ACT ON CAREER ADVANCEMENT

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CONSORTIUM

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Introduction

Gender equality in scientific or research careers refers to equal presence and representation of women and men in all career stages. This means mitigating the effects of gender bias, removing gender-related institutional barriers, fostering a gender-inclusive organisational culture, and gender-sensitive policies for recruitment, retention, and advancement (Palmén et al., 2019).

With the launch of Horizon Europe, the European Commission has again prioritized gender equality in careers in the European Research and Higher Education Areas. The expectation is that R&I/HE institutions develop and maintain plans to promote gender equality in careers, including data monitoring, bias mitigation, and combating sexual harassment. However, the structural change goal of abolishing gender-related institutional barriers for careers is not present in all EU countries equally (GENDERACTION, 2018a).

Following from the EC prioritization of careers as an important topic for gender equality, HEIs, research performing and research funding organizations, national governments, and professional associations have made provisions for career-related issues in their formalized gender equality plans and policies. A comprehensive but not exhaustive list of such efforts is (GENDERACTION, 2018b):

- Efforts to promote research careers among girls and young women, especially in STEM;
- Efforts to improve career advancement, representation, and retention of women in research careers, especially where men are currently overrepresented;
- Efforts to promote work-life balance;
- Efforts to reduce precariousness (e.g. temporary contracts), especially where women are overrepresented in such positions;
- Efforts to transform institutional culture, promote inclusiveness, and prevent sexual harassment.

Why is this important

Striving for gender equality in careers in HE / R&I supports both UN sustainable development goals and the innovation capacity of the ERA as well as individual countries. However, for gender equality to be achieved and for gender diversity to add value, we need to challenge implicit but strong notions of what the ideal researcher and the ideal research career look like. With collaborative teamwork and open science on the rise, individualized hyper-competition and the "superstar model" are rapidly becoming obsolete. However, existing incentives and evaluation models still promote competition between individuals, research groups and institutions, making systemic

change difficult and resistance likely. Implicit, but normative and gendered notions of the ideal researcher (i.e., without care responsibilities, devoted to their work) and the ideal research career (i.e., linear upward mobility, based on a competition model) promote a "lack of fit" and therefore limit the career advancement of many. Furthermore, homogeneity at the top levels in institutions (or homogeneous research teams) are a risk in terms of decision making and innovation.

Evidence on the numerical representation of men and women in research careers show that gender equality is not achieved, as especially the most senior levels are very homogeneous. While there is near gender parity among doctoral graduates, women continue to be under-represented at the top of the hierarchy relative to men. The ratio of women to men typically decreases the higher up the career ladder. Most recent data from She Figures 2021 contends that the EU is approaching gender balance among doctoral students. *"In the EU-27 in 2018, women represented 48.1 % of doctoral students and graduates, 46.6 % of grade C academic positions, 40.3 % of grade B and 26.2 % of grade A academic positions* (She Figures, 2021).

Earlier studies of career experiences and trajectories have highlighted several main challenges and issues in relation to gender (in)equality in scientific careers (Müller et al., 2017), including *work-life balance, bias and discrimination (e.g. in research assessment), workplace culture and climate*, and *sexual harassment* (for an overview see Bondestam & Lundqvist, 2019). Generally speaking, the percentage of women on the top rungs of the research career ladder is not growing at the same rate as the number of women with the age and qualifications to reach these levels. While this is a general phenomenon, it is important to note that these numbers differ quite strongly depending on the discipline as well as the country or region under consideration (Huang et al., 2020; Vinkenburg et al., 2020). For example, the gap between women and men is wider in STEM (science, technology, engineering and mathematics) than in other disciplines; with men especially overrepresented in engineering and ICT (She Figures, 2019).

It is widely agreed that gender differences in interests or preferences for subjects cannot explain this phenomenon. The lag of women's advancement relative to men's is especially stark in fields in which women are very well represented at the entry levels (psychology, life sciences including medicine, and social sciences), compared with math intensive STEM fields in which women are under-represented throughout their career (Miller & Wai, 2015). Efforts to increase the numbers of women studying STEM at the undergraduate and doctoral levels have not translated into equal representation of women in senior STEM positions. Various analyses within disciplines and/or national settings indicate this phenomenon will not simply resolve itself over time as more women enter STEM education. Other explanations need to be considered to understand why women's careers in STEM progress more slowly, stall more often, and are more likely to be discontinued than men's (Greider et al., 2019; Pollitzer et al., 2018).

In Europe, it takes an average of 17 years after obtaining a PhD to reach the most senior level (MORE4, 2021). It is important to recognize that research careers do not necessarily progress within academia: research and development (R&D) positions in both the private and public sectors provide growing employment and career opportunities for PhD holders. In some countries, more women researchers are employed outside of academia than within (OECD, 2017a). While many monitor data on the representation of women among doctoral candidates and at the professorial level, Wroblewski (2020) points out that there are no monitoring indicators on *reducing* structural barriers for the careers of women.

Insights from recent research on research careers

To identify levers to achieve gender equality, it is first necessary to *track research careers* across disciplinary, national, and sectoral borders. We need to understand gendered differences and similarities in research career trajectories by looking at representation at different levels, at critical transitions or bifurcation points, and at differential progression or "drop out" rates across cohorts and disciplines. Such insights are needed to take targeted measures and develop evidence-based policies. At the same time, there may actually be more similarities than differences in research career patterns of men and women (in terms of movement over time and place, see Dlouhy et al. 2019), and explaining differences in outcomes (e.g. pay, publication rates, funding, attainment) by assuming differences in trajectories may be overly simplistic. A sequence analysis of career histories from ERC applicants collected in ERCAREER project (Vinkenburg et al., 2020) identified five unique and distinct career patterns for both junior and senior researchers. This is of course a selective sample, but it covers all disciplines and nationalities within the EU and AC. The findings show that there are almost no gender differences in terms of career patterns, that excellence (in terms of ERC grantees) can be found in all patterns, and that the main distinctions are institutional (HE versus research institutions) and progress: quick advances, steady progress or repeated (often post-docs).

Despite these recent efforts to map research careers, understanding exactly how careers develop in terms of patterns or moves through positions, institutions, sectors and national borders remains largely uncharted territory. Common indicators (SheFigures, NSF and OECD data) are typically static and do not inherently indicate career progress or advancement. Even if representation changes at various career stages and/or over time, this difference or change cannot be said to unequivocally reflect actual career development, hence the need for an indicator that reflects career progress or development within research professions over time. Such indicators have already been developed for other professional fields and could be adapted to reflect the specificities of research careers (Dries et al., 2009).

Developing a *career-progression indicator* for research is feasible, because research careers around Europe and North America reflect a highly comparable logic of four to five consecutive levels – from PhD to full professor or senior researcher, with minimal disciplinary and institutional variations (Vinkenburg et al., 2020). Such an indicator would make career progress quantifiable and comparable. It would help track gender, national or disciplinary differences and similarities between careers, and could shed light on the actual movement of researchers across positions and institutions. Together with existing statistical measures, it could inform policy making on research careers at the international, national and institutional levels.

Similarly, it is important to understand the *realities and lived experiences* of researchers in combining career and care responsibilities. Following individual and societal expectations relating to motherhood and family structures, in many cases women have more care responsibilities than men. As a result, the share of female researchers with children is lower than the share for male researchers, especially in the case of researchers with full-time positions. At the same time, the share of part-time working mothers in research is higher than the share of part-time working fathers (MORE4, 2021). These divisions reflect the general unequal distribution in society of care responsibilities (including elder care) between women and men. However, it is evident that even among a selective sample such as ERC applicants, considerable numbers of women and men have taken parental leave or worked part time, and around 50% are in a dual career in science (ERCAREER, 2014). Thus combining career and care is the norm, not the exception. Targeted policies addressing employment conditions are required to address this. Appropriate measures include: flexible working practices; availability of paid leave, childcare facilities; dual-career support; and flexible pension plans (Pollitzer et al., 2018). However, in order to be effective, flexibility in employment conditions needs to be accompanied by "compensation" measures in terms of performance evaluation, e.g. extension of eligibility windows for tenure or funding. Furthermore, the unintended consequences of using such measures (e.g., career penalties for fathers requesting extensions) should be taken into account (Leslie, 2019).

How to compensate for "time to care" in research careers became especially urgent and timely during the COVID-19 pandemic, as many noticed the detrimental effects of lockdowns on research careers. Especially women are disproportionally affected by the **COVID-19 crisis** (GENDERACTION, 2020). Three main compensation measures that are similar to general ways of RPOs / RFOs compensate researchers for care responsibilities when it comes to evaluating their performance:

- Extension (extra time)
- Supplementation (extra resources)
- Adaption (of criteria)

Witteman et al. (2020) show that taking these kinds of measures helps, especially because applicants were asked to consider sex/gender in their application content. Extensions while very common can also quickly become problematic when the (bi-

)annual cycle of calls for funding is disrupted. In addition, not only applicants but also grantees need compensation. Measures should therefore be offered as opt out rather than opt in (He et al., 2021).

In addition to career patterns and compensation for time to care, we need to gain a better understanding of the gendered causes and consequences of different types of *mobility* between positions, both within and across institutions. Researcher mobility is generally considered a good thing, which should be encouraged; the evidence shows that researchers who are mobile produce more highly cited research (OECD, 2017b). Existing studies of mobility often look at the career consequences of single mobility events (e.g. a stay in the USA for non-US citizens). Mobility is often taken as a proxy for excellence in research careers (Herschberg et al., 2018). Yet it is easy to see how an over-emphasis on mobility could inadvertently disadvantage women at various life stages. Again assumptions play a role, as women researchers are generally expected to be less mobile than men. This assumption affects selection, promotion, and funding decisions about women negatively. Women's partners and dependents are expected to be less "portable" (Rivera, 2019), and women who are mobile are disproportionally penalized for not being "good mothers or wives". However, evidence shows that women and men are almost equally mobile (She Figures, 2019).

ACT Communities of Practice on research careers

Within the context of the ACT project, we organized several activities and provided various tools to promote equality in research careers and to design evidence-based interventions.

ACT GEAM tool relevant modules
Several question modules in the GEAM tool target issues that are related to research careers (Aldercotte et al., 2019). Next to the institutional data on representation and other indicators such as contract type by career stage, these relevant modules include: *Work-life balance, Working culture and climate (e.g.* "Masculinity Contest Culture", Berdahl et al, 2018), and *Sexual harassment (e.g.* "microaggressions").

ACT community mapping
The ACT Community Mapping Survey (Reidl, et al. 2019) highlighted that a large number of policy measures to promote women's research careers are in place and often, but not always, evaluated in terms of outcomes and impact. Flexible working arrangements belong to the measures which were deemed most effective with regards to gender equality issues.
ACT ERA careers priority group

In the ACT ERA career priority group, in which several ACT core and seed partners representing various CoPs participated, an informal inventory of urgent careers topics to discuss cross-cutting CoPs was made at the beginning of 2020.

The following issues were identified:
- Recruitment & selection
- Data & metrics
- Sexual Harassment

The ERA group decided to hold an e-discussion on the prevalence and prevention of sexual harassment in research organizations, during which ideas for prevention and organizational response were discussed[1]. During the Matching Event on careers[2] (October 2020) we zoomed in on the Covid-19 pandemic and its disproportionate effects on women's careers; on the assessment or evaluation of individual researchers and mitigating bias; and on starting and having difficult conversations on difficult topics (data collection and monitoring, intersectionality, sexual harassment).

The first interactive session focused on Covid-19 and gendered career consequences. Aspects that have been discussed in the events are: (1) career consequences resulting from Covid-19, (2) how can these consequences be measured, (3) compensating measures for researchers; and (4) work-family measures (LERU, 2018). The second interactive session was dedicated to the DORA declaration and evaluating researchers/ academics. Simple solutions such as emphasizing and valuing teamwork and collaborative skills in job descriptions and call materials help to bend the norm. In the second half of this session, we discussed ways to measure career advancement beyond mere representation as is commonly done in the scissors graphs and about operationalizations of intersectionality in data collection and monitoring. As ERA group, we shared ideas, experiences, and good practices on institutional responses to these career related topics. Especially the sharing atmosphere, the recommended conversation starters, and Covid-19 compensation measures were well received by the audience. Being able to bring together a varied group of experienced practitioners from around the globe for each of the topics discussed by virtue of the online platform was an unexpected benefit of pandemic circumstances.

From these events, we identified various sources of innovation potential for the careers priority. We discussed the potential and the perils involved in the adoption of so-called *narrative CVs* in research assessment (selection, promotion, funding). While narrative CVs help us move away from counting publications and citations towards a more qualitative assessment of impact, the evidence of the cumulative careers effects of gender, race, and class bias as evidenced in the language of evaluation points to

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[1] GenPort, E-discussion https://www.genderportal.eu/group/e-discussion-addressing-sexual-harassment-research-organizations

[2] Matching Events, Summary report on Careers https://www.act-on-gender.eu/sites/default/files/act_matching_event_careers_summary_report_final.pdf

problems in simply adopting this approach. Research funders (united in FORGEN and the DORA funders group) are joining forces in evaluating the (un)intended consequences of the narrative turn. More generally, it is important to explore to what extent the use of new metrics for research assessment impacts men and women researchers at different career stages and disciplines differently (GENDERACTION, 2018c).

ACTonBias

During a dedicated session for CoP faciliators (April 2021), we discussed evidence-based ideas[3] to design bias interventions in research organizations (see also Vinkenburg, 2017). We distinguished between raising awareness and building competence in bias mitigation, promoting a customized small wins approach (Correll, 2017) based on local bias evidence. One suggestion to mitigate bias is to promote the use of *inclusive language*. This is especially important when it comes to performance evaluation, but it also means getting rid of problematic metaphors such as the "leaky pipeline" and the "glass ceiling". Another important lesson is not to underestimate the cumulative effect of a little bit of bias - mathematical simulations show this can result in 0% women (or other underrepresented groups) after 4 or 5 career steps (see ACT Careers Advancement video[4] and Du et al., 2021).

Recommendations

- Track career progression (using a comparative indicator), by sex and other relevant indicators (contract type, fte, discipline, nationality, ethnicity, etc)
- Compensate for time to care, mind the unintended consequences, provide opt out choice
- Consider the gendered effects of new methods and metrics for research assessment
- Mitigate bias in performance evaluation at *every* process step
- Take a small wins approach (find evidence, design, pilot, intervene, evaluate, repeat)
- Conceptualize / develop indicators to measure the reduction of structural barriers

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[3] ACT One-pagers, Evidence-based Implicit Bias Interventions
https://www.genderportal.eu/sites/default/files/resource_pool/cop_facilitator_training_series_actonbias.pdf
[4] ACT on Career Advancement (video) https://vimeo.com/601767409

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Additional resources

- ERCAREER Project 2014 https://cordis.europa.eu/project/id/317442
- European Commission report https://op.europa.eu/en/publication-detail/-/publication/61564e1f-d55e-11eb-895a-01aa75ed71a1
- GenPORT, Careers Resources https://www.genderportal.eu/tags/careers
- GENERA project/network: minimal data set, career progress indicator, mobility scheme

https://genera-project.com/portia_web/GENERA_Policy_Brief_3_implementing_GEPs.pdf

- GENDERACTION (2020) Report, Position paper on the current COVID-19 outbreak and gendered impacts on researchers and teachers https://genderaction.eu/wp-content/uploads/2020/06/SWGGRI_Position-paper-on-COVID-19.pdf
- GENDERACTION (2018a) Policy Brief on Gender in Open Science & Open Innovation https://genderaction.eu/wp-content/uploads/2021/07/GENDERACTION_Policy-Brief_5.pdf
- GENDERACTION (2018b) Report on national roadmaps and mechanisms in ERA priority 4 https://genderaction.eu/wp-content/uploads/2018/12/741466_GENDERACTION_D05_NAPS_submitted.pdf
- GENDERACTION (2018c) Policy Brief on Gender Equality and Gender Mainstreaming in Research and Innovation https://genderaction.eu/wp-content/uploads/2021/07/GENDERACTION_Policy-Brief_9.pdf
- LERU (2020) Report https://www.leru.org/publications/family-leave-for-researchers-at-leru-universities
- MORE4 Support Data Collection and Analysis Concerning Mobility Patterns and Career Paths of Researchers. Final Report PPMI IDEA WIFO https://ideas.repec.org/b/wfo/wstudy/67165.html
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