RESEARCHERS IN MOTION

Quarterly Newsletter Issue 2 2019

EURAXESS NORTH AMERICA

This newsletter is also intended as a communication tool with you all, so please do not hesitate to contact us at northamerica@euraxess.net for comments, corrections or if you want to advertise for a particular funding scheme or event

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Dear Friends and Colleagues!

Being the gateway to the European Research Area (ERA), EURAXESS takes pride in providing an array of information on Europe's vibrant and dynamic research landscape, from latest strides and achievements to funding and partnership opportunities through our new and improved portal and beyond!

In the second 2019 issue, we are zooming into Poland as one of the European Research Area's research destinations; bringing you an interview with Dr. Agnieszka Weinar – a former Global Marie Skłodowska-Curie fellow and current Marie Curie Alumni Association's North America Chapter Chair based in Canada. Our hot topic for this issue is 'Status update of gender equality in research careers in Europe'.

EURAXESS North America is very pleased to provide you with the latest news and developments from the ERA. As always, we strive to offer a selection of articles to engage our growing community of researchers and science advocates in North America, and include recent and very interesting R&D news from the European Research Area, Canada and the United States.

Enjoy reading the newsletter!

With Best Wishes,

Your EURAXESS North America Team

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1 EURAXESS Country in Focus: POLAND

Poland is a country located in central Europe near Baltic Sea, Sudetes- and Carpathian Mountains.

It's EU member since 2004.

Country Size:

312 696 km²

Population

38 413 000 (2018)

Language

Polish

English is widely spoken

Capital

Warsaw

Currency

Polski złoty (PLN)

Unemployment rate

3,8% (2018)

More about Poland:

https://www.polska.pl/

Tatra Mountains, www.pixabay.com

Poland is a country located in central Europe. It has a developed market and it is a regional power. It has the eighth largest and one of the most dynamic economies in the European Union, achieving at the same time

a high rank on the Human Development Index. Poland is a developed country, which keeps a high-income economy along with great standards of living, life quality, safety, education and economic freedom.

The country provides free university education, state-funded social security and a universal health care system.

Poland is a cradle of many outstanding Nobel Prize winners, e.g.: Maria Skłodowska-Curie (Physics 1903 and Chemistry 1911 Nobel Prize), Józef Rotblat (Nobel Peace Prize, 1995), Czesław Miłosz (Literature Nobel Prize 1980), Menachem Begin (Nobel Peace Prize, 1978), Leonid Hurwicz (Economics Nobel Prize, 2007) and many more.

Research and Development in Poland

Over the last 20 years, the Polish R&I sector has developed rapidly. Thanks to national and European Structural Funds GERD has exceeded 1% of GDP, hundreds of institutions have been equipped with modern infrastructure, start-ups are dynamically developing, industrial doctorates introduced in 2017 are popular among the private sector. Moreover, there are many dynamically developing science parks, which offer consulting services in technology transfer and transforming of research results into technological innovations.

In Poland there are ca. 400 higher education institutions, 79 Polish Academy of Sciences establishments and around 120 public research institutes and

laboratories, which focus their activities on conducting applied research and development activities. Higher education institutions (HEIs) are one of the most dynamically developing centres of social life in Poland, which plays a major role in the development of national research potential. There are circa 100 public (state-funded) and 300 private universities. They are of different profiles, for example: universities, universities of technology, economics, agriculture, arts, medical universities, university schools of sport, military schools, as well as Higher Schools of Professional Education. The Minister of Science and Higher Education supervises most of them, but some are governed by other relevant ministries (i.e. the Ministry of Health, Ministry of Culture, Ministry of National Defence).

Polish Academy of Sciences; www.pixabay.com

The Polish Academy of Sciences (PAS)

It is an independent state research institution with units across the country. The mission of the Academy is two-fold. It is a network of research centres comprising of 79 research establishments (institutes and research centres, research stations, botanical gardens and other research units) and auxiliary scientific units (archives, libraries, museums), including foreign PAS stations in Brussels, Paris, Berlin, Rome, Vienna and Moscow. On the other hand, PAS is a corporation of scholars from different institutes, also from abroad. PAS organises, integrates research community and prepares expert opinions for public institutions. Researchers from institutes of Polish Academy of Sciences got 7 ERC grants: Nicolaus Copernicus Astronomical Center Department of Astrophysics (2 grants); Mathematical Institute (1); Nencki Institute of Experimental Biology (1); Institute of Biochemistry and Biophysics (1); Institute of Physical Chemistry (1), Institute of Physics (1) and ca. 50 participations in MSCA grants in Horizon2020, e.g. MSCA COFUND 'PASIFIC' which will finance 50 fellowships for scientists coming to 79 institutes of the PAS.

Polish Universities

Poland has 18 classical universities, mainly in the largest cities. The oldest one is **Jagiellonian University** in Cracow, established in 1364. That University consists of thirteen main departments and three faculties of Collegium Medicum. As the only university in Poland, the Jagiellonian University is a member of many associations of the most prestigious universities in the world, including Coimbra Group, Europaeum or Utrecht Network.

Warsaw, www.pixabay.com

The highest ranked and the biggest is **University of Warsaw**. Some of Nobel Prize winners mentioned above are graduates of this University (e.g. Leonid Hurwicz, famous economist). Researchers from UW got half of 28 ERC grants in Poland. From 2016 it has prestigious "HR Excellence in Science" logo, which is a confirmation of keeping rules of European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers. In the Shanghai scientific area ranking in 2018, ten disciplines at the University of Warsaw were included. The highest places (position between 51st and 75th in the world) were taken by mathematics and physics.

Development units

They include about 700 business entities active in the area of R&D. Beside their principal activity, they also conduct experimental development aimed at application of already existing knowledge gained through conducting basic or applied research or through practical experience. The knowledge is applied to produce or significantly improve new materials, devices, products, processes, systems or services. The companies cooperate with national research units, such as universities and research institutes.

Bionanopark in Łódź; fot. M. Szuber

Research institutes

These are state-funded institutions operating as separate entities in terms of their legal basis, organisational arrangements and funding mechanisms. They are supervised by various sector ministries, which conduct R&D activity in line with the needs of the national economy and social life. Among 115 units, there are research institutes, central laboratories and research and development centres, which focus their activities on conducting applied research and development activities. The Main Council of the Research Institutes is their representative body.

Łukasiewicz Research Network

A recent initiative is the Łukasiewicz Research Network which is the biggest Polish and 3rd largest European research and development network connecting 38 scientific institutes with hundreds of world class laboratories and almost 8000 employees in 11 locations across the country. Its aim is to conduct applied research, particularly important for the country's innovative development and to provide a better transfer of knowledge to the economy.

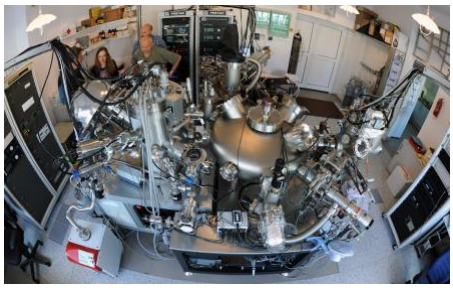
Patents

In terms of applications of inventions for protection, Poland is ranked 17th in the world, while in terms of granted patents − 15th on the list of the World Intellectual Property Organization among all countries in the world. It is worth noting that the highest number of patents is reported by Polish universities and research institutes, not private companies, which is a distinctive feature of other countries. A pinch of examples:

- Developing solutions for the super fast X3 hybrid helicopter, creating a battlefield robot, an internet browser for people paralyzed - these are some illustrations of the cooperation of the Lodz University of Technology with the industry.
- Graphene. The unusual material was invented by the Russians. However, Poles have found a method by which it can be obtained on a mass scale with little money. This is a unique discovery, because it allows you to start production of many items that you need in your life. Among them, there are mostly extremely capacious batteries, exceptionally durable car windows and many, many other useful solutions. For discovering this cost-effective method of production, scientists from the Institute of Electronic Materials Technology in Warsaw are responsible.

- Polish engineer teams regularly win contests in USA and Europe for Mars rovers.

In 2018 students from the Częstochowa University of Technology have won the University Rover Challenge. The third place was taken by a rover constructed by students of the Kielce University of Technology. The fourth was a machine created by the Raptors team from the Lodz University of Technology. Moreover, on 5th May 2018 NASA launched the InSight lander and probe that will be used for Mars research. One of the main measuring devices was created with the participation of scientists from the Polish company. It is used to monitor the flow of heat on the surface of the planet.



Institute of Physical Chemistry, fot. G. Krzyżewski

Where can you get funding from?

The reform of research system introduced by the Ministry of Science and Higher Education creates favourable conditions for developing scientific and didactic excellence (e.g. research universities initiatives) and gives the universities more autonomy in managing their potential. The reform resulted, among others, in establishing public research funding organisations to which foreign researchers may also apply for grants:

The Polish National Agency For Academic Exchange

(Polish: Narodowa Agencja Wymiany Akademickiej, NAWA) is the new entity in Poland established in 2017. It is set up to coordinate state activities driving the process of internationalization of Polish academic and research institutions. The mission of NAWA is to foster the development of Poland in the area of science and higher education, support international mobility of students, academics and researchers and the process of internationalization of Polish HEIs and research institutions, promote Polish science and higher education as well as popularize teaching of the Polish language.

The National Centre for Research and Development

(Polish: Narodowe Centrum Badań i Rozwoju, NCBiR) has already supported 8900 project, 2039 companies, 2657 scientific units for general amount of 43 billion zloty (10 bilion €). Its mission is to support the creation of innovative solutions and technologies that increase the competitiveness and innovation of the Polish economy. The NCRD is to strengthen the collaboration between business and academia, leading both to a greater engagement of entrepreneurs in research funding, as well as to a more effective commercialization.

The National Science Center

(Polish: Narodowe Centrum Nauki, NCN) is a governmental grant-making agency responsible for providing financial support for the conduct of basic science research in Poland and various programs to assist scientists throughout their careers.

The Foundation for Polish Science

National Contact Point for Research Programmes of the European Union

(Polish: Krajowy Punkt Kontaktowy Programów Badawczych UE, KPK).

This organization has been selected to perform its function in a call by Ministry of Science and Higher Education. KPK is a part of the Institute of Fundamental Technological Research Polish Academy of Sciences (IPPT PAN) since 1999. There are experts with many years' experience in the field of R&D projects financed by European authorities. KPK supports Polish research and innovation leaders: scientists, research organizations and enterprises on their way to grants from European programmes, but they also help foreign scientists as a EURAXESS Centre in Warsaw.

(Polish: Fundacja na rzecz Nauki Polskiej, FNP) is a non-governmental, non-political and non-profit institution which mission is science support. It is the largest source of science funding in Poland besides the state budget. The Foundation realizes its statutory purposes through: support for great scholars and research teams in all fields of inquiry; assisting innovative ventures and commercialization of scientific discoveries and inventions.

European Research Council

Prestigious ERC grants finance frontier research in any scientific area. Researchers of any nationality may apply for funding with European host institutions and do their research that will push the existing frontiers of science further. In the years 2014-2020, the Council has a budget of ca. 13 billion € (being part of the Horizon2020 Programme) allowing to support nearly 7000 grants of individual researchers and their teams.

Marie Skłodowska-Curie Actions IN POLAND

Experienced researchers willing to move to Poland can apply for an Individual Fellowship (IF) of the Marie Skłodowska-Curie Actions (MSCA), irrespective of their country of origin. Poland is in the list of widening countries. Therefore, from 2018 to 2020, proposals above the quality threshold of 70% but not retained for funding through the MSCA IF call with a host institution in Poland will be automatically reassigned to the Widening Fellowships call.

Examples of the most outstanding scientific results achieved by the Polish scientists are published **on-line**.

Important information for incoming researchers: EURAXESS Poland

EURAXESS Poland supports researchers coming to Poland by providing practical personalised information related to entry conditions, administrative procedures and life in Poland. Our website www.EURAXESS.pl is an information point for internationally mobile researchers wishing to come to our country. There are 10 EURAXESS Centres in Poland.

- Warszawa - National Contact Point (KPK PB UE)
- Lublin - Institute of Agrophysics PAN
- Kraków - Cracow University of Technology
- Gliwice - Silesian University of Technology
- Łódź - Regional Contact Point
- Wrocław - Wroclaw Centre for Technology Transfer
- Poznań - Regional Contact Point
- Szczecin - Regional Centre for Innovation and Technology Transfer
- Gdańsk - Gdańsk University of Technology
- Olsztyn - University of Warmia and Mazury

To know more about Poland and practical issues contact the Polish EURAXESS network.

2 Interview with Dr Agnieszka Weinar: Chair of the Marie Curie Alumni Association's North America Chapter

Agnieszka Weinar, PhD

Agnieszka Weinar is an Adjunct Research Professor at the Institute of European Union and Russian Studies at Carleton University and a Team Leader of the EU-Canada Policy Dialogues in Ottawa. Between 2011 and 2014, she was a Scientific Coordinator at the European University Institute (EUI). In 2014, she was awarded a Marie Skłodowska-Curie Outgoing Fellowship for Experienced Researchers at the EUI and Carleton University. Her current research interests address EU-Canada relations and North-North mobility systems. Since 2017, Agnieszka has been involved with the evaluations of the MSC proposals, and since January 2019 she has acted as the Chair of Marie Curie Alumni Association's North American Chapter.

"…if there hadn't been ERA, I would have not become a researcher at all."

This year, EURAXESS North America's focus is "Europe to Humanity" shedding a light on research in social sciences, arts and humanities in the European Research Area (ERA). We are dedicating our quarterly newsletter to all the change-making women in research, particularly in the fields of Social Sciences, Arts and Humanities. Dr. Weinar: Thank you for taking the time to share your experience and research with us and our members.

EURAXESS North America (ENA): *Could you tell us a bit about your experience as a female researcher in general and more particularly in your field?*

Agnieszka Weinar (AW): I think that social science in general is one of these fields where women tend to be well-represented across the spectrum, on all levels of hierarchy. In this context, the gendered experience is quite different than for example in the STEM fields. Honestly, I have never thought about myself as a woman, always as a researcher. Maybe I was lucky to become a researcher in Poland, where the question of gender equality in social science was not an issue one had to fight for. It was the legacy of the communist times, when the equality between the sexes in the professional field was supported by the official political discourse, and in many cases, it was a fact of life. At the University of Warsaw, I was surrounded by men and women in the positions of power, I had supervisors and mentors who were both men and women. Personally, I always felt empowered by all people I have met on my way. As I said, maybe I was just very lucky.

ENA: *How would you say your experience in the European Research Area (ERA) has contributed to your personal and professional growth?*

AW: Let me put it this way: if there hadn't been ERA, I would have not become a researcher at all. I became interested in the issues of immigration very early on. It might have been because my best childhood friend emigrated to Germany when I was 10, or maybe because half of my family was emigrants. I witnessed their struggles to adapt and to forge a new living away from Poland and this impacted me deeply. I was really interested in the other end of migration. This is why I chose to study culture of Italian immigrants in the US for my Master degree in Italian Philology. Sadly, in the late 1990s and early 2000s, there was no interest in Poland for research on immigration, everybody was still focusing on emigration and Polish diaspora studies. And I was the one odd out, who wanted to study immigration policies and their impact on migration choices of ordinary people. I was incredibly lucky to build my first academic credentials as the participant of the first Erasmus cohort from Poland. Thanks to that experience, I became interested in the EU-level offerings as regards to research cooperation and looked actively for engaging with European scholars. And then, there was

"And this is exactly what ERA offers, this funding that makes it possible to get employed on temporary basis, working side-by-side renowned academics."

internet, something that opened a myriad of opportunities for connections. When I started my PhD in 2001 at the Centre for Migration Research (CMR) in Warsaw, a newly established institution, I already had experience as a research assistant at an FP5 project at the European University Institute with prof. Bo Strath and Anna Triandafyllidou. My language skills helped me on the way as well. From then on, the international network has grown, as CMR being the only institution in Poland working on immigration, was often a partner of choice in the EU-funded projects. I learnt my research skills by doing research, on the go. I participated in roughly 10 different research projects with European partners even before I got my PhD. That was very fulfilling, but also helped me build my international credentials and opened up a new professional path, that of a self-initiated professional careerist! The idea that you could spend all your professional life moving countries and pursuing new challenges appealed to me. And this is exactly what ERA offers, this funding that makes it possible to get employed on temporary basis, working side-by-side renowned academics. I could thus research questions that were still not of interest in my home country. My dissertation on Europeanisation of the Polish immigration policy developments during the accession period was developed inter alia during a European PhD Summer School on Europeanisation at the University of Aarhus, with help from such scholars as prof. Jorgenson, prof. Bulmer, prof. Chaloff and prof. Héritier. Friendships and contacts established then are still alive today and help me pursue my career both in academia and outside of it. ERA made it possible.

"Friendships and contacts established then are still alive today and help me pursue my career both in academia and outside of it. ERA made it possible."

ENA: *What is the first experience you think of when you hear "researcher mobility" or "research abroad"? What did you learn from it?*

AW: My first assignment as the research assistant at the European University Institute in 2001, for the project IAPASIS: Does Implementation Matter? In that role I spent two months in Florence doing interviews with Polish immigrants working in the care sector. I learnt how to do interviews, how to transcribe them, but most importantly, I could finally verbalise my research interest: the nexus between written immigration policies, their implementation and sometimes unexpected consequences.

ENA: *What would you say is the biggest challenge being a female mobile researcher? How did you overcome it?*

AW: As regards to the professional path, for me the challenge has been always not about being a woman. It was to be a woman with certain disability. I suffer from attention disorder and I also stutter. So in many cases, the stumbling blocks to my professional career have come from these factors, rather than gender. I always had to re-assert myself, get people to accept the way I speak and act, to make them see beyond that to understand my potential. Mobility challenges me every time, because I have to go through that process every time I move. On a more personal level, I think that family life changes all the parameters for all women in research. Suddenly, when planning my next career move I found myself choosing the location not only from the career point of view, but also – from the point of view of the well-being of my small children. This is why I chose Canada over the US, for example. Canadian socio-political system and the way of life is very family-friendly.

"Also, there is [in Canada] little interdisciplinary research collaboration in the sense we are used to do in Europe. There is only a couple of truly interdisciplinary research centers, which in Europe are a norm. I would love to implement this interdisciplinary approach to Canada, it is so rewarding!"

ENA: *From your experiences, how does the research environment in Europe differ from that in Canada, if at all? And, how do you think EURAXESS North America can further promote research collaborations between Europe and North America?*

AW: When I moved here, I soon discovered that it is impossible to be mobile and do research in Canada. Research funds fund only research, not salaries, this is why only tenured professors can afford applying for research grants. In Europe, you can spend your life working on projects, always paid from them. Also, there is little interdisciplinary research collaboration in the sense we are used to do in Europe. There is only a couple of truly interdisciplinary research centers, which in Europe are a norm. I would love to implement this interdisciplinary approach to Canada, it is so rewarding! Given its unique position, EURAXESS North America could launch an experience-sharing campaign to discuss interdisciplinarity in research practice with our Canadian partners. Such a campaign would definitely benefit our further joint collaboration in the EU funded research programs, which stress interdisciplinarity to an extent hardly known in Canada.

ENA: *What would you tell someone who is hesitant to apply for one of the prestigious and more competitive European research grants like ERC or MSCA found on our portal?*

AW: Don't hesitate. Be bold. If you are a woman and a mother, these grants are best for you, because they make the balance between your work and family so much easier! You are the master of your grant, i.e. your time and your results. Normally, in social sciences we get more freedom when pursuing a research on a grant, don't let this chance slip away. Apply, and if rejected, try again, learn from your mistakes, until you get it (I did!).

"Apply, and if rejected, try again, learn from your mistakes, until you get it (I did!)."

ENA: *Finally, what's next for you, where is your research taking you?*

AW: I have always been on the bridge between research and policy worlds. I worked as a researcher, but also as a policy officer at the European Commission, then again as a researcher, and now it is again time for policy-relevant work. My research interests have evolved during my MSC fellowship and I needed time to reformulate them. I studied European immigrants in Canada and I realized that number one issue for all of them is the lack of recognition of their European credentials. This is no longer a real issue in Europe, but causes huge brain drain when skilled Europeans leave the EU. I am now working with Canadian and European partners on developing a research program in the field of labour market integration of workers with foreign credentials and foreign professional experience.

3 HOT TOPIC: Status update of gender equality in research careers in Europe

The 'She Figures' publication provides a range of indicators on gender equality in research and innovation at pan-European level. It aims to give an overview of the gender equality situation, using a wide range of indicators to examine the impact and effectiveness of policies implemented in this area. At the occasion of the publication of the latest edition in March 2019, we investigate the evolution of the situation of gender equality in Europe and in EU programmes for researcher mobility ERC and MSCA. Large parts of this article are directly sourced from the final 'She Figures 2018' report.

The EU is approaching gender balance among doctoral students. Overall, in 2016, women made up 47.9 % of doctoral graduates at the EU level, in two thirds of EU Member States the proportion of women among doctoral graduates ranged between 45 % and 55 %. While the overall number of both women and men doctoral graduates increased between 2007 and 2016, in most of the countries that 'She Figures' covered, the number of women doctoral graduates increased at a faster rate than that for men. The proportion of women among doctoral graduates still varies among the different fields of education; in 2016, women doctoral graduates at EU level were over-represented in education (68 %), but under-represented in the field of information and communication technologies (21 %) and the fields of engineering and manufacturing and construction (29 %).

Differences between women and men can also be observed in their working conditions as researchers. At the EU level, the proportion of women researchers working part-time was higher than that of men; 13 % of women researchers and 8 % of men researchers were working part-time in 2016. Furthermore, 8.1 % of women and 5.2 % of men researchers worked under contract arrangements considered as 'precarious employment'. In terms of equal payment, there is still a considerable gender pay gap in scientific R&D occupations. Across the EU-28, women in R&D earned on average 17 % less than their male colleagues in 2014, and the gender pay gap was found to widen with age. Moreover, the presence of women researchers seems to have an inverse relationship with the R&D expenditure per researcher; most of the countries that spent more per researcher had some of the lowest shares of women researchers.

In the EU-28, women were still under-represented in the writing of scientific papers. Between 2013 and 2017, the ratio of women to men among authors of scientific publications in the EU was on average one to two. However, this ratio is slowly improving and it has been increasing by almost 4 % per year since 2008. The highest women to men ratio of authorship was observed in the fields of medical and agricultural sciences, where a little over 8 women authors corresponded to 10 men authors. Moreover, women are still strongly under-represented among patent inventors; between 2013 and 2017 in the EU, the women to men ratio of patent inventors was on average just over 1 to 3. A strong

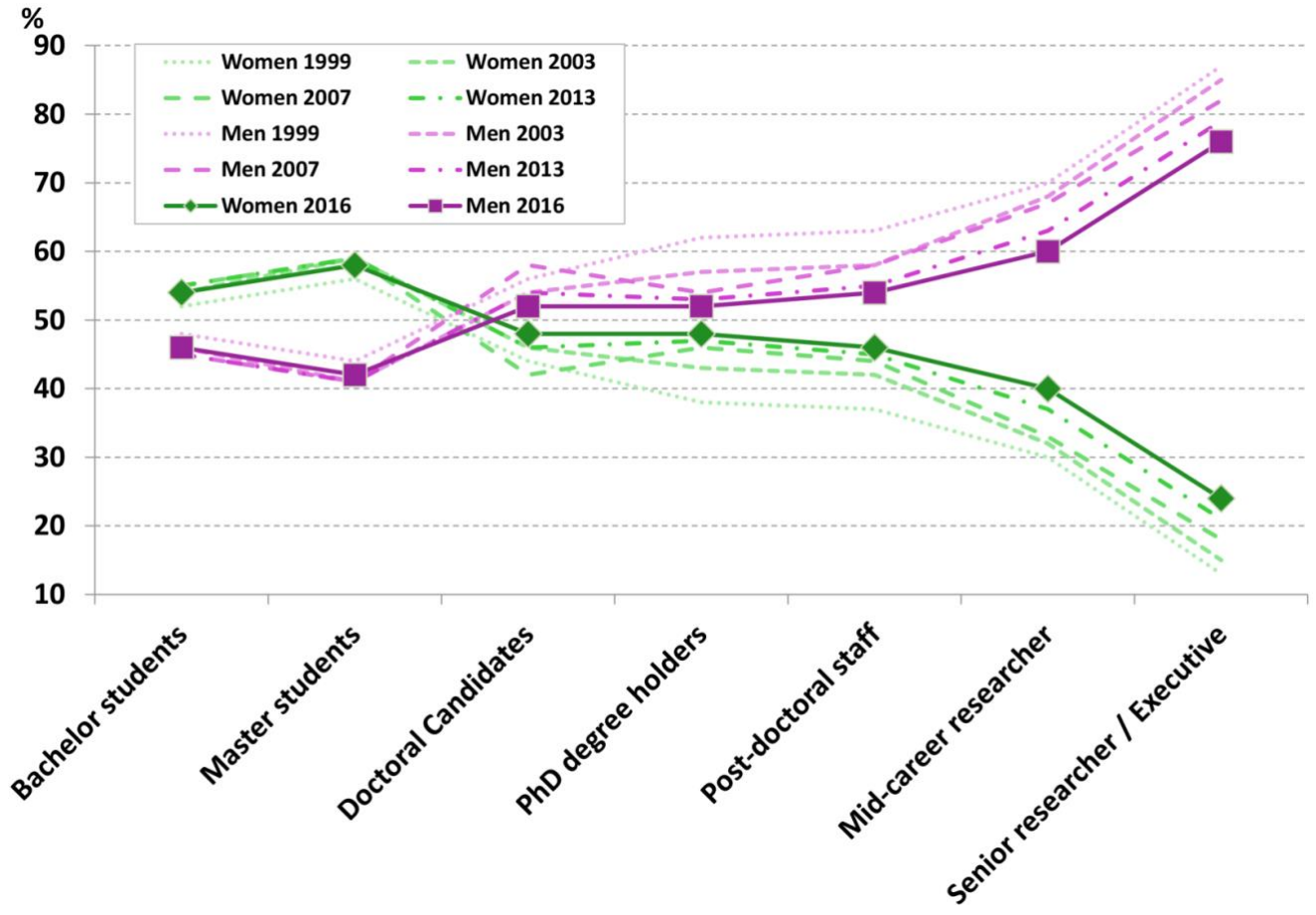
gender gap in the composition of the inventors' teams was also observed in the EU-28, where the most frequent composition of the teams was all men (47 %), followed by those with just one male inventor (33%). A final overall observation for EU countries was a slight gender gap in receiving research grants. The funding success rate was higher for men team leaders than women team leaders by 3.0 percentage points.

The 'leaky pipeline' and its evolution over time

The fact that women tend to be less and less represented within researcher population with age (or experience, career level) is often referred to as the 'leaky pipeline'. Indeed, as shown in Figure 1, women are on average over-represented up to the tertiary education level, but start being under-represented at the higher education level: there are less women university graduates (all levels including PhD) than men; and the tendency worsens after the post-doctoral phase.

Figure 1. Proportion (%) of men and women in a typical academic career, students and academic staff, EU-28, 1999-2016

Source: She Figures 2018 and 2015



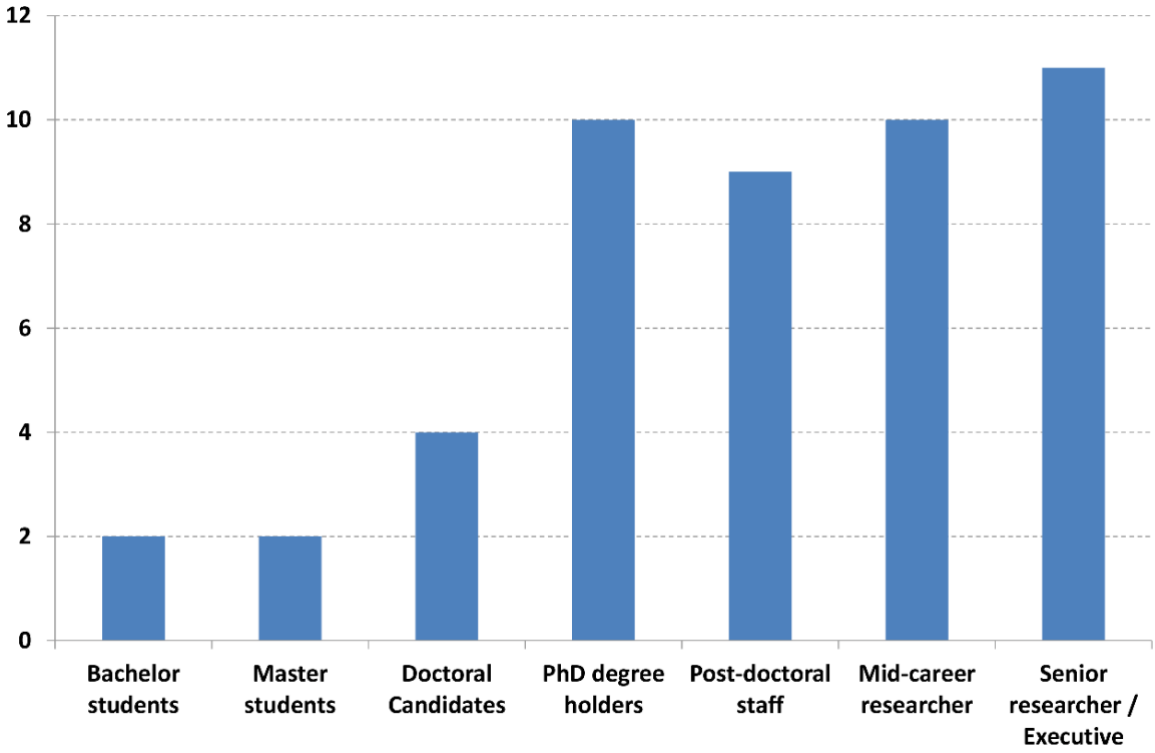
Women in the EU were the majority of students and graduates at Bachelor's and Master's or equivalent levels in 2016. In fact, their share among graduates (58 %) was higher than that among students (54 %), pointing to the better performance of women rather than men in their studies. Conversely, women start to be under-represented as of the Doctoral stage (48 %), and while the same proportion is

observed among PhD degree holders, numbers plunge as of the postdoctoral stage (46 %), down to 40 % at mid-career level and as low as 24% at senior level.

Research identifies institutional and field-related research cultures that favour the advancement of men. Some of the issues stopping women's advancement to top decision-making roles include women's lower success rates in securing prestigious grants and the preponderance of part-time and short-term contract research positions among women's careers. In addition, implicit gender bias in performance assessment, gender stereotypes, gendered perceptions of leadership and leadership styles, the 'glass ceiling', and the 'gender pay gap' are among the factors that can influence the recruitment and promotion of women to senior grade positions, evaluation committees and university oversight bodies and scientific committees responsible for research funding.

Figure 2. Percentage points gained in closing the gender gap at all career levels in EU-28, between 1999 and 2016

Source: She Figures 2018 and 2015



The proportion of women among senior staff at the national level ranges from 13 % to 54.3 %. The proportion is 40 % or higher in just 5 countries. The largest proportions of women were observed in Romania (54.3 %), Bosnia and Herzegovina (45.1 %) and Latvia (41.4 %) while the smallest proportions were in Cyprus (13 %), Israel (14.3 %) and Czechia (14.6 %).The share of women among all academic staff, irrespective of career level, in the EU, was 41.3 %, while at national level it ranged from 34.4 % to 57.4 %. The largest proportions of women were observed in Lithuania (57.4 %), Latvia (55.8 %) and Romania (54.6 %). while the smallest ones were found in Czechia (34.4 %), Greece (35.1 %) and France (36.5 %).

Still, there is a notable positive evolution of the gender gap in research careers, as displayed in Figure 2. While the number of women university students in the EU-28 (pre-doctoral) has stagnated or only slightly evolved between 1999 and

2016 (with a peak in 2003), all career levels from PhD degree holders to senior level have seen an evolution of 10 points on average over the same period.

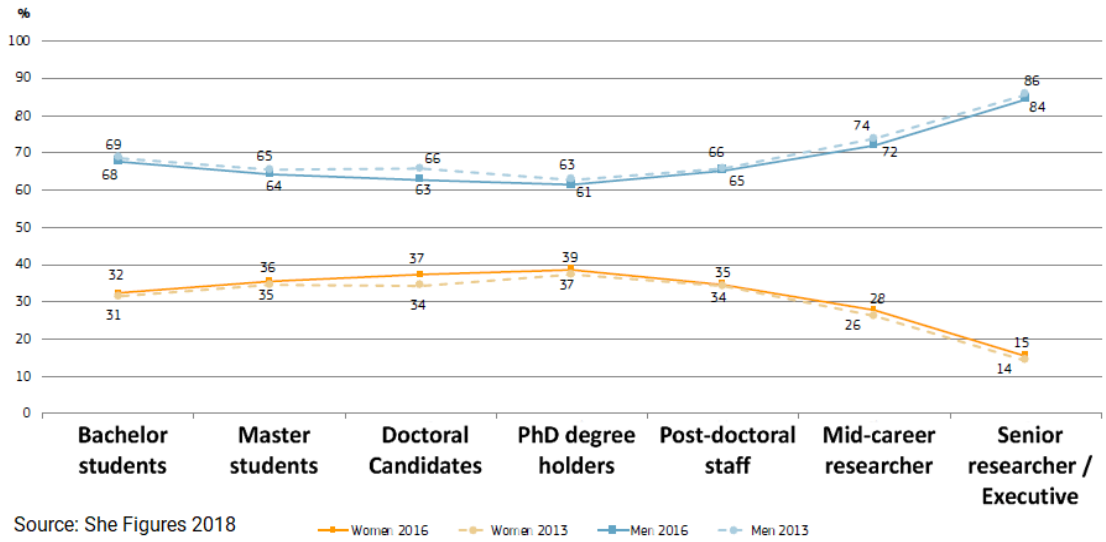
This evolution represents an annual progression of 0.6 percentage points at the PhD degree holders' level, 0.5 at the post-doctoral level, 0.6 at the mid-career level and 0.65 at the senior level; which, assuming similar rates in years to come would only allow to totally remove the remaining gender gap in:

- mid-2019 at the PhD degree holder level (2 percentage points progression needed to reach 50%);
- 2024 at the postdoctoral level (4 points needed);
- mid-2032 at the mid-career level (10 points needed);
- 2056 at the senior level (26 points needed).

Very slow improvement in STEM fields

The share of women is considerably smaller in natural sciences, technology, engineering and mathematics (STEM) than over all fields of research across the career path. This affects all tertiary education levels and all the three higher career grades. More specifically, as shown in Figure 3, in the EU in 2016, women were 32 % of students and 36 % of graduates in STEM at the university graduates level. These proportions are 23 percentage points lower than the respective ones over all fields of education. At doctorate level, women were 37 % of students and 39 % of graduates in STEM, eleven and nine percentage points respectively below their corresponding shares over all fields.

Figure 3. Proportion (%) of men and women in a typical academic career in STEM, EU-28, 2013-2016



Source: She Figures 2018

The same picture of a wider gap between women and men emerges among academic staff, where women were 35 % of postdoctoral staff, 28 % of mid-career researchers and only 15 % at senior level. The situation has nonetheless improved slightly since 2013, when the respective shares were 34 %, 26 % and 14 %.

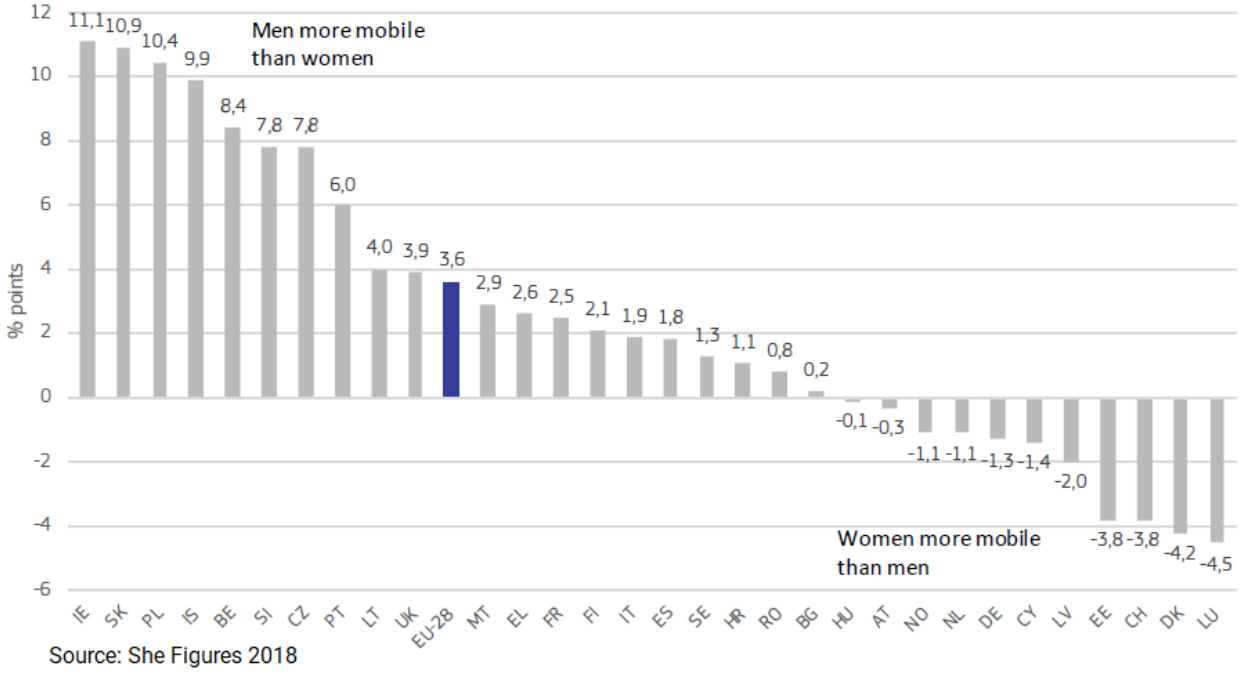
Gender gap in international mobility of researchers

Figure 4 explores the sex differences in the mobility of researchers at advanced stages in their careers (from post-doctoral to senior career levels). It presents the difference between the proportions of women and men researchers who reported that they have worked for at least three months in the last decade in a country

other than the one where they attained their highest educational degree. A positive result indicates that men's rate of mobility is higher, whilst a negative result shows that women's rate is higher. The difference between the mobility of women researchers and men researchers in the EU in 2016 was 3.6 percentage points in favour of men (25.1 % mobility for women and 28.7 % for

men).It is worth noting that this difference has decreased since 2012 when it was 9 percentage points. The largest differences in mobility between women and men researchers in favour of men for 2016 were found in Ireland with 11.1 percentage points, Slovakia with 10.9 percentage points and Poland with 10.4 percentage points.

Figure 4. Sex differences in the international mobility of researchers, 2016



Source: She Figures 2018

Gender pay gap in research careers

At the EU level, 13.0 % of women researchers and 8.0 % of men researchers in the higher education sector were working part-time in 2016. In most of the countries considered, the proportion of women researchers working part-time was higher than that of men. Women researchers in the higher education sector were also more likely than men to be employed under precarious working contracts with the respective shares in the EU being 8.1 % and 5.2 %. This pattern was found in two thirds of the countries examined. This partly contributed to the fact that women employed in scientific R&D activities earned on average 17 % less than their male colleagues in 2014, but overall the gender pay gap widens with age.

Country	Scientific research and development (NACE rev.2, division 72)					Total economy			
	<35	35–44	45–54	55+	Total	<35	35–44	45–54	55+
EU-28	9,2	15,0	19,8	21,7	17,0	9,7	19,1	20,9	21,1
BE	8,0	9,4	22,9	33,7	16,3	1,5	7,0	9,5	19,6
BG	3,7	-12,2	-1,8	0,7	-1,4	13,6	19,9	13,8	2,2
CZ	18,3	40,7	24,1	26,6	25,4	17,9	30,1	23,9	16,4
DK	10,9	18,9	20,3	21,4	18,3	11,8	18,6	19,2	15,4
DE	9,3	18,8	31,5	30,2	19,4	13,2	25,8	28,5	24,8
EE	13,7	24,4	31,3	34,3	22,4	26,4	31,0	27,4	24,8
IE	7,0	40,5	c	c	30,5	4,5	15,6	21,8	26,0
EL	8,0	36,1	22,8	c	23,1	3,6	10,1	17,2	14,9
ES	9,6	14,8	17,3	10,0	16,6	7,5	15,0	20,1	22,6
FR	11,4	9,3	16,0	22,3	17,1	7,7	16,8	19,1	25,3
HR	1,8	31,8	25,3	13,5	18,1	3,0	16,3	9,7	9,1
IT	1,5	4,5	-0,5	24,9	6,4	5,2	7,8	7,4	9,2
CY	c	c	c	c	18,9	0,4	18,5	27,4	30,2
LV	16,9	5,6	2,8	32,2	16,5	17,6	17,2	15,0	16,1
LT	-27,7	-15,4	31,7	42,6	5,8	13,6	15,9	11,8	10,5
LU	c	c	c	c	-3,8	-4,0	6,1	11,6	13,0
HU	21,6	29,5	25,3	30,9	25,0	12,4	20,6	13,3	11,5
MT	:	:	:	:	:	6,4	17,9	11,1	5,6
NL	17,1	18,1	29,5	30,5	25,0	2,5	19,4	24,3	22,6
AT	11,9	16,7	26,0	14,0	16,5	15,2	25,1	27,5	35,1
PL	13,8	13,0	23,5	16,4	16,6	9,2	11,9	3,5	7,0
PT	15,2	10,1	29,8	c	14,6	6,1	16,1	18,8	29,9
RO	-18,1	-4,0	-6,7	-4,6	-6,7	1,4	7,2	3,3	2,8
SI	5,0	-0,5	6,1	-2,5	3,5	5,3	10,5	7,2	-6,6
SK	11,0	25,0	23,4	20,3	20,6	16,0	25,6	20,0	16,1
FI	14,6	18,1	18,7	20,3	17,3	13,3	21,4	21,7	24,6
SE	12,8	16,2	16,3	30,2	17,1	10,0	17,1	16,5	15,3
UK	1,0	24,6	25,1	21,6	18,3	11,4	25,6	29,5	26,7
IS	:	:	:	:	:	8,3	22,6	24,8	19,6
NO	8,1	14,3	16,8	24,5	15,9	9,2	15,8	19,0	19,5
CH	9,7	16,5	25,4	22,9	20,9	9,3	19,5	22,9	24,7
ME	c	c	c	c	22,5	1,9	7,2	11,5	13,2
MK	-14,2	-30,8	-6,1	c	-21,8	5,6	14,4	7,0	8,2
RS	1,3	-4,3	-9,0	0,5	-0,8	7,4	9,7	9,8	0,6
TR	31,6	19,7	47,4	c	35,7	-6,1	-2,2	13,2	19,5

Source: She Figures 2018

Table 1. Gender pay gap in % in the EU-28 and Associated Countries in 2014. Left panel: economic activity 'Scientific R&D', per age category; right panel: total economy, per age category. A positive value points to women being paid less than men, a negative one the reverse.

The gender pay gap for scientific R&D activities and the total economy in 2014, broken down in four age categories (younger than 35; 35 to 44 years old; 45 to 54 years old; 55 years old and older), is presented in Table 1. The relative gender pay gap in total economy follows the same pattern with age as that in R&D.

On average at the EU level, the gender pay gap is even actually almost similar to that of the total economy, at about 10 % in early careers, 15 % to 20 % mid-career, to 21 % at senior level. However, considerable discrepancy is shown between countries; with for example a considerable gender pay gap in all age categories in Czechia (18 %, 41 %, 24 % and 27 % respectively) or a reversed situation in Romania, women there being paid more than men in R&D with a -18 %, -4 %, -7 % and -5 % gender gap in favour of women, while such a tendency is not visible in Romania's total economy. Another interesting example is that of Lithuania, where young to mid-career women are sensibly paid more than their counterparts (-28 % and -15 % gap), while at later career stages they are paid much less (32 % and 43 %). This two-stage tendency is not seen in other countries, and also does not show correlation to the gender pay gap evolution in Lithuania's total economy, potentially pointing at a phenomenon characteristic of careers in R&D.

Gender equality policies and gender distribution in Marie Skłodowska-Curie Actions

Since their creation, the MSCA have placed a strong emphasis on promoting gender and equal opportunities for their fellows, and within their projects. Indeed, the MSCA require transparent recruitment and high quality employment and working conditions for researchers, in line with the principles of the European

Gender in Horizon 2020:

Gender equality is a cross-cutting issue in Horizon 2020 and shall be implemented across all areas of Horizon 2020, including the MSCA and ERC. Key objectives include:

- Gender balance in decision-making: The aim is to reach the Commission's target of 40 % of the under-represented sex in each group and panel. For Horizon 2020 Advisory Groups, the target was raised to 50 %.

- Gender balance in research teams at all levels: Applicants for funding are encouraged to promote equal opportunities and to ensure a balanced participation of women and men at all levels. Gender balance in teams will also be taken into account when ranking proposals with the same evaluation scores.

- Gender dimension in research and innovation content: Gender is explicitly integrated into several topics across the Horizon 2020 Work Programme, but all H2020 applications should take the gender dimension into account.

Source: European Commission

Charter for Researchers and the Code of Conduct for the Recruitment of Researchers. In addition, MSCA grants permit part-time working and parental leave. Post-doctoral researchers who wish to resume their career after a break, for example to raise children, can apply to a dedicated panel of the MSCA Individual Fellowships.

In practice, MSCA features four actions: RISE, which funds exchanges between several research institutions by allowing mobility of students, staff, researchers and professors alike; COFUND, which supports doctoral programmes for PhD candidates, as well as fellowship programmes for experienced researchers; ITN, which funds Doctoral programmes; and IF, which funds individual projects of experienced researchers.

Over the five years of the running Horizon 2020 calls (2014-2018), MSCA supported a total of approximately 25,000 researchers, out of which 40 % were women. A breakdown of the ration of men and women per Action is displayed in Figure 5. Although no significant difference can be found in the gender distribution of the COFUND, ITN and IF Actions (respectively with a gender gap of 8.7, 7.5 and 7.2 percentage points), it is shown that the RISE Action displays a larger gender gap with 13.2 percentage points. This can be attributed to the fact that RISE projects involve senior as well as early stage and experienced researchers, whereas other actions only involve early stage- and experienced researchers (defined as pre- and post-doctoral researchers). All of these values are notably higher than the gender gap in EU-28 as shown in Figure 1, since we would only expect between 2014 and 2018 a 3 point gap at the doctoral stage (ITN), 4.5 points at post-doctoral stage (COFUND and IF), and an aggregate of 9.5 points for a mix of senior, mid-career, post-doctoral and doctoral stages (RISE). The gender gap across all MSCA Actions therefore appear to be roughly four to five points above that expected from statistics at the EU level, perhaps pointing to further efforts to be made.

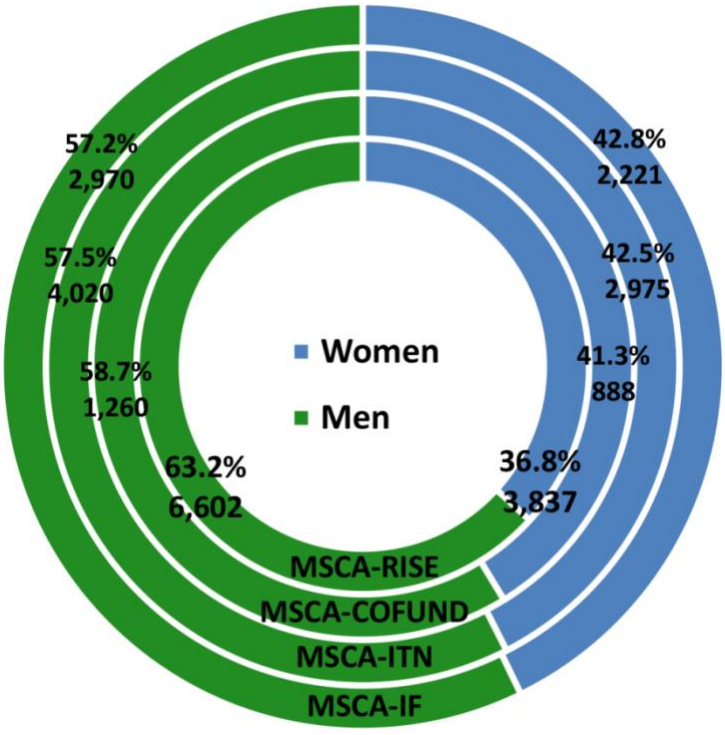


Figure 5. Distribution of men and women across all Actions within MSCA, 2014-2018

The only programme allowing individual researchers to directly apply for funding (i.e. not via their institution) is MSCA-IF. For this programme we can extract success rates of men and women and analyse their differences, as shown in Figure 6. Although the total number of female applicants over the 2014-2018 period is much lower than the number of male applicants (roughly 17,550 versus 25,750), we can see that their average success rate is higher, resulting in female researchers being better represented after evaluation stage than at proposal submission stage (2,770 versus 3,620).

Figure 6 shows that on average, women are 1.7 percentage points more successful than men at securing MSCA-IF funding. There are strong discrepancies between panels. The career restart panel features the most female-favouring score, with a 4.5 percentage points advantage to women over men, followed by Social Sciences and Physics with 3.2 points; while results in the Economics panel seem skewered towards men, with 3.5 points disadvantage.

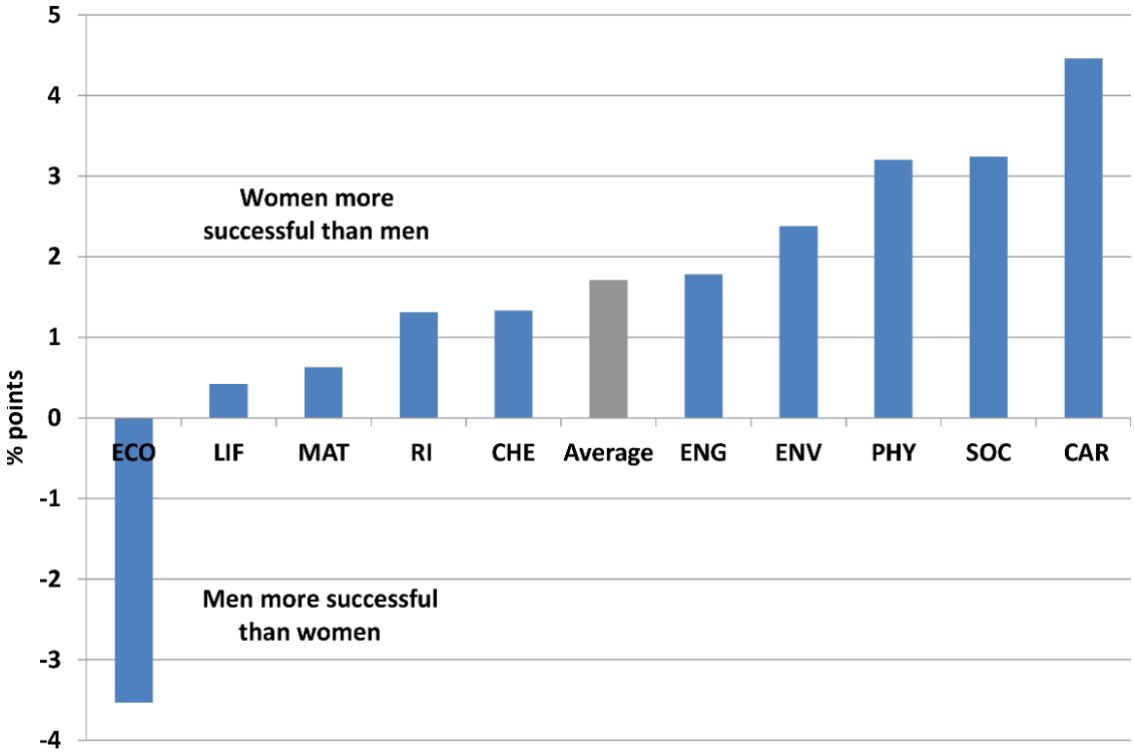


Figure 6. Sex differences in the success rate to MSCA-IF calls, per panel, 2014-2018. Panels from left to right: Economic Sciences (ECO), Life Sciences (LIF), Mathematics (MAT), Reintegration (RI), Information Science and Engineering (ENG), Chemistry (CHE), Environmental and Geosciences (ENV), Physics (PHY), Social Sciences and Humanities (SOC), Career Restart (CAR).

Gender equality policies and gender distribution in European Research Council grants

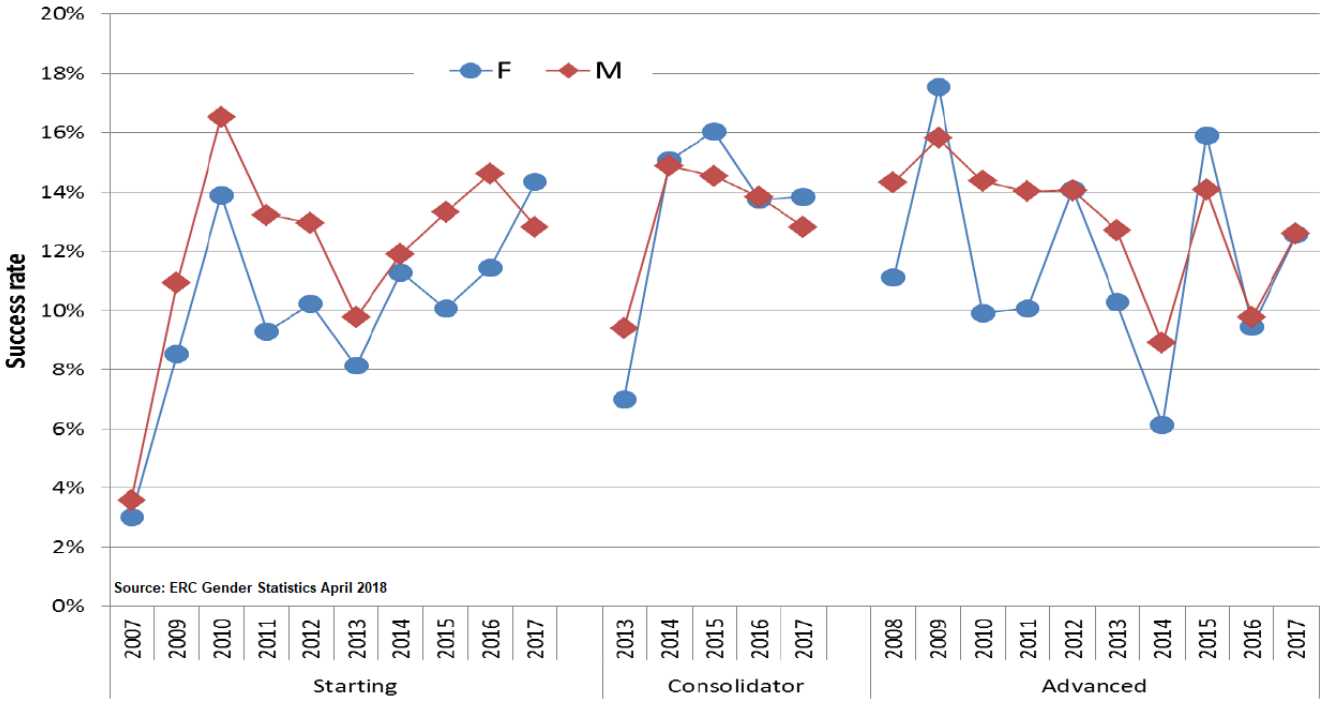
The ERC has seven Working Groups dedicated to the advancement of specific topics, such as open accessor international participation. One of them is focused on gender balance. Since women and men are equally able to perform excellent frontier research, each process within the ERC - from creating awareness about the ERC to signing of grant agreements – is designed to give equal opportunities to men and women. The purpose of the gender balance working group, launched in 2008, is to monitor these aspects at all stages.

The Working Group on Gender Balance drafted the ERC Gender Equality Plan 2007-2013 and the ERC Gender Equality Plan 2014-2020, endorsed by the ERC Scientific Council, which main objectives are:

- **raising awareness about the ERC gender policy** among potential applicants;
- working towards **improving gender balance** among ERC candidates and within ERC-funded research teams;
- **identifying and removing** any potential **gender bias** in the ERC evaluation procedures;

- **embedding gender awareness** within all levels of the ERC processes - while keeping focus on excellence;
- **striving for gender balance** among the ERC peer reviewers and other relevant ERC bodies.

Figure 7. Men and Women success rates to the ERC's Stg, Cog and AdG calls, 2007-2017



To achieve these objectives, the working group has been monitoring the evolution of gender balance of ERC funded projects since its inception, the latest available statistics dating from April 2018.

The ERC proposes three main grant categories: the Starting Grants (StG, 2-7 years post PhD obtention), the Consolidator Grants (CoG, 7-14 years –since 2013 only--), and the Advanced Grants (AdG, 10+ year and excellent track record); and features three main evaluation panels: Life Sciences (LS), Physical Sciences and Engineering (PE), and Social Sciences and Humanities (SH). The breakdown of men's and women's success rate per type of call and year is displayed in Figure 7. The tendency shown is positive, as while success rates of women were significantly inferior to those of men prior to Horizon 2020 (i.e. until 2013), statistics show that equilibrium is almost reached on average for all the calls within Horizon 2020 (2014-2017). Until 2013 the total success rate was 11 % for men and only 8 % for women (Stg: 10 %- 8%; CoG: 9 %-7 %; AdG: 14 %-12 %), but for the whole period 2014-2017 success rates are equal with 13 % for both men and women (Stg: 13 %-12 %; CoG: 14 %-15 %; AdG: 11 %-11 %).

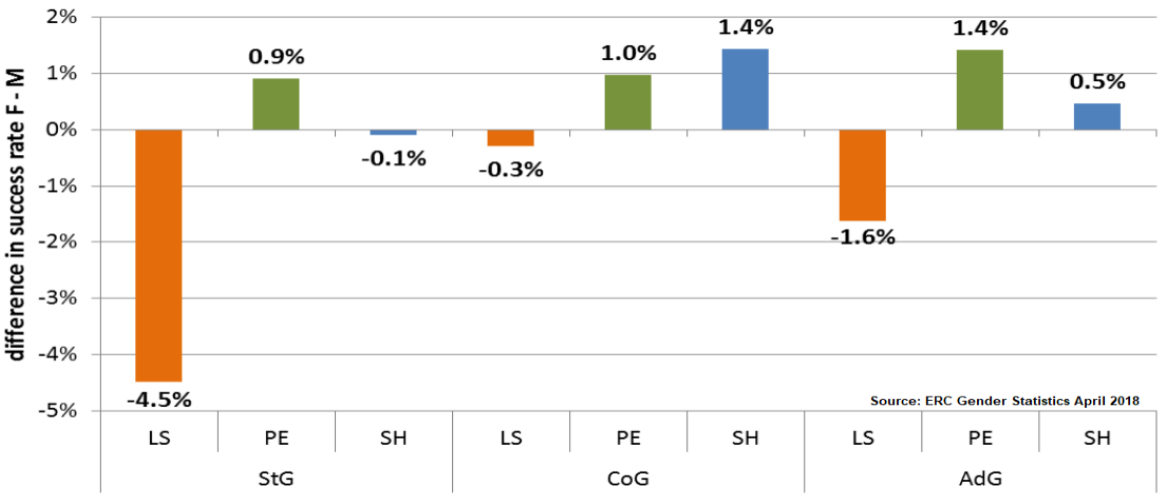


Figure 8. Sex difference in success rates for ERC calls, per panel, 20014-1017

However, this tendency does not equally apply to all domains of science. Figure 8 shows the differential success rate by panel and call for the Horizon 2020 calls. The Life Sciences panel consistently features lower success rates for women, with a particularly strong imbalance for the StG call (early career researchers) at -4.5 percentage points. On the other hand, the Physical Sciences and Engineering panel shows success rates slightly in favour of women at all career stages; while the Social Sciences and Humanities panel features more balanced statistics.

When it comes to the total number applicants (i.e. irrespective of their success or failure in securing the grant), a positive tendency is also observed as shown in Figure 9. The total share of female applicants steadily grows since 2014, reaching 30 % in 2017 and as high as 37 % for StG only in the same year. The lowest shares of women participation are reached in the AdG (senior level), in agreement with the 'leaky pipeline' effect and the statistics at EU level displayed in Figure 1 and 2 (24 % of women at senior level overall, only 15 % in STEM fields in 2016).

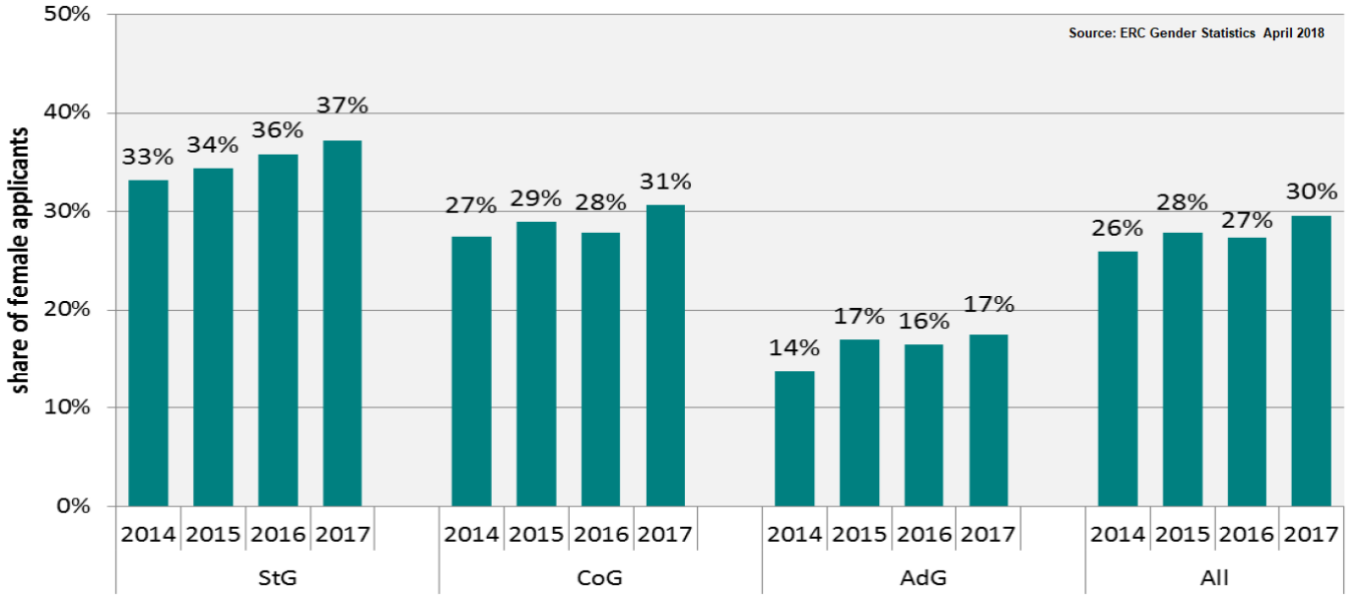


Figure 9. Share of female applicants to ERC call, per grant type, 2014-2017

4 In case you missed it….

Event Outlook

Event	When	Where	Organized by	Link
ARIT: Austrian Research & Innovation Talk 2019	14 September 2019	New York City, NY, USA	OSTA (Office of Science and Technology Austria)	Link
Nature Jobs Career Fair & EXPO	19-20 October 2019	New York City, NY, USA	Nature Careers	Link

Editors: Viktoria BODNAROVA and Dr. Dimah MAHMOUD, EURAXESS North America Team

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