strong>36.91%</strong></td>
<td><strong>33.88%</strong></td>
</tr>
<tr>
<td>IEF</td>
<td>44.31%</td>
<td>38.36%</td>
</tr>
<tr>
<td>IOF</td>
<td>46.75%</td>
<td>36.71%</td>
</tr>
<tr>
<td>IIF</td>
<td>32.36%</td>
<td>20.80%</td>
</tr>
<tr>
<td>ERG</td>
<td>43.26%</td>
<td>24.64%</td>
</tr>
<tr>
<td>IRG</td>
<td>39.48%</td>
<td>27.79%</td>
</tr>
</tbody>
</table>

Overall, it can be said with 95% confidence that female participation in FP6 was between 34% and 37%, but with a wider range in individual and host fellowship types.

- **Q10**: Anecdotal evidence suggests that family and partner pressures can make mobility difficult and impact on subsequent careers\(^\text{134}\).

- **Q17**: The impact on the **awareness of ethical issues** is still at a lower level than other impacts but about one third of Fellow respondents report that this increased for them, whether they were in industry or academia. The most significant impact is in mid-career for taking ethical issues into account in research. Economic Sciences panel Fellow respondents are least likely to praise the MCAs for their impact in terms of ethical awareness and ability to manage ethical issues\(^\text{135}\).

- **Q18**: The closest the study has come to measuring social return is to note the increased **awareness of the social impact of research**, with which some 64% are in agreement. Industry based Fellows have experienced more of an impact on the awareness of their research on society than those in academia\(^\text{136}\).

- **Q22**: The comparisons across FP4, FP5 and FP6 show particular consistency in the case of the following impacts in the sense that the “gap” between what supervisors believe is the Scheme contribution and the related “working effectively in science” factor has not changed since the previous impact assessment study (1994-2002): the ability to attract excellent researchers, relation with team members, financial resources, autonomy/independence and facilities/equipment/infrastructure. However, this gap has increased since the previous impact assessment study (1994-2002) in the case of: international experience, transnational research networks, reputation of the institute, building a research group and time to do research, all of which are targeted impacts of the MCA\(^\text{137}\).

\(^{134}\) APPENDIX A: Researcher Training and Skill Development: Q10 summary paragraph

\(^{135}\) APPENDIX A: Researcher Training and Skill Development: Q17 summary paragraph

\(^{136}\) APPENDIX A: Research Outputs: Q18 summary paragraph

\(^{137}\) APPENDIX A: Other wider impacts: Q22 summary paragraph
• Q23: There was a convergence of view between industrial and academic supervisors about the evaluation process, with some two thirds replying that they thought the criteria were transparent and fair. Industrial supervisors in particular thought that the evaluation process was less efficient than those in academia. Additional concerns included weak candidate quality (9 mentions), the inadequacy of the process (8), the quality of the referees/reviewers (5) and the long time taken to undertake an evaluation (3). Commission staff acknowledged that the proposal assessment process continues to take a long time, partly because it has become more complex.\textsuperscript{138}

• Q25: With regard to attaining the targets for research community demographics, the gender balance of 37% for the FP6 population as a whole is 92.5% of the 40% target. In addition, the ESR population who were awarded RTN Fellowships in FP6 was 64.53%, which is 81% of the targeted 80%. Targets for LFRs and thematic panels are not known. Statistical analysis shows that female fellows coming from large corporations are underrepresented and those coming from not-for-profit organisations are overrepresented.\textsuperscript{139}

• Q28: Respondents give Help Systems a positive rating overall (75% positive answers), although an analysis of the survey open comments reveals examples of inadequate support at European, national and local host organisation levels. Potential sources of information about the projects themselves through project websites seems to be weak, seemingly constrained by the size of project, by internal allocation of budget monies and by the low priority given to communications by many researchers. However, their operational use project websites is appreciated, as even the smaller projects see the utility of the site as a presence for a wide range of users, and a platform for project documents.\textsuperscript{140}

• Q29: Although conditions have continued to improve for those with family obligations, and the proportion of Fellows in this situation has increased, it will always been a challenge for Fellows with partners and children. It is seen more as a potential than an actual obstacle, with current Fellows being generally satisfied with the family-related mobility allowance. There is bound to be an indirect discrimination against long international stays which suggests that more flexibility and shorter forms of “shuttle mobility” may be the way forward.\textsuperscript{141}

• Q30: The main message on brand awareness is that it is highly visible in Europe, carrying with it a high level of prestige, but barely known in the US, where the focus is on national schemes. Over 2/3 of respondents through all career stages agree that their peers are aware of the Marie Curie Fellowship Scheme and awareness has increased significantly from FP5 to FP6. The new ERC scheme is seen, by those who are aware of its existence, to have some attractive features and there is evidence of concern of the lack of a transnational mobility component which Marie Curie has. The current peer group awareness, which is strong, appears to be through internal promotion by the Fellows themselves. There appears to be scope to improve publicity, to broaden awareness of Marie Curie Fellowships in industry and to develop greater awareness of potential industrial-academic collaboration.\textsuperscript{142}

\textsuperscript{138} APPENDIX A: Other wider impacts: Q23 summary paragraph
\textsuperscript{139} APPENDIX A: Other wider impacts: Q25 summary paragraph
\textsuperscript{140} APPENDIX A: Other wider impacts: Q28 summary paragraph
\textsuperscript{141} APPENDIX A: Attractive Careers: Recruitment and Retention: Q29 summary paragraph
\textsuperscript{142} APPENDIX A: Structuring Effects: Q30 summary paragraph
Relevant findings from the analysis of impacts by type of fellowship are taken from Appendix B and summarised as follows:

- Having a partner or spouse during the Fellowship was a common experience amongst FP6 Fellows (67%), especially in RTN (80% Former to 90% Current). Individual Fellowship respondents reported a higher incidence of children and fewer obstacles by having a family than Host Fellowship respondents and there were substantial differences across the types of Fellowship (e.g. the incidence of children ranged from 5% (ESTs) to 58% (IRGs). Satisfaction levels regarding the family allowance were low but with several large differences between types of Fellowship that were difficult to interpret\textsuperscript{143}.

- With respect to the personal and professional characteristics of the respondents, female FP6 Fellows were more active as respondents than their male counterparts and, at 41%, were close to the projected proportion of female researchers (37%) in the FP6 Fellows population overall. Career stage and fellowship duration findings lined up with Fellowship design and the majority (75%) were aware of the access to Help System support open to them. Peer awareness of Marie Curie was rated to be about 70%, but with a large difference between Former (44%) and Current (74%) Fellows in ToK-IAP. The high degree of preparedness to recommend Marie Curie to others (95%) demonstrates the respect which the Fellowship Scheme holds amongst FP6 Fellows\textsuperscript{144}.

Relevant findings from the separately presented Annexes to the report are summarised as follows:

- The European “Researchers’ Nights” have permitted broad groups of the EU population to discover researchers and science whilst having fun at the same time\textsuperscript{145}.

- The MCFA has grown in status and importance, contributing increasingly to policies affecting the Marie Curie Programme and to the creation of new initiatives, such as the European Research Council in FP7\textsuperscript{146}.

- Finally, the supporting MCA web sites were much smaller in scale and ambition than the average FP6 web site and were constrained by the lack of resources dedicated to the media for the project. 86% believed the website to be a useful tool for their scientific discipline, but only one third believed the site could be sustained without external funding\textsuperscript{147}.

8.1.2 Evidence from the longitudinal comparisons: FP4 to FP6

In the Long Term Schemes Report, with regard to personal and professional characteristics\textsuperscript{148}, whilst the supervisory research community is male dominated in terms of gender, the groups of Fellows themselves appear to be moving towards a more equitable participation if the respondent population reflects the Fellows as a whole. Other characteristics are summarised as follows:

\textsuperscript{143} APPENDIX B: Family
\textsuperscript{144} APPENDIX B: Personal and Professional
\textsuperscript{145} ANNEX X: The Other Actions Report (D5): The Scientific Support Actions (SSAs)
\textsuperscript{146} ANNEX X: The Other Actions Report (D5): The Scientific Support Actions (SSAs)
\textsuperscript{147} ANNEX X: The Other Actions Report (D5): The Scientific Support Actions (SSAs)
\textsuperscript{148} ANNEX X: The Long Term Schemes Report (D3) #9
On the personal side, having a spouse or partners applies to about 50% of the Fellows, but having children under the age of 18 years is much less common. Overall, having a family appears to be more of an obstacle to Current FP6 Fellows than those before. There is a moderate degree of satisfaction about the level of family allowance in the Scheme.

In terms of home country location, supervisory respondents are mainly to be found in the UK, Germany, France, Italy, and Spain in order of numbers. Italy remains the most common home country for Current FP6 Fellows, followed by Poland.

Regarding panel representation, Life Sciences was the dominant panel representation for all categories of respondent Fellow. Economic Sciences tends to be the weakest in terms of representation.

The majority of Fellows are at early career stage, ranging from about 60% (Former FP6 Fellow respondents) to 82% (Current FP5 Host Fellow respondents) and 13-24 months is typical Fellowship duration for the majority of Fellows in each category.

In the main, Former FP5 Host Fellow respondents completed their Fellowship more than 3 years ago and most Former FP6 Fellows up to a maximum of 2 years ago.

In the Long Term Schemes Report, the Scheme has had significant awareness and prestige impacts. Supervisor perceptions are ones of a significant level of peer awareness and a high level of Scheme prestige. Fellows agree that peer awareness is high and are nearly all prepared to recommend the Scheme to others. The free commentary from Supervisors suggests that the Marie Curie Fellowship scheme is held in high regard in Europe.

In the Long Term Schemes Report, regarding the Marie Curie Fellowship process, in contrast to content, supporting evaluation procedures are seen to be transparent, fair, and efficient by the majority of respondents, although personal contacts seem to figure highly in recruiting applicants. The burden of administration of the Scheme is seen to be high in comparison with other funding sources. Fellows report that they can access the necessary information, but the level of Fellows so reporting has dropped since FP5.

8.1.3 Evidence from the analysis of open comments

The views on MC Fellows’ salary level impacts also provide a focus for comment by responding supervisors. There is again a more positive view of the Marie Curie Programme as a whole amongst those who commented on salary levels, with only 16 of the 23 comments being negative (70%) compared with 22 of the 24 comments (92%) in relation to the salary level comments themselves. An analysis of the negative comments made on MC Fellows’ salary level impacts brings out the following factors as having the most weight:

- MC salaries are higher than those of the researchers whom they have to work with, causing tensions and difficulties in the team (11);
- MC salaries take up too high a proportion of the budget, meaning that other aspects of the projects do not get the funding they need (7);

- MC salaries are seen to be very high; they stand out in comparison with other salary levels (6);

- MC salaries should be adjusted to national levels to avoid some of the problems listed above (3);

- MC salaries are too high for the quality of Fellows delivered by the programme (2).

In contrast to the above, two supervisors saw the salaries of MC Fellows as being attractive (1) or competitive (1).

The views of current FP6 Fellow respondents about Fellows’ salaries and allowances show some frustration amongst FP6 Current Fellows. The comments on salaries and allowances can be summarised as follows:

- Although some express satisfaction (3), a similar number mentioned that the net of tax salary and allowance level was not sufficient (2).

- A large number (8) commented on the fact that salaries and allowances are treated differently in different countries and others expressed this as dissatisfaction about the net amount being received (5).

- A few (2) said their payments were subject to delays, leading to cash flow problems.

There were individuals who felt they had either been misinformed (1) or mistreated (1) by not being awarded higher allowances when their family situation changed during the Fellowship.

An analysis of the open commentary shows that the body of comments on administration and bureaucracy and Fellowship management by supervisors and hosts were consistently negative across FP5 and FP6 survey respondents.

The views on the administration and bureaucracy impact does not line up with the more positive view of the programme by the same respondent supervisors. Whilst 68 of the 70 comments are negative (96%), there is evidence that the same respondent supervisors retain a more positive view of the overall Marie Curie initiative, with only 48 of the 69 comments being negative (70%).

Nevertheless, it is clear that negative views about administration and bureaucracy impact on views of the Programme as a whole and this has to be an important issue, as the volume of comments made is at least twice that of any other subject included in the analysis, positive or negative. Given the tone of the replies, the survey made a judgement of the level of dissatisfaction inherent in the comments made and this ranged from those who expressed a high level of dissatisfaction (19) to those expressing a medium level (25). Some declared that they would never get involved in a Marie Curie project again (5) because of the “bureaucracy”.

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152 ANNEX IV: Analysis of Open Comments made in the surveys: The views of current FP6 Fellow respondents.

153 APPENDIX A: Other wider impacts: Q22 summary paragraph

154 ANNEX IV: Analysis of Open Comments made in the surveys: The views of FP6 Supervisors
Where there was more articulation about the level of frustration with the bureaucracy, the following views emerged:

- A plea for greater simplicity in the rules governing the implementation of Marie Curie (10)\(^\text{155}\)
- Another plea for more flexibility in the approach to the Programme (5)
- The need for more harmonisation of the rules (4)
- The need for more administrative support in managing Marie Curie (3)
- The negative impact of time delays in decision making with Marie Curie (2)

The views on evaluation procedure impacts also do not line up with the more positive view of the programme by the same respondent supervisors. Whilst 28 of the 30 comments are negative (93%), there is evidence that the same respondent supervisors retain a more positive view of the overall Marie Curie initiative, with only 20 of the 28 comments being negative (71%). Nevertheless, as in the case of administration and bureaucracy, it is clear that these negative views impact on views of the Programme as a whole. The comments suggest that there are some concerns amongst supervisors about the evaluation procedures, summarised by theme as follows\(^\text{156}\):

- The quality of the candidates chosen is seen to be weak by some (9)
- The evaluation process itself, including the criteria used, is seen to be inadequate (8)
- The quality of the referees/reviewers is seen to be suspect (5)
- The time taken to undertake an evaluation is seen to be too long (3)
- The transparency of the evaluation process is not clear (2)
- The visibility of the process is not sufficient for those applying (2)

In spite of these kinds of misgivings, two supervisors stated that they would recommend eligible students to apply for a Marie Curie Scheme grant.

Amongst negative points commented on by former FP5 Host Fellow respondents, obstacles included a lack of awareness of the Scheme outside the narrow scientific field (in this case in “law”), difficulty in finding where training sites were located (1), lack of public announcements about Marie Curie (1) and poor publicity in an Eastern European university\(^\text{157}\).

Comments about awareness levels made by current FP6 Fellow respondents are summarised in the table below\(^\text{158}\).

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\(^{155}\) Published online 1 March 2010: *Nature* **464**, 20 (2010). It is interesting to note what the outgoing President of the ERC says about this matter: “An overly strict control culture permeates the commission”, Kafatos says. "We continuously had to spend energy, time and effort on busting bureaucracy roadblocks that kept appearing in our way," says Kafatos. "At best, this costs us precious energy and resources. At worst it may hamper our zeal to inspire and continuously improve the ERC strategy, it can damage the morale of our staff and discourage the top talented researchers from applying to or reviewing for the ERC."

\(^{156}\) ANNEX IV: Analysis of Open Comments made in the surveys: The views of FP6 Supervisors

\(^{157}\) ANNEX IV: Analysis of Open Comments made in the surveys: The views of FP6 Supervisory respondents.

\(^{158}\) ANNEX IV: Analysis of Open Comments made in the surveys: The views of current FP6 Fellow respondents.
Nature of the comments about awareness

<table>
<thead>
<tr>
<th>Nature of the Comments</th>
<th>Mentions</th>
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<tr>
<td>Few students are aware of the existence of the MCAs</td>
<td>3</td>
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<tr>
<td>Web portals not well known or difficult to understand</td>
<td>2</td>
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<tr>
<td>Unaware of the exact amounts of MCA funding available</td>
<td>2</td>
</tr>
<tr>
<td>Unaware of the possibility of short collaborations with other European institutes</td>
<td>1</td>
</tr>
<tr>
<td>Unaware of the existence of the National Contact Points</td>
<td>1</td>
</tr>
<tr>
<td>Unaware of the rules and regulations (RTNs)</td>
<td>1</td>
</tr>
</tbody>
</table>

The negative views of former FP6 Fellow respondents (only 5% or the 38 views were positive) on *administration and bureaucracy* line up with the overall views of the direction of the comments by the same respondent Former FP6 Fellows, with only 6 of the 38 comments being positive (16%). The more frequent *administration and bureaucracy* views cited were:\(^{159}\):

- The amount of bureaucracy compared with the size, duration and alternative to the grant (12 neg.);
- The inadequate support from official in Brussels in dealing with Marie Curie problems (12 neg.);
- The time taken to complete the application and selection process (all 8 comments negative).
- Problems with securing or waiting for funding (all 6 comments negative)
- The need for simplification in the procedures linked to programme administration (6 neg.)

A few (3) complained about the loss of research time due to excessive bureaucracy, poor support from National Contact Points (2) and lack of flexibility in programme administration (2).

Although only 3% of the 36 views of current FP6 Fellow respondents on *administration and bureaucracy* were positive, the views of the same respondents about the programme as a whole were 83% positive. The comments about *administration and bureaucracy*, 40% of which came from RTN-ESRs, can be summarised as follows:\(^{160}\):

- The **complexity and volume of paperwork** needed to support the Fellowship process is one of the main points made by respondents (8/8 negative comments).

- Some concerns centre around the **lack of understanding about the way that money is allocated or spent** (8/9 negative), often in the host institution.

- Lack of clarity in **different aspects of the process** is also a criticism (5/5) and lack of efficiency and user friendliness in **the application process** (5/5).

Other points include inadequate direct support (4/4), local difficulties related to employment (4/4) and other smaller one off comments.

Although only 31% of the 13 views of former FP6 Fellow respondents on **family and partner issues** were positive, there were two who had very positive things to say about the experience, both for the Fellow and the family, and the overall comments (2 in total) on the Programme itself were positive. The most cited negative comments were related to the difficulty in maintaining good relations with **partners and spouses** when having to be separated for a long time (2); for others (2), international

\(^{159}\) ANNEX IV: Analysis of Open Comments made in the surveys: The views of former FP6 Fellow respondents.

\(^{160}\) ANNEX IV: Analysis of Open Comments made in the surveys: The views of current FP6 Fellow respondents.
travel was limited. Two were unable to get family support because marriage or the birth of a child came after the deadline and others (2) mentioned having problems of spouse unemployment

Only 19% of the 16 views of current FP6 Fellow respondents on family and partner issues were positive, which affected the degree of support of the same respondents for the Fellowship programme as a whole (only 31% positive). In summary, the views on family and partner issues can be summarised as follows:

- Several (6) expressed the view that they felt that different partner/family issues when located abroad had still to be addressed by the Fellowship programme;
- Two expressed the view that long stays abroad were not compatible with family life, although one had got round this problem by being located in a country neighbouring his/her own.
- Only two expressed a view that the family allowance was sufficient (1/2 positive) or that it had been a good experience both for them and their family (1/2 positive), each being offset by negative views.

Comparisons with other schemes by current FP6 Fellow respondents included NSF (more efficient than MCA), Alexander von Humboldt (the MCA impact in the academic field is much less) and two who thought that MCA conditions were more or less the same as any other “postdoc”, with one mentioning easier access to conferences in MCA.

8.1.4 Evidence from the case studies

Q4: Have the actions improved the career options for researchers?
The summary comments refer mainly to researchers with partners and/or children:

- The provisions for maternity leave, the removal of age criteria, and the provision of support for family mobility coupled with more flexible approaches to fellowships together extend opportunities and increase access to the Scheme to a wider range of researchers including those with partners and children. As such it improves the career options to these groups of researchers who are often ill-catered for in traditional schemes.

Q8: Have the actions addressed the gender balance objectives of the EU?

- The gender balance objectives of the European Union extend to a wide variety of policy areas include non-discrimination in employment (focused on improving procedural equality) and a platform of positive action measures aimed at achieving substantive equality (equality of outcomes).
- The representation of women in science careers varies widely between Member States. In some countries women are very well represented in the natural sciences whilst in others they are not and

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161 ANNEX IV: Analysis of Open Comments made in the surveys: The views of former FP6 Fellow respondents.
162 ANNEX IV: Analysis of Open Comments made in the surveys: The views of current FP6 Fellow respondents.
163 ANNEX IV: Analysis of Open Comments made in the surveys: The views of current FP6 Fellow respondents.
the causes of this are diverse and complex. The only common trend is a gradual decline in the representation of women with seniority. The Marie Curie Scheme draws on this pool of researchers and to a large extent inherits the outcomes of processes taking place at national level\textsuperscript{166}.

- The measures referred to above will help to ensure that men and women are able to compete on an equal footing. However more innovative and flexible approaches to mobility and internationalisation are required to ensure that the ‘institutionalisation’ of mobility does not constitute an emerging form of indirect discrimination limiting the opportunities of men and women with caring responsibilities (Ackers, 2008)\textsuperscript{167}.

**Q29: Have the actions been designed so that researchers with relationship or parental obligations have also been able to benefit from the opportunities?**

- The ‘tensions’ described above will be experienced by men and women in science; they are not specific to the Scheme. As a mobility scheme, the impact is likely to be exacerbated. To the extent that the experience of holding a Marie Curie Fellowship enhance long term career outcomes (as the study indicates), the requirement for long international stays is likely to operate to the disadvantage of those researchers unable to exercise this form of mobility\textsuperscript{168}.

- Put simply, the requirement of mobility constitutes a form of indirect discrimination\textsuperscript{169}.

- The Marie Curie Scheme has evolved in recent years to ameliorate the effects of this. The availability of generous maternity provisions and family allowances provides significant support to Fellows with children and helps to remove the perceived ‘risks’ of pregnancy and moving with children. There is no evidence to suggest that existing any levels are inadequate\textsuperscript{170}.

- Increasing recognition of more flexible approaches to mobility perhaps permitting shorter forms of ‘shuttle mobility’ and the ability to respond to evolving personal circumstances (such as partnering or parenting mid fellowship) would provide further support. Greater ‘tolerance’ of emerging life course events on the timing of planned return phases to recognise the needs of partners and children would also help\textsuperscript{171}.

**Q30: Have the actions generated sufficient broad support by the EC and participation institutions to create a brand awareness that promotes European mobility and scientific excellence?**

- Based on the interviews, there appears to be some scope to broaden awareness of Marie Curie Fellowships in industry and to develop greater awareness of the scope for industrial-academic collaboration\textsuperscript{172}.

The following summarises the evidence from interviews with Marie Curie Excellence beneficiaries\textsuperscript{173}:

\textsuperscript{166} ANNEX V: Case Study 3: New Policies: Gender Equality and Support for Families.

\textsuperscript{167} ANNEX V: Case Study 3: New Policies: Gender Equality and Support for Families.

\textsuperscript{168} ANNEX V: Case Study 3: New Policies: Gender Equality and Support for Families.

\textsuperscript{169} ANNEX V: Case Study 3: New Policies: Gender Equality and Support for Families.

\textsuperscript{170} ANNEX V: Case Study 3: New Policies: Gender Equality and Support for Families.

\textsuperscript{171} ANNEX V: Case Study 3: New Policies: Gender Equality and Support for Families.

\textsuperscript{172} ANNEX V: Case Study 2: Industry-Academia Cooperation.
• There was evidence of a high awareness and appreciation of the Marie Curie brand in Europe, but not necessarily elsewhere, particularly in the US.

• It is clear that problems related to gender and family status were not seen to be an issue for the Chairs interviewed or for those in the teams they led, beyond the normal. Marie Curie was seen to have adequate provision although the gender balance was seen to be a problem by one Chair in fields like mathematics.

• Based on the anecdotal evidence the EXC grants could be said to have certain unique features (focus on fundamental research, freedom to conduct the research, the mix of teaching and research within the structure) which underpin a strong additionality.

• Two of the five Chairs reported that they were following up their Marie Curie grant with a European Research Council (ERC) grant in the IDEAS specific programme\(^{174}\), although another had not heard of the ERC initiative.

• Significant gender and family issues did not arise amongst interviewed grant holders, but gender balance on a team was appreciated, even if it was rare for some fields of research.

• There is evidence of reasonably robust additionality from interviewees, who see no “citable” alternative to the EXT offer. Without Marie Curie, some projects and related breakthroughs would have taken longer, some publications would not have been delivered and ongoing funding would have been more difficult and time consuming.

• Going forward there could be concern about the diffusion of the strong Marie Curie brand name when other programmes (such as ERC ideas) are seen to be follow-up initiatives. Whilst the ERC is seen, by those who are aware of its existence, to have some attractive features, there is evidence of concern of the lack of a transnational mobility component.

• Speaking engagements were reported by some award holder interviewees, but articles in newspapers and journals were mentioned widely as the typical channels for publicity in relation to their awards.

• Although direct competition from other prizes would have diminished the uniqueness of the MC award, this does not appear to have happened, thereby protecting additionality. One interview said it was difficult to say how much of the many subsequent invitations to conferences related to the MC award, although it was an important factor.

\(^{173}\) ANNEX V: Case Study 6: The Excellence Actions: case study evidence.

\(^{174}\) [http://cordis.europa.eu/fp7/ideas/home_en.html](http://cordis.europa.eu/fp7/ideas/home_en.html) The objective of the specific programme ‘Ideas’ is to reinforce excellence, dynamism and creativity in European research and improve the attractiveness of Europe for the best researchers from both European and third countries, as well as for industrial research investment, by providing a Europe-wide competitive funding structure, in addition to and not replacing national funding, for ‘frontier research’ executed by individual teams. Communication and dissemination of research results is an important aspect of this programme.
8.2 HORIZONTAL IMPACTS

Some of the characteristics of the supervisory and fellow respondents (home country location, thematic panel, career stage) emerge from the analysis as follows (location

- D3: In terms of home country location, supervisory respondents are mainly to be found in the UK, Germany, France, Italy and Spain in order of numbers. Italy remains the most common home country for Current FP6 Fellows, followed by Poland.
- D3: In terms of home country location, supervisory respondents are mainly to be found in the UK, Germany, France, Italy and Spain in order of numbers. Italy remains the most common home country for Current FP6 Fellows, followed by Poland.
- D3: Regarding panel representation, Life Sciences was the dominant panel representation for all categories of respondent Fellow. Economic Sciences tends to be the weakest in terms of representation.
- D3: The majority of Fellows are at early career stage, ranging from about 60% (Former FP6 Fellow respondents) to 82% (Former FP5 Host Fellow respondents) and 13-24 months is typical Fellowship duration for the majority of Fellows in each category.

Although a “typical” Fellow does not have much meaning in terms of the home location characteristics of supervisory and fellow respondents, it can be said that the majority are at early career stage, ranging from about 60% (Former FP6 Fellow respondents) to 82% (Former FP5 Host Fellow respondents) and 13-24 months is typical Fellowship duration for the majority of Fellows in each category. Life Sciences is the dominant panel for all categories of respondent Fellow.

Regarding the gender balance of Marie Curie and implications for researchers:

- Q8: Gender balance across the MCAs was 37% female, ranging from 22% in ToK to 48% in EST. Respondent figures were higher and female participation increased from 37% to 47% from Former to Current FP6 Candidate country respondents were 63% female.
- Q25: With regard to attaining the targets for research community demographics, the gender balance of 37% for the FP6 population as a whole is 92.5% of the 40% target and the ESR population who were awarded RTN Fellowships in FP6 was 64.53%, which is 81% of the targeted 80%.
- Q25: Female fellows coming from large corporations are underrepresented those coming from not-for-profit organisations are overrepresented.

Regarding gender balance, the participation of female Fellows in FP6 reached 37%, close to the targeted 40%. Current FP6 Fellow respondents increased from 37% females amongst Former FP6 Fellows to 47% for Current FP6 Fellows, although supervisors remain predominantly male. Candidate country respondents were 63% female. Female fellows coming from large corporations are underrepresented those coming from not-for-profit organisations are overrepresented.

With regard to personal and family status, the characteristics of the respondent population and implications for their Fellowship experience were as follows:

- D3: On the personal side, having a spouse of partners applies to about 50% of the Fellows, but having children under the age of 18 years is much less common. Overall, having a family appear
to be more of an obstacle to Current FP6 Fellows than those before. There is a moderate degree of satisfaction about the level of family allowance in the Scheme.

- **Q4:** Recent changes to the Fellowship Scheme, particularly with those with families in mind, have widened the MCA intake and improved career options.
- **Q8:** Case study evidence suggests that innovative and flexible approaches to mobility and internationalisation are still required to avoid the kind of “indirect discrimination” which limits the opportunities of those with caring responsibilities.
- **Q10:** Anecdotal evidence suggests that family and partner pressures can make mobility difficult and impact on subsequent careers.\(^{175}\)
- **Q29:** The obstacles facing researchers with relationship or parental obligations are seen to more as potential than actual and conditions have continued to improve whilst remaining a challenge.

In terms of personal and family status, having a spouse or partner applies to about 50% of the Fellows, but having children under the age of 18 years is much less common. Overall, having a family appears to be more of an obstacle to Current FP6 Fellows than those before. There is a moderate degree of satisfaction about the level of family allowance in the Scheme. The obstacles facing researchers with relationship or parental obligations are seen to more as potential than actual and conditions have continued to improve whilst remaining a challenge.

With respect to the salaries and allowances paid to Fellows during the Fellowship:

- 22 of the 24 comments (92%) on MC Fellows’ salary level by supervisors were negative and included the fact that they are higher than the researchers whom they have to work with, causing tensions and difficulties in the team, they take up too high a proportion of the budget. They stand out as high in comparison with peer salary levels and need to be adjusted to national levels to avoid some of the problems.

- Although some FP6 Fellows expressed satisfaction (3), a few mentioned that the net of tax salary and allowance level was not sufficient (2), several (8) commented on the fact that salaries and allowances are treated differently in different countries, others were unhappy about the net amount being received (5) and a few (2) said their payments were subject to delays, leading to cash flow problems.

There is a contrast between the views of supervisors and fellows regarding the salaries and allowances paid to Fellows during the Fellowship. Supervisors’ comments were negative and included the fact that salaries are often higher than the researchers whom they have to work with and that they take up too high a proportion of the budget. However, some Fellows were unhappy about the difference way in which the net value of the salary and allowances is calculated in different countries and the subsequent lower net amount received.

The ethical and social impacts of the Fellowship include the following:

- **Q17:** Whilst the awareness of ethical issues remains low, it is increasing and mid-career researchers have experienced the most significant impacts.
- **Q17:** Economic Sciences panel Fellow respondents are least likely to praise MCAC for its impact in terms of ethical awareness and ability to manage ethical issues.

\(^{175}\) APPENDIX A: Researcher Training and Skill Development: Q10 summary paragraph
• Q18: The MCAs have delivered an increased awareness of the social impact of research, especially amongst industry Fellows, but the social return on investment is not known.

Awareness of ethical issues, although low, is increasing and mid-career researchers Report the most significant impacts. Perhaps not surprisingly, Economic Sciences panel Fellow respondents are least likely to report an impact in terms of ethical awareness and ability to manage ethical issues.

Similarly, the MCAs have delivered an increased awareness of the social impact of research, especially amongst industry Fellows, although the social return on investment is not known.

The supporting processes emerge from the analysis are as follows:

• D3: The burden of administration of the Scheme is seen to be high in comparison with other funding sources. Fellows report that they can access the necessary information, but the level of Fellows so reporting has dropped since FP5.
• Q23: Evaluation criteria are seen to be transparent and fair by supervisory respondents, but there are concerns about efficiency and user friendliness in the application process, candidate quality, reviewer selection and the speed of response of the evaluation process as a whole.
• Q28: Respondents give Help Systems a positive rating overall (75% positive answers), although an analysis of the survey open comments reveals examples of inadequate support at European, national and local host organisation levels.

Amongst supporting processes, evaluation criteria are seen to be transparent and fair by supervisory respondents but there are concerns about efficiency and user friendliness in the application process, candidate quality, reviewer selection and the speed of response of the evaluation process, all of which have the potential to improve impacts. Help systems are viewed positively, but the open commentary suggests that there are several places where they could be improved. The administration burden is seen to be high and is the subject of much negative open commentary, which contrasts with the overall positive view of the programme.

The awareness and prestige impacts which emerge from the analysis are as follows:

• D3: Fellows agree that peer awareness is high and are nearly all prepared to recommend the Scheme to others. The free commentary from Supervisors suggests that the Marie Curie Fellowship scheme is held in high regard in Europe.
• Q5: The prestige of the MCA makes an award attractive to aspire to, although there is insecurity in terms of future career progression in some countries.
• Q30: Marie Curie brand awareness in Europe is strong, but not in the US, where domestic priorities dominate. There is scope to broaden awareness of potential industry-academia collaboration.
• Q30: Over 2/3 of respondents through all career stages agree that their peers are aware of the Marie Curie Fellowship Scheme and awareness has increased significantly from FP5 to FP6.

The awareness and prestige of the MCA makes an award attractive to aspire to. Marie Curie brand awareness in Europe is strong, but not in the US, where domestic priorities dominate. There is scope to broaden awareness of potential industry-academia collaboration. Fellows agree that peer awareness is high and are nearly all prepared to recommend the Scheme to
others. The free commentary from Supervisors supports the view that the Marie Curie Fellowship scheme is held in high regard in Europe.

8.3 RECOMMENDATIONS RELATING TO HORIZONTAL ISSUES

With regard to Fellows with partners and families, potential improvements emerge from the impact assessment as follows:

- Increasing recognition of more flexible approaches to mobility perhaps permitting shorter forms of ‘shuttle mobility’ and the ability to respond to evolving personal circumstances (such as partnering or parenting mid fellowship) would provide further support.

- Greater ‘tolerance’ of emerging life course events on the timing of planned return phases to recognise the needs of partners and children would also help.

Areas where improvements in the impact of the programme could be found included the following:

- The analysis of the supporting processes suggest that, although evaluation criteria are seen to be transparent and fair by supervisory respondents, there are concerns about efficiency and user friendliness in the application process, candidate quality, reviewer selection and the speed of response of the evaluation process, all of which have the potential to improve impacts.

- Fellows report that they can access the necessary information, but the level of Fellows so reporting has dropped since FP5 and the burden of administration of the Scheme is seen to be high in comparison with other funding sources. Simplification would help to reduce frustration, make the way for increased supervision time and enhance impacts.

The specific recommendations of the impact assessment are:

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<th>Recommendations: horizontal issues</th>
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<td>To examine the feasibility of shorter term mobility schemes where relevant to make it easier to combine the often competing demands of family and fellowship.</td>
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<td>To consider the introduction of types of ‘shuttle mobility’ which permit a greater amount of contact for Fellows with partners and children who are not able to move from their home base along with the opportunity not to abandon their original place of work for such a long period.</td>
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<tr>
<td>To review the degree of ‘tolerance’ of emerging life course events with respect to the timing of planned return phases within the Fellowship with a view to recognising the needs of the partners of Fellows and children.</td>
</tr>
<tr>
<td>To consider the feasibility of reserving a budget line which permits the allocation of partner and child related maintenance grants when these events occur during the Fellowship.</td>
</tr>
<tr>
<td>To consider partial funding to encourage the spread of good practice, to pilot test an alumni network, to facilitate the exchange of knowledge and experience and to develop proposals that will help to attain long term sustainability of the impacts achieved by the Fellowship programme.</td>
</tr>
</tbody>
</table>
9.0  A COMPARISON OF KEY IMPACT FINDINGS

This chapter summaries the main impacts from the analysis, starting with the views of the supervisors regarding the impact of the Marie Curie programme on the factors affecting working effectively in science, followed by summary tables of FP6 Fellow respondents views about the benefits. It goes on to summarise statistically significant longitudinal (since FP5) and thematic panel impact variations and then summarises the evidence by sector and country. Finally, the additionality of the Marie Curie Scheme is considered and programme wide recommendations are made.

9.1  THE IMPACT ON “WORKING EFFECTIVELY IN SCIENCE” FACTORS

The principal longitudinal impacts are can be represented in terms of the degree to which the MCAs contributed to those factors that supervisory respondents considered to be important for working effectively in science. In the table below, the factors are listed in order of importance and the contribution of Marie Curie to that factor is compared to it.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Contribution of Marie Curie Actions</th>
<th>Importance of factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transnational research networks (n=1,607) TransN</td>
<td>76.06%</td>
<td>98.51%</td>
</tr>
<tr>
<td>Time to do research (n=1,613) SciOut</td>
<td>62.07%</td>
<td>97.64%</td>
</tr>
<tr>
<td>Research competence (n=1,602) SciOut</td>
<td>66.88%</td>
<td>97.63%</td>
</tr>
<tr>
<td>Reputation of institute (n=1,6056) SciOut</td>
<td>64.83%</td>
<td>97.12%</td>
</tr>
<tr>
<td>Relation with team members (n=1,607) T&amp;M</td>
<td>38.82%</td>
<td>97.02%</td>
</tr>
<tr>
<td>Knowledge trans. betw. fields/disciplines (n=1,600) InterD</td>
<td>62.64%</td>
<td>96.74%</td>
</tr>
<tr>
<td>International experience (n=1,610) TransN</td>
<td>69.92%</td>
<td>94.46%</td>
</tr>
<tr>
<td>Human (research) resources (n=1,599) T&amp;M</td>
<td>68.03%</td>
<td>94.08%</td>
</tr>
<tr>
<td>Good facilities / equipment / infrastructure (n=1,610) T&amp;M</td>
<td>61.31%</td>
<td>92.56%</td>
</tr>
<tr>
<td>Financial resources (n=1,612) Finance</td>
<td>76.09%</td>
<td>92.13%</td>
</tr>
<tr>
<td>Contact with the private sector (n=1,605) InterSec</td>
<td>62.97%</td>
<td>88.63%</td>
</tr>
<tr>
<td>Building a research group (n=1,598) T&amp;M</td>
<td>71.09%</td>
<td>86.87%</td>
</tr>
<tr>
<td>Autonomy / independence (n=1,605) T&amp;M</td>
<td>17.30%</td>
<td>36.91%</td>
</tr>
</tbody>
</table>

Source: Analysis of survey outputs and deliverable D3

The following general observations can be made from the responses of the supervisors:

176 Deliverable D3: The Long Term Schemes Report: See Section 2.1
Nearly all 13 factors (except “autonomy/independence”) are considered either important or very important for working effectively in science;

The most significant contributions of the MCA to these key factors are seen to be access to good facilities/equipment/infrastructure, financial resources and transnational research networks;

The least significant contributions of the MCA are in autonomy/independence and relations with team members;

The principal impacts as seen through the eyes of the Fellow respondents are presented in the Table below in order of the highest impact, as reported by FP6 Current Fellows. In each case the % of very important/very significant responses are added to the important/significant responses to give an overall % impact figure.

<table>
<thead>
<tr>
<th>Impact</th>
<th>FP6 CURRENT (N=1,570)</th>
<th>FP6 FORMER (N=2,228)</th>
<th>FP5 FORMER (N=490)</th>
<th>FP4 (N=387)</th>
</tr>
</thead>
<tbody>
<tr>
<td>on international experience (TransN)</td>
<td>89%</td>
<td>89%</td>
<td>88%</td>
<td>88%</td>
</tr>
<tr>
<td>enabling trans/inter-research organisation mobility (TransN)</td>
<td>9%</td>
<td>77%</td>
<td>80%</td>
<td>81%</td>
</tr>
<tr>
<td>enabling their inter-research organisation mobility (TransN)</td>
<td>9%</td>
<td>72%</td>
<td>77%</td>
<td>78%</td>
</tr>
<tr>
<td>engagement with inter/multi-disciplinarity research (InterD)</td>
<td>9%</td>
<td>72%</td>
<td>77%</td>
<td>78%</td>
</tr>
<tr>
<td>researcher autonomy and independence (T&amp;M)</td>
<td>69%</td>
<td>69%</td>
<td>70%</td>
<td>70%</td>
</tr>
<tr>
<td>development of transN research contacts/networks (TransN)</td>
<td>59%</td>
<td>65%</td>
<td>75%</td>
<td>76%</td>
</tr>
<tr>
<td>developing complementary skills (T&amp;M)</td>
<td>53%</td>
<td>60%</td>
<td>70%</td>
<td>70%</td>
</tr>
<tr>
<td>Developing contact with other research disciplines (InterD)</td>
<td>9%</td>
<td>60%</td>
<td>70%</td>
<td>70%</td>
</tr>
<tr>
<td>improving the quality of research outputs (SciOut)</td>
<td>89%</td>
<td>89%</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>career progression (Career)</td>
<td>89%</td>
<td>89%</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>access to high quality research equip/infrastructure (T&amp;M)</td>
<td>89%</td>
<td>89%</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>increasing the number of job options (Career)</td>
<td>89%</td>
<td>89%</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>enabling inter-sectoral mobility (InterSec)</td>
<td>89%</td>
<td>89%</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>‘salary progression’ (Career)</td>
<td>89%</td>
<td>89%</td>
<td>90%</td>
<td>90%</td>
</tr>
</tbody>
</table>

Source: Analysis of survey outputs and deliverable D3

The observations that can be drawn from the comparison of impacts from FP4 to FP6 as reported by FP6 Fellow respondents include the following:

- Overall, half the impacts are seen to be lower by Former Fellows in FP6 than those in FP5 (7 impacts), although 3 are higher and 4 are about the same.
• The “transnational” (TransN) impacts make up the most dominant group as far as Fellows are concerned. There is broad consistency across the FPs concerning these impacts, and the development of transnational research contacts and networks is the one that has shown the greatest improvement over the years.

• The “interdisciplinary” (InterD) impacts make up the 2nd most important group, with engagement in inter/multi-disciplinary research showing a small improvement and developing contacts with other research disciplines showing the greatest improvement, going back to FP4.

• “Training and mobility” (T&M) impacts are very close to “interdisciplinary” impacts in significance. Researcher autonomy and independence is valued much more highly by researchers than supervisors and has been consistent since FP4. There has been improvement in “complementary” skills impacts since FP4 and access to high quality research equipment and access to high quality research equipment and infrastructure, although less of an impact, is seen to be stronger by FP6 Current Fellows.

• The career impacts are seen to be a weaker feature of the Fellowship by Fellows in comparison with other impacts. However, FP6 Current Fellows indicate sizeable increases for all three type of impact: career progression, job options and salary progression.

Both “improving the quality of research outputs” and “enabling inter-sectoral mobility” have maintained a consistent impact of above 55% over the period.

The level of agreement with certain statements and the combination of “strongly agree” and “agree” responses by Fellows is plotted in the table below for six aspects of the MCA:
The following observations are made from the above figure of Fellow respondents’ replies:

- The overall **view of Fellows about the Fellowship is sufficiently positive** for nearly 100% of them to indicate that they would recommend it to others;

- They also indicate a **very high level of awareness of the Fellowship** amongst peers and colleagues.

There has been **consistency of many impacts across FP4, FP5 and FP6**, including several where there have been increases. However, the gap between performance and overall need has widened since the previous impact assessment study (1994-2002): i.e.on the basis of the evidence of supervisory respondents, the more recent Marie Curie Fellowship Scheme has contributed less in % terms to those factors that supervisors believe are essential to working effectively in science than the former Scheme did. At the same time:

- **Supervisors believe that the most significant contributions of MCA to working effectively in science** are particularly the good facilities / equipment / infrastructure made possible, followed by financial resources and transnational research networks.

- **Fellows place transnational impacts** as the most important delivered by the MCA, followed by inter-disciplinary and training & mobility impacts. Career impacts are seen to be a weaker feature, although FP6 Current Fellows report increases for all three type of impact: career progression, job options and salary progression.

- The overall **view of Fellows about the Fellowship is sufficiently positive for nearly 100% of them to indicate that they would recommend it to others. They also indicate a very high level of awareness of the Fellowship amongst peers and colleagues.**

### 9.2 STATISTICALLY SIGNIFICANT IMPACT VARIATIONS SINCE FP5

The following table summarises the statistical analysis, where the main differences in the responses of Fellows to the survey questions were found between programmes (FP5/FP6), career stage (ESRs and more experienced researchers) and course duration (longer/shorter):

<table>
<thead>
<tr>
<th>THE PROGRAMME, CAREER AND COURSE EMPHASES OF SIGNIFICANT FELLOWSHIP IMPACT VARIATIONS ON . . .</th>
<th>Programme</th>
<th>Career stage</th>
<th>Course duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time with supervisor</td>
<td>INPUTS</td>
<td>FP5</td>
<td>Early/later</td>
</tr>
<tr>
<td>Quantity of research outputs</td>
<td>OUTPUTS</td>
<td>FP5</td>
<td>Later stage</td>
</tr>
<tr>
<td>Quality of research outputs</td>
<td>OUTPUTS</td>
<td>FP5</td>
<td>Early stage</td>
</tr>
<tr>
<td>Quality of publications</td>
<td>OUTPUTS</td>
<td>FP5</td>
<td>Later stage</td>
</tr>
<tr>
<td>Developing advanced research skills</td>
<td>OUTPUTS</td>
<td>Same</td>
<td>Early stage</td>
</tr>
<tr>
<td>Complementary skills</td>
<td>OUTPUTS</td>
<td>Early stage</td>
<td>Longer</td>
</tr>
<tr>
<td>Inter-sector mobility</td>
<td>OUTCOMES</td>
<td>FP5</td>
<td>Later stage</td>
</tr>
<tr>
<td>Salary progression</td>
<td>OUTCOMES</td>
<td>FP6</td>
<td>Similar</td>
</tr>
<tr>
<td>Transnational mobility</td>
<td>OUTCOMES</td>
<td>Early stage</td>
<td></td>
</tr>
<tr>
<td>Increasing the number of job options available</td>
<td>OUTCOMES</td>
<td>FP6</td>
<td>Early stage</td>
</tr>
</tbody>
</table>
The following main observations are made:

- **FP5 is perceived to have had the stronger MCA impacts** for several programme aspects. It is not surprising that FP6 shows a higher appreciation of salary impacts as MCA salaries were improved in FP6 and this gives a better launch platform.

- With respect to **job options**, there is a large difference between the experience of former FP6 Fellows, whose view on the impact on job options was much lower than former FP5 Fellows, and current FP6 Fellows, who indicated that they have high experience or expectations about an increase in the number of job options available.

- The impact of the MCA on both the **quantity and quality of research outputs** is seen to be stronger by the more experience researchers as well as being biased towards FP5.

- However, beyond job options, most aspects of the MCA are reported by **ESRs to have greater impacts** compared to the more experienced researchers, and none are where FP5 or FP6 dominate, showing consistency across the FP5 and FP6 programmes.

- There is also some consistency in the influence of **course duration** on MCA impacts, where the longer the course duration, the more it has impacted on the quality of research outputs and the development of advance and complementary skills.

- The responses imply that the **course intensity in FP5 was greater**, as time spent with supervisors was greater, but it was the shorter course durations in FP5 that are seen to have had the greater impact.

Regarding the **FP5 to FP6 trends amongst statistically significant impacts**, which were identified through linear regression analysis, several scientific outputs were weaker in FP6 (time with supervisor, quantity of research outputs, quality of publications) but a few career impacts were stronger in FP6 (salary progression and job options available).

Regarding the **early/later career stage emphasis amongst statistically significant impacts**, two scientific outputs (quantity and publications quality) were strongest with later stage researchers, as was inter-sectoral mobility, but skill development, research output quality, transnational mobility and job options impacts were stronger with ESRs.

When the **statistically significant impacts are differentiated by stages in the intervention logic**, it can be seen that, whilst FP5 results were stronger on inputs and outputs, favouring longer term researchers as much as ESRs, FP6 results are seen to be stronger on expected outcomes, favouring ESRs on transnational mobility and job option outcomes.

**9.3 STATISTICALLY SIGNIFICANT THEMATIC IMPACT TRENDS**

The way in which the inputs, outputs and outcomes of the Marie Curie Fellowship programme vary by **thematic panel** are summarised in the following table, which only includes those trends which are statistically significant:
The largest variation in statistically significant panel impacts is in the Economic Sciences which, although weaker in several respects Fellows see themselves as stronger in research output quantity and in developing networks. Chemical panel Fellows have shown stronger “access to facilities” inputs and stronger salary progression and job options outcomes than other panels.

9.4 KEY IMPACTS BY OVERALL SECTOR (ACADEMIA-INDUSTRY)

Some of the main sector comparisons between the views of Fellows hosted in industry and those hosted in academia about the impact of the Fellowship are presented in the following table:
• Fellows hosted by industry acquired more multi-disciplinary and complementary skills and were more likely to attract projects which would not otherwise be funded. Companies are more likely to award permanent contracts post Marie Curie and gave more training in dealing with ethical issues and societal aspects. Research projects are more likely to result in a patent and more importance is given to industry-academia collaboration.

• Fellows hosted in academia reported a higher quality of supervision continues to be reported as better in academia, a highly likelihood of maintained research links, a higher priority being given to training in knowledge deepening and overall skills acquisition a higher impact on career progression and a higher quality and quantity of research outputs and publications.

Whilst it is not possible to determine 95% confidence levels for an industry-academia sectoral analysis because the overall population of FP6 Fellows in each category (academia/industry) is not known, it seems likely that industry based Fellows development more complementary skills and engaged in more inter or multi-disciplined research and academia based Fellows were ahead on the quality and quantity of publications.

9.5 DIFFERENTIATION OF IMPACTS BY COUNTRY

The following observations are made from the analysis of the country dimension:

• With respect to mobility, almost 80% of respondents to the Fellows’ survey valued the support of the Marie Curie fellowship in enabling their move to a different country, particularly those from ICPC and OECD countries. Of all who obtained an IRG grant, 65.4% thought that they would not, or with a lower probability, have returned without the help of the grant. Some two-thirds were living in their home countries before the Fellowship, the least likely being those from ICPC and ENPI countries. These two groups were still working in a different country more frequently than the other groups. Between 4% and 15% of all groups had already been living in the host country for a short duration. The brain drain to countries outside Europe seems to be modest, with fewer than 6% from the EU living outside Europe after the Fellowship. Retention in the host country was highest for third country researchers and lowest for respondents from EU 10 and 28.8% of respondents from EU 15 were still in the host country at the time of answering the questionnaire, so there does not seem be a brain drain from EU10 to EU15. Of all respondents with an International Reintegration Grant, 71% were in their home country at the time of answering the survey (during or after the fellowship).

• With regard to knowledge transfer and networking, the Fellowships seem to make a significant contribution to forming research collaborations in Europe and between Europe and the rest of the world Respondents from third countries with an S/T collaboration agreement with the EU maintained contacts to a greater extent than the other nationality groups, whereas the respondents from the new EU 10 Member States reported fewer cases of continuing collaborations. Third country researchers from all groups maintained links with their home countries more frequently than their European colleagues. As for the individual fellowships, supervisors associate a stronger knowledge transfer between researchers to the IEFs (92.4%) than to IOFs (83%) and IIFs (86.3%) and the IOFs appear to facilitate knowledge transfer between organisations to a greater extent. 64.8% of supervisors who had supervised an IOF fellow reported a significant or very significant impact of the grant on their transnational research networks, compared to 61.4% of IEF supervisors and 58.9% of IIF supervisors.
• As to career aspects, the nationality group most frequently still engaged in science and research after the fellowship are EU 10 respondents, the lowest frequency being noted in ICPC and OECD countries. Respondents from the EU10 and Candidate countries were most frequently on permanent work contracts after the fellowship and from EU15 on temporary contracts. The impact on career progression was thought to be positive by the majority, particularly Candidate and OECD country respondents. A ‘significant’ or ‘very significant’ impact on salary progression after the fellowship was indicated most frequently by Associated and OECD country respondents. 77% of OECD respondents and 74% of EU15 respondents were currently at either a significantly higher or incrementally higher career level than before the Fellowship and values were between 60% and 65% for the other country groups.

• Supervisors’ answers differed in relation to the quantity of research output they ascribed to the work carried out by the Marie Curie Fellow. A very significant or significant impact was reported by 73.1% of supervisors of IEF fellows, 80.3% of those who had supervised IOF fellows and 73.3% of IIF supervisors. As to research output since the Fellowship, the most positive impact on both volume of publications and quality of journals in which they publish was shown by respondents from Candidate countries and S/T Agreement countries.

Where the above results are of statistical significance they have already been embedded in other parts of the report.

9.6 ADDITIONALITY CONSIDERATIONS

There was some evidence regarding the degree of additionality across parts of the MCAs, even though this was not built into the methodology in a robust way:

• Although the additional impact of the Fellowship on enabling a researcher to gain experience in a different country was either “important” or “very important” for respondents from ICPC and OECD countries (87.5% and 87.1% respectively), EU 15 respondents and those from Associated countries, and countries with an S/T agreement with the EU are slightly more convinced that they would have been able to go abroad in any case, even if they had not received a Marie Curie fellowship.

• Although 65.4% of IRG respondents were unlikely to have returned without the help of the grant, 21% answered that they would have returned to Europe anyway, and 13.6% had a neutral opinion.

• Compared to universities, respondent supervisors from companies declared a more positive impact of the presence of the fellows in their groups in relation to projects which could not otherwise have been funded.

• D3: Supervisors and Fellows see the most significant interdisciplinarity impact of the scheme to be that projects are implemented which would not otherwise be funded under FP6.

• Q20: The Marie Curie Actions have allowed research to take place that would not be covered elsewhere in the Framework Programme, with an average proposal success rate of 19% across the panels.
Q20: Some **two thirds of supervisors** felt that the Fellowship scheme had had an impact on undertaking FP6 research that would otherwise not have been carried out, which illustrates the additionality of the Marie Curie Scheme. Supervisors from mathematics and social sciences particularly appreciated the Scheme for this reason, whereas those in engineering and in economic sciences thought there had been less impact. The Fellowship allowed companies to undertake more medium or long term collaborative research activities than would normally have been acceptable for company management. Success rates averaged around 19% across the panels\(^\text{177}\).

For researchers from industry, Companies show more appreciation for the additionality of the grant, funding projects which would not otherwise be funded\(^\text{178}\).

When looking at relevant types of impacts across specific MCAs which have an international flavour, the IRGs exhibit a reasonably robust degree of additionality and a post-grant commitment to the home country\(^\text{179}\).

The case study evidence relating to additionality is mainly linked to the **Excellence Actions**, each of which was reported as follows:

- Based on the anecdotal evidence the **EXC** grants could be said to have certain unique features (focus on fundamental research, freedom to conduct the research, the mix of teaching and research within the structure) which underpin a strong additionality.

- There is evidence of reasonably robust additionality from interviewees, who see no “citable” alternative to the **EXT** offer. Without Marie Curie, some projects and related breakthroughs would have taken longer, some publications would not have been delivered and ongoing funding would have been more difficult and time consuming.

- Although direct competition from other prizes would have diminished the uniqueness of the MC award (**EXA**), this does not appear to have happened, thereby protecting additionality. One interviewee said it was difficult to say how much of the many subsequent invitations to conferences related to the MC award, although it was an important factor.

The very sparse evidence for additionality (based on the views of supervisors and IRG Fellows feedback) suggests that the overall additionality of the Marie Curie Fellowship Scheme is about **two thirds (67%)**, either in terms of returnees to the EU or in terms of projects being funded which otherwise would not have been. There is evidence of some “leakage” in transnational mobility Fellowship targeting, both in terms of outflows and inflows, where a minority of researchers have indicated that they would have made the moves anyway, sometimes in the leading EU Member States.

### 9.7 RECOMMENDATIONS

The following recommendations are made after considering the programme as a whole:

\(^\text{177}\) APPENDIX A: Research Outputs: Q20 summary paragraph  
\(^\text{178}\) ANNEX X: The New Schemes Report (D4): The Industry Dimension  
\(^\text{179}\) ANNEX X: The New Schemes Report (D4): The International Dimension
**Recommendations: Marie Curie programme design and delivery**

To design and maintain a **common database of all actions under the Marie Curie label** which captures key characteristics of the programme’s beneficiary population so that evidence can accumulated about the extent to which the Actions are attaining desired targets and achieving certain policy goals. Key characteristics could include type of Action/Fellowship, career stage, gender, nationality, sector, type of host institutions, start year, course duration, thematic panel, etc.)

To increase **programme coherence and visibility** by providing a more integrated Marie Curie Fellowship Scheme, comprising fewer separate action lines, with greater unity of criteria and commonality of rules, and more continuity through the successive Framework Programmes.

Greater **flexibility in the choice of Fellowship options** (deadlines, duration, possibility of shuttle mobility, etc.) to allow for a better fit with the researchers’ needs, faster response times, and reliable start dates.

Offer a wider **choice of implementation options** to suit the diverse situations of researchers and host organisations, rather than a “one-size-fits-all” approach.
10.0 SUMMARY CONCLUSIONS

The conclusions are taken from the main chapters of the report and each group of conclusions is summarised (in bold) under the different impact categories and taken to the Executive Summary.

10.1 THE SCIENCE IMPACTS

The science impacts determined in Chapter 3 are summarised as follows:

- The scientific output impacts include the quality of knowledge produced, which is rated highly, particularly in academia (although “time to do research” impacts do not match supervisory expectations), the execution of research that would not be covered elsewhere in the FP and significant scientific output impacts in terms of the volume and quality of research and the volume of publications (although the standard of publications is not seen to be particularly high). Publication outputs have eased since FP5, particularly for ESRs and supervisors would like more time to do research.

- The longer the Fellowship duration, the larger the impact, both for FP5 and FP6 Fellows. However, in general, the longer the duration the less time a fellow will spend with the supervisor and the lower the probability that Fellows will be satisfied with the number of hours.

- The interdisciplinary impacts include increased channels for researcher knowledge and information exchange, particularly in international fellowships. Interdisciplinary knowledge transfer has been strong, particularly in industry, and the engagement in research with a higher interdisciplinary component has been high; ESRs in particular indicated their appreciation for the fact that the research they did was highly interdisciplinary. Supervisors and Fellows also indicated an important impact of the scheme to be that projects are implemented which would not otherwise be funded under FP6, although this might involve mono-disciplinary projects also.

- The networking impacts which include an increase in the international component of researchers’ work, along with their networks, which augur well for long term impacts and the large number of new and durable research and professional contacts made by Fellows. This underpins the significant network formation impact of the Scheme, along with Cross border networks, which are reported to show reasonable sustainability.

- Dissemination impacts were also consistently positive, both for supervisory and FP5 and FP6 Fellow respondents.

The science impacts of the Marie Curie Actions, in the form of the quality and quantity of research outputs are rated highly. Publication outputs have eased since FP5, particularly for ESRs. The extent of scientific impacts correlates with Fellowship duration. Interdisciplinary knowledge transfer has been strong, particularly in industry, and the engagement in research with a higher interdisciplinary component has been high; ESRs in particular indicated their appreciation for the fact that the research they did was highly interdisciplinary. Dissemination has been consistently positive in FP5 and FP6. Longer term impacts are underpinned by the large number of new and durable research and professional contacts made by Fellows.
10.2 THE TRAINING AND CAREER DEVELOPMENT IMPACTS

The training and career development impacts determined in Chapter 4 are summarised as follows:

- The training and mentoring impacts include significant positive impacts on advanced research skills, enhanced researcher autonomy, the development of complementary skills and the quality of supervision, contributing to the ERA skills base and boosting career prospects. Accessing better research facilities, which is also positive, is a more significant consequence of the fellowship for researchers from candidate countries than for those from the EU as a whole. The MCAs have allowed researchers, including early stage researchers (ESRs) to be better trained in the most advanced methods, and Fellows appreciate being placed in an international cultural environment where they can work with multi-disciplinary teams and acquire a wider social and cultural base. Whilst the awareness of ethical issues remains low, it is increasing and mid-career researchers have experienced the most significant impacts. The MCAs have delivered an increased awareness of the social impact of research, especially amongst industry Fellows. Structures for ESR supervision and mentoring are more informal than formal as interdisciplinarity requires more fluid and flexible approaches.

- The research career impacts include publication outputs, which have eased since FP5 but increase with Fellowship duration, and evidence of worldwide knowledge outcomes is widespread. The impact on research careers improves with Fellowship duration and is stronger in Southern Europe. Recent changes have made it easier for those with partners and children and improved career options. Public research institutes and industry have been the employers to gain most from employment sector mobility in the most recent period, at the expense of the university sector. The MCAs have not improved the administration and employment of researchers, except in some smaller Member States, but most former fellows are now on permanent contracts. In fact, a significant impact on contract permanence, salaries and working condition is reported by Fellows and on career progression as a whole. In terms of professional responsibility level expectations, these have not increased with length of service, but there is an increased perception of success relative to peers amongst FP5 Hosts and FP6 Fellows.

- The evidence shows that ESRs are fully engaged in the transfer of interdisciplinary knowledge between research fields and the impact on their channels of knowledge and information exchange is considerable. They have also participated in the substantial advanced methods training impacts. ESR supervision and monitoring is sometimes informal and ESR views about supervisory and host management competence are mixed.

Significant positive training and development impacts have been seen in the form of advanced research skills, enhanced researcher autonomy, the development of complementary skills and the quality of supervision, contributing to the ERA skills base and boosting career prospects. The MCAs have allowed researchers, including ESRs, to be better trained in the most advanced methods. Fellows rate highly the fact that they are in an international cultural environment where they can work with multi-disciplinary teams and acquire a wider social and cultural base. The impact on research careers improves with Fellowship duration. Recent changes have made it easier for those with partners and children and improved career options. In terms of professional responsibility level expectations, these have not increased with length of service, but there is an increased perception of success relative to peers amongst FP5 Hosts and FP6 Fellows. ESRs are fully engaged in the transfer of interdisciplinary knowledge between research fields and the impact on their channels of knowledge and information exchange is considerable.
10.3 INNOVATION AND KNOWLEDGE TRANSFER IMPACTS

The innovation and knowledge transfer impacts determined in Chapter 5 are summarised as follows:

- The characteristics of Fellowships in industry and academia are often quite different in terms of the benefits of the training (e.g. Academia was stronger on maintaining research links and Industry experience more likely to result in a permanent contract). Some 80% of respondents who were at a company host site during their fellowship indicated that they collaborate with industrial partners in their current job, whereas the same was indicated by only 25% of respondents at an academic host organisation.

- The inter-sectoral collaboration impacts include the fact that MCAs have enabled knowledge to flow into innovative activities, including patenting, commercial exploitation and new company creation. However, this is mainly in industry and it is unlikely that the MCA stimulates sufficient industrial involvement for the ERA objectives to be addressed directly as collaboration with industry is given a low priority in academia as a whole. Although private sector contacts are not seen to be significant in terms of the inter-sectoral collaboration impact of the Scheme, with little evidence of industrial or commercial results, Supervisors report progress in industrial collaboration, knowledge transfer and innovation and the case study evidence supports this.

- Overall, the flow of knowledge into innovative activities has been reported as the strongest by those Fellows hosted in industry, particularly Information Science and Engineering panel Fellowships. However, although the experience and expectations of involvement in collaborations with industrial/commercial partners are very high in ToK-IAP, there are low expectations of innovation impacts such as patents, commercialisation and enterprise creation and even collaboration with industry emerging from respondents' views.

The innovation and knowledge transfer impacts are affected by the different characteristics of Fellowships in industry and academia, both in terms of training benefits and in terms of future collaborations: some 80% of respondents who were at a company host site during their Fellowships indicated that they collaborate with industrial partners in their current job, whereas the same was indicated by only 25% of respondents at academic host organisations. Innovative activities, including patenting, commercial exploitation and new company creation were mainly found with industry Fellowships, especially Transfer of Knowledge (ToK) Fellowships, but there were low expectations of innovation impacts such as patenting and commercial exploitation.

10.4 INTERNATIONAL IMPACTS

The international impacts between Europe and the rest of the world, determined in Chapter 6, are sometimes difficult to extricate from transnational impacts within the borders of a wider Europe, but are summarised as follows:

- The networking impacts which include an increase in the international component of researchers’ work, along with their networks, augur well for long term impacts and the large number of new and durable research and professional contacts made by Fellows. This underpins the significant
network formation impact of the Scheme, along with Cross border networks, which are reported to show reasonable sustainability.

- The transnational impacts include a net “brain circulation” in favour of the EU, although with some lack of resources and prohibitive recruitment, this could combine to encourage ‘remigration’. Transnational impacts have been underpinned through the development of research contacts, particularly in academia. There has been greater transnational mobility, as well as inter-research organisational mobility, but with just a hint that some Fellows in leading EU countries might have gone abroad or moved organisation or sector anyway.

- The evidence for the greater internationalisation of research is positive. The incidence of new researcher contacts was at least as high as in the previous study; job securing effects were reported by some 40% of FP4 Fellows and an increasingly high level of contacts in more recent Fellowships have been secured or is expected.

Network formation has already been mentioned as a science output, but it is also a component of the international impacts through researcher engagement with leading world class teams. The evidence suggests there has been a net international “brain circulation” with Europe being central along with the underpinning of transnational impacts through the development of research contacts, particularly in academia. The evidence for the greater internationalisation of research is positive. The incidence of new researcher contacts was at least as high as in the previous study and an increasingly high level of contacts in more recent Fellowships has been secured or is expected.

10.5 STRUCTURING IMPACTS

The structuring impacts, determined in Chapter 7, are summarised as follows:

- Poor grant administration appears to be the most prominent of several negative views which emerged from those Fellows who commented on management and supervision at the host institution. Whilst supervisory time is reported as sufficient by FP6 Fellow respondents, training quantity was not rated particularly highly. “On the job” training is perceived to be better than formal training and training quality is rated more highly than quantity in each case.

- In terms of structuring impacts, public research institutes and industry have been the employers to gain most from employment sector mobility, at the expense of the university sector. Whilst involvement with the MCAs has not improved the administration and employment of researchers, except in some smaller Member States, most former fellows are now on permanent contracts and a good number of those supervisory respondents who gave an opinion reported more than a small improvement in the types of contract awarded (53%) and in the working conditions of workers at their institute (31%). Structures for ESR supervision and mentoring are more informal than formal as interdisciplinarity requires more fluid and flexible approaches.

- A significant impact on contract permanence, salaries and working conditions is reported by Fellows and on career progression as a whole. Fellows in the chemistry panel seem to report the largest salary impact and those in the social sciences panel the least.

The structuring impacts are mixed. On the one hand, significant impacts relating to contract permanence, salaries and working conditions were reported by Fellows and career
progression impacts were positive. This was especially true in Associated and OECD countries, where salary progression was high on average and contrasted with the low impact in the EU 10, EU 15 and Candidate countries as a whole. On the other hand, Involvement with the MCAs has not improved the administration and employment of researchers, except in some smaller Member States, and poor grant administration appears to be the most prominent of several negative views which emerged from those Fellows who commented on management and supervision at the host institution. However, a good number of those supervisory respondents who gave an opinion reported more than a small improvement in the types of contract awarded (53%) and in the working conditions of workers at their institute (31%), with some of these reporting a significant improvement and this is evidence of the positive structuring impact of the Scheme. Many structures for ESR supervision and mentoring are more informal than formal, as interdisciplinarity requires more fluid and flexible approaches.

10.6 HORIZONTAL IMPACTS

The horizontal “impacts”, determined in Chapter 8, are summarised as follows:

- Although a “typical” Fellow does not have much meaning in terms of the home location characteristics of supervisory and fellow respondents, it can be said that the majority, ranging from about 60% (Former FP6 Fellow respondents) to 82% (Former FP5 Host Fellow respondents) are at early career stage and 13-24 months is typical Fellowship duration for the majority of Fellows in each category. Life Sciences is the dominant panel for all categories of respondent Fellow.

- Regarding gender balance, the participation of female Fellows in FP6 reached 37%, close to the targeted 40%. Current FP6 Fellow respondents increased from 37% females amongst Former FP6 Fellows to 47% for Current FP6 Fellows, although supervisors remain predominantly male. Candidate country respondents were 63% female. Female fellows coming from large corporations are underrepresented those coming from not-for-profit organisations are overrepresented.

- In terms of personal and family status, having a spouse or partner applies to about 50% of the Fellows, but having children under the age of 18 years is much less common. Overall, having a family appears to be more of an obstacle to Current FP6 Fellows than those before. There is a moderate degree of satisfaction about the level of family allowance in the Scheme. The obstacles facing researchers with relationship or parental obligations are seen to more as potential than actual and conditions have continued to improve, whilst remaining a challenge.

- There is a contrast between the views of supervisors and fellows regarding the salaries and allowances paid to Fellows during the Fellowship. Supervisors’ comments were negative and included the fact that salaries are often higher than the researchers whom they have to work with and that they take up too high a proportion of the budget. However, some Fellows were unhappy about the difference way in which the net value of the salary and allowances is calculated in different countries and the subsequent lower net amount received.

- Awareness of ethical issues, although low, is increasing and mid-career researchers Report the most significant impacts. Perhaps not surprisingly, Economic Sciences panel Fellow respondents are least likely to report an impact in terms of ethical awareness and ability to manage ethical issues.
- Similarly, the MCAs have delivered an increased awareness of the social impact of research, especially amongst industry Fellows, although the social return on investment is not known.

- Amongst supporting processes, evaluation criteria are seen to be transparent and fair by supervisory respondents, but there are concerns about efficiency and user friendliness in the application process, candidate quality, reviewer selection and the speed of response of the evaluation process, all of which have the potential to improve impacts. Help systems are viewed positively, but the open commentary suggests that there are several places where they could be improved. The administration burden is seen to be high and is the subject of much negative open commentary, which contrasts with the overall positive view of the programme.

- The awareness and prestige of the MCA makes an award attractive to aspire to. Marie Curie brand awareness in Europe is strong, but not in the US, where domestic priorities dominate. There is scope to broaden awareness of potential industry-academia collaboration. Fellows agree that peer awareness is high and are nearly all prepared to recommend the Scheme to others. The free commentary from Supervisors supports the view that the Marie Curie Fellowship scheme is held in high regard in Europe.

The characteristics of the Marie Curie population, all of which has been affected by horizontal issues, is made up of a majority of ESRs, from 60% (Former FP6 Fellow respondents) to 82% (Former FP5 Host Fellow respondents), and was about 40% female. Having a spouse or partner applied to about 50% of Fellows, but having children under the age of 18 years was much less common. The obstacles facing researchers with relationships or parental obligations were seen to more potential than actual and conditions have continued to improve, whilst still remaining a challenge. Supervisory respondents pointed out that Fellowship salaries were often higher than those of the researchers with whom they have to work and salaries took up too high a proportion of the project budget (they would prefer to see more spent on research and equipment). However, some Fellows were unhappy about the way in which the net value of the salary and allowances is calculated differently across beneficiary countries. Awareness of ethical issues and the social impact of research is still low, but both have been increasing in FP6. Evaluation criteria were seen to be transparent and fair by supervisory respondents, but there were concerns about efficiency and user friendliness in the application process, candidate quality, reviewer selection and the speed of response of the evaluation process, all of which have the potential to improve impacts. Help systems were viewed positively, but analysis of the open commentary suggests that there are several places where they could be improved. The administration burden is seen to be high and was the subject of much negative open comment, contrasting with the overall positive view of the programme. The awareness and prestige of the MCA made an award attractive to aspire to. Marie Curie brand awareness in Europe was strong, but not in the US, where domestic priorities dominate. Peer awareness was high and nearly all were prepared to recommend the Scheme to others.

10.7 A COMPARISON OF KEY IMPACT FINDINGS

The overall comparison of impact findings, determined in Chapter 9, is presented below and the five paragraphs in bold are copied into the Executive Summary.

There has been consistency of many impacts across FP4, FP5 and FP6, including several increases but, although the overall assessment of the MCA is definitely positive, the gap
between performance and overall need has widened since the previous impact assessment study (1994-2002), in terms of its contribution to the factors that determine “working effectively in science” from the viewpoint of supervisory respondents.

- Supervisors believe that the most significant contributions of MCA to working effectively in science are particularly the good facilities / equipment / infrastructure made possible, followed by financial resources and transnational research networks.

- Fellows place transnational impacts as the most important delivered by the MCA, followed by interdisciplinary and training & mobility impacts. Career impacts are seen to be a weaker feature, although FP6 Current Fellows report increases for all three type of impact: career progression, job options and salary progression.

- The overall view of Fellows about the Fellowship is sufficiently positive for nearly 100% of them to indicate that they would recommend it to others. They also indicate a very high level of awareness of the Fellowship amongst peers and colleagues.

Regarding the **FP5 to FP6 trends amongst statistically significant impacts**, several scientific outputs were weaker in FP6 (time with supervisor, quantity of research outputs, quality of publications) but a few career impacts were stronger in FP6 (salary progression and job options available).

Regarding the **early/later career stage emphasis amongst statistically significant impacts**, two scientific outputs (quantity and publications quality) were strongest with later stage researchers, as was inter-sectoral mobility, but skill development, research output quality, transnational mobility and job options impacts were stronger in the case of ESRs.

When the statistically significant impacts are differentiated by stages in the intervention logic, it can be seen that, whilst FP5 results were stronger on inputs and outputs, favouring longer term researchers as much as ESRs, FP6 results are seen to be stronger on expected outcomes, favouring ESRs on transnational mobility and job option outcomes.

The largest variation in statistically significant thematic panel impacts was in the Economic Sciences which, although weaker in several respects Fellows saw themselves as stronger in research output quantity and in developing networks. Chemical panel Fellows reported stronger “access to facilities” inputs and stronger salary progression and job options outcomes than those in other panels.

Whilst it is not possible to determine 95% confidence levels for an industry-academia sectoral analysis because the overall population of FP6 Fellows in each category (academia/industry) is not known, it seems likely that industry based Fellows development more complementary skills and engaged in more inter or multi-disciplined research and academia based Fellows were ahead on the quality and quantity of publications.

The very sparse evidence for additionality (based on the views of supervisors and IRG Fellows feedback) suggests that the overall additionality of the Marie Curie Fellowship Scheme is about two thirds (67%), either in terms of returnees to the EU or in terms of projects being funded which otherwise would not have been. There is evidence of some “leakage” in transnational mobility Fellowship targeting, both in terms of outflows and inflows, where a minority of
researchers have indicated that they would have made the moves anyway, sometimes in the leading EU Member States.
APPENDIX A: SUMMARY OF THE MAIN IMPACT ASSESSMENT FINDINGS

The main impact assessment findings are presented to follow the objectives of the study, as defined in the Interim Report of December 2008 (Deliverable D2, Chapter 2.3: The Objectives of the study). The findings in relation to the 30 key questions defined for the study are presented below under the appropriate objective:

- Researcher training and skills development
- Knowledge transfers: Networks and Collaboration
- Attractive careers – improving recruitment and retention
- Research Outputs
- ‘Structuring Effects’

Inserts from the statistical analysis of key variables are inserted from the Annex VIII to the report, just before the concluding paragraphs for each section, which are in bold type and carried through to the main text of the report.

RESEARCHER TRAINING AND SKILLS DEVELOPMENT

One of the core objectives of the MCAs is to increase the volume and quality of scientific ‘outputs’ in the European Union as the basis of competitiveness. The study will focus on the impact the Actions have had on improving scientific quality and the calibre of the skills base.\(^{180}\)

- Diversifying scientific skills base, including inter-disciplinarity.
- Broadening generic skills base, including management of ethical aspects, IPR, project management, communication, etc.
- Industry/academic collaboration.
- Social relevance, ‘usefulness’, impact and social return.

The impact on the ERA skills base

Q2: Have the actions increased the ERA skills base?

The Marie Curie Fellowship impacts on the ERA skills base through the acquisition of a wide range of skills by Fellows. These range from complementary skills to advanced research skills. Taking each in turn:

Regarding the acquisition of advanced research skills:

- 75% of all respondent Fellows report a significant impact.

\(^{180}\) Deliverable D2: Chapter 2.3 Objectives of the study: Researcher training and skills development, page 6
• 86% of those engaged in industry-academia collaboration reported a significant impact
• Associated Candidate countries were the most positive country grouping
• Both the duration of the fellowship and the intensity of the supervision significantly affect the
  likelihood of a Fellow to experience an increase in research skills.

Regarding the acquisition of complementary skills:

• Complementary skills acquisition was reported to be stronger in industry
• ENPI country Fellow respondents were the most positive.
• Former FP6 Fellows commented favourably on the quality of training and skills learnt
• Amongst mobility fellowship respondents (IEF, IIF and ERG), IEF supervisors were the most
  positive about the impact on skills diversification.
• Excellence Chairs (EXC) and Grant Holders (EXT) were active in training in the broader
  complementary skills, such as project management, how to structure a research paper,
  presentation and communications.

In contrast with industry, Marie Curie hosting in academia has led to different positive impacts, which
included skills and experience that contributed more in attracting research funding and more
significant training benefits in terms of knowledge deepening and skills acquisition.

Occasional examples of de-skilling of the partner or spouse were observed due to Marie Curie choices
and the “trailing spouse” phenomenon.

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<th>IMPACTS MEASURED</th>
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<tr>
<td>impact that your Marie Curie fellowship has had on: c. Developing advanced research skills</td>
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<tr>
<td>More experienced fellows were less likely to find a significant impact of the MCAC fellowship on their advanced research skills. The duration of the fellowship also seems to impact slightly but significantly on advanced research skills; the longer the fellowship, the larger the impact. This pattern is similar across FP5 and FP6 fellows; however mid-career FP6 fellows were somewhat more likely to report a significant impact than their FP5 counterparts.</td>
<td></td>
</tr>
<tr>
<td>Impact of MC on career: c. Developing advanced research skills</td>
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<tr>
<td>Most respondents reported a significant impact in terms of developing advanced research skills, although fellows within the economic sciences panel were the least likely to report such impact; the fellowship duration, the intensity of the supervision as well as the ability to make new contacts all seem to impact heavily and significantly on the respondent’s probability to report an impact.</td>
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Q2: The MCAs have had a significant positive impact on the acquisition of both advanced research skills and complementary skills by Fellows, particularly those in industry. However, the most experienced fellows are less likely to experience significant impacts and the longer the Fellowship the larger the impact. Fellowship duration, the intensity of the supervision as well as the ability to make new contacts all seem to impact heavily and significantly on the respondent’s probability to report an impact. Associated countries (advanced skills) and ENPI countries (complementary skills) report the highest impacts and supporting Actions have been active in supporting skills diversification.

The career benefit impacts of spending time in a different country

Q10: (orig): Do the researchers see the time spent in a different country as beneficial for their career?

Regarding the sources and destinations of Marie Curie Fellows:
- Most Fellows were in their home country before the fellowship and a large number of FP5 host Fellows (57.7%) and a smaller number of FP6 fellows (39.9%) returned to their former institution afterwards.

- Taking a longer view, the majority of Former FP4 Fellows (59.2%) had moved to a third institution and 66.6% said they were still involved in European Research, most (53.1%) having moved jobs once or twice since their Fellowship.

Survey evidence suggests that staying abroad as part of the Marie Curie Fellowship improves career prospects and job options.

- Nearly 25% of respondents who stayed abroad for over 3 months reported a very significant impact on their career progression.

- Less than 20% of those who did not stay abroad, or for a shorter period of time, reported such an impact.

- Those who stayed abroad for more than 3 months are significantly more likely to report an impact of the fellowship on their career progression and their job options.

Fellows from candidate countries are significantly more likely to do research that would otherwise be difficult to fund, thanks to the Fellowship, than fellows from EU countries.

Open comments by respondents give evidence of the diversity of ways in which career impacts are expressed, with new international contacts and networking uppermost. Several supervisors said that mobility eats into research time and detracts from research outputs, whilst Former FP6 Fellows mentioned family and partner pressures and Current FP6 Fellows social security and travel restrictions.

**Q10:** Fellow respondents report several moves in their career progression over time. Career and job option impacts are beneficial, but are not as strong as other impacts reported by Fellows. Anecdotal evidence suggests that family and partner pressures can make mobility difficult and impact on subsequent careers.

**The impact on allowing researchers to access better research facilities**

**Q11:** Have the actions allowed researchers to access better research facilities?

62% of all FP5 and FP6 fellows reported an impact of the fellowship in accessing better equipment to do research. Similarly to what was found previously regarding the ability that fellows had to do research otherwise difficult to fund, the fellowship’s impact on researchers’ access to better facilities varies greatly between EU fellows and fellows from candidate countries. EU fellows were 60% to report a significant impact, compared with over three quarters for researchers from candidate countries.

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<tr>
<td>Impact of MC on career: k. Access to high quality research equipment / infrastructure</td>
<td>The probability of reporting such an impact is only slightly lower for fellows at more advanced career stages; Chemistry panel fellows are much more likely to feel a significant impact in terms of access to new equipment, while mathematicians were the least likely to do so.</td>
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Q11: The impact on accessing better research facilities is positive and reported to be stronger for those in the chemistry panel (in contrast to the mathematics panel) and in candidate countries than in the EU as a whole.

The impact on allowing researchers to be trained in the most advanced methods

Q12: Have the actions allowed researchers to be better trained in the most advanced methods?

The overwhelming majority of Fellows believe the Scheme to have had a very strong impact on advanced methods training. Some 95% of respondent Fellows either ‘agreed’ or ‘totally agreed’ with the suggestion that the Scheme, ‘allows me to learn more advanced research methods’. There appears to have been a decline in the extent of this impact since FP5, but according to Fellow respondents, it remains high in absolute terms.

In their open comments, respondents tended to focus on more general training benefits rather than “advanced methods”, such as the lining up of the research with Fellows’ interests but, for Former FP6 Fellow respondents, the more frequent scientific output impacts cited included the acquisition of new techniques during the Fellowship.

It is clear from case study evidence that ESRs were involved with research teams from the start and that many of these teams were at the leading edge in their field. Supporting mentoring approaches were such that the scientific progress of ESRs was being constantly monitored and adjustments made.

Q12: The impact on allowing researchers to be trained in the most advanced methods has been substantial, even though it has eased slightly since FP5. There is evidence that ESRs have been involved with leading edge teams.

The impact on allowing researchers to undertake research within EU ethical guidelines

Q17: Have the actions allowed researchers to better undertake research within the ethical guidelines prescribed by the EU?

Some 35% of FP6 Fellow respondents perceived an improved awareness of ethical issues as a result of the Fellowship, a percentage somewhat lower than that of FP5 fellows (40%), which would tend to show a decrease in the fellowship’s effectiveness in promoting that awareness.

However, Fellows reported an increased awareness of ethical issues in industry where awareness is at a higher level than academia (33.3% vis a vis 29.6%) and where respondents reported that they had gained more awareness about the societal relevance of their research.

An increased recognition of the role that the Scheme plays over time can also be seen in the ability of Fellow respondents to take ethical issues into account in their research, where current FP6 Fellows reported the highest impact (28.1%). Looking at the different career stages of respondents, the evidence suggests that the most significant impact is on mid-career researchers and this has been broadly constant over FP5 and FP6.
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<tr>
<td>&lt;b&gt;...has made me more aware of ethical issues related to my research&lt;/b&gt;</td>
<td>Fellows from the Economic Sciences panel are the least likely to praise MCAC for its impact in terms of ethical awareness and ability to manage ethical issues.</td>
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Q17: The impact on the awareness of ethical issues has is still at a lower level than other impacts but about one third of Fellow respondents report that this increased for them, whether they were in industry or academia. The most significant impact is in mid-career for taking ethical issues into account in research. Economic Sciences panel Fellow respondents are least likely to praise MCAC for its impact in terms of ethical awareness and ability to manage ethical issues.

**The impact on researcher engagement with more inter-disciplinary research**

Q19: Have the actions allowed researchers to engage in research with a wider scientific basis (i.e. higher interdisciplinary component) than otherwise possible?

A majority of fellows reported that their research had a high degree of inter-disciplinarity or multi-disciplinarity. The highest levels can be seen in the “current FP6 fellows” category, where the proportion of “very high engagement” plus “high engagement” in these areas is 77.0%, compared with former FP6 Fellows (70.7%) and Former FP5 Host Fellows (71.7)\(^{181}\).

The evidence for increased interdisciplinarity is mainly with industry (78.8% of fellow respondents in industry gave a positive answer, compared to 72.8% in academia) and this is confirmed by industry based supervisory respondents, who give 6% more importance to the transfer of knowledge between research fields or disciplines.

The case study evidence suggested that inter-disciplinary research teams were common amongst ESRs and widespread (e.g. including the Excellence teams), even though the sample did not include many industrial collaborations, and brought beneficial effects in the form of novel insights in leading research areas accompanied by more informal research structures.

Q19: There has been a high engagement with inter-disciplinary research during FP4 and FP5 (above 70%) and the evidence from both Fellows and Supervisors is that it is stronger in industry than academia. There is evidence that Interdisciplinary teams which involve ESRs are widespread.

**The impact on the structures for ESR supervision and monitoring**

Q24: Do the actions have appropriate structures for early stage researchers, supervision and mentoring in place?

In terms of their professional career, the majority of Fellow respondents were at early career stage, ranging from about 60% (Former FP6 Fellow respondents) to 82% (Former FP5 Host Fellow

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\(^{181}\) Deliverable D3, Chapter 5.1.2: The views of fellows, Figure 29 and page 41.
respondents); 13-24 months being a typical Fellowship duration for the majority of Fellows in each category\textsuperscript{182}.

The typical ESR experiences a high degree of research autonomy and independence, some exposure to considering ethical issues, some 25% of their time in formal training, about 11% of their time in “on the job” training and are now more likely to spend less time discussing their Marie Curie project (about 1-4 hours per week) and more likely to be involved in industry collaborations than before.

**Q24: There is evidence that appropriate structures for ESR supervision and monitoring are in place, but more through informal rules and procedures that through formal structures. Interdisciplinarity puts pressure on formality and more fluid and flexible approaches are more in evidence. However, mentoring is still well controlled and typically involves both a scientific mentor and a personal tutor both at the receiving and sending institutions.**\textsuperscript{183}

**The impact on actions that enable knowledge to flow through to innovation**

\textit{Q26: Do the actions have appropriate and strategic actions to enable knowledge to flow into innovative activities?}

The survey evidence shows that the MCAs include examples of collaborations that enable knowledge to flow into innovative activities through patenting and commercialisation. Patenting, commercial exploitation and new company creation are much more prevalent with industry based hosts that with those based in academia by a factor of 3 to 4 times and overall these strategic collaborations showed a similar pattern in IMPAFEL2.

Comments by supervisors give some feeling for the obstacles there are to stimulating innovation through industry, such as industry preference for less bureaucracy and its difficulties in engaging with the MCAs. A general lack of appreciation by academia emerges and the views of Fellows support this.

The case studies identified several international, inter-disciplinary and inter-sectoral collaborations have developed, which have resulted in innovative ideas and new applications of knowledge.\textsuperscript{184}

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<tr>
<td>Have or will the results of your research as a Marie Curie fellow...</td>
<td>Fellowships relating to Information Sciences and Engineering were more likely than any other to lead to a patent owned by the host; Fellowships relating to Information Sciences and Engineering and Chemistry panels were more likely than any other to lead to a patent owned by the fellow; Fellows from large companies or international organisations are the most likely to work on a project leading to a patent owned by the host; the picture for fellow owned patents is similar although to a smaller extent.</td>
</tr>
<tr>
<td>Patents (host and own), commercialisation, enterprise</td>
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**Q26: The MCA examples that have enabled knowledge to flow through to innovation include patenting, commercial exploitation and new company creation and are much more prevalent with industry based hosts that with those based in academia by a factor of 3 to 4 times. Respondents with Fellowships in the Information Science and Engineering panel were more**

\textsuperscript{182} Deliverable D3, Chapter 2.2: Summary of the long term schemes report, page 19 (item 9).

\textsuperscript{183} Case Study 5: EST and the structuring effect: Relevance to the impact assessment

\textsuperscript{184} Case Study 1: Continuity Dimension (Long Term Career Impact): Conclusions and reflections on the evaluation questions.
likely than others to lead to a patent and Fellows from large companies or international organisations are the most likely to work on a project leading to a patent. A general lack of appreciation of industry by some in academia emerges from the evidence.

**The impact on industrial involvement that directly address ERA objectives**

**Q27: Do the actions have sufficient industrial involvement for the ERA objectives to be addressed directly?**

The extent of industrial involvement in the Fellowship programme has been limited, with only 18% of Fellows engaged in any form of industrial collaboration. For those who have completed Fellowships, 7.6% reported that patents have resulted from their work, which compares with 7% in IMPAFEL2. Obstacles to increased engagement with industry include the low priority given by academic supervisors in general and the related lack of industry specific training across the Programme.

The case studies show that effective industry collaboration in Marie Curie is often dependent on pre-existing good personal working relations and mediation. Academics do not always pursue applications, not having developed the necessary networks and preferring to stick with theory, even though some are prepared to acknowledge that the potential is there. In some disciplines, industrial collaboration is established and common.

The trend from FP4 to FP6 for former Fellows is for increased collaboration with industry, but starting from a low level¹⁸⁵.

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<tr>
<td>To what extent is this collaboration with industrial / commercial partners a result of your time as a Marie Curie fellow?</td>
<td>Information Sciences and Engineering related fellowships that led to patents were the most likely to be seen as (partly) the result of MCAC</td>
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</table>

**Q27: Although the evidence that Fellows placed in industry experience more enhanced skill acquisition, a more multi-disciplinary research and greater innovation impacts, the extent of industrial involvement in the MCA programme is limited (18%). A reluctance to engage with industry seems to be because this is often given a low priority by academia. Engineering related fellowships that led to patents were the most likely to be seen as (at least partly) the result of the MCAs**

**KNOWLEDGE TRANSFER: NETWORKS AND COLLABORATION**

*One of the key objectives of the MCAs is to promote a wide range of forms of transnational mobility as a mechanism to support knowledge transfer processes and internationalisation*¹⁸⁶.

*The study will consider the extent to which the Actions support the mobility of skills and knowledge and the extent to which they foster new forms of collaboration and networking that may then have an impact over a longer period.*

¹⁸⁵ Deliverable D3, Chapter 7.7: Summary: intersectoral-collaboration, page 54
¹⁸⁶ Deliverable D2: Chapter 2.3 Objectives of the study: Knowledge transfers: Networks and collaboration, page 7
The IMPAFEL study drew attention to the persistence of active and effective networking and collaboration post-Marie Curie funding.

The continuation element of this study will provide an opportunity to assess the longer term impact in this respect.

The impact of researchers acquiring a wider social and cultural base

Q13: Have the actions benefited researchers from acquiring wider social and cultural base?

In IMPAFEL 2, Fellow respondents clearly appreciated the international cultural environment in which they were placed, affording opportunities to work with multi-disciplinarity teams in different research cultures and enabling fellows and their host groups to take more risks and develop innovative approaches, thereby contributing to their reaching scientific maturity and becoming independent researchers and the same has been true in the more recent MCAs.

Former FP5 Host Fellows attached particularly high value to the acquisition of complementary skills, some of which are related to the acquisition of a wider social and cultural base in the international setting of the Fellowship, such as management, communications, language, intellectual property rights, research ethics, etc. Ratings were highest in the ENPI (80%) and Candidate country (77%) respondents and lowest in the case of Associate country respondents (51.8%).

Amongst the Marie Curie Excellence Actions, improvements in career skills in the areas of initiative taking, issue resolution, communications, leadership and training were reported by a large majority of EXC and EXT respondents, with doctoral level researchers in EXT reporting a high level of impact on leadership skills.

The comments by Former FP5 Fellows suggest that the acquisition of a wider social and cultural base was one of the most important factors, as it is also for Current FP6 Fellow respondents.

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<th>IMPACTS MEASURED</th>
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<tr>
<td>Impact of MC on career: e. Developing complementary skills, such as language skills, management, communication skills etc.</td>
<td>The level of experience is negatively correlated to the respondent's probability to report an impact of the fellowship on acquiring complementary skills; Here too, Fellows from the Economic Sciences panel were the least likely to report such impact; the duration of the fellowship as well as the intensity of the supervision are both highly correlated with the perceived impact of MCAC on developing complementary skills.</td>
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</table>

Q13: Fellow respondents clearly appreciated the international cultural environment in which they were placed, affording opportunities to work with multi-disciplinarity teams in different research cultures and enabling fellows and their host groups to take more risks and develop innovative approaches and a wide range of complementary skills.

The impact on the researchers' international work and their networks

Q14: Have the actions increased the international component of their work, and their network in general?
Although the impact of the Marie Curie Fellowship on transnational research networks came high on the list of potential impacts (4th out of 14), regarding factors that are important to working effectively in science supervisors ranked them at a low level (13th out of 14 factors).

The small “gap” (about 10 percentage points) between the importance of the transnational networking factor and the Marie Curie impact suggests that Fellowship transnational networking effects have had more impact on effective working in science than some other factors, even though the gap has increased since IMPAFEL 2. It is the international experience that networking brings that is the real benefit and new and durable research and professional contacts are the channels through which long term impacts are seen to be underpinned.

Econometric analysis suggests that making new contacts increases dramatically and very significantly the probability of improving Fellows’ career prospects.

Between the different country groups, the contribution of the Fellowship to increasing the international component of researchers’ work and networks is seen to be particularly significant by ENPI countries (95% rating), whose researcher respondents are one of the leading groups in maintaining links with their home country.

Amongst those Actions with an international flavour, IOF respondents report the most strengthened transnational research networks, along with the strongest knowledge transfers between organisations, whilst IEF supervisors report the strongest continuation of these networks along with the strongest knowledge transfers between researchers.

Positive international mobility and networking impacts were reported in the open comments of many supervisory and fellow respondents and negative comments on this aspect were very few.

Q14: The MCA brings international experience for Fellows, who then get engaged in networks and build new and durable research and professional contacts. These in turn become the channels through which long term impacts are underpinned. The impact of the MCAs on the international research component is particularly significant in Fellows from the ENPI countries and IOF and IEF respondents report strong knowledge transfers. Econometric analysis suggests that making new contacts increases dramatically and very significantly the probability of improving Fellows’ career prospects.

The impact on researcher channels of knowledge and information exchange

Q15: Have the actions increased the channels by which researchers can exchange knowledge and information?

In the current study, the extent to which researchers can exchange knowledge and information is seen to have strengthened during FP5 and FP6 and has been the most important factor in the formation of durable relationships with former research and professional contacts.

Amongst the international Fellowship respondents, stronger knowledge transfer between researchers is particularly appreciated by IEF Fellow respondents. Knowledge transfer between organisations was highest for IOF Fellow respondents, whereas the IIF have a stronger focus on knowledge transfer from third countries to Europe.
Channels for the exchange of knowledge in industry are focused more on collaboration and the exploitation of results than in academia, with an even higher level of interdisciplinarity. Supervisory respondents from industry rated this interdisciplinary transfer of knowledge between research fields was rated some 6% more highly than academia respondents.

Supervisory respondent spoke highly about researcher/knowledge exchange impacts. Negative comments focussed on the fact that mobility is time consuming and detracts from the contributions that Fellows could make if there was less travel.

Case study evidence shows that, through their contributions to publications and their involvement in conferences and similar events, ESRs were given many opportunities to exchange knowledge, experience and information. New contacts with peer group researchers at different levels developed during their EST tenure and there is evidence of sustained working relationships from supervisors as well as the appreciation of the beneficiaries themselves.

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| Impact of MC on career:  
Developing contact with and/or knowledge of other research disciplines | Economic Sciences panel fellows tend to develop more interdisciplinary and transnational networks than all other fellows, but are also those who develop the least interdisciplinary knowledge as a result of the fellowship. |

Q15: Channels of knowledge and information exchange have continued to strengthen in FP5 and FP6 and have been particularly noticeable amongst international Fellowship respondents. The transfer of interdisciplinary knowledge between research fields was rated by industrial supervisory respondents to be some 6% higher than those in academia. ESRs seem to be fully engaged with this process and the impact on their channels of knowledge and information exchange is considerable. Economic Sciences panel fellows tend to develop more interdisciplinary and transnational networks than all other fellows, but are also those who develop the least interdisciplinary knowledge as a result of their fellowship.

ATTRACTIVE CAREERS: RECRUITMENT AND RETENTION

The contribution of MCAs in terms of\(^{187}\):

- Retaining scientific excellence and potential in the EU (and encouraging return).
- Making Europe a more attractive location to third country scientists.
- Encouraging younger people within the EU to further their science careers (growing our own).

The study will also look at some of the distributional and inclusivity issues identified in the Charter and Code, focussing on the impact of the actions on these aspects:

- The representation of women.

\(^{187}\) Deliverable D2: Chapter 2.3 Objectives of the study: Attractive careers, improving recruitment and retention, page 7
• **The relationship between personal circumstances and mobility (including family circumstances but also disability).**

• **Balanced growth: The effect of the scheme on the relationship between mobility and scientific development especially in less favoured regions (and new Member States) and third countries.**

**The impact on the career options for researchers**

**Q4: Have the actions improved the career options for researchers?**

The percentage of respondents who reported a significant impact of the MCAC fellowship on their job options has gone up from FP5 fellows (less than half) to FP6 fellows (55%). The duration of the fellowship is positively correlated with the likelihood of reporting a significant impact.

Three quarters of the fellows who were academia prior to the MCAC fellowship stayed at university after the fellowship, while 12% only went on to work for industries. The opposite is not true: nearly 70% of the respondents who were working for large industrial groups prior to the fellowship went on to work in universities afterwards.

All categories of Fellow respondent in the current study report that the impact on career progression (and hence job options) is significant. The increase in job options as an impact of the Fellowship appear to highest in certain South of Europe countries (Spain, Romania and Italy), but Greece and Poland also figure highly in the most important responding countries.

In examining the increased job options available to Fellows in the current study relative to past experience from an inter-sectoral viewpoint, the findings show that, whilst there has been significant inter-sectoral mobility as a result of the Fellowship, and this is seen to be growing in importance, the increase in the proportion of Fellows moving to industry has been small.

The open comments of both supervisors and fellows regarding career option impacts were very positive. Two Fellows had had career continuity problems when returning to their home country after their Fellowships.

The provisions for maternity leave, the removal of age criteria, and the provision of support for family mobility coupled with more flexible approaches to fellowships together extend opportunities and increase access to the Scheme to a wider range of researchers including those with partners and children. As such it improves the career options to these groups of researchers who are often ill-catered for in traditional schemes.

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<tr>
<td>Impact on the increase in the number of job options: g. Increasing the number of job options available to you</td>
<td>The impact of the MCAC fellowship on job options seems be lower the more advanced fellows are in their careers (both FP5 and FP6); the perceived impact has improved substantially from FP5 to FP6 fellows, at all career stages. Chemistry and Environment and Geosciences panel scientists report a larger impact on average than social scientists</td>
</tr>
<tr>
<td>Impact on enabling inter-sectoral mobility: How important has the Marie Curie fellowship been in terms of enabling your inter-research organisation mobility?</td>
<td>MCAC's impact on intersectoral mobility has somewhat decreased from FP5 to FP6 fellows, albeit more so for fellows in their mid-careers (83% of FP5 and 68% of FP6 reported an impact)</td>
</tr>
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</table>
Q4: The impact on career options improves with the duration of the Fellowship, although it is also lower the more advanced fellows are in their careers. The perceived impact has improved substantially from FP5 to FP6, at all career stages. Chemistry and Environment and Geosciences scientists report a larger impact on average than social scientists. The impact appears to be stronger in Southern Europe and, although inter-sectoral mobility has been growing, it has somewhat decreased from FP5 to FP6, albeit more so for fellows in their mid-careers (83% of FP5 and 68% of FP6 reported an impact) and the net flow is away from industry and towards academia. Provisions for maternity leave, the removal of age criteria, and the provision of support for family mobility coupled with more flexible approaches to fellowships together improve the career options to these groups of researchers who are often ill-catered for in traditional schemes.

**The impact on the attractiveness of a scientific career as a researcher**

Q5: Have the actions improved the scientific career as a researcher more attractive overall?

The Fellowship’s impact on career progression seems to have improved from FP5 to FP6: 57% of FP5 respondents reported a significant impact, a proportion that went up to 63% for FP6 respondents, who are in much higher numbers, making the trend all the more robust.

The evidence from statistical analysis shows that the duration of the Fellowship is positively correlated with the significance of the impact perceived: the longer the fellowship, the more likely the respondent to report a significant career impact.

Supervisory respondents mentioned how the following factors had increased the attractiveness of careers: better prospects back in the Fellow’s home country (4 mentions), in the host institution (2), academia (1) and industry (1). The great opportunity being offered to researchers (6) is mentioned and several commented on the growth in researcher reputation through Marie Curie (5), particularly mentioning that this would go with them to their home country or next post.

Beneficiaries from other MCAs give evidence of the impact of the Fellowship on the attractiveness of research careers through their high level of support for the view that it has helped them in their future career prospects (EXT).

The case studies confirmed that Marie Curie Fellowships are prestigious and the conditions of the Marie Curie Fellowships were mostly regarded as highly attractive. For their duration, they certainly made research careers more attractive. The main problem identified was the general insecurity of research careers and the extent to which it enabled fellows to progress in a research career varied.

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<td>Salary progression: Please rate for each of the following, the degree of impact that your Marie Curie fellowship has had on your career... i. Salary progression</td>
<td>Chemistry panel fellows seem to report a larger impact of the fellowship on their salary progression than most, while fellows in social sciences are much less likely to report an impact; far from having decreased from FP5 to FP6 fellows, the likelihood of reporting a significant impact has actually increased, and this is true at all career stages</td>
</tr>
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</table>

Q5: No direct measurement of the attractiveness of a research career was made during the study, but it could be said to be a function of how Fellows find their early stage researcher experience and how the career prospects look to them during the Fellowship. The study evidence shows that the longer the fellowship, the more likely the respondent to report a significant career impact. The conditions and prestige of the Marie Curie Fellowships make an
award attractive although some insecurity can be found in terms of future career progression and there are clearly extraneous factors operating on research career attractiveness. Those in the chemistry panel seem to report a larger impact on their salary progression than most, while those in social sciences are much less likely to report an impact.

The impact on the brain drain momentum

Q6: Have the actions reduced the brain drain momentum?

The views of Supervisors from the current survey about significant transnational impacts of the scheme include the international experience that this brings and, to a slightly lesser extent, transnational networking. Fellows are of the same view, with current Fellows attributing an increased impact on both aspects compared with former Fellows from FP4 to FP6. In terms of transnational mobility and inter-research organisational mobility, the impact of the scheme is seen to be important, with a hint that Fellows would have gone abroad or moved organisation or sector otherwise.

The phenomenon of the brain drain to countries outside Europe seems to be modest among the group of respondents. 4% of respondents from European Member States were living outside Europe after the Marie Curie fellowship. The percentage of respondents from ICPC and ENPI countries that moved to a third country was 26% and 24% respectively.

Many current FP6 fellows are still unsure about their future location; some expected to return to their previous institution and a similar proportion expected to remain at the host institute.

The patterns of repeat and shuttle mobility identified in the case study sample coupled with the continued value of international networks take the emphasis away from the mobility dimension of the fellowship itself to consider its impact on the building and exchanging of scientific expertise. This encourages us to examine the whole concept of ‘embodied’ forms of brain circulation and think instead about the cumulative effect of mobility combined with disembodied flows. Viewed in this way the Marie Curie fellowship scheme can be seen to have a very positive impact on both the individuals concerned but also on the ‘sending countries.

Many fellows are leaving the new Member States and other countries because of the lack of scientific positions and opportunities. If they did not leave they may well have to abandon scientific research altogether or work for no pay. This is not a sustainable alternative to mobility.

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<td>Impact on mobility movements (where came from compared with present country)</td>
<td>The probability of an impact of MCAC on fellows’ transnational mobility decreases as the fellow’s experience increases (significant at the 5% level)</td>
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Q6: The brain drain to countries outside Europe seems to be modest among the group of respondents, with only 4% of respondents from the EU living outside Europe after the Marie Curie fellowship. Many current FP6 fellows are still unsure about their future location.

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188 Deliverable D4, Chapter 3.3.1: Mobility aspects, page 43.
189 Deliverable D3, Chapter 2.2: Summary of the long term schemes report, page 17 (item 2).
190 Case Study 4: New Member States and the issue of inclusion and brain circulation: Conclusions and reflections on the evaluation questions
However, it seems more useful to look at brain circulation as a whole and in a “virtual” way where considerable benefits accrue to both individuals and sending institutions. The probability of an impact of MCAC on fellows’ transnational mobility decreases as the fellow’s experience increases (significant at the 5% level)

**The impact on the brain gain momentum**

Q7: **Have the actions improved the brain gain momentum?**

23% of all FP5/FP6 respondents who were living outside the EU before the fellowship were living in the EU when being surveyed, meaning the EU retained nearly a quarter of incomers.

The vast majority of Fellow respondents to the current survey (80%) indicated that they valued the support of the Marie Curie fellowship in enabling their move to a different country, particularly those in non-European countries such as ICPC and OECD. The IRG was instrumental for a good number (65.4%) of beneficiary respondents in encouraging return to Europe.

Respondents from ICPC and ENPI country groupings were most likely to have changed countries as a result of the fellowship, even though they were also the least likely to have been living in their home country before the fellowship. The evidence suggests that there has been little brain gain by EU15 through flows from EU10 on account of the Fellowship.

There is a high level of appreciation for the contribution of the Marie Curie Excellence Actions in attracting leading researchers back to Europe, including from places like the USA (EXT) and this has been followed by a high level of success in keeping respondents in their home country, the EU or an AS for their next job (also EXT). ERA-Link schemes have proved to be a positive influence in reinforcing the brain gain momentum in Europe.

In their open comments Former FP6 Fellow respondents mentioned that the Fellowship had facilitated a return to Europe (3 respondents with different types of Fellowship). One Current FP6 Fellow respondent also said that it had facilitated a return to the EU.

The case studies illustrate that several fellows are seeking to return to their home country because of the lack of scientific positions and opportunities in other countries, but have faced difficulties. Some migrants express a long term desire to return (sometimes referred to as the ‘myth of return’), often on retirement. Individuals in the case study sample have gone beyond that to actually return and actively seek to reintegrate but the combination of lack of resources and prohibitive recruitment systems often combine to encourage a ‘remigration’.

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Q7: The brain gain appears to be stronger than the brain drain in the context of the Fellowship, with the EU retaining circa 25% of incomers. The IRG was instrumental in the case of more than 65% of beneficiary respondents, encouraging them in their return to Europe. Supporting Actions, such as the Excellence Actions, have also been a positive brain gain influence. However, lack of resources and prohibitive recruitment systems often combine to encourage a ‘remigration’.
The impact on addressing the EU gender balance objectives

Q8: Have the actions addressed the gender balance objectives of the EU?

The gender of respondents shows that the proportion has been gradually moving towards parity since FP4, except in the case of supervisors:

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<tr>
<th>Category of respondent</th>
<th>Female</th>
<th>Male</th>
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<tbody>
<tr>
<td>Current FP6 Fellows</td>
<td>47.00%</td>
<td>53.00%</td>
</tr>
<tr>
<td>Former FP6 Fellows</td>
<td>36.70%</td>
<td>63.30%</td>
</tr>
<tr>
<td>Former FP5 Host Fellows</td>
<td>46.50%</td>
<td>53.50%</td>
</tr>
<tr>
<td>Former FP4 Fellows</td>
<td>47.00%</td>
<td>53.00%</td>
</tr>
<tr>
<td>Supervisors</td>
<td>36.70%</td>
<td>63.30%</td>
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The extent to which MCAC fellowships benefit men and women equally is unclear. However, econometric and statistical analyses tend to suggest that female beneficiaries are significantly likely to experience the following impacts:

- More likely to acquire greater awareness of ethical issues as a result of the MCAC fellowship
- More likely to benefit from the fellowship in terms of their advanced research skills as well as the quality and quantity of their research outputs
- More likely to experience a significant improvement in job options and career prospects as a result of the fellowship.

Source: Survey statistics and Commission reports
The averages across FP6 are closer than the individual types of Fellowship, the % of female fellows in the population being 37% and in the survey being 41%. The higher % of female respondents amongst Current FP6 Fellows has already been noted.

The population analysis shows that the MCAs in FP6 fell slightly short of the targeted 40% female researcher participation at 37%. Amongst respondents the % has risen significantly between Former and Current FP6 Fellows. It is encouraging to note that 47% of FP6 Current Fellow respondents were female and, interestingly, these FP6 Current Fellows as a whole reported that having a family was more of an obstacle than FP6 Former Fellows. There were even more female respondents in the Candidate countries (63.3%) and an even balance in the OECD countries (46.9% male). There was also an even balance amongst EXT respondents, but amongst the Marie Curie Conference and training courses, attendance was predominantly male, with a low proportion of females in keynote/speaker roles.

Female participants continue to be under represented in the ERA Links, although at senior researcher and post doctorate levels there is a more even gender balance in the US and China ERA Link countries. The MCFA has been active in stimulating policy change and related action to improve the gender balance in the MCAs.

The case study evidence is supportive of some or the above findings measures referred to above will help to ensure that men and women are able to compete on an equal footing, but believes that more innovative and flexible approaches to mobility and internationalisation are required to ensure that the ‘institutionalisation’ of mobility does not constitute an emerging form of indirect discrimination limiting the opportunities of those with caring responsibilities.

Q8: The population analysis shows that the MCAs in FP6 fell slightly short of the targeted 40% female researcher participation at 37%. Amongst respondents the % has risen significantly between Former and Current FP6 Fellows. It is encouraging to note that 47% of FP6 Current Fellow respondents were female and, interestingly, these FP6 Current Fellows as a whole reported that having a family was more of an obstacle than FP6 Former Fellows. There were even more female respondents in the Candidate countries (63.3%) and an even balance in the OECD countries (46.9% male). Case study evidence suggests that innovative and flexible approaches to mobility and internationalisation are still required to avoid the kind of “indirect discrimination” which limits the opportunities of those with caring responsibilities.

**The impact of Fellowship design on those with family obligations**

Q29: Have the actions been designed so that researchers with relationship or parental obligations have also been able to benefit from the opportunities?

From FP5 to FP6 there has been an increase in the incidence of Fellows being accompanied by partners (from 45% to 59%) and children (from 8% to 18%), which demonstrates that the improvement in mobility allowances and related changes has had a positive effect on the intake of Fellows.

Most respondents felt that having a family did not represent a significant obstacle. Having said that, around 16% of former FP5 and 22% of former FP6 indicated that it had been an obstacle to at least some extent.
The identification of family as a potential obstacle to participation in the scheme appears to be much greater amongst current fellows than former fellows. Excluding the ‘not applicable’ responses (predominantly people without partners or children) families presented obstacles for over 60% of respondents for whom the question was relevant.

Excluding the ‘not applicable’ responses (those with no family) reveals that former Fellows with families were either very satisfied (39.8%) or moderately satisfied (31.9%) with the family-related mobility allowance. Current FP6 fellows with families were also generally satisfied with the family-related mobility allowance: 43.8% were very or moderately satisfied.

It is the fellows rather than the supervisory respondents who offered open commentary on parental issues arising within the Fellowship scheme. Although comments about the Scheme as a whole were mainly positive, it is clear that long stays abroad are not well suited to family life. There were instances when those with partners were able to limit their international travel, but others were unable to get family support because marriage or the birth of a child came after the deadline.

Case study evidence suggests that the requirement for long international stays is likely to operate to the disadvantage of those researchers unable to exercise this form of mobility, constituting a form of indirect discrimination. However, the availability of generous maternity provisions and family allowances provides significant support to Fellows with children and helps to remove the perceived ‘risks’ of pregnancy and moving with children and there is no evidence to suggest that existing levels are inadequate.

Increasing recognition of more flexible approaches to mobility perhaps permitting shorter forms of ‘shuttle mobility’ and the ability to respond to evolving personal circumstances (such as partnering or parenting mid fellowship) would provide further support. Greater ‘tolerance’ of emerging life course events on the timing of planned return phases to recognise the needs of partners and children would also help.

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<tr>
<td>To what extent are you satisfied with the family-related mobility allowance provided under the scheme?</td>
<td>Fellows married and with children were more likely than others to report a significant help provided by the allowance</td>
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</table>

Q29: Although conditions has continued to improve for those with family obligations, and the proportion of Fellows in this situation has increased, it will always been a challenge for Fellows with partners and children. It is seen more as a potential than an actual obstacle, with current Fellows being generally satisfied with the family-related mobility allowance. There is bound to be an indirect discrimination against long international stays which suggests that more flexibility and shorter forms of “shuttle mobility” may be the way forward.

**RESEARCH OUTPUTS**

The MCAs are also designed to improve the quality of the research produced. As such, the study will look at the contribution of the MCAs in terms of 191:

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191 Deliverable D2: Chapter 2.3 Objectives of the study: Research outputs, page 7
- Increasing both scientific output and the quality of the outcomes.
- Leading to research with a higher social return on investment than otherwise possible.
- Allowing the researchers to undertake essential research in disciplines and areas that would not be covered by other parts of the Framework Programme.

**The impact on scientific output and outcomes**

**Q3: Have the actions increased both scientific output and outcomes?**

The extent to which the Fellowship has led to an increase in the rate of senior author publications has dropped from FP5 to FP6:

- Nearly 30% of respondents reported a significant increase in the rate of publications in FP5, but only 20% in FP6,
- The percentage of respondents reporting a stagnation in the rate of publications has increased from 11% to 23% between FP5 and FP6.
- 50% of FP6 respondents report a net increase in the rate of publications since being awarded the fellowship compared to 60% for FP5 fellows.

Regarding the factors affecting publication outputs:

- The more recent former Fellow respondents report a higher and widening Fellowship impact as the length of the Fellowship increases.
- Having Marie Curie Fellows in their research group has contributed in particular to the volume and quality of the scientific outputs is the majority view of respondent supervisors.
- Fellows themselves attribute the increase in publication output to being a more experienced researcher, although the proportion has declined since FP4.

The open comments of supervisors were positive (85%), highlighting the following scientific and related impacts: the contribution of Fellows and teams to the host institution (including wider organisational impacts, stimulating research teams, forcing the pace on the use of English and being good value for money), project related impacts and mentions of IP and dissemination as a result of hosting Fellows. FP6 Fellow respondents put the emphasis on publications, the value of the research support and personal benefits.

Case study evidence points to the fact that many international, inter-disciplinary and inter-sectoral collaborations have developed, which have resulted in innovative ideas and new applications of knowledge outcomes.
IMPACTS MEASURED | FINDINGS FROM ANALYSIS OF KEY VARIABLES
--- | ---
**Impact on VOLUME of publications:** Since your Marie Curie fellowship, your rate of publications has... | FP6 were less likely than FP5 fellows to report a significant impact of the fellowship in terms of their trend of research output; This is particularly true for early career fellows; Fellows in the Economic and Social Science panels were the most likely to report a significant impact (over 60%), while researchers in Life Sciences were the less likely to do so (less than 50%).

**Impact on QUALITY of publications:** To what extent have the skills learnt and developed during your Marie Curie fellowship contributed to your success in having articles published in journals of a higher standard? | FP6 were less likely than FP5 fellows to report a significant impact of the fellowship in the quality of their publications; This is only true for early career fellows, as mid-career FP6 actually report a higher impact than their FP5 counterparts.

Q3: The impact on the rate of senior author publications appears to have dropped since FP5, particularly in the case of ESRs, although publication outputs tend to increase with the length of the Fellowship and FP6 outputs have yet to reach maturity. Fellows in Economic and Social sciences were the most likely to report a significant impact on publication volume (over 60%), while those in Life Sciences were the less likely to do so (less than 50%). ESRs in FP6 were less likely than FP5 fellows to report a significant impact in the quality of the journals in which their publications appeared, but mid-career FP6 fellows report a higher impact than those in FP5. Beyond the hard outputs of publications, case study evidence points to many international, inter-disciplinary and inter-sectoral collaborations which have led to innovation and knowledge outcomes.

**The impact on the quantity and quality of knowledge production**

Q1: Have the actions increased the production and/or quality of knowledge produced for the ERA?

Having identified “time to do research” as the second most important factor in working effectively in science, the impact of the Fellowship (60% replying this to be important or extremely important) is a modest figure and may be being eroded by the degree of supporting administration needed. There is more appreciation of the impact on research time in industry, where longer term projects are supported that might not have been attempted elsewhere.

The evidence suggests that the impact of Marie Curie on the quality of research is perceived to be significant by 70% of respondents, rising to 80% for those in the 5 Candidate countries. The quality of research outputs is perceived to be higher the longer the Fellowship and to be higher in academia than industry, particularly in the large industry groups. There appears to have been little change in research quality since FP4. The profile of research quantity is similar to quality across the different groups.

Looking through the eyes of the Fellows on their own, some 67% reported at least a significant impact of the Fellowship on the quality of the research outputs and this is perceived by them to be higher in academia, as well as the quality of journals in which this research output appears. Fellows in country grouping other than the EU Member States value the quality of research outputs more highly than those in the Member States themselves.

There is good supporting case study evidence for publications being key elements of Marie Curie Fellowship research outputs, including contributions by early stage researchers and by those involved
in the Excellence Actions, with some outputs going beyond this through having patents, spin offs and policy level impacts.

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<tr>
<td>How much time per week do you spend discussing your Marie Curie project with your supervisor or other researchers in your group?</td>
<td>FP6 Fellows in their early careers or at mid-career were significantly less likely to spend over 9 hours a week with their supervisors than FP5 fellows, and much more likely to spend just 1 hour a week with their supervisors (late careers too small a sample to extract robust info); The fellowship’s duration is negatively correlated with the time spent with a supervisor: The longer the fellowship, the less time/weeks the fellow will spend with his/her supervisor (correlation coefficient -.151); The finding that FP6 fellows spent on average less time/week than FP5 fellows with their supervisors is observed in all sectors, whether the fellows come from Universities, public/private research or private companies.</td>
</tr>
<tr>
<td>Do you feel you have sufficient time to discuss your research with your supervisor?</td>
<td>FP5 fellows were more likely to be satisfied with the number of hours spent with their supervisors than FP6; The longer the fellowship, the lower the probability that the fellows will be satisfied with the number of hours spent with their supervisors, and both findings are consistent through all sectors (Univ, research) and through both levels of experience (early &amp; mid).</td>
</tr>
<tr>
<td>impact that your Marie Curie fellowship has had on: ......f. Improving the quality of research outputs</td>
<td>More experienced fellows were less likely to find a significant impact of the MCAC fellowship on the quality of their research outputs. The duration of the fellowship also seems to impact slightly but significantly on the quality of the research outputs: the longer the fellowship, the larger the impact. This is observed for both FP5 and FP6 fellows.</td>
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</table>

Q1: The quantity of publication outputs has been commented on and case study evidence shows that ESRs contribute actively to these. Supervisory respondents rated “time to do research” as a key factor in working effectively in science (and hence no doubt to quality), but although the Fellowship contribution is appreciated, it does not quite match up to these high expectations. However, the quality of research is rated highly by respondents, the higher the longer the Fellowship, and to be generally higher in academia than industry.

Q1: With regard to time spent with a supervisor, the longer the duration the less time a fellow will spend the supervisor (correlation coefficient 0.151). FP6 fellows spent on average less time/week with their supervisors than FP5 fellows and this is observed across the sectors: universities, public/private research or private companies. FP5 fellows were more likely to be satisfied with the hours spent with their supervisors than those in FP6; the longer the fellowship, the lower the probability that the fellows will be satisfied with the number of hours; both findings being consistent through all sectors and across both ESRs and mid-career researchers.

Q1: More experienced fellows were less likely to find a significant impact of the fellowship on the quality of their research outputs. The duration of the fellowship seems to impact slightly but significantly on the quality of the research outputs: for both FP5 and FP6 fellows the longer the fellowship, the larger the impact.

The impact on researcher engagement with research which has a higher social ROI

Q18: Have the actions allowed researchers to engage in research with a higher social return on investment than otherwise possible?
FP5 and FP6 fellow respondents report an increasing awareness of the social impact of their research, with 63.7% current Fellows in agreement, although it may have not changed much since FP4.

Whilst 47.5% of FP5 and FP6 Fellow respondents in industry “agree” that the Fellowship has had an impact of their awareness of their research on society, this compares with only 40.8% in academia.

Q18: The closest the study has come to measuring social return is to note the increased awareness of the social impact of research, with which some 64% are in agreement. Industry based Fellows have experienced more of an impact on the awareness of their research on society than those in academia.

**The impact on allowing research that would not be covered elsewhere in the FP**

Q20: Have the actions allowed researchers to undertake essential research that would not be covered by other parts of the respective Framework Programme?

Because the Fellowship scheme is so broad, embracing all scientific disciplines, but grouped under certain main disciplines, there is an opportunity to undertake research that would not be covered by other parts of the respective Framework Programmes (FP4, FP5 and FP6).

Supervisors of one or more Marie Curie fellows were asked to rate to which extent the Marie Curie scheme had led to the funding of projects that would not be otherwise covered under FP6. Of the 1,594 supervisors who answered this question, over two-thirds thought there had been a positive impact (38.1% ‘to a significant extent’ and 30.6% ‘to a certain extent’).

With regard to the differences across the thematic panels, supervisors from mathematics and social sciences particularly appreciated the Marie Curie scheme for this reason, whereas supervisors in information sciences and engineering and in economic sciences thought there had been less impact on this particular aspect.

With regard to the different sectors, and compared to universities, respondent supervisors from companies declared a more positive impact of the presence of the fellows in their groups on the possibility to fund projects which could not otherwise have been funded. In fact, the Marie Curie fellowship allowed companies to undertake more medium or long term research activities, often in collaboration with universities or public research centres, than would normally have been acceptable for company management\(^{192}\).

Within each macro-discipline there has been a range of success rates in submitting Marie Curie proposals, from 7% for Pharmaceutical Sciences, 10% for Architecture, Educational Sciences. Communication Science and Philosophy, to 21% for Psychological Sciences, 23% for History and Language Sciences, and 24% for Neurosciences (not considering percentages of groups of less than 10). The overall average for all Marie Curie proposals in FP6 was 19%

Q20: Some two thirds of supervisors felt that the Fellowship scheme had had an impact on undertaking FP6 research that would otherwise not have been carried out, which illustrates the

\(^{192}\) Deliverable D4, Chapter 2.3: Summary observations, Industry dimension, page 20.
additionality of the Marie Curie Scheme. Supervisors from mathematics and social sciences particularly appreciated the Scheme for this reason, whereas those in engineering and in economic sciences thought there had been less impact. The Fellowship allowed companies to undertake more medium or long term collaborative research activities than would normally have been acceptable for company management. Success rates averaged around 19% across the panels.

STRUCTURING EFFECTS

The MCAs are designed to have both an immediate, direct, impact on the scientists and institutions involved and a more diverse and indirect 'structuring effect'. This structuring effect can be defined as the impact the scheme has on policy developments in other schemes and at national level. ‘Brand awareness’ is an important component of this. The structuring effect will only achieve optimal impact if the Actions are associated with high value, prestige and reputation.

The sufficiency of stakeholder support to create brand awareness

Q30: Have the actions generated sufficient broad support by the EC and participation institutions to create a brand awareness that promotes European mobility and scientific excellence?

84.3% of respondent supervisors reported some degree of awareness of the Marie Curie scheme in their field, with over half (53.3%) reporting that their peers were ‘very aware’. Almost three quarters (74.6%) reported a ‘high’ or ‘very high’ level of prestige attached to the Marie Curie scheme in their field.

The Scheme can be said to have had significant awareness and prestige impacts. Supervisor perceptions are ones of a significant level of peer awareness and a high level of Scheme prestige. Fellows agree that peer awareness is high and are nearly all prepared to recommend the Scheme to others. The free commentary from Supervisors suggests that the Marie Curie Fellowship scheme is held in high regard in Europe.

Some of the open comments from Fellow respondents suggest that awareness of the Scheme (and its detailed content) could be better amongst their scientific peers, where the impact is exacerbated by poor publicity both at European level and locally.

Excellence Chairs (EXC) and grant holders (EXT) reported that there was awareness and appreciation of the Marie Curie brand and it was seen as a mark of excellence and carried with it prestige. This was reported to be strongest in Europe, extending to all countries eligible for Marie Curie support, but less so in the US where the focus is much more on the national scene.

Going forward there could be concern about the diffusion of the strong Marie Curie brand name when other programmes (such as ERC ideas) are seen to be follow-up initiatives. Whilst the ERC is seen, by those who are aware of its existence, to have some attractive features, there is evidence of concern of the lack of a transnational mobility component.

193 Deliverable D2: Chapter 2.3 Objectives of the study: Structuring effects, page 8
194 Deliverable D5: The Marie Curie Excellence Actions: Section 1.3: The Excellence Grants
Based on the industry-academia collaboration interviews, there appears to be some scope to broaden awareness of Marie Curie Fellowships in industry and to develop greater awareness of the scope for industrial-academic collaboration.\textsuperscript{195}

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<th>IMPACTS MEASURED</th>
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<tr>
<td>My peers / colleagues in my field are aware of the existence of the Marie Curie scheme.</td>
<td>Over 2/3 of respondents would agree that their peers are aware of MCAC, and this is consistent through all career stages. Awareness has also increased significantly from FP5 to FP6 fellowships.</td>
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Q30: The main message on brand awareness is that it is highly visible in Europe, carrying with it a high level of prestige, but barely known in the US, where the focus is on national schemes. Over 2/3 of respondents through all career stages agree that their peers are aware of the Marie Curie Fellowship Scheme and awareness has increased significantly from FP5 to FP6. The new ERC scheme is seen, by those who are aware of its existence, to have some attractive features and there is evidence of concern of the lack of a transnational mobility component which Marie Curie has. The current peer group awareness, which is strong, appears to be through internal promotion by the Fellows themselves. There appears to be scope to improve publicity, to broaden awareness of Marie Curie Fellowships in industry and to develop greater awareness of potential industrial-academic collaboration.

OTHER WIDER IMPACTS

The impact on researcher flows between participating countries and stakeholders

Q9: Have the actions led to appropriate balanced flows between the participating countries and stakeholders?

Public research institutes and industry were the employers to gain most from employment sector mobility from the university sector (especially Former FP5 Host Fellow respondents). Although the majority of FP4 fellows continued to work in the university sector, the results indicate there a greater degree of inter-sectoral experience and exposure to the private/industrial sectors compared with FP5, including a fairly high level of inter-sectoral mobility post-fellowship. However, Former FP6 experience was much closer to that of FP4.

The impact of the Fellowship on mobility flows is evidenced by the high level of importance attributed to transnational and inter-research organisation mobility, although impact on the latter has dropped slightly from FP5 to FP6. Most FP4 Fellows felt that mobility made possible by the Fellowship had aided career progression. FP5 and FP6 Fellows reported that the Fellowship had been important in enabling inter-sector mobility.

Gaining experience in a different country was important or very important for ICPC respondents (87.5\%) and by OECD respondents (87.1\%). Additionality was slightly reduced in the case of Respondents from the EU 15, S&T and Associated countries, who were slightly more convinced that they would have been able to go abroad even if they had not received a Marie Curie fellowship (some

\textsuperscript{195} Case Study 2: Industry-Academia Collaboration: Conclusions and reflections on the evaluation questions.
10% to 11%). In a similar way, 21% of IRG beneficiaries responded that they would have returned to Europe without the grant.

Although only 25% of the 12 Former FP5 Fellow respondents’ views on industry/academia aspects were positive in the open commentary, the overall direction of the views of the same respondents was evenly balanced. Two reported that the Fellowship led to valuable knowledge about working in industry, but another two found the opposite; one saw likely patent outcomes; in another case, these had been abandoned.

Case study evidence shows that return moves facilitate critical capacity-building opportunities. In practice many of these are sustained by and reliant upon continued European funding of one form or another. The findings underline the value of taking a longer term view of fellowship-related mobility and network-building making it possible to identify long term impacts.

This evidence also suggests that the Fellowships have not reduced the brain drain momentum or improved the brain gain momentum as such. Neither can they, in themselves generate balanced flows between Member States. On the other hand, there is evidence that the funding of researchers in the new Member States and other smaller or less developed research systems through the Marie Curie scheme is creating significant potential for capacity-building in those countries. Whether that potential is harnessed or not really depends on the economic situation and the political priorities of the countries concerned.

Q9: The flows between countries has not been measured, but public research institutes and industry were the employers to gain most from employment sector mobility from the university sector, especially Former FP5 Host Fellow respondents. Although the majority of FP4 fellows continued to work in the university sector, the results indicate there a greater degree of inter-sectoral experience and exposure to the private/industrial sectors compared with FP5. It seems that the Fellowships have not reduced the brain drain momentum or improved the brain gain momentum as such. Neither can they, in themselves, generate balanced flows between Member States.

The impact on establishing the better internationalisation of EU research

Q16: Have the actions created any sense of permanence to the better internationalisation of research in the EU?

Evidence from the current study suggests a slightly higher incidence of new researcher contacts made during the Fellowship by FP 6 Fellows (87.3% Current to 90% Former) than was the case in IMPAFEL 2 (86%).

Job securing effects from contacts established during the Fellowship are reported by 40.7% of former FP4 Fellows and a reasonable incidence of maintained contacts with all or most contacts since the Fellowship is reported by former FP5 Host Fellows (48.5%); even more by former FP6 Fellow respondents (62.5%). 79.1% of current FP6 Fellow respondents expect contacts made to continue after the Fellowship.

The contacts of academia located fellows are more durable than those based in industry and the focus is different (exchange of knowledge, new ideas and co-authoring)
The Excellence Actions provided a source of new contacts in support of internationalisation, including strengthened contacts for future research activities (EXC, EXT). In the EXT case, doctoral (88.6%) and Basic Studies (75%) grant holder respondents gave the highest instances of new contacts made.

In the case of conferences, the majority of LCF respondents (94.7%) reported significant new contacts, particularly researchers who actively participated as keynote speakers or with poster presentation. The focus at SCF was findings contacts that might lead to work abroad in the future.

Several respondent supervisors mentioned the importance of internationalisation impacts in their open commentary, characterising these in different statements. FP5 and FP6 Fellow respondents reflected the same views including international contact development and the likelihood of future collaborations.

Q16: The evidence for the greater internationalisation of research is positive. The incidence of new researcher contacts was at least as high as in the previous impact assessment study (1994-2002); job securing effects were reported by some 40% of FP4 Fellows and an increasingly high level of contacts in more recent Fellowships have been secured or are expected. Academic contacts are more durable and of a different nature than those in industry. Supporting actions have allowed ongoing contact development.

The impact on improved administration and researcher employment

Q21: Have the actions engaged stakeholders to improve the administration and employment of researchers?

Supervisory respondents gave a strong indication that the Fellowship has had little impact on improving the administration and employment of researchers, although there is evidence of a modest improvement in the types of contract awarded to researchers and of some improvement in working conditions.

With regard to improvements in contract conditions, most Fellows reported that they had moved from temporary to permanent contracts following involvement in the Scheme. In the case of former FP4 Fellows, almost 80% now have permanent contracts, with nearly 50% being in their present position for 5-10 years.\(^{196}\)

All categories of Fellow report that the impact on career progression is significant, whilst the beneficial impacts on the number of job options and salary progression have increased for current FP6 Fellows. Supervisors are clearly concerned about Fellows’ salary levels and a few have suggested that would prefer some of the funds to be diverted for use by host institutions.

The European Charter and Code has paved the way for applying fair and transparent working conditions and career progression rights for researchers across Europe. It is considered relevant for the improvement of the researchers’ working conditions, even though some stakeholders see it as somewhat bureaucratic.

Whilst a high degree of frustration is evident from some of the supervisory respondents about the administration and bureaucracy surrounding the MCAs, the 68 negative views expressed represent less than 4% of the 1,817 supervisors who responded to the survey. It would seem from the

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\(^{196}\) Deliverable D3, Chapter 2.2.2: Summary of the long term schemes report, page 18 (item 7).
comments that for greater simplicity in the rules governing the implementation of Marie Curie would meet some of the negativity expressed.

The evidence from the few EST supervisors interviewed during the case study suggests that the MCAs improved the administration and employment of researchers, but mainly in the smaller EU Member States and through some transfer of knowhow from industry in one case. At least one organisation overhauled its administrative system to handle the funding and employment of researchers, although this no doubt went beyond Marie Curie to include other EU funded programmes.197

Q21: Supervisory respondents gave a strong indication that the Fellowship has had little impact on improving the administration and employment of researchers. With regard to improvements in contract conditions, most former Fellows reported that they had moved from temporary to permanent contracts. A few examples were found where MCAs had improved the administration and employment of researchers, but mainly in the smaller EU Member States.

The consistency of MCA impacts across FP4, FP5 and FP6

Q22: Have the actions developed any effects which are persistent across FP4, FP5 and FP6?

When the "gap" between the “importance of the factor to working effectively in science” and the “significance of the Marie Curie impact on that factor” is plotted for both IMPAFEL2 and the latest survey to see to what extent the "gap" has changed since IMPAFEL2, it is possible to get a view on as to what extent the Fellowship scheme continues to be of relevance to the key factors identified.

Only in the case of the “research competence” factor has the gap reduced since IMPAFEL 2, although in the case of the following factors there has been little change: ability to attract excellent researchers, relation with team members, financial resources, autonomy/independence and facilities/equipment/infrastructure.

The gap has increased since IMPAFEL 2 in the case of the following factors: international experience, transnational research networks, reputation of the institute, building a research group and time to do research.

Overall, there would appear to be an increasing gap in the impact of Marie Curie since IMPAFEL 2 on the key factors affecting effective research, according to supervisory respondents, although the result may be influenced by question structures.

Whilst this is a comparison across impact assessment periods, rather than between FP4, FP5 and FP6, it serves to show where there has been convergence in terms of impact consistency and where there has been some divergence.

An analysis of the open commentary shows that respondent comments on career, mobility, networking and collaboration impacts were consistently positive, whilst those relating to administration and bureaucracy and Fellowship management by supervisors and hosts were consistently negative.

197 Case Study 5: EST and the structuring effect: Relevance to the impact assessment
Q22: The comparisons across FP4, FP5 and FP6 show particular consistency in the case of the following impacts in the sense that the “gap” between what supervisors believe is the Scheme contribution and the related “working effectively in science” factor has not changed since IMPAFEL2: the ability to attract excellent researchers, relation with team members, financial resources, autonomy/independence and facilities/equipment/infrastructure. However, this gap has increased since IMPAFEL 2 in the case of: international experience, transnational research networks, reputation of the institute, building a research group and time to do research, all of which are targeted impacts of the MCA. An analysis of the open commentary shows that the body of comments on career, mobility, networking and collaboration impacts were consistently positive, whilst those relating to administration and bureaucracy and Fellowship management by supervisors and hosts were consistently negative across FP5 and FP6 survey respondents.

**The appropriateness of the targets for achieving the greatest impact**

**Q25: Do the actions have appropriate targets for the demographics of the research community where greatest impact can be achieved?**

With regard to attaining the targets for research community demographics, the gender balance of 37% for the FP6 population as a whole is 92.5% of the 40% target and the ESR population who were awarded RTN Fellowships in FP6 was 64.53%, which is 81% of the targeted 80%. Targets for LFRs and thematic domains are not known.

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<tbody>
<tr>
<td>Look at relationship of gender with sector variables</td>
<td>Female fellows coming from large corporations are underrepresented those coming from not-for-profit organisations are overrepresented.</td>
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</table>

**Q25:** With regard to attaining the targets for research community demographics, the gender balance of 37% for the FP6 population as a whole is 92.5% of the 40% target. In addition, the ESR population who were awarded RTN Fellowships in FP6 was 64.53%, which is 81% of the targeted 80%. Targets for LFRs and thematic panels are not known. Statistical analysis shows that female fellows coming from large corporations are underrepresented and those coming from not-for-profit organisations are overrepresented.

**The appropriateness of the evaluation and selection processes**

**Q23: Do the actions have appropriate processes for evaluation and selection in place?**

There was a convergence of view between industrial and academic supervisors about the evaluation process in the current study, with some 67% replying that they thought the criteria were transparent and 67% that they were fair. Industrial supervisors thought that the evaluation process was less efficient than those in academia.

Additional concerns about the evaluation procedures cited by supervisors in the open commentary includes weak candidate quality (9 mentions), the inadequacy of the process (8), the quality of the referees/reviewers (5) and the long time taken to undertake an evaluation (3).

The pilot sample survey was limited to IEF scheme applicants, but it provides some evidence that 70% unsuccessful applicants felt they had access to information about the scheme and at least half through the evaluation procedures were transparent (circa 58%) and fair (circa 50%).
However, views about the efficiency of the process were not so positive, which has some resonance with the very strong negative view about the administrative load in engaging with Marie Curie, which emerges from the comments of the FP6 supervisors.

Whilst Commission staff see the evaluation process for individual Fellowships as transparent, fair and appropriate, it is acknowledged that the proposal assessment process continues to take a long time, partly because it has become more complex. Monitoring is reported to be difficult due to budgetary constraints, the lack of time and frequent changes in project officials.

Q23: There was a convergence of view between industrial and academic supervisors about the evaluation process, with some two thirds replying that they thought the criteria were transparent and fair. Industrial supervisors in particular thought that the evaluation process was less efficient than those in academia. Additional concerns included weak candidate quality (9 mentions), the inadequacy of the process (8), the quality of the referees/reviewers (5) and the long time taken to undertake an evaluation (3). Commission staff acknowledged that the proposal assessment process continues to take a long time, partly because it has become more complex.

The sufficiency of the Help Systems at different levels

Q28: Do the actions have sufficient Help Systems at host, regional, national, international and EU level?

Q28: Respondents give Help Systems a positive rating overall (75% positive answers), although an analysis of the survey open comments reveals examples of inadequate support at European, national and local host organisation levels. Potential sources of information about the projects themselves through project websites seems to be weak, seemingly constrained by the size of project, by internal allocation of budget monies and by the low priority given to communications by many researchers. However, the operational use of project websites is appreciated, as even the smaller projects see the utility of the site as a presence for a wide range of users, and a platform for project documents.
APPENDIX B: IMPACTS BY TYPE OF FELLOWSHIP

Annex IX gives an analysis of the impacts by type of fellowship, comparing FP6 Former and Current Fellows only and differentiating between the 5 Host Fellowships and the 5 Individual Fellowships and fully supported by figures. The findings are summarised as follows:

SKILLS AND KNOWLEDGE DEVELOPMENT

The differentiation of skills and knowledge development impacts is summarised as follows:

- There is a high level of agreement amongst Fellows about the contribution of the Fellowship to advanced research methods learning, with an average of 87% agreeing or totally agreeing with the statement.

- The level agreement between FP6 Former Fellow respondents about the contribution of the Fellowship to deepening their knowledge of their particular research field was very high at an average of 94%.

- The views of FP6 Fellow respondents about the contribution of the Fellowship to permitting research for which it is usually difficult to find funding are less positive than for other contributions with an average of 67% in agreement or total agreement.

- The contribution of the Fellowship to greater awareness of ethical issues related to Fellows’ research was reported as low by respondents at 33%. However, Current FP6 Fellows have indicated a higher appreciation (36%) than Former FP6 Fellows (30%).

- The contribution of the Fellowship to increasing the ability of FP6 Fellows to take ethical aspects into account in their research was given a very similar average rating by respondent fellows to that of ethical awareness at 33%. The overall profile between the Fellowships was similar and again, FP6 Current Fellows were the most positive.

- The contribution of the Fellowship to the impact of Fellows’ research on society was rated more highly than ethical aspects, with an average level of agreement or total agreement of 61% amongst Former FP6 Fellows and 66% amongst Current FP6 Fellows.

- The average level of inter/multi-disciplinarity in the research carried out (or being carried out) during their Fellowship is seen by 72% of Former FP6 Fellows and 80% of Current FP6 Fellows to be high or very high.

- The impact of the Fellowship on the ability to engage in inter-disciplinary research is reported as significant by 47% of Former FP6 Fellows and 50% of Current Fellows; in the latter case, respondents were asked compare it with their previous training.

The skills and knowledge development impacts as reported by FP6 Fellow respondents are particularly strong across all types of instrument in deepening knowledge in their research field (94%), advanced research methods (87%) and in multi-disciplinary research (72-80%).
Interestingly, the Fellowship impact on the ability to engage in inter-disciplinary research is more moderate (48%), as is its impact on Fellows’ research on society (63%). Awareness of ethical issues (33%) and the ability to take ethical issues into account in research was low (also 33%) was marginally higher amongst FP6 Current Fellows.

MOBILITY

The differentiation of mobility impacts is summarised as follows:

- The average “important and very important” rating of the impact of the Fellowship on enabling trans-national mobility was 81-82% for FP Fellow respondents as a whole. There was a greater convergence of the views of Current and Former FP6 Fellows than in several other types of impact.

- The impact of the Fellowship on enabling inter-research organisation mobility was rated as “important or very important” by an average of 75%; average Current FP6 Fellow ratings being 5% higher than those of former FP5 Fellow respondents.

- The final of the 3 mobility impacts, sectoral mobility scores a lower “important and very important” rating average amongst all Fellows, ranging from 55% (Former FP6 Fellows) to 60% (Current FP6 Fellows).

The mobility impacts as reported by FP6 Fellow respondents are clearly in the following order of importance: enabling trans-national mobility (81-82%), enabling inter-research organisation mobility (75%) and sectoral mobility (55-60%). There was convergence between former and Current Fellows regarding trans-national impacts, and a slightly stronger rating by Current Fellows for the other two types of mobility impacts.

CAREER DEVELOPMENT AND JOB SATISFACTION

The differentiation of career development and job satisfaction impacts is summarised as follows:

- Former FP6 Fellows were asked to rate the improvement in their position and 51% of ERG Fellow respondents rated the change in their positions as significantly higher. Across the programme as a whole, the Host Fellows were the least likely to report significant progress (around 10%).

- Relative to their research peers, just over half (53%) of those still in science felt that their career progression had been more successful than their peers. Others reported that they were either just as successful or less successful (a small minority)

- International experience was the first of 11 areas where respondents were asked to rate the degree of impact that the fellowship had had on a Fellow’s career. The average rating of a “significant and very significant” impact was 81%, with Current FP6 Fellows (82%) just ahead of Former FP6 Fellows (79%).

- The significant and very significant ratings regarding the impact on autonomy and independence average 73% and show a different pattern than for some other types of impact.
The ERG Fellow respondents are some of the most positive and, along with IOFs, give returned ratings of about 87%.

- The “significant and very significant” impact of the Fellowship on the **development of advanced research skills** averages about 70% and there is little difference between the two groups of respondents: Former and Current Fellows. Fellowships supporting ESRs are positive (nearly 80%), but ToK Fellowships are several point weaker (around 55%), particularly Former FP6 ToK-IAP Fellows (53%).

- The “significant and very significant impact” on **developing contacts with researchers** from (and knowledge of) other research disciplines is one of the more modest impacts at an average rating of 65%, with Current FP5 Fellow (68%) respondents again rating the impact more highly than Former Fellows (63%). However, the ratings of Former FP6 IRGs Fellows (42%) and ERG Fellows (49%) are some way behind others.

- The career impact of **developing complementary skills** is quite positive for all Fellowships (average rating of 66%), but this would be higher were it not for a very low rating from IRG Fellow respondents, where the 19% rating of Former FP6 Fellows and the 40% rating of Current FP6 Fellows drags down the overall impact.

- The “significant and very significant” career impacts in **improving the quality of research outputs**, which average around 65%, also show a marked difference in the case of one Fellowship type (ToK-IAP), where Former FP5 Fellows give only a 35% rating.

- The “significant and very significant” ratings for the Fellowship impact on **increasing the number of job options** is not strong in the case of Former FP6 Fellows (46%), but rises to 57% for Current FP6 Fellow respondents. Those FP6 Former Fellows with ToK and ERG Fellowships report the lowest impacts (circa 33%).

- The different “significant and very significant” Fellowship impact ratings on **career progression** between Former FP6 Fellows (60%) and Current FP6 Fellows (69%) may well have been influenced by the fact that it is rather early to ask this question of the Current cohort. The profile between the types of Fellowship is similar to that of job options, with Former FP6 ToK respondents posting the weakest impact ratings (about 44% on average).

- Apart from IRG and ERG respondents, FP6 Current Fellows as a whole (48%) report a significantly higher average Fellowship impact than Former FP6 Fellows (31%) on **salary progression**, possible reflecting in part the improvements of the MCA since FP5. Again, for some current Fellows, there is still an "expectation" element, whereas for Former Fellows, they have now found out in practise what the change has been.

- Views on the Fellowship career impact on **developing transnational research contacts** shows the ratings of IRG and ERG respondents catching up with those of others in moving from average FP6 Former Fellows’ ratings (66%) to FP6 Current Fellows (73% average).

- **Access to high quality research equipment/infrastructure** impact ratings were modest and averaged 51% for Former FP6 Fellow respondents and 59% for Current Fellows. The shape of the impact profile is similar to that of transnational impacts, but the overall average rating is lower (55% compared with 70%).
The highest career development and job satisfaction impacts as reported by FP6 Fellow respondents included international experience (80%), autonomy and independence (73%) and the development of advanced research skills (70%). In the centre ground were developing complementary skills (66%), developing contacts with researchers (65%), career progression (65%) and improving research output quality (65%). Lower impacts included accessing high quality research infrastructure (55%), making more career progression than their peers (53%) and increasing the number of job options (51%). The latter was higher for Current Fellows (57%), as it was for salary progression (48% Current; 32% Former).

CONTACTS AND NETWORKS

The differentiation of contacts and network impacts is summarised as follows:

- When the “non applicable” responses are removed there is a reasonably strong intention to continue to maintain active research links with “home” country researchers by both FP6 Fellow respondents (average 72.5%) and FP6 Former Fellows (74.5%).

- There were no “Not applicable” options in this question and the results show a strong Fellowship impact in the form of making significant new research and professional contacts during Marie Curie. There is a consistency across the types of Fellowship and strong convergence between both former and current fellows. Individual fellowships (upper 80s) show a slightly stronger trend than host fellowship (lower 80s).

- Whilst new contacts have been made, the intention to stay in contact with all or most of them is lower (66%). This may not be surprising, and is actually a very good result, because the opportunity to reply “I am still in contact with some of them” was also an option. As in the case of making new contacts, Individual fellowships (mid 70s) show a stronger trend than host fellowship (mid 50s), possibly reflecting the higher level of independence and motivation of individual fellows.

FP6 Fellows respondents are very positive about making significant new research and professional contacts through the Fellowship (85%) and demonstrate strong intentions to continue active research links with home country researchers (72.5). Intentions to stay in contact in general is a little weaker (66%) and overall, individual Fellows give firmer indications than host Fellows about maintaining their contacts and networks.

SCIENTIFIC AND OTHER OUTPUTS

The differentiation of scientific and other output impacts is summarised as follows:

- The ratings reflect the degree to which the durability of the new research and professional contacts made during Marie Curie has increased to a significant extent and although the figure is low (average 22%), perhaps this is realistic. Again, individual fellowship respondents return a stronger rating than host fellows (26% and 16% respectively) and the ToK respondents offer the least rating (10% to 12%)

- Six possible reasons were mooted for an increase in the number of publications and the averages across these showed that having become a more experienced researcher was the most
important reason (52.9% responses), followed by the skills and knowledge gained (44.9% responses):

- In responding to questions about how the skills learnt and developed during Marie Curie contributed to success in have articles published in journals of a high standard, the degree to which the individual fellows (excepting IRGs) reported “to a significant extent” (circa 35%) was much higher than Host fellow respondents (circa 23%).

- The individual Fellowship respondents give a more positive view (average 39%) than the hosted Fellowship respondents (average 17%) about the contribution of Marie Curie acquired skills to success in obtaining research funding. Responses from all Fellowship types are below 50%, with IOF the highest (45%) and ToK-AIP the lowest (16%).

FP6 Fellows ratings of the important of scientific and other impacts are low. The view that Individual Fellows are likely to have more durable research and professional contacts is reinforced (25% vis a vis 16% for host Fellows), and they hold a stronger view than host Fellows about their success in having articles published in journals of a high standard (35% vis a vis 25% for host Fellows). Increases in the number of publications are seen to be a function of becoming a more experienced researcher (59%) and of the skills and knowledge gained (45%).

INDUSTRY-Academia KNOWLEDGE TRANSFER AND COLLABORATION

The differentiation of industry-academia knowledge transfer and collaboration impacts is summarised as follows:

- The responses are somewhat in line with the way the Fellowships are designed, with ToK-IAP being the most positive about whether or not the Fellowship provided training in industry-related issues, because this Fellowship is designed around industry-academia. However, the hopes of Current FP6 Fellows are a factor of 2 times the realities expressed by Former FP6 Fellows, which illustrates that in practice the time spent on internship or having experience in industry is not living up to expectations.

- There is nevertheless slightly stronger evidence of involvement with collaborations with industry and convergence between Former FP6 and Current FP6 Fellows as to the likelihood or experience of this, at least in ToK-IAP (both around 47%). Interestingly, IOF is against the trend of a more positive view from Current FP6 Fellow respondents, who show a sharply lower expectation (2%) than Former FP6 Fellows (12%).

- Expectations and experience in relation to specific training on industry relevant issues is low, but much higher in the ToK-IAP Fellowship (Former FP6 Fellow respondents 26%; Current FP6 15%) than in others, where it is in the 5-10% range. Again, the expectations of Current Fellows are higher (9%) than Former Fellows (7%) overall, except amongst ToK-IAP and IOF respondents where the reverse trend is strong.

- This shows the reverse side of the coin in that it looks at the expectations or involvement of respondents about getting any experience in industry-related issues during their Fellowship. All figures are below 50% and there is a convergence of views across Former and Current FP6 Fellows (average around 34%), indicating that there were some expectations or involvement.
When the question is put more starkly (no industry training gains at all), Former FP6 Fellows state their views a lot more strongly (47%) than Current Fellows (38%), reflecting the fact that the expectations of the latter group are higher (except in IOF, IEF and ToK-IAP).

There are low expectations (Current FP6 Fellow respondents: 12%) or experience (Former FP6 Fellow respondents: 7%) of host owned patents. With regard to patents owned by the Fellows, expectations (Current FP6 Fellow respondents: 2.5%) and experiences (Former FP6 Fellow respondents: 1.7%) are even lower.

ToK-IAP respondents have high hopes that the results of their research will lead to commercialisation (Current FP6 Fellow respondents: 65%), although experience in practice is less positive (Former FP6 Fellow respondents: 26%). In other Fellowships, the figures are typically only a few % points (<5%), except for Current FP6 Fellows.

It is interesting to note that no Former FP6 Fellow respondent with a ToK-IAP Fellowship thought that their research would lead to the creation of a commercial enterprise, contrasting strongly with Current FP6 Fellow respondents, where 25% had expectations that it would do so. A small degree of enterprise creation is reported in IRG and ERG, where expectations were zero.

Collaboration with industrial and/or commercial partners is part of ToK-IAP, so high expectations (97%) and experience (79%) here is to be expected. Average figures for Former FP6 Fellow respondents (41%) are higher than those for Current FP6 Fellow respondents (36%); Current FP6 individual international Fellowship holders in particular (IEF, IOF, IIF) had low expectations of any collaboration.

The collaboration with industry appears to have been something that was not a function of the Marie Curie Fellowship for all Former FP6 Fellow respondents (average only 8%), even those in ToK-IAP (22%). Although the figures are still very low, outside ToK-IAP Fellowships, ESRs had the more positive experiences in compared with others (RTN-ESR: 13%; EST: 12%).

It is clear from FP6 Fellow respondent replies that the focus of any industrial-academia impacts is within the ToK-IAP type of Fellowships. The hopes of Current Fellows far exceed the expectations and experience of Former Fellows when it comes to internships. However, views about the training provided are convergent in ToK-IAP (Former and Current Fellows both 47%) and Former FP6 ToK-IAP Fellows report a higher incidence of specific training on industrially relevant issues that Current ToK-IAP FP6 Fellows are expecting. There are low expectations of patents, commercialisation and enterprise creation and even collaboration with industry emerging from respondents’ views, but the level of experience (79%) and expectation (97%) of involvement in collaborations with industrial/commercial partners is very high in ToK-IAP.

**RESEARCH SUPERVISION AND TRAINING**

The differentiation of research supervision and training impacts is summarised as follows:

- The quality of supervision received during the Fellowship is slightly higher for Former FP6 Fellow respondents (63%) than Current ones (60%). IRG gives the lowest readings overall (40% Current and 46% Former) and IIF the highest (67% Current and 76% Former).
• Those whose **time per week spent on discussing their project** was not more than 4 hours constituted the large majority of respondents, 75% of Current FP6 Fellow respondents reporting this level and 70% of Former FP6 Fellow respondents. There is a degree of consistency of view across the different Fellowships, although they range from 63% (IIF) to 84% (IOF) amongst Current Fellows and from 57% (ERG) to 87% (IRG) amongst Former Fellows.

• Generally, the consensus is that Fellows feel they have sufficient **time to discuss their research with their supervisors.** This is a strong convergence of the views of Former (83%) and Current (82%) FP6 Fellow respondents.

• There has been a fall in the degree to which the **amount of training received** is viewed as good and very good between Former FP6 Fellows respondents (42%) and Current Fellows (39%). ESRs are the most consistently positive (Both RTN-ESR and EST being circa 53%) and the only Fellowship types where respondents rated this factor about 50%. Apart from IRGs (only 12%), nearly all other Former FP6 respondents gave a rating of the amount of formal training as good and very good which was in the 40% to 50% range. Current FP6 respondent ratings were more variable, with IRG, ERG and ToK-IAP ratings all below 30%.

• The ratings for the **quality of formal training** were closer between Former and Current FP6 Fellows than the ratings of the amount of formal training and the average was about 10% points higher at 51%. ESRs are again the most consistently positive (Both RTN-ESR and EST being circa 62%) and the only Fellowship types where respondents rated this factor about 60% across all FP6 Fellow respondents. Apart from IRGs (only 20%), nearly all other Former FP6 respondents gave a rating of the amount of training as good and very good which was above 50%. Current FP6 respondent ratings were more variable, with IRG, ERG and ToK-IAP ratings below 40%.

• The **quantity of “on the job” training** receives higher ratings than that of training as a whole, with a slight fall in the degree to which the amount of “on the job” training received is viewed as good and very good between Former FP6 Fellows respondents (57%) and Current Fellows (55%). ESR scheme respondents do not stand out as more positive than others. Former FP6 Fellow respondents in ERG, IIF, IOF, IEF ToK-IAP, EST and RTN-ER are more positive than Current Fellows, whereas in IRG, ToK-DEV and RTN-ESR, it is the other way round.

• The average ratings for the **quality of “on the job” training** were the same for Former and Current FP6 Fellows (60%) and about 10% points higher than the quality of formal training. There is nothing that stands out relating to ESRs, but IOF respondents gave a consistent 75% rating of the quality of “on the job” training as good and very good. Former FP6 Fellows respondents in IIF, IEF, ToK-IAP and EST rated the quality more highly than Current FP6 Fellows whereas it was Current FP6 Fellows in IRG, ToK-DEV and RTN-ESR who rated the schemes more highly than Former FP6 Fellows.

There is a consensus view (82%) from FP6 Fellow respondents that as part of research and supervision impacts, the amount of supervisory time is sufficient and the time spent per week for about 72% of FP6 Fellows was less than 4 hours, although slightly fewer Former Fellows reported the lower number of hours (70%). The quality of supervision was similar between Former (63%) and Current Fellows (60%), as was the average rating for the quantity (40%) and quality (50%) of formal training received and the quantity (55%) and quality (60%) of “on the job” training. Training quality scores higher that quantity and “on the job” scores more highly than formal training.
FAMILY

The differentiation of family related experiences is summarised as follows:

- For nearly all types of Fellowship, more Fellows had partners or spouses than those who did not, with an average overall of around 67%. Not surprisingly, respondents in ESR related schemes (EST and RTN-ESR) had a lower incidence of partners or spouses than others. There was more likely to be differences between Former and Current between schemes, than within the different types of Fellowship, except in IRG where nearly 90% of Current FP6 Fellow respondents had a partner or spouse (10% points more than Former FP6 Fellows) and in ERG, where nearly 66% of Former FP6 Fellow respondents had a partner or spouse (13% points more than Current FP6 Fellows).

- There was a marked difference in the incidence of children under 18 years between respondents with different Fellowship types, ranging from about 5% for ESTs to 58% for IRGs. Overall, the differences between the Fellowships were more striking than those between Former and Current FP6 Fellows. Individual Fellowship respondents reported a high incidence of children than Host Fellowship respondents.

- The perception that having a family represents an obstacle to participation in Marie Curie is not strong and is only slightly higher amongst Current FP6 Fellow respondents (12%) than Former ones (10%). However, there are sometimes large differences of opinion between Current and Former respondents, such as in IOF (7% points) and ToK-DEV (9% points). For Individual Fellowship respondents, fewer obstacles are expected than for Host Fellowship respondents.

- There is a large difference between Former and Current Fellow respondents about satisfaction with the family related allowance, with Former Fellows showing double the level of satisfaction (average 40%) when compared with Current Fellows (20%). This picture is consistent across all type of Fellowship, but the gap is both less and in the other direction with IRG and ERG Fellowship respondents. Current FP6 Fellows were given the option of choosing a “neutral” reply, but this was not extended to Former FP6 Fellows and this omission may have exaggerated the gap in levels of satisfaction between the two categories of Fellow.

Having a partner or spouse during the Fellowship was a common experience amongst FP6 Fellows (67%), especially in RTN (80% Former to 90% Current). Individual Fellowship respondents reported a higher incidence of children and fewer obstacles by having a family than Host Fellowship respondents and there were substantial differences across the types of Fellowship (e.g. the incidence of children ranged from 5% (ESTs) to 58% (IRGs). Satisfaction levels regarding the family allowance were low but with several large differences between types of Fellowship that were difficult to interpret.

PERSONAL AND PROFESSIONAL

The differentiation of personal and professional characteristics is summarised as follows:

- The gender balance amongst respondents shifted away from a large majority of males amongst Former FP6 Fellows (70% male) to a less dominant majority amongst Current FP6 Fellows (58%
male). In Annex 3, the overall FP6 Fellow survey average recorded (which includes a significant number of Fellows who did not know the type of Fellowship they had been awarded) was 41% female (59% male) and this is compared with the overall FP6 Fellow population of 37% female (63% male). It would seem that female Fellows were more active as survey respondents than their male colleagues.

- A similar proportion of Current FP6 Fellows respondents were already **aware that they were a Marie Curie Fellow** before the survey (95%) to Former FP Fellows (94%). Perhaps not surprisingly, but with the notable exception of IRG (circa 88% awareness) Individual Fellows tended to be more aware than Host Fellows, although the awareness of Current Host Fellow respondents is higher than Former Host Fellows.

- The responses on **career stage** follow the design and eligibility restrictions of the different types of fellowship, with close to 100% of the EST and RTN-ESR scheme respondents reporting career stages of less than 4 years. However, where the Fellowships are open not only to ESRs but to others, it is interesting to see to what extent early career researchers are involved. It should be noted that the average across the different types is not weighted.

- As in the case of career stage, **fellowship duration** is also a function of MCA Action design, with the larger majority of Individual Fellowship schemes lasting longer than 12 months. There seems to have been a significant increase in respondents’ course duration between Former and Current fellows, particularly in relationship to Host Fellowships, where some 50% of Former FP6 Fellow respondents reported Host Fellowship durations of up to 12 months only.

- The ratings of all FP6 Fellow respondents who were aware of the **access to Help System support** were quite positive, averaging about 75% for all respondents. ToK-DEV respondents were the most positive (83%) and IOF the least (59%). However, the fact that there were high proportions of “don’t knows” amongst both Current (35.7%) and Former (28.8%) Fellows suggests some ignorance of Help Systems overall.

- Ratings of the measure of agreement about **peer awareness of the Fellowship** strengthened slightly from Former FP6 Fellow respondents (67%) to Current fellows (72%). IEF respondents were the most positive (84%) and ToK-IAP the least (circa 59%); ToK-IAP also returned the largest difference between the ratings of Former (44%) and Current fellows’ (74%) which suggests that Marie Curie is found to be not well known in industry after the Fellowship.

- The extent to which respondents would **recommend the Scheme to others** reflects a high level of support in the case of many types of Fellowship, being around 95% for 4 of the 5 Host Fellowships (ToK-DEV, EST, RTN-ER, RTN-ESR) and 3 of the Individual Fellowships (IEF, IOF and IIF). Whilst still at high levels, only 87% of ToK-IAP respondents would recommend the Scheme to others and the Former and Current IRG and ERG respondents have very different views, albeit at higher levels than ToK-IAP.

With respect to the personal and professional characteristics of the respondents, female FP6 Fellows were more active as respondents than their male counterparts and, at 41%, were close to the projected proportion of female researchers (37%) in the FP6 Fellows population overall. Career stage and fellowship duration findings lined up with Fellowship design and the majority (75%) were positive about access to Help System support open to them, even though awareness was not high. Peer awareness of Marie Curie was rated to be about 70%, but with a large difference between Former (44%) and Current (74%) Fellows in ToK-IAP. The high degree
of preparedness to recommend Marie Curie to others (95%) demonstrates the respect which the Fellowship Scheme holds amongst FP6 Fellows.

SUMMARY IMPACTS BY TYPE OF FELLOWSHIP

The following figures present the summary impacts, as reported by FP6 Fellows (a weighted average of both Former and Current FP6 Fellows), showing the upper and lower % results to give 95% confidence levels.

Figure 63: Skills and knowledge development: interdisciplinarity, society, ethics, uniqueness, research fields and advanced methods

- Skills and knowledge development: interdisciplinarity: high and very high responses. My Marie Curie fellowship.... (agree and totally agree responses)
Figure 64: Mobility: the contribution of the Marie Curie Fellowship to types of mobility

![Diagram showing the contribution of the Marie Curie Fellowship to types of mobility.](image)

Figure 65: Career development and job satisfaction: Mobility: the contribution of Marie Curie

![Diagram showing career development and job satisfaction related to mobility.](image)
Figure 66: Contacts and networks: maintaining links and contacts

<table>
<thead>
<tr>
<th>CONTACTS AND NETWORKS: &quot;Yes&quot; answers to 2 questions about contacts; &quot;All or most of them&quot; answers to question about staying in contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you are not currently working in your &quot;home&quot; country, do you continue to maintain active research links with researchers in your &quot;home&quot; country?</td>
</tr>
<tr>
<td>FP6 Higher (95% confidence)</td>
</tr>
<tr>
<td>74.2%</td>
</tr>
<tr>
<td>Did you make any significant research and/or professional contacts during your Marie Curie fellowship?</td>
</tr>
<tr>
<td>FP6 Higher (95% confidence)</td>
</tr>
<tr>
<td>91.9%</td>
</tr>
<tr>
<td>To what extent have you stayed in contact with these research and/or professional contacts?</td>
</tr>
<tr>
<td>FP6 Higher (95% confidence)</td>
</tr>
<tr>
<td>67.2%</td>
</tr>
</tbody>
</table>

Figure 67: Industry-academia knowledge transfer and collaboration: level of engagement

<table>
<thead>
<tr>
<th>INDUSTRY-ACADEMIA KNOWLEDGE TRANSFER AND COLLABORATION: Did your Marie Curie fellowship provide you with training in industry-related issues, or did it allow you to gain experience in this area? (Please tick as many as apply)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP6 Higher (95% confidence)</td>
</tr>
<tr>
<td>Yes, I spent an internship or fellowship in an industrial setting</td>
</tr>
<tr>
<td>6.9%</td>
</tr>
<tr>
<td>Yes, I was involved in collaborations with industry</td>
</tr>
<tr>
<td>14.5%</td>
</tr>
<tr>
<td>Yes, I received specific training on industry-relevant issues</td>
</tr>
<tr>
<td>8.0%</td>
</tr>
<tr>
<td>No, not significantly</td>
</tr>
<tr>
<td>34.9%</td>
</tr>
<tr>
<td>No, not at all</td>
</tr>
<tr>
<td>43.9%</td>
</tr>
</tbody>
</table>
Figure 68: Industry-academia research and collaboration: impacts

INDUSTRY-ACADEMIA RESEARCH AND COLLABORATION IMPACTS:
Have or will the results of your research as a Marie Curie fellow...
- FP6 Higher (95% confidence)
- FP6 Lower (95% confidence)

...led to a patent owned by the host / by you?
- 8.9% 8.7%

...led to a patent owned by the fellow?
- 2.1% 2.0%

...been in any way commercialised?
- 8.7% 8.5%

...led to the creation of new commercial enterprise?
- 3.2% 3.1%

Figure 69: Research supervision and training: quantity and quality ratings

RESEARCH SUPERVISION AND TRAINING: How would you rate the following aspects of the training (i.e., both formal training and training received "on the job") you have received during your Marie Curie fellowship?
- FP6 Higher (95% confidence)
- FP6 Lower (95% confidence)

Amount of formal training
- 41.2% 40.2%

Quality of formal training
- 51.9% 50.6%

Amount of "on the job" training
- 56.9% 55.4%

Quality of "on the job" training
- 61.2% 59.7%