

DTU's Postdoc Programmes

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Framework Programme and H2020

External Impact Assessment Report



Innovayt A/S

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Executive Summary

This Impact Assessment Report concerns the projects COFUNDPostdocDTU (hereafter COFUND 1) and COFUNDfellowsDTU (hereafter COFUND 2) and has been carried out by Innovayt A/S in accordance with a contract signed on 7th May 2018 with the Technical University of Denmark (DTU).

The report has been issued since DTU intends to submit a new Marie Skłodowska-Curie Actions (MSCA) Postdoc COFUND project in September 2018 (hereafter COFUND 3), and it is a requirement from the European Union (EU) that *“Applicants having benefited from COFUND under previous calls (under the Seventh Framework Programme or under Horizon 2020) must explain how their proposal adds value in relation to the excellence and/or impact award criteria compared to their previous one/s”*.

As mentioned, DTU has benefited from MSCA COFUND on two previous occasions within both the Seventh Framework Programme (COFUND 1) and Horizon 2020 (COFUND 2). The aim of the present report is to explain the improvements that have been made in previous COFUND programmes and to evaluate the impact and benefits of a new programme through key indicators, including the number, nationality and quality of applications, the specific impact of COFUND 1 and 2 as perceived by the fellows, as well as their employment status (evaluated through an impact focused questionnaire).

As illustrated in the Figure below, the successful actions implemented in COFUND 1 have been consolidated in COFUND 2 to the benefit of the postdoc candidates, as will be discussed throughout this report. In addition to the indicators presented in the Figure, new measures implemented in COFUND 2 for career development, training and networking will also be analysed. Data related to the employment situation of the fellows are mainly available for COFUND 1 since COFUND 2 is still active. These data will be analysed together with the choice of the fellows of diversifying their training options (e.g. by planning a secondment as part of the COFUND programme).

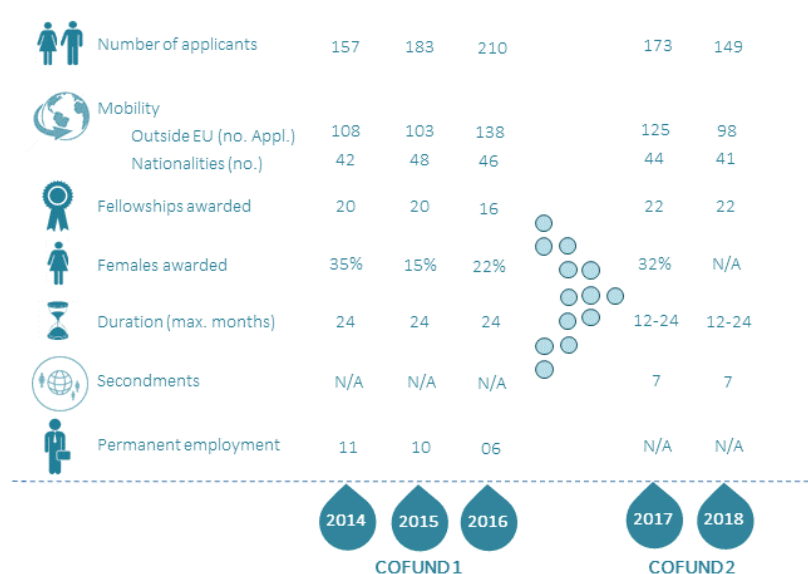


Figure 0.1: Actions implemented in COFUND 1 and consolidated in COFUND 2

In the end, this study has resulted in a series of positive conclusions regarding the impact of both COFUND programmes, as well as in useful recommendations that can be used for the new COFUND programme application that DTU is developing.

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1. Background and Objectives

1.1. Context

The **Technical University of Denmark (DTU)** is a research-based, entrepreneurial and internationally oriented technical university. Based on technical science, DTU works to create sustainable value and welfare in society through education, research and innovation. DTU work is in fact concentrated on the three following core tasks:

- **Education.** DTU study programmes are designed to stimulate analytical thinking, interdisciplinary collaboration, and an entrepreneurial spirit. Coupled with solid academic knowledge these qualifications will enable DTU graduates to help solving the challenges of the modern, globalized world.
- **Research.** DTU is at the academic and multidisciplinary forefront of the technical and natural sciences, with new initiatives in a number of internationally demanding engineering disciplines, including sustainable energy technology and life science. Research covers all areas of classical and modern engineering, being carried out in 19 Departments, 4 Centres and 19 PhD-schools with a total research staff (including PhDs) of 3,334 full time equivalent employees in 2017. All DTU research departments have at least one world-leading research group. DTU continuously and heavily invests in **research infrastructure** – operating and maintaining state-of-the-art equipment and facilities, which allows the University to work at the forefront of a broad range of technological areas.
- **Knowledge and Technology transfer.** DTU provides scientific advice to the Danish authorities and international organizations and is renowned for its ability to transfer research into new technologies through close collaboration between academic, commercial, and public partners. DTU is among the world's most innovative universities and is currently no. 1 in the Nordic countries on 'Reuters Top 100 World's Most Innovative Universities' as of May 2017.

DTU works closely with an extensive **network** of partners including other universities and institutes of technology, secondary schools, national and international companies, political circles and the general public, to achieve real impact for society by making use of joint complementary strengths within education, research and innovation. Moreover, DTU is involved in different EU Public-Private Innovation consortia like contractual Public-Private Partnerships and EIT KICs.

Finally, DTU offers attractive, digital and globally oriented research and study environments, combined with an academic culture and infrastructure that can accommodate **international talents** and offer the best conditions for developing and pursuing new ideas. The University's extensive innovation ecosystem has been key in the implementation of a strategy for attracting, developing and retaining academic talent from all over the world¹, in this way supporting the implementation of the ERA and the Innovation Union.

In the past thirteen years the following measures – targeting researchers at postdoctoral level – have been implemented at DTU:

- **DTU- HC Ørsted Postdoc programme** (HCØ programme). An exclusively DTU funded programme that awarded 9-14 postdoc positions each year in the period 2005 – 2013, to PhD graduates who had proven outstanding results during their PhD studies and had demonstrated excellence and potential in their fields of research.
- **COFUND 1.** In 2014, a postdoc programme, co-funded by the FP7 Marie Curie Actions, started. The aim was to attract the most talented postdoc candidates from all over the world to carry out research projects within all branches of engineering science at DTU, based on their own choice. The programme awarded a total of 58 fellowships (the programme was initially scheduled to award 56 fellowships, but with some left over from the funding of the other fellowships it was possible to award 2 extra fellowships).
- **COFUND 2.** In 2017 a new postdoc programme co-funded by the H2020 Marie Skłodowska-Curie Actions started. The aim was to increase the total number of fellowships, introduce both junior and senior postdoc positions (+/- 5 years after PhD), implement a gender blinded review process, include gendered innovation as an evaluation criterion, and give a stronger encouragement to fellows to engage with the non-academic

¹ Best Practices in Talent Attraction, Development and Retention, Research on International Trends and Policies August 2016

sector. The programme has now reached the second year and 44 out of 66 fellowships have been granted so far.

- **COFUND 3.** In 2018 DTU will apply for a new postdoc programme that, if successful, will be co-funded by the H2020 Marie Skłodowska-Curie Actions. The programme will implement the following planned improvements (when comparing with the previous programmes):
 - **Excellence.** Increase the duration of the fellowships from 2 to 3 years;
 - **Training.** All COFUND fellows will have the opportunity to participate in the DTU “Young Researcher Training Programme”, an initiative launched in 2018 specifically aimed at the most talented young post docs (up to 7 years after doctorate received). The program aims to promote personal growth and career development as well as providing a platform for intellectual community across research disciplines.
 - **Enhancing career possibilities.** Introduce a mandatory inter-sectoral secondment and/or interdisciplinary, and support the fellows in finding a suitable secondment organisation (expressions of interest from 5 institutions including companies, interest organisations and a regional office representing 12 university hospitals have been already obtained);
 - **Enhancing mobility and networking possibilities.** Introduce financial benefits for the fellows: a fixed amount of “research-travel” and “family” allowances will be paid in addition to the salary, improving as well the fellow’s working conditions;
 - **United Nations (UN) Sustainable Development Goals.** The applicants will be required to specify in their proposal the project’s expected contribution to the UN sustainable development goals, if any². That will be taken into consideration by the evaluators.
 - **Introduction of two annual prizes.** Each year of the programme, fellows are encouraged to submit a short proposal to fund either an entrepreneurship or a communication initiative. The awarded funding for entrepreneurship could for instance be used to fund prototyping or professional support for writing a business plan, while communication funding could cover video production, hosting a small event or making an app. The goal is to support exploitation of research and public outreach.
 - **Address EU-13 participation in the dissemination strategy.** DTU, at the urging of Robert-Jan's Smits, former Director-General, DG Research & Innovation, has contacted selected Eastern European universities in EU13 to discuss how Horizon 2020 and Horizon Europe can support enhanced cooperation between East and European universities via so-called “widening initiatives”. Among the universities contacted are: Budapest University of Technology and Economics, Czech Technical University in Prague and Tallinn University of Technology. The dissemination strategy implemented during the programme will specifically include contacts with the Research Offices of the mentioned universities, making them aware through different channels of the possibilities for their researchers to apply for a postdoc.

Figure 1.1 presents a development timeline for COFUND 1, COFUND 2 and COFUND 3 (together with a brief overview of each programme).

² <http://ec.europa.eu/research/environment/index.cfm?pg=sdgss>

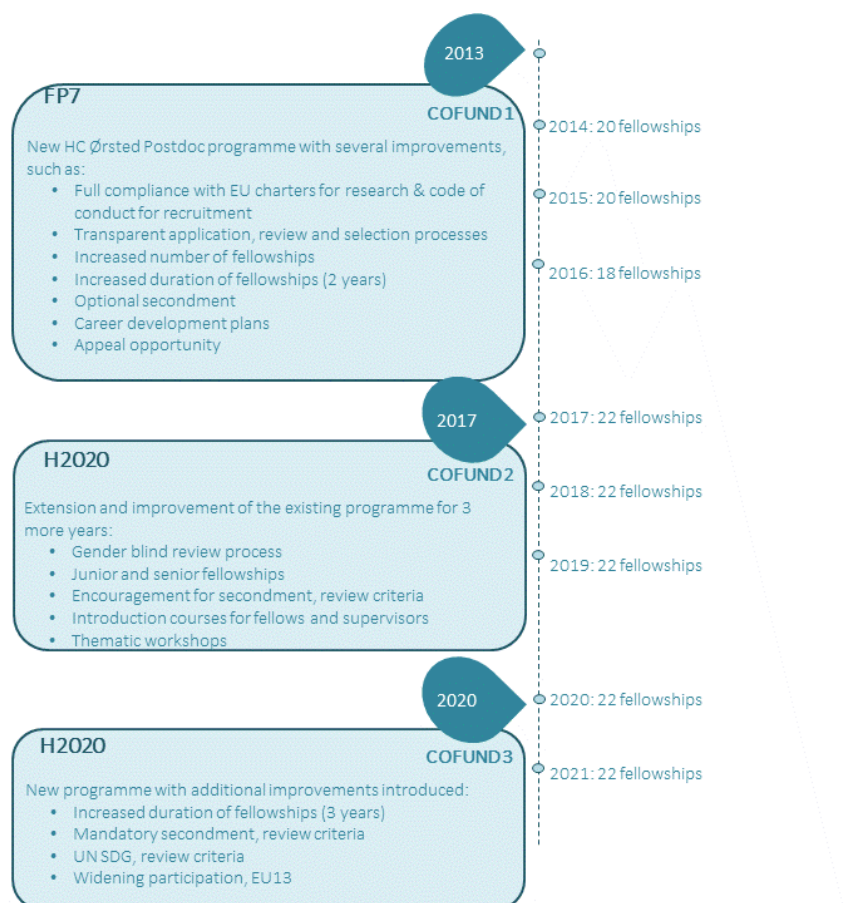


Figure 1.1: Timeline and short overview of DTU's EU Co-funded Post-Doctoral programmes. The most significant new improvements for each programme is listed. As each programme builds on the previous it thus includes the improvements made on the previous programme, in addition to the new improvements.

1.2. Objectives

The present report aims to measure the impact that COFUND programmes at DTU have had on participants and whether immediate outcomes have been achieved. The study describes how the actions successfully implemented in COFUND 1 have been consolidated in COFUND 2. It also evaluates the impact of the new measures/actions implemented in COFUND 2 on the fellows, providing evidence for the quality of both programmes. Since COFUND 2 is still running, it is currently not possible to know the impact of the fellowships on the fellows' careers. Nevertheless, DTU has decided to have a stronger focus on secondments as an instrument to enhance the career possibilities of the fellows – still optional in COFUND 2.

1.3. Methodology

The methodology to assess the impact of both COFUND programmes at DTU (i.e. COFUND 1 and COFUND 2) is mainly based on the following **indicators**:

- Type of fellowship (junior and senior);
- Duration of the fellowship;
- Number of applications from 2014 to 2018;
- Number of fellowships awarded after each call from 2014 to 2018;
- Number of female and male applicants from 2014 to 2018;

- Success ratio of female applicants;
- Fellowship position offered to female researchers from 2014 to 2018;
- Mobility, nationalities and geographical region of the applicants from 2014 to 2018;
- Quality of the application, evaluation and selection process
- Secondments
- Career development goals; career guidance, training and networking

In addition, and since the COFUND 1 is finished, it has been also possible to look at the following data for the fellows employed by the programme:

- Employment status and sector, institution and geographical region of employment
- Number of publications

All figures and assessments provided in this report for the COFUND 1 refer to the entire duration of the programme while for COFUND 2 they only refer to the first two years of the programme, namely 2017 and 2018.

Data collection **methods** are described below:

Key interviews/discussion: A few meetings were conducted with the *Office for Research and Relations* and the DTU COFUND secretariat, exploring the full range of the post-doctoral programme including relevance, design, evaluation process, selection of fellowships and impacts of the programmes. The main people involved were:

- **Dr. Claus H. Andersen**, Programme Coordinator
 - Dr. Andersen is Head of the DTU Research Office with 10 administrative staff and has extensive experience from managing numerous national and EU projects including the role as coordinator of FP5 and FP6 research projects.
 - Entitled to act and make legally binding declarations on behalf of the programme.
 - Responsible for the day-to-day management of the project.
 - Supported in all tasks by the Programme Manager (Stine Work Brodersen).
 - Acts as liaison between REA and DTU.
 - Will be involved in writing the future COFUND application.
- **Ms. Stine Work Brodersen**, full-time Project Manager, academic officer, Office for Research and Relations, the COFUND secretariat
 - Responsible for daily management of the programme.
 - Handles all communication with applicants prior, during and post application and selection process.
 - All communication with the different parties of the secretariat goes through the project manager.
 - Responsible for the on-going evaluation and optimization of the programme and material for applicants/fellows, supervisors and evaluators.
 - Reporting to REA/Commission and the registration of fellows in the Participant portal.
 - Developing PR strategy and its implementation.
 - Ensuring that departments are informed of the requirements in relation to COFUND fellows.
 - Support supervisors and departments regarding the COFUND fellows.
 - Will be involved in writing the future COFUND application.

Review of administrative data: Administrative data analysed included the following:

- a) Type of fellowship (junior and senior)
- b) Duration of the fellowship;
- c) Number of applications from 2014 to 2018;
- d) Number of fellowships awarded after each call from 2014 to 2018;
- e) Number of female and male applicants from 2014 to 2018;
- f) Success ratio of female applicants
- g) Fellowship positions offered to female researchers from 2014 to 2018;
- h) Mobility, nationalities and geographical region of the applicants from 2014 to 2018.
- i) Quality of the application, evaluation and selection process

Document and literature review: Documentation reviewed included documents produced by DTU, namely the COFUND 2 project description and the deliverables of the COFUND 1 project – D2.1, D3.1, D3.2, D3.3, D3.4, D3.5). In addition, the fellows' career development plans, as well as their CVs and updated list of publications were analysed. A literature review was conducted to gain insight into postdoc requirements and the most beneficial working conditions for postdocs, including duration of employment, travel allowance and family allowance.

Feedback from the 2014-17 COFUND fellows concerning the programme, obtained through a specific questionnaire: As part of this evaluation, DTU has conducted surveys among the 58 fellows employed under COFUND 1 and the 22 fellows employed after the first COFUND 2 round of recruitment, in 2017. The purpose of the surveys was to better understand the career and employment possibilities of the fellows including:

- career development; job situation (2014), career plans (2017)
- training, skills and ability to conduct independent research and development;
- interaction/collaboration with the non-academic sector, job situation and secondment (2014), secondments (2017);
- personal research networks;
- demands and expectations; travel allowance, family allowance (attractiveness of the program); benefit of a third year, how many ended their contract early (2014).

The conclusions of the fellows' questionnaires are described in details in Section 2.

Feedback from the 2014-2017 COFUND experienced supervisors concerning the programme, obtained through a specific questionnaire: In order to evaluate the programme also from the side of the supervisors, the most experienced ones have been asked by DTU to take part in the survey. They have been chosen based on their experience in participating in other actions of the H2020 Framework Programme and in supervising fellows at the postdoc level. The purpose of the survey was to understand which actions can be taken by DTU in order to offer an excellent research programme that can be more attractive for young and talented researchers and to improve their career possibilities. The questionnaire focus on the key improvements that will be implemented in COFUND 3. The supervisors have been asked about how the following actions could benefit the fellows:

- provide a fixed amount of "research-travel allowance"
- support in planning a secondment;
- introduce a mandatory secondment;
- extend the period of the fellowship from 24 months to 36 months.

The respondents agreed about the benefit of introducing a fixed amount of "research-travel" allowance. One of the respondents mentioned that more focus should be given to supporting the spouses of the fellows. Both aspects will be addressed by COFUND 3 where a fixed amount of "research-travel" and "family" allowance will be implemented. The respondents agreed that support in planning the secondment would be beneficial, but one expressed concerns about the requirement of a mandatory secondment. Regarding the extension of the fellowship for up to 36 months, the respondents agreed that a longer fellowship would be more attractive for both sides and would make it easier to plan a secondment. DTU will implement the mentioned actions in COFUND 3.

Exchange of best practices with the Faculty of Medicine of the University of Oslo

In the period February 2018 – June 2018 a few meetings have been conducted between DTU and the Faculty of Medicine of the University of Oslo concerning the MSCA COFUND projects funded and running at both universities. The Faculty of Medicine of the University of Oslo has been granted a MSCA COFUND during the 7th framework programme (called Scientia Fellows), and a new MSCA COFUND has been funded within Horizon 2020 (called Scientia Fellows 2). The aim of the meetings was to exchange experiences and feedback on the programmes running at both universities and discuss how those inputs could be implemented in the COFUND 3 programme. The discussions focused on the following:

- **Secondment options and exposure of the fellows to other sectors.** How expression of interests from other universities, companies and other institutions are beneficial in supporting the programme, in enhancing the career possibilities of the fellows, and in guiding the fellows to apply for secondment possibilities in institutions that are interested in the programme.

- **Role of the host in providing specific and hands on training aimed to enhance the researchers' career development both within and outside academia.**
- **Financial benefits for the fellows.** The payment of "research-travel" and "family" allowances, besides the salary, allows the fellows to participate in relevant conferences and workshops, supporting them in expanding their network. The "family allowance" is attractive for excellence fellows having a family when applying for a position at DTU (mobility requirement).
- **Evaluation process.** The gender blinded process in the evaluation of the proposals and the requirement of previous contacts between the fellows and the host have been implemented by both universities and have proven to have a great impact on the participation of female researchers and in a better level of the applications.

The limitations of the present impact assessment are mainly ascribed to the fact that the first fellowships from the COFUND 2 programme have only been awarded at the beginning of 2017. Therefore, since then, only two calls were opened (2017 and 2018). Also, none of the fellows has completed their stay at DTU yet. For this reason, it is not possible, for instance, to evaluate the impact of the COFUND 2 programme on the fellows' career in terms of employment opportunities, or the impact of secondments on the 2018 call fellows'. Moreover, questionnaires have been sent out to all COFUND 1 and COFUND 2 fellows, but while it has been possible to reach and receive feedback from all COFUND 2 fellows only half of the fellows employed on the COFUND 1 have responded.

2. DTU's EU Co-funded Post-Doctoral programmes impact assessment

2.1. Programme overview and implementation

DTU has implemented two COFUND programmes – COFUND 1 and 2. The number of fellowships offered by the programme was increased from COFUND 1 to 2; COFUND 1 awarded 58 fellowships³ while COFUND 2 will award a total of 66. All fellowships are individual postdoctoral fellowships of 12-24 months and are awarded within five academic programme areas which together cover all scientific fields at DTU:

- Mathematics, physics, space research and informatics
- Chemistry, chemical engineering and energy
- Photonics engineering and communications
- Construction, production, wind, buildings and transportation
- Life Science and biotechnology

Both programmes run for 60 months with three calls in three years (COFUND 1; 2014-2016, COFUND 2; 2017-2019). To the benefit of the candidates, and to ensure that DTU is able to commit the most talented of the candidates, there is a focus on condensing the evaluation and selection procedures; from application to decision it only takes three and a half months. To promote equal opportunity, gender blinded evaluations and selections have been implemented.

COFUND 1 and 2 are constructed to ensure the greatest flexibility so that fellows have full freedom to pursue their own research and career goals. In this context, the fellow has the possibility to apply for a 12-24 months fellowship, depending on individual preference, and is able to freely choose and approach the Department that best accommodates their specific scientific project needs. The host ensures that the fellow will have the best opportunity to perform his/her bottom-up research plan in the best possible way.

Moreover, the fellows' professional development is strengthened by a Personal Career Development Plan, one-to-one mentoring and obligatory additional fellow days. The fellow days have a new theme every year so that each fellow can learn something new each time. Career development plans are executed and analysed twice a year during the tenure of the fellowship. Under the programmes, the fellows follow the Danish law, which states that every employee must have a so-called staff development interview once a year.

Finally, under the DTU COFUND programmes, fellows have the opportunity to participate in professional courses, conferences, and to choose from DTU's large course catalogue to the benefit of their careers and suited to their individual talents and preferences.

2.2. Key facts

In the following, the impact of the COFUND 1 and 2 programmes is assessed.

All the actions implemented within COFUND 1 have been continued and consolidated in COFUND 2, together with the inclusion of new actions. In the following, the continued success of these initiatives is described, and the **new improvements implemented within COFUND 2** are highlighted, including: two types of postdoctoral fellowships, increased number of fellowships, gender blinded evaluation and selection process, increased encouragement to include secondments in the research plan, and an increased focus on a structured career development for fellows.

✓ Number of applications

Prior to the implementation of COFUND 1, DTU had an internal postdoctoral programme. The number of eligible applications per call in the internal DTU programme was between 17 and 71. The introduction of COFUND 1 significantly increased the number of applications to >150 (Figure 2.1). This 2-3-fold increase in eligible applications is a direct result of the dissemination strategy introduced in COFUND 1, which aimed to increase the knowledge on the COFUND programme as widely as possible. The dissemination strategy was therefore

³ The number was increased to 58 as DTU was granted permission to use unspent fellow months in the final call

continued for COFUND 2. The strategy includes: advertisements in the journals Nature and Science, Euraxess, the MSCA job page, through DTU's strategic partners and alliances (Nordic 5 Tech, EuroTech Universities Alliance, Korea Advanced Institute of Science and Technology (KAIST), and in STEM networks for female scientists. DTU's research departments are also asked to promote COFUND in their appropriate networks.

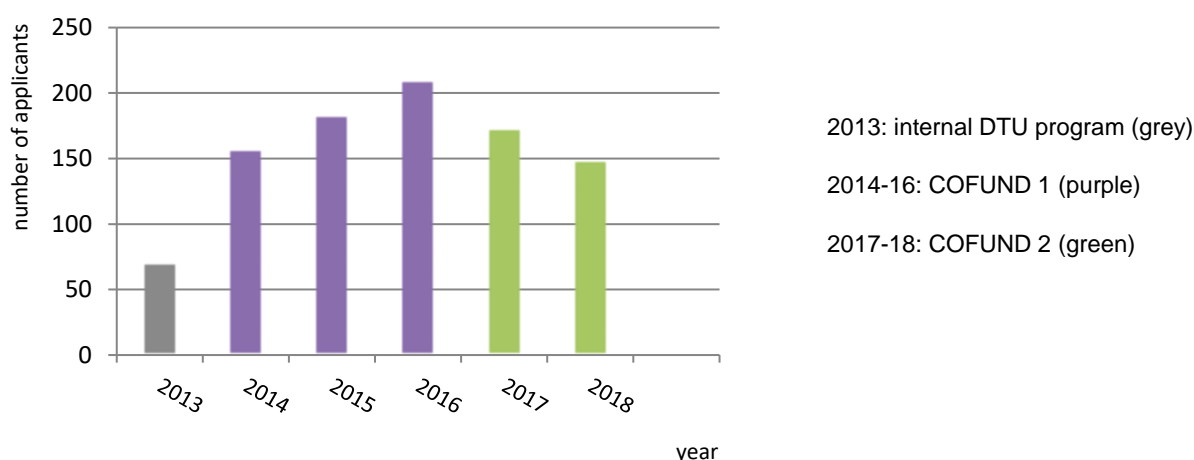


Figure 2.1: Number of eligible applicants per HCØ call and COFUND 1 and 2 calls from 2006-2018

For COFUND 2 (calls 2017-19) the applicant and potential hosting Principal Investigator (PI) were required to have contact to each other prior to the application deadline. The purpose of this was to enable the PIs to support the candidates with knowledge of available infrastructure etc. when devising their research project plan and to ensure that the content of the project was integrated into the hosting research group. This resulted in a lower number of applications but higher success rate of the programme. The success rate had dropped from 12.73 in 2014 to 8.57% in 2016, which DTU felt was too low and not attractive to potential applicants. By introducing prior contact it was ensured that only relevant candidates (both in terms of the offered infrastructure and research interests) applied, which has contribute to an increase in the success rate - to 12.77 in 2017 and 14.77 in 2018.

Conclusions: The dissemination strategy implemented by DTU in COFUND 1 increased the number applicants; on the other side the strategy also resulted in a lower success rate. In order to ensure both high level applicants and a higher success rate, DTU decided to introduce a requirement of prior contact between applicant and supervisor. This led to better applications that are feasible at DTU, both by ensuring a match between the proposed research and infrastructure available and the integration of the fellows in the research groups.

The dissemination strategy introduced in COFUND 1 and 2 will be consolidated in COFUND 3. Moreover, the dissemination strategy implemented in COFUND 3 will specifically include contacts with the Research Offices of the Budapest University of Technology and Economics, Czech Technical University in Prague and Tallinn University of Technology, making them aware through different channels of the possibilities for their researchers to apply for a postdoc.

✓ **Mobility, nationalities and geographical region of the applicants from 2014 to 2018**

The COFUND programmes are based on incoming mobility and enable candidates from all over the world to carry out curiosity-driven, bottom-up research projects within all branches of engineering science at DTU.

Applicants must not have resided or carried out their main activity in Denmark for more than 12 months in the three years immediately prior to the deadline.

Implementation of both COFUND programmes has greatly increased the national mobility impact. For each call ~40-50 different nationalities are represented. Overall, the number of different nationalities represented for the calls on COFUND 1 and 2 have been 65 and of 58 respectively (table 2.1).

Table 2.1 – EU residence

	DTU	COFUND 1			COFUND 2		
	2013	2014	2015	2016	2017	2018	2019
EU residents	23	49	80	72	48	51	-
Outside EU	50	108	103	138	125	98	-
No. of nationalities	27	42	48	46	44	41	-
Overall no. unique nationalities in the period		65			58		-

As mentioned, the applicants come from all over the world. In the five years of COFUND 1 (3/3 calls) and COFUND 2 (2/3 calls) DTU has received a total of 872 applications (table 2.2). The majority of applicants come from Europe (28%) and Asia (39%); top 10 countries are India (178), China (100), Iran (77), Spain (55), Germany (38), Italy (38), Denmark (26), France (24), Pakistan (22), South Korea (20) and Greece (20).

Table 2.2: Geographical area and no. of applications

UN World Geographical Area*		No. applications	% applications
Europe	EU	300	26%
	Non-EU	29	2%
Americas		52	4%
Africa		25	2%
Asia		457	39%
Oceania		9	1%

* Based on the UN World Geographical Area definition: <https://unstats.un.org/unsd/methodology/m49/>

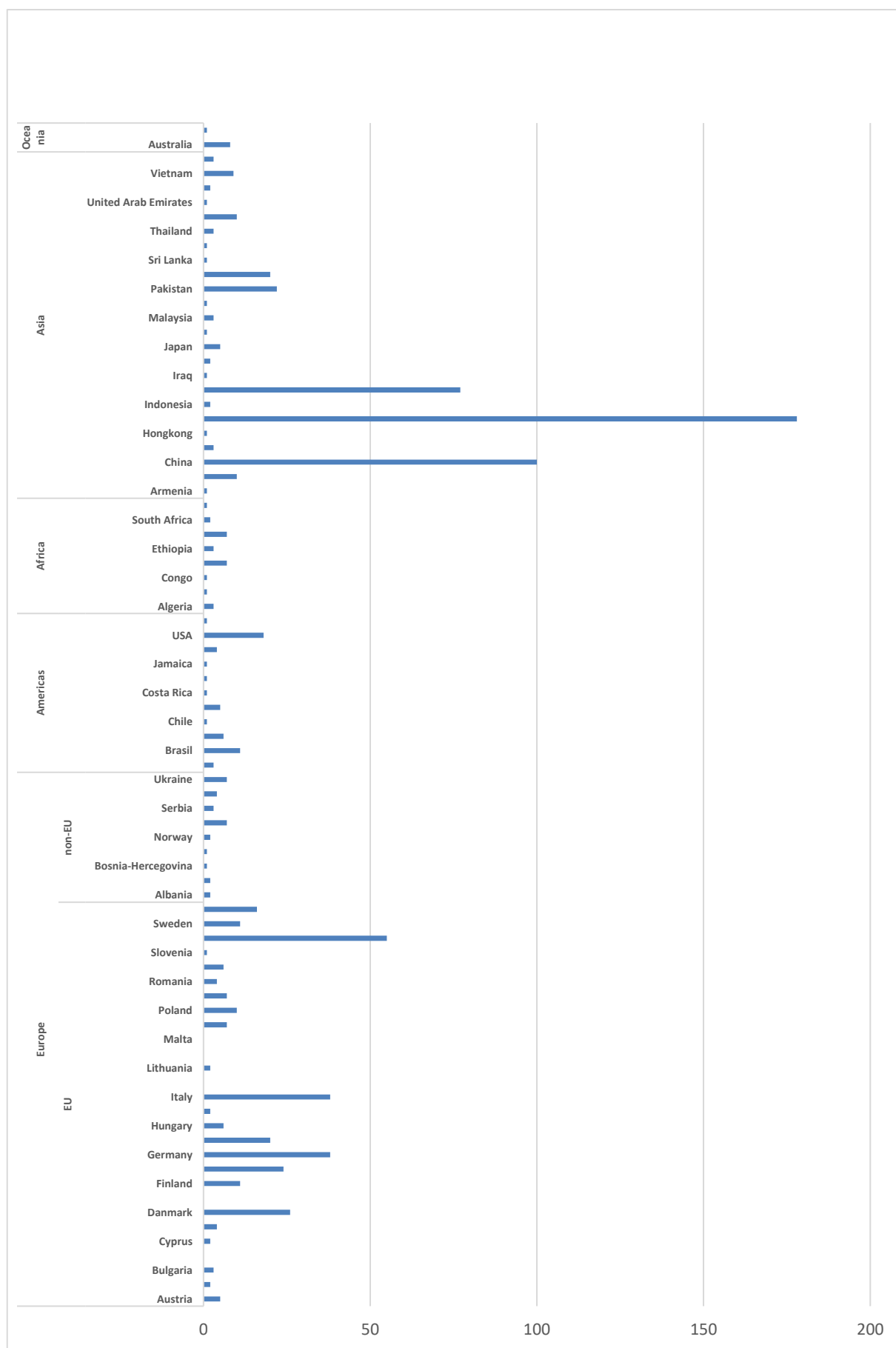


Figure 2.2: National mobility by UN Geographical area and no. of applications

Conclusions: the dissemination strategy and the mobility requirements of the COFUND 1 programme resulted in an increased number of nationalities and geographical region of the applicants. The strategy has therefore been continued for COFUND 2 and will be consolidated in COFUND 3.

✓ **Basis for widening participation; EU13**

DTU fully supports the European Union wish to realize the innovation and research potential across the European Research Area (ERA), thereby overcoming the innovation gaps⁴ in the EU-13 Member States. In that direction, DTU has identified and contacted the following three universities: Budapest University of Technology and Economics, Czech Technical University in Prague and Tallinn University of Technology; In order to promote research collaborations with DTU. The identification and selection of the mentioned universities has been based on an analysis of the existing exchange of students and research staff, scientific collaboration in H2020 projects, co-authorship and any other relevant types of collaborations such as Knowledge and Innovation Communities (KIC).

The importance of promoting a balanced development of the ERA is high on DTU's agenda. The MSCA COFUND scheme aims to foster excellence in the fellows' training, mobility, and career development, and excellence is essential in the implementation of the programme at DTU. DTU believes that one of the way to achieve excellence is by unlocking the potential of the pockets of the EU13 Member States. In fact, increasing focus on widening efforts results in an increase of the university's access to excellent research groups and untapped talent in the mentioned countries and have access to research infrastructures that are, among others, supported by the Structural Funds. This will pave the way to a balanced development and creation of inclusive Research and Innovation (R&I) communities throughout Europe⁵.

Figure 2.3 shows the number of applications that COFUND 1 and 2 have received from applicants from EU13 member states. Of the 872 eligible applications received during the 5 active calls on COFUND 1 and 2 only 4.36% were from EU13 Member States (38 applications) – showing a great potential for improvement in terms of promoting knowledge of the program and recruitment of young excellent researchers from these countries. COFUND 3 will promote awareness about the programme to the chosen universities located in the EU13 countries and agree with their Research Offices to the most appropriate channels in order to effectively disseminate the programme to the relevant researchers.

⁴ [http://www.europarl.europa.eu/RegData/etudes/STUD/2018/614537/EPRS_STU\(2018\)614537_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2018/614537/EPRS_STU(2018)614537_EN.pdf)

⁵ [http://www.europarl.europa.eu/RegData/etudes/STUD/2018/614537/EPRS_STU\(2018\)614537_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2018/614537/EPRS_STU(2018)614537_EN.pdf)

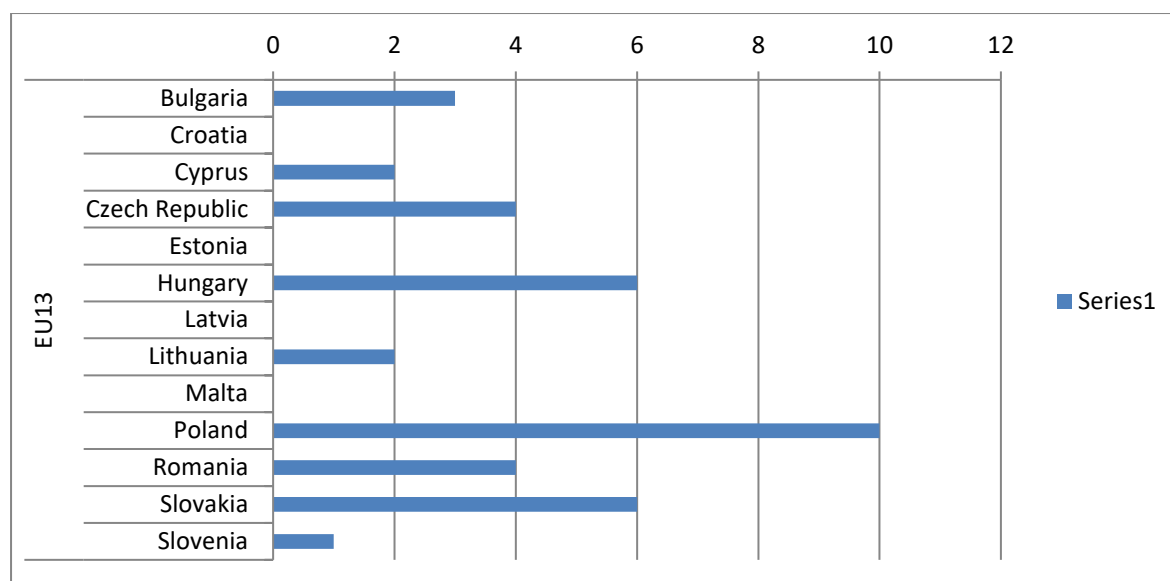


Figure 2.3: Number of applications COFUND 1 and 2 have received from EU13 member states during the 5 calls.

Conclusions: There is potential for widening participation amongst EU13 member states. COFUND 3 will, therefore, dedicate specific efforts to disseminate the calls to the universities mentioned above that are located in EU13 Member States.

✓ Duration of the fellowships

The COFUND 1 and 2 programmes award postdoctoral fellowships for a duration of 12-24 months. The fellowships' duration will be extended to 36 months in COFUND 3. This decision has been made to attract and promote talent by improving the working conditions of fellows and encourage excellent science.

Currently in the EU there are a lot more postdocs than faculty positions with only around 10-15% achieving permanent employment⁶. This situation has led to hyper competition amongst postdocs, with an increasing pressure to produce measurable outcomes. The pressure to publish and move from fellowship to fellowship comes at a price; it discourages creative thinking and risk-taking with postdocs opting for safe but minor improvements of existing knowledge⁷.

Answers from current and alumni fellows document that 78% of fellows feel that a longer fellowship would allow for more rigorous studies, and 47% of fellows feel that a longer fellowship would have allowed them to implement high risk/high gain elements into their research (Section 2.5 Fellows Impact Questionnaires, question 9).

Conclusions: More time would encourage two important aspects of research, namely a) allow for higher ambitions in terms of goals and creativity (higher risk, higher gain research), b) provide time for scientific rigorousness and well-documented reproducible studies. For this reason, fellowships of up to 36 months will be implemented in COFUND 3.

⁶ Science Europe. (2016). Postdoctoral Funding Schemes in Europe: Survey Report. Retrieved from Brussels: <https://www.scienceeurope.org/wpcontent/uploads/2016/10/20160922-Survey-Postdocs-Final.pdf>

⁷ Alberts, Bruce, et al. "Rescuing US biomedical research from its systemic flaws." *Proceedings of the National Academy of Sciences* 111.16 (2014): 5773-5777.

✓ **Increased number of fellowships awarded and type of fellowship (junior and senior)**

For COFUND 2 the number of fellowships was increased from 56 to 66 (18% increase). In addition, a distinction for postdoctoral fellows +/- 5 years after PhD was introduced; candidates who have up to five years' experience after their PhD degree are categorized as junior fellows and can apply for up to 24 months, whereas candidates with more than five years' experience are categorized as senior fellows and can apply for up to 12 months. This distinction was introduced based on recommendations made in the Impact Assessment Report of COFUND 1; senior fellowships were introduced as a sabbatical scheme for junior professors to attract research capabilities at top level and to boost the career development of the researchers

The senior category has been implemented in COFUND 2 and two senior fellowships (10%) have been awarded for each call. However, the number of applications for senior fellowships has not been impressive and the overall quality of the applications has not lived up to the expectations. Two factors that could have influenced the relatively low numbers of applications for senior fellowships are: DTU was not offering a "family allowance", and that is a normal requirement for all fellows and especially senior researchers with a family, the application and evaluation process is discouraging for experienced senior researchers that do not normally apply for funding when interested in a sabbatical, but are invited by the host institution. DTU has therefore decided to address that group of researchers with other initiatives and to focus on younger postdoctoral fellows with the COFUND programme. The senior category will therefore not be implemented in COFUND 3.

Conclusions: COFUND 2 increased the number of fellowships and introduced senior fellowships. COFUND 3 will offer 44 fellowships with an increase in duration; thereby sustaining the number of fellowship months. COFUND 3 will consolidate efforts to attract and develop younger researchers early in their career.

✓ **Gender equality. Targeted dissemination of programme, evaluation and selection of applications**

Targeted dissemination strategy

DTU fully acknowledges the importance of equal opportunities. In that regard, several initiatives which fall under a "Gender Equality Policy" have been implemented since 2015 and a Gender Equality and Diversity Consultant was hired with the main task of overseeing initiatives to promote equality in the organization. DTU recruitment strategy is founded on "hiring the best-qualified candidate, regardless of gender". Removing "potential barriers", conscious or unconscious, which might create a bias at the recruitment stage" is a main focus. In line with this, DTU COFUND programmes welcome applications from all interested candidates irrespective of age, gender, ability, religion or ethnicity.

DTU, like other STEM universities, experiences a difficulty in recruiting enough female fellows. In 2013, only one Postdoctoral fellow on the internal DTU program was female. For this reason, COFUND 1 was committed to increasing the pool of possible female applicants by strategically disseminating the programme to reach female audiences. The dissemination strategy implemented in COFUND 1 has proven to be effective and has also been implemented in COFUND 2.

The following measures have been introduced: Each call has been announced in STEM networks for female scientists, namely the "European Platform of Women Scientists, EPWS" "Association for Women in Science, AWIS" and the "Society of Women Engineers, SWE". In addition, a local cross-disciplinary group for female scientists at DTU (Women in Engineering Science) has been made aware of these opportunities. Female candidates are encouraged by all DTU Research Departments to apply.

In 2013, only one Postdoctoral fellow on the internal DTU program was female. For this reason, COFUND 1 was committed to increase the pool of possible female applicants by strategically disseminating the programme to

reach female audiences. The dissemination strategy implemented in COFUND 1 has proven to be effective and has also been implemented in COFUND 2. In specific, the following measures have been introduced: Each call has been announced in STEM networks for female scientists, namely the “European Platform of Women Scientists, EPWS” “Association for Women in Science, AWIS” and the “Society of Women Engineers, SWE”. In addition, a local cross-disciplinary group for female scientists at DTU (Women in Engineering Science) has been made aware of these opportunities. Female candidates have been encouraged to apply by all DTU Research Departments.

Conclusions: The targeted dissemination strategy has led to a relatively high number of female applicants (~25%, table 2.3) considering the low female/male ratio in the engineering field. The strategy has proven to be successful and will be continued in COFUND 3.

Evaluation and selection of applications

To further promote equal opportunities, COFUND 1 and 2 have implemented gender blind evaluation⁸. This is a two-step approach.

First, applicants and any relevant references are instructed to use a gender neutral language in the application and letters of reference; this means refraining from using first names and gender specific pronouns such as he/she, his/hers, Mr/ms etc. and to use gender neutral terms such as parental leave instead of maternal/paternal leave.

Secondly, after the application deadline, the secretariat manually crosses out all first names, gender specific references and pictures of the applicant in the entire application, including CV, diplomas and letters of reference. Once this process is completed the applications are identified by an acronym defined by the applicants themselves. This ensures that neither the secretariat, nor the evaluators and the Selection Committee are aware of the name and gender of applicants, but only of the application acronyms. This ensures an evaluation unbiased by gender. Once the applicants who will be offered a fellowship are decided upon by the Selection Committee, the secretariat matches acronyms with names and offers are sent out.

Table 2.3 shows the percentage of eligible female candidates, initial 1st priority offers and final percentage of females awarded fellowships for calls 2014-2018. Initial offers mirror the overall percentage of female applicants each year. Overall, through the years, 23.8% of applications have been from female applicants and 24.4% of fellowships have been awarded to female applicants. This demonstrates that the gender blinded evaluations is a success and, for this reason, the measures will be implemented as well on COFUND 3.

Table 2.3: Female candidates and awarded fellows.

	Year	% of eligible applications – female	% awarded postdoc fellowships – female
COFUND 1	2014	24%	Initial offers; 25% Final fellows; 35%
	2015	26%	Initial offers; 25% Final fellows; 15%
	2016	24%	Initial offers; 27% Final fellows; 22%
COFUND 2	2017	22%	Initial offers; 27% Final fellows; 32%
	2018	23%	Initial offers; 23%

⁸ <http://eige.europa.eu/sites/default/files/mh0716096enn.pdf>

			Final fellows; 18%
Overall		23.8%	Initial offers; 25.4%
			Final fellows; 24.4%

Conclusions: as shown in Table 2.3 the percentage of offers that go out to initial 1st priority applicants mirrors the percentage of female applicants each year and overall the percentage of female applicants and awarded fellowships are identical. The gender blinded evaluation is a success and will continue to be implemented in COFUND 3.

Main conclusion: The combination of a strategic and focused dissemination of the programme with a gender blinded evaluation has resulted in a relatively high percentage of female applicants and a corresponding percentage of fellows employed. This strategy has thus proven itself effective and will continue to be implemented in COFUND 3.

✓ Inter-sectoral aspects and secondments

The evaluation criteria for COFUND 1 included interdisciplinary and multidisciplinary aspects. On COFUND 2 this was extended to also include inter-sectoral aspects and optional secondments. Table 2.5 shows the number of applicants that either had already planned a secondment at the time of application or indicated that they were interested but had not identified a suitable place for the secondment at the application deadline. In addition, applicants also indicated in which sector the planned or possible secondment should take place.

Secondment plans and interest at the time of application

For COFUND 1, where inter- and multidisciplinary aspects were part of the evaluation criteria, 3.5% of fellows had planned a secondment at application deadline, and 22.5% of fellows indicated they would be interested in a secondment (table 2.4).

For COFUND 2, where inter-sectoral and optional secondments were part of the evaluation criteria, 25% of fellows had planned a secondment at application deadline, whereas 11% of fellows indicated they could be interested in a secondment during their fellowship (table 2.4).

Table 2.4: Fellows' secondment plans

	Year	Planned secondment	sector	Nature of secondment	Interest in secondment	Sector	Nature of possible secondment
COFUND 1	2014	0	-	-	5	Academia	Short stays
	2015	1	Academia	Months	4	Academia	Unspecified
	2016	1	Academia	Short stays	4	3 Academia 1 Industry	unspecified months
COFUND 2	2017	6	2 Academia 4 Industry	2-6 months	2	Industry	Months
	2018	5	4 Academia 1 Other	2-3 months	3	1 Other 2 Industry	Unspecified 3 months

Secondment and interest in secondment during fellowships

Based on the questionnaire answers from alumni and currently employed fellows, 42% have at some point during their fellowship implemented a secondment in either academia, industry or other sectors. 58% did not but were interested (section 2.5 question 5). The reasons for not planning or implementing were; not feasible due to time restraints (43%), it would not be relevant (29%), could not identify a partner (21%) or other reasons (7%) (section 2.5 question 6).

44% of fellows indicated that the fellowship has had an “excellent” or “good” impact in terms of interaction/cooperation with the non-academic sector.

Conclusions: There is a great interest amongst the fellows for implementing research collaborations with non-academic institutions through the secondment scheme. The innovation ecosystem at DTU enables fellows to easily plan and implement secondments even after they have started working at DTU (28.5% of the fellows planned a secondment at the application stage vs. 42% of the fellows who actually add secondments during fellowships). The main factors that have limited the fellows’ ability to include a secondment in COFUND 1 and 2 are related to the time restraints of the fellowship total duration and the fellows’ ability to find a suitable partner where to be seconded. COFUND 3 will offer to all the fellows a three year fellowship thereby allowing them to plan in advance a meaningful secondment at other institutions. The mandatory secondment in other leading academic environments, industrial companies, and other sectors, will be included at the proposal stage. The programme will support the fellows in identifying suitable partners among others by providing them an overview of the institutions that have already shown interest in the programme and that are willing to contribute. The secondment will support the fellows in looking at different career paths and in broadening their expertise and will provide them a unique platform to become future research leaders, industry leaders, or entrepreneurs.

✓ **Career development and employment status**

COFUND 1 and 2 have had a significant focus on strengthening the employability and future career of the young researchers. This is achieved through career guidance and planning through individual career development plans, through offering training opportunities and providing the framework for establishing a professional network within the fellow community.

Career guidance and planning

Fellows on both COFUND 1 and 2 have been required to make Career Development Plans (CDP) in co-operation with their supervisor. These include expected milestones, results and dissemination, technical and research management skills, plans for secondments, expected impact on the fellow’s career and integration into DTU and Denmark. In addition, fellows were asked to consider their goals short- (1-2 years) and long-term (2-5 years) and how to achieve them. The career plans enable fellows to define their own goals and to define which steps they need to take to achieve them.

Employment status

An analysis on the employment status of COFUND 1 alumni enrolled in 2014 and 2015 (fellows enrolled in 2016-2018 are still employed at DTU) has shown that almost all alumni are, and mostly in academia. Some of the fellows even left their fellowships before the ending in order to work as assistant/associate or full professors.

Table 2.5: Alumni employment status, sector and job title/function.

COFUND	Enrolment year	Current sector	no.	Job title
COFUND 1	2014 (20)	Unemployed (0)	-	-
		Academia (16)	1	Professor
			1	Associate Professor
			4	Assistant Professor
			1	Researcher
			1	Lecturer
			8	Postdoc
		Industry (2)	1	Senior Application Engineer
			1	Product Development Engineer
		Other/unknown (2)	2	-
	2015 (20)	Unemployed (1)	1	-
		Academia (15)		Professor
				Associate Professor
			2	Assistant Professor
			2	Researcher
			1	Lecturer
			10	Postdoc
		Industry (2)	2	Scientist
		Other/unknown (2)	2	-

Conclusions: Focus on the development of CDPs has resulted in a 100% employment status of the fellows either in the academic and non-academic sector. The CDPs have supported the fellows in defining the necessary steps regarding training courses, hands on training, networking and secondments, needed to enhance their career perspectives. The implementation of CDPs will be continued in COFUND 3.

✓ Career Development; Training

Fellows' training is achieved on many levels; 1) training-through-research, 2) training where specific scientific knowledge is acquired, 3) training on soft and transferable skills, and 4) the bi-annual DTU COFUND fellow days aimed to introduce relevant themes and strengthen the research community of the fellows. Fellows report that the training-through-research is progressing to satisfaction - (Section 2.5 question 9 – 41.82% state that a longer fellowship would allow them to go deeper into their research – thereby learning even more), (section 2.5 question 1 – 27% list the possibility to learn new skills and techniques and 29% list the reputation and research strength of the hosting research group as the main reason for applying with DTU).

Soft and transferable skills training is provided as part of the existing DTU academic training program (fellows are free to choose relevant training courses on their own initiative). The DTU fellow days have also been successfully implemented via secretariat coordinated workshops with DTU staff as well as invited external experts (workshops topics have included “cultural intelligence”, “considerations towards research excellence; pathways and opportunities”, “gender dimension in sciences, research and innovation”).

DTU is continuously striving to provide training and career development opportunities for the most talented fellows. Therefore, a “Young Researcher Training Programme” was initiated in 2018, a specific initiative aimed at young postdocs (up to 7 years of experience from their doctoral grade) already employed at DTU, offering multidisciplinary elements of personal and career development thereby promoting a community of diverse intellects. The ultimate goal of the programme is to promote research excellence that has become the benchmark for quality of research and both individual and institutional reputation. COFUND 3 will implement a training program for the COFUND fellows based on this recent initiative.

Conclusions: Fellows reported that training through research and gaining specific scientific knowledge on a practical level is well established and well functional in all departments. The annual fellow days and workshops have been conducted successfully with a variety of topics. Fellows are expected to construct their own training program by selecting established courses in soft and transferable skills. Not all fellows felt able to do so due to finance restraints, not having sufficient results to present, time restraints or not having the knowledge of which conferences would be relevant (see section 2.5 point 8) and it is therefore recommended that a more structured training program is implemented for fellows on COFUND 3. COFUND 3 will implement a structured training program with specific elements tailored to the needs of young excellent researchers.

✓ **Career Development, networking opportunities**

91.5% of fellows state that the fellowships have had an “excellent” or “good” impact on developing and expanding their personal research networks. 25.45% feel that a longer fellowship would have allowed them to further expand their professional network (section 2.5 question 9).

As stated by the American National Postdoctoral Association⁹ “Networking allows postdocs and professionals to cultivate relationships with people who can be helpful to one professionally, especially in finding employment or moving to a higher position”. A Belgian study from 2014 has shown that through networking and secondment the fellows reach awareness about the skills needed for working in non-academic settings (Hannelore De Grande, Katrien De Boyser, Karen Vandeveld, Ronan Van Rossem. 2014. Journal of the Knowledge Economy. 5(3). p.538-561.).

A Danish study from 2012 on the employment status of Ph.Ds that have been working on an industry-focused doctoral project, conducted in cooperation of a private company, has concluded that the rate of employment of those PhDs is high in comparison to conventional PhDs¹⁰.

Conclusions: Facilitating networking possibilities and secondments support the fellows in identifying and finding jobs possibilities both in industry and academia. Moreover, the fellows have the possibility to focus on developing technical skills and more transferable competencies that are considered important by the industry and other sectors but often underestimated by doctoral candidate. COFUND 3 by implementing a mandatory intersectoral/interdisciplinary secondment will further facilitate the mobility of the fellows from academia to other sectors and areas and support them in avoiding the mismatch of skills that are needed in a different setting.

Key Facts Conclusions for COFUND 1 and 2

The programmes have a positive impact on:

- Attracting excellent researchers from all over the world to the European Research Area, as demonstrated by the number of applicants and geographical diversity;
- Increased number of female applicants and fellows;
- Increased number of fellowships;
- Enhance the fellows career possibilities, as demonstrated by project secondments, career planning and alumni employment (only possible for COFUND 1)

⁹ https://www.nationalpostdoc.org/page/about_us_home

¹⁰

https://innovationsfonden.dk/sites/default/files/the_effect_of_the_industrial_phd_programme_on_employment_and_income_v4_1.pdf

Recommendations for COFUND 3

- Longer fellowships (increase from 24 to 36 months) will allow for higher ambitions in terms of goals and creativity by giving fellows the opportunity to increase the scientific rigorousness and implementing high risk/high gain elements into their research.
- Mandatory secondments will support the fellows in building a broad set of competencies and skill that will make them more attractive for the job market either in academia or in other sectors addressing that way one of the European Research Area (ERA11) priorities and contributing in that way in making Europe's science system more competitive
- Extra focus on "Training excellence" – the talent, career and personal development of the fellows, while strengthening their sense of community within the COFUND programme
- Consolidate efforts to attract and develop younger researchers early in their career.
- Continue to disseminate the program directly to female scientist networks.
- Continue to conduct the successful non-gender biased evaluation of applications.
- Widening participation by identifying strategic alliance universities in EU13 countries and targeted dissemination of the programme to these partners

2.3. Excellence of the evaluation of applicants

In the COFUND 1 and 2 programmes independent evaluators from other countries, with diverse expertise and relevant experience in order to ensure that the higher quality fellows were the ones being selected for the PostDoc programme, were involved. In fact, three entities were selected and/or created to be part of a two-stage evaluation procedure, which was designed to be in full compliance with the European Charter for Researchers and Code of Conduct for their Recruitment:

1. **The hosting research department.** The Head of Department fills out a standardised form stating whether they can or cannot host the potential fellow regarding the fulfilment of the sub-criteria "Quality and match of research group facilities/infrastructure, scientific framework and staff hosting the fellow". The evaluators can take the host's reflections regarding this sub-criterion into consideration during the evaluation of applications; however they are not bound by the host statement.
2. **Five programme area evaluation panels.** Each panel consists of one DTU Researcher (the coordinator of the panel) and 2-4 international researchers recruited primarily within DTU's network, from industry and academia. Before starting the evaluation process, each evaluator must sign a statement confirming that he/she is: an internationally renowned and recognised expert in his or her particular field (assessed by bibliographical analysis, e.g. ISI), relevant for the programme area and proposal evaluation; fully independent, impartial and objective; able to perform evaluations electronically; and, finally, committed to follow the Guidelines for Evaluation (containing the pre-defined evaluation criteria). In addition, all evaluators are asked to be aware of any conflict of interest between themselves and the applicants, and must sign a statement disclosing any professional or personal relationship that could entail disqualification. Until now, in the COFUND 1 and 2 programmes, a conflict of interest between the applicant and one of the evaluators was declared in 33 cases (2014:12, 2015:4, 2016:5, 2017:5 and 2018:7). In these cases, a different evaluator was appointed. Each programme area panel performs an internal ranking of their panel.
3. **One Selection Committee Board.** The Board has five members from DTU, overseen by the DTU provost or Dean of Research. To ensure transparency, fairness and a secure and optimal process the selection is performed by the Selection Committee Board. The Board has the opportunity to change ranking of applications based on comments in the evaluation summary reports from the review panels, and – if relevant – following the applicants appeal (see below). This possibility is only exercised based on thorough discussions and sound reasoning.

After receiving the evaluation report, all candidates have the **opportunity to write an appeal**; i.e. candidates are able to comment on the evaluation of their application, to report substantial misunderstandings of important aspects in the application by the evaluators. In cases where applicants point to substantial misunderstandings on part of the evaluators, an additional external and independent appeal evaluator is assigned. The appeal

¹¹ FP7 ex post and H2020 interim evaluation of Marie Skłodowska-Curie actions (MSCA)

evaluator is asked to evaluate the original application in context of the evaluation report and appeal. The comments – from both the applicant and the additional appeal evaluator – are then forwarded to the Selection Committee Board to be considered together with the evaluation reports when the Board performs the final ranking of applications.

Overall, by providing candidates with extensive information about the application and selection process and by giving them the possibility to appeal after seeing the evaluation report and prior to the actual selection, the COFUND 1 and 2 programmes have ensured **transparency in the application and selection procedures**. These procedures will be implemented in COFUND 3.

The results of the evaluation process for the years 2014 - 2018 are summarized below.

✓ High quality of the applicants

With the COFUND programmes DTU has attracted highly qualified applicants, as demonstrated by the distribution of scores awarded during the evaluation for all eligible applications (figure 2.2). Scores of 1-6 are awarded, 6 being the highest. The figure shows that the majority of applications are given the higher-end scores of 4-6 during evaluation. Fellowships are only offered to applicants with scores 5 or 6.

DISTRIBUTION OF SCORES AWARDED DURING EVALUATION

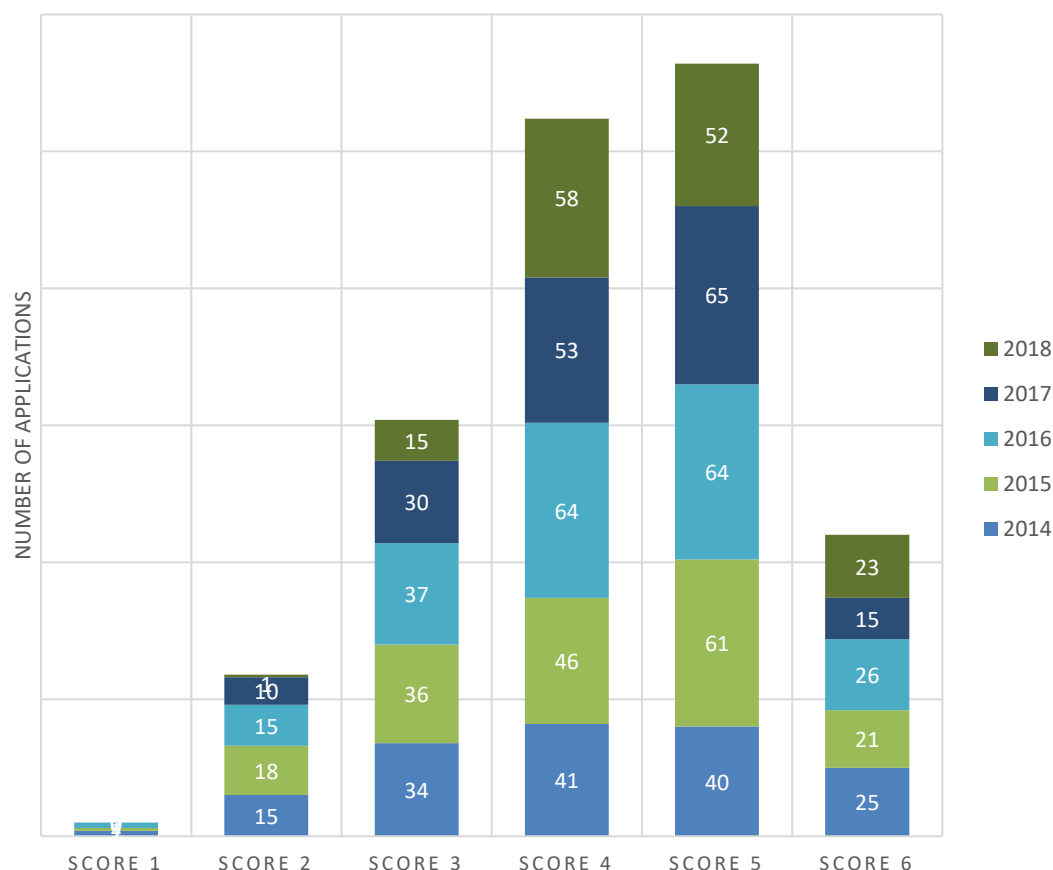


Figure 2.2: Graphical representation of the distribution of scores rewarded to all eligible applications for COFUND 1 (2014-16) and COFUND 2 (2017-18). The years 2014-18 are visualised by different colour boxes, the number of applications awarded each score is listed in each box. Score 6 is the highest possible score. Fellowships are only offered to applicants with scores 5 or 6. The majority of applications are awarded scores 4, 5 or 6 which corresponds to “good”, “excellent” and “outstanding”.

2.4. Evaluation criteria as stated in the call text and used under COFUND selection process

The evaluation process for the COFUND 1 and 2 programmes is both **transparent and open**. The call text for both programmes is detailed and the evaluation criteria against which the proposals are evaluated are clearly described (see Table 2.6). Both the call text and the criteria are published on the programme webpage and accessible to all the interested candidates.

The formal requirements implemented in both COFUND 1 and 2 will be consolidated in COFUND 3. Moreover, the applicants will be required to specify in their proposal the project's expected contribution to the **sustainable development goals**, if applicable¹². That will be taken into consideration by the evaluators.

Table 2.6: Eligibility Criteria; Formal requirements.

COFUND 1 and 2
Research plan max 5 pages + ½ page introduction
CV
Publication list
Letters of recommendation from most recent employer or grad. university (COFUND 1 only)
Ethics issues table
Bottom up and idea driven research
COFUND 1 no prior contact to DTU department required
COFUND 2 prior contact required to ensure fit to hosting department in terms of infrastructure and resources
Comply with incoming mobility criterion
Document status as young experienced researcher by providing PhD diploma or declaration from supervisor on date of PhD defence

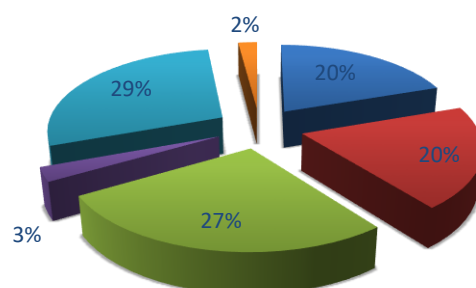
2.5. Fellows impact assessment

A questionnaire has been sent out to all COFUND 1 alumni and COFUND 1 and 2 fellows currently employed on the programmes (79 in total) in order to collect their feedback regarding the impact of the programme on their skills and career, and on the potential for improvements. 37 out of 39 current fellows and 22 out of 40 alumni have returned their questionnaires. In the following we present an analysis the input received from the 59 fellows who have responded.

¹² <http://ec.europa.eu/research/environment/index.cfm?pg=sdgss>

1) Which factors were the most important for your decision to apply for this Fellowship?

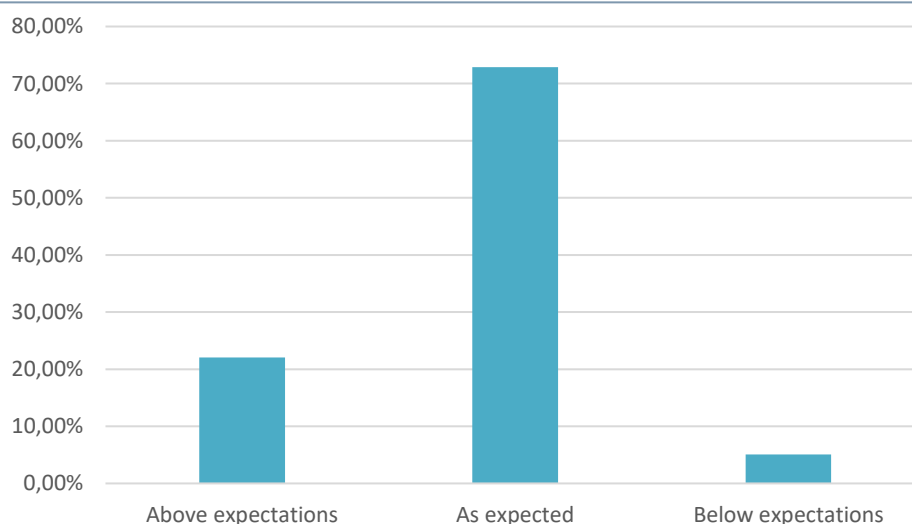
Most important factors for fellows deciding to apply for the fellowship



- Improve the CV - enhance career opportunities in industry and with well-renowned universities
- Experience abroad
- Learn new techniques and acquiring knowledge on a specific area
- Possibility to interact with non-academic sectors (hospital, municipality, international organisations etc.)
- Research strength and reputation of hosting research group, department and/or university
- Other

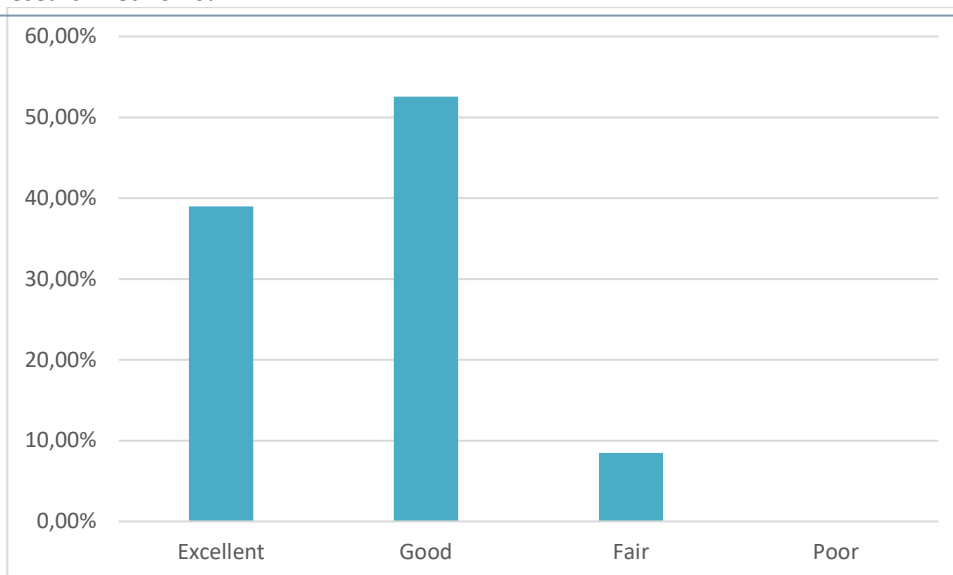
When asked about the most important factors that made fellows choose to come to DTU 29% state the importance of the international research strength and reputation of the university and/or hosting research group, 27% come to acquire particular research skills or knowledge, 20% highlight the importance of going abroad and 20% state that they chose to come to DTU to improve their CV and enhance their career possibilities in industry or well-renowned universities. Finally, 3% indicate the possibility to interact with the non-academic sectors.

2) To what extent did the COFUND Programme respond to your demands and expectations?



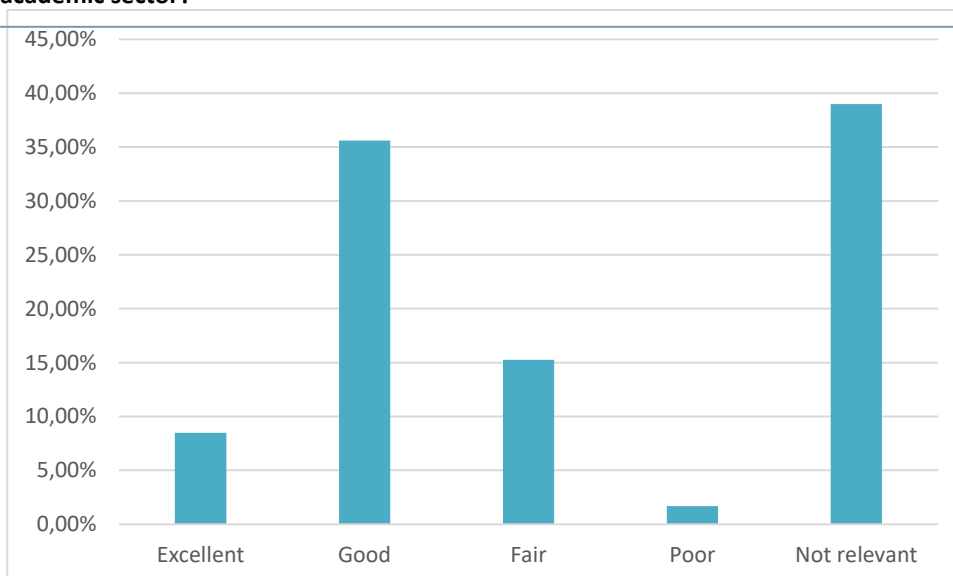
95% of fellows feel that the fellowship has lived up to their demands and expectations or even above expectations.

3) What has been the impact of the COFUND Programme on developing and expanding your personal research networks?



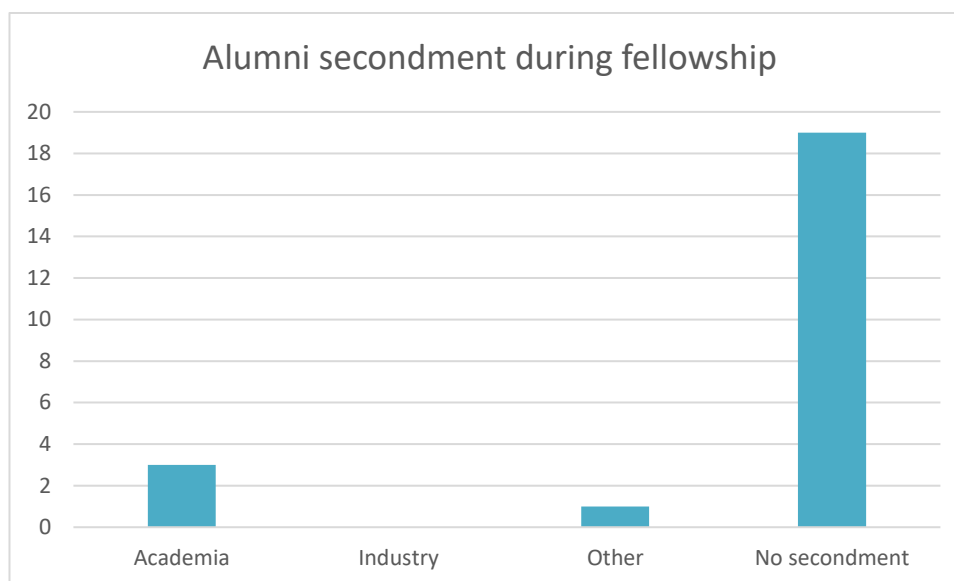
91.5% of fellows feel that the fellowships has had an “excellent” or “good” impact on developing and expanding their personal research networks.

4) What has been the impact of your fellowship in terms of interaction/cooperation with the non-academic sector?



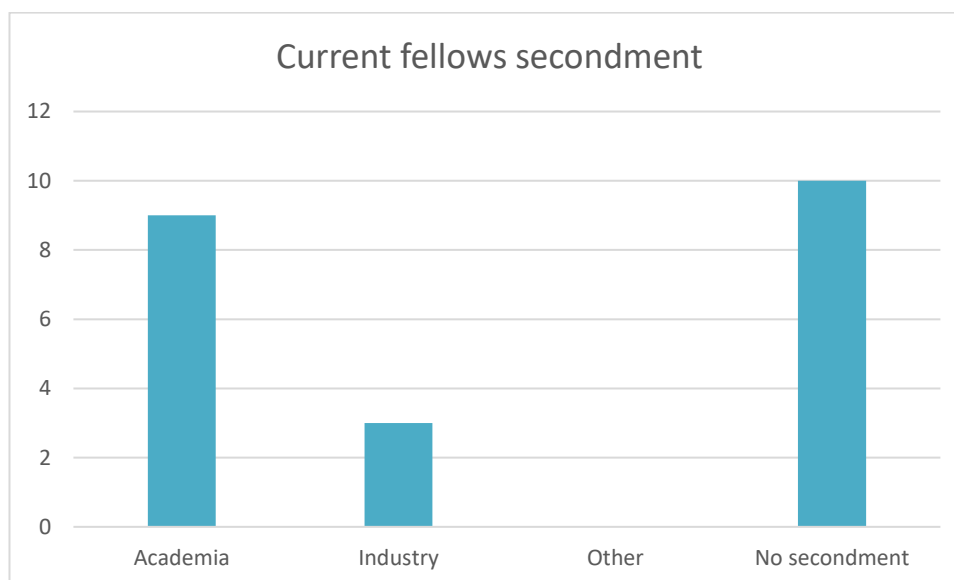
44% of fellows feel that the fellowships have had an “excellent” or “good” impact in terms of interaction and co-operation with the non-academic sector. This is a very high percentage given the fact that 7% of fellows have had a secondment in the industry (this section question 5) and 3% indicated this as a reason for choosing DTU (this section question 1). 39% indicate that this was not relevant for them.

5) Did you/have you planned a secondment during your fellowship or would you be/have been interested in a secondment?

Alumni, COFUND 1

Of the respondent alumni fellows, 4 fellows on COFUND 1 had included a secondment in their project. 19 had not included a secondment.

The reasons for not including a secondment during their fellowship was listed by fellows; not feasible due to time restraints (8), could not identify a suitable partner (1), not relevant (9), other (1) (see question 6).

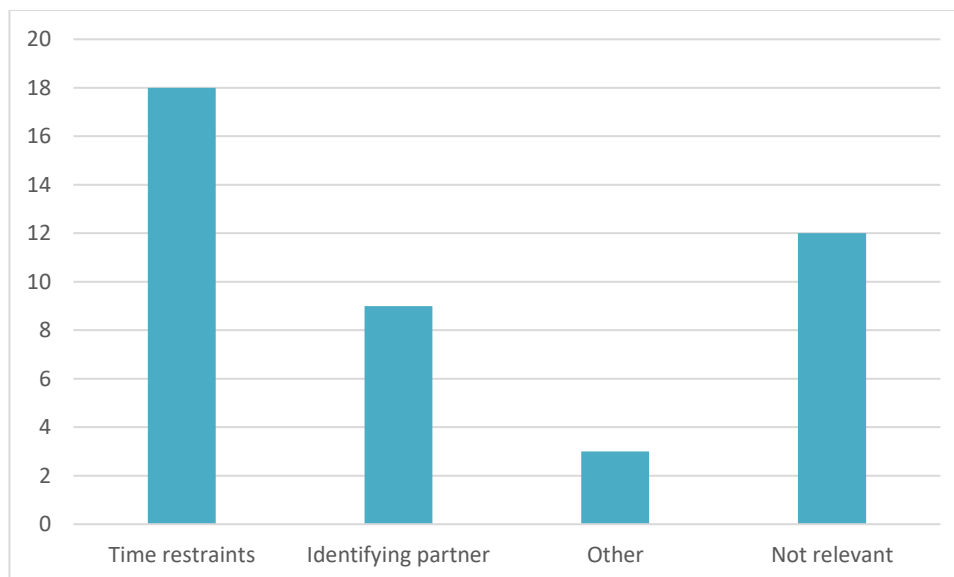
Current fellows, COFUND 2

Of the current fellows employed on COFUND 2, 12 have included a secondment in their project. 10 have not included a secondment.

Current fellows have listed the reasons for not including a secondment during their fellowship; not feasible due to time restraints (10), could not identify a suitable partner (8), not relevant (9), other (2) (see question 6).

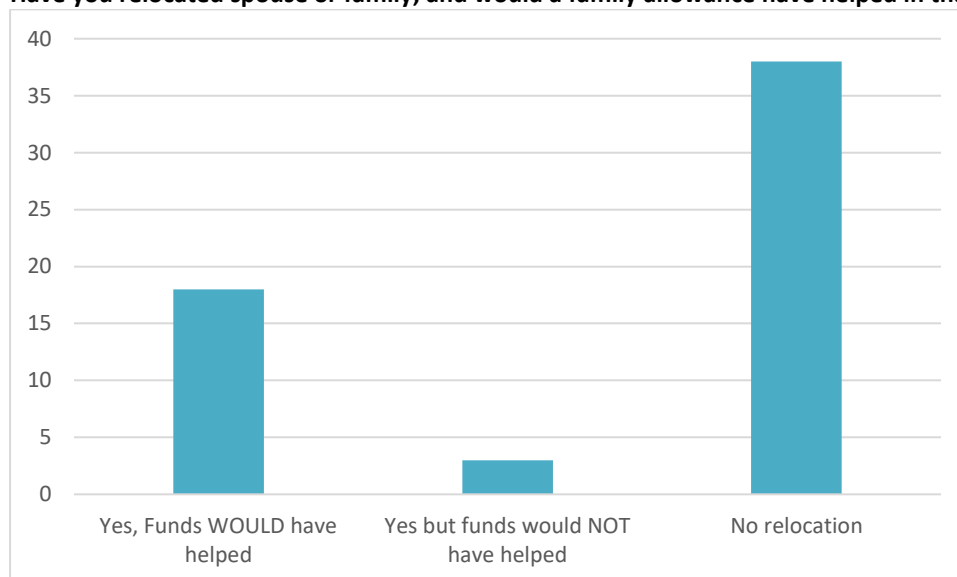
However, many of the fellows who did not include one have indicated that they would have liked to do so, either in academia (12) and/or industry (10).

6) What is the reason for not planning a secondment, COFUND 1 and 2?



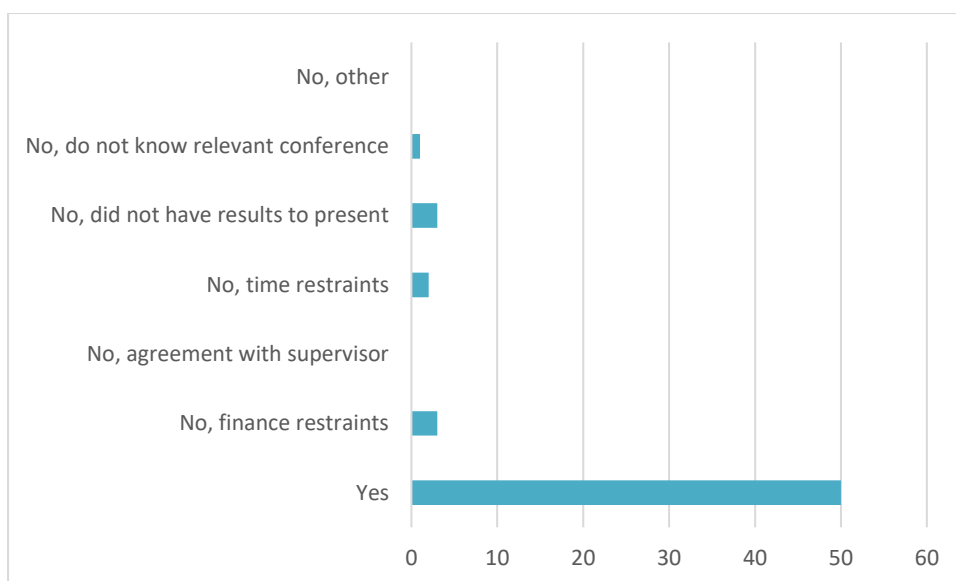
The reasons for not planning or implementing a secondment indicated were: not feasible due to time restraints (18), it would not be relevant (12), could not identify a partner (9) or other reasons 3).

7) Have you relocated spouse or family, and would a family allowance have helped in that regard?



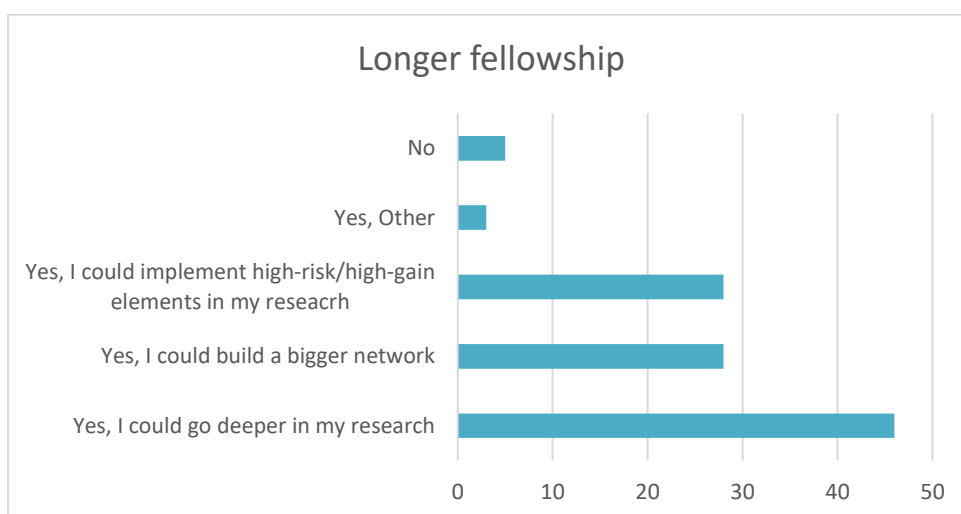
64% of fellows have not relocated spouse or family during their fellowship. 36% of fellows have relocated spouse or family and the majority of these felt that a family allowance would have been helpful.

8) Do/did you have the opportunity to go to relevant conferences and network meetings?



The majority of fellows feel they have the opportunity to attend relevant conferences and networking meetings (85%). 3 did not and have listed finance restraints (5%), not having sufficient results to present (5%), time restraints (3%) or not having the knowledge of which conferences would be relevant (2%).

9) Would a longer fellowship have helped?



Only 8% of fellows do not feel they would benefit from a longer fellowship. The majority, 92%, feel a longer fellowship would be beneficial and would allow them to go deeper in the research, aid them in building a bigger network and to implement high-risk/high-gain elements in their research.

10) What has been the impact of the COFUND programme on your ability to conduct independent research and development? What key professional, technical and scientific experience and skills did you gain during the programme?

The great majority of the respondents recognise the importance and positive impact of the programme on their skills and ability to conduct independent research. They describe a clear expansion of their scientific and technical skills as well as a very useful learning of new techniques and approaches to solve problems, which is in part due to the access to state-of-the-art facilities and labs. Many fellows feel the programme has provided them with the opportunity to work with world class researchers.

Fellows describe how the programme has helped them to think independently, define new research directions and how to construct bottom-up research thereby facilitating their establishment as independent researchers. Fellows have honed their skills in research grant writing as well as improving their presentation, writing and oral English skills. Supervision, mentoring and teaching experience were also referred as important skills strengthened by the programme.

Fellows have also indicated that secondments have given them opportunities to provide scientific advice to government and to transfer knowledge to real-world implementation.

Finally, fellows have indicated the opportunity for international and new interdisciplinary collaborations and the interaction with world experts as a key positive impact of the programme, which also contributed for the extension of their professional network.

11) What has been the impact of the COFUND programme on your career so far?

As shown in section 2.2, the employment status of former fellows is almost 100%, and some fellows even left their fellowships early to take on new positions as assistant/associate or full professors.

This correlates nicely with the feedback from former fellows regarding the impact of the COFUND 1 programme on their career. The majority of alumni mention that the programme has given them an opportunity to continue within academia and securing permanent positions, due to the improvement of their CV and experience. They have gained confidence in themselves that they can plan and carry out independent bottom-up research.

Many feel that they have expanded their scientific network by keeping a strong connection with their supervisor and the scientific network at DTU, as well as beyond DTU.

The alumni feel that they have gained strong soft skills within grant writing and knowing how to secure external funding, presentation skills and teaching/mentoring skills.

Many alumni also feel that they have acquired skills applicable to real-life and that these skills have significantly improved their employability.

12) If you were to mention one thing that we could have done better in this programme, what would it be?

The following suggestions to improve the programme have been received by fellows and will be implemented in the COFUND 3 programme:

- Extend the duration of the fellowship for at least one year;
- Closer collaboration with industry;
- Financial support for:
 - Participation in at least one conference;
 - Travels, which could be helpful to establish a better international scientific network or collaboration;
- Organization of seminars and meetings where the fellows could communicate their work, cooperate with other fellows to share experiences and ideas, and build connections between different fields and people. These seminars/meetings could also be used for presentations from researchers outside DTU or from industry;
- Inform all fellows of the opportunity to apply directly for an MSCA IF.

One of the suggestions received is already implemented at DTU, and should be communicated in a clearer way to the fellows:

- Support for finding an apartment

Public dissemination and outreach by fellows enrolled on COFUND 1 and 2

DTU has investigated the publications resulting from the work funded by COFUND 1 and 2.

So far, the 58 COFUND 1 fellows enrolled in the period 2014 - 2016 (of which some are still employed on the COFUND 1 programme at DTU) have produced 542 peer-reviewed publications, book chapters and conference proceedings; an average of ~9 publications per fellows. The 22 COFUND 2 fellows, enrolled in 2017 and all still employed on the programme, have produced 50 peer-reviewed publications, book chapters and conference proceedings; an average of ~2 publications per fellow so far. In the years to come more publications etc. will be published by fellows.

3. Key findings and Recommendations

After a careful analysis of the previous DTU COFUND programmes, namely COFUND 1 and COFUND 2, it was possible to draw some key conclusions regarding their impact, as well as elaborate on the main recommendations towards an improvement of the programme in the future – i.e. the COFUND 3. The key findings can be summarized in the following:

- In COFUND 2, an increase has been verified in the applicants' success rate, when compared with COFUND 1 – the success rate has increased from 8% in the last COFUND 1 round to close to 15% in the last COFUND 2 call. This has been possible due to the introduction of a mandatory contact between the researcher and the potential supervisor (PI), prior to submitting the application; with this, it was ensured that only relevant candidates – with research interests matching the interests and infrastructure of the host research group – applied to a COFUND fellowship.
- A relatively high percentage of female applicants has been verified in COFUND 2 due to the introduction of a gender blinded evaluation combined with the existing strategic and focused dissemination of the programme towards female researchers.
- In COFUND 2, the encouragement of the applicants to include secondments in their research plan has contributed to strengthen and diversify their career prospects (both in academia and industry). The importance of implementing inter-sectoral and inter-disciplinary research collaborations through a secondment scheme has been acknowledged by most fellows.
- The implementation of thematic workshops for COFUND 2 has provided the fellows with more training and career development opportunities.

In both COFUND 1 and COFUND 2 the application and selection process has been guided by absolute transparency regarding the evaluation criteria and review process. The same process will be maintained in COFUND 3, as it has ensured the selection of high quality fellows – as demonstrated by the awarded high scores.

The COFUND 1 and 2 fellows were also asked to make an assessment of the impact of the programme through a questionnaire specifically created for that purpose. Overall, most of the fellows have recognized the positive impact of the programme on expanding their scientific skills and on their ability to conduct independent research. The impact of the new programme on their careers was also assessed for all COFUND 1 fellows. This analysis has revealed an 100% employment status of the fellows. This number is greatly supported by the required CDPs which enable the fellows to define the necessary steps to enhance their career perspectives. In COFUND 3, the elaboration, continuous evaluation and update of a CDP will also be mandatory for each fellow.

In addition to the employment status, and analysis of the publications resulting from the work funded by the COFUND 1 and 2 programmes – a key indicator of these Programmes impact – was made, leading to the impressive number of 600 publications so far. However, in a further stage – and given the encouragement for inter-sectoral secondments – it would also be important to assess the impact of the COFUND programmes in terms of the number of patents filled and even start-ups created.

From the questionnaires that was sent out to the COFUND 2 fellows and COFUND 1 alumni it was also possible to conclude that the programme: (1) has responded well to the demands and expectations of the fellows; (2) has been helpful to expand the fellows' personal research networks; 3) when relevant for the research project, had a positive impact in terms of interactions and cooperation with industry and, also for this reason, (4) several

fellows, particularly in COFUND 2, were interested in having a secondment in industry during their PostDoc project.

Finally, we recommend the present report to be used as a tool to evaluate the viability and potential to continue with the COFUND programmes through a new grant application in 2018. It can also be used as a basis for future improvements or modifications to the DTU PostDoc programme. **Some of the already foreseen possible modifications and improvements** – drawn from the analysis of this report – **include:**

- **Increase duration of fellowships awarded.** Fellowships will be extended to 36 months. This will allow the fellows to draw a more ambitious research project, with more high-risk/high-gain elements. It will also facilitate the inclusion and potentially increase the duration of secondments.
- **Include mandatory secondments.** As part of the fellowship, fellows must enrol on a secondment. This is expected to support them on broadening a set of competencies, exposing them to different working environments, and expanding their skills respond to public / private sector needs and network.
- **Promote wide participation from EU13 applicants.** Increase number of applicants from EU13 member states – contributing to reduce innovation gaps across the European Research Area (ERA).
- **Consolidate measures that have revealed successful in COFUND 1 and 2 programmes.** These measures include, among others, the consolidation of 1) targeted dissemination activities (towards female applicants and researchers from diverse geographical regions) and 2) the transparent and non-gender biased evaluation process.