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The Hidden Potential: Gender in Research Funding of Three Strong Innovators

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Abstract. In academic, non-profit and business research, project funding and grants are important elements to promote science, boost innovation and support researchers on their career paths. However, they are also powerful instruments to materialize and prioritize major principles of science policy and social values such as gender equality and equity. An analysis of research funding processes and organisations in the scope of the EU project CHANGE[1] could illuminate gender policies and practices, aiming at a more diverse and gender equitable research and innovation landscape, but could also reveal inherent gender biases. This paper particularly focuses on the results of 41 expert interviews on research budgets, gender policies and practices in research funding in the three "strong innovator"-countries Austria, Germany and Israel, and explores the hidden potential of gender in science and research funding in all sectors.

1 Introduction

Gender equality (GE) and mainstreaming in research has been defined as priority number four by the European Research Area and Innovation Committee (ERAC), a policy advisory body assisting the European Commission and the Council of the European Union on research and innovation (R&I) issues that are relevant to the development of the European Research Area (ERA). In negotiations and policy briefs

[1] The project CHANGE has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 787177 and is carried out between 2018 and 2022. The overall aim of the project is an institutional cultural change towards gender equal work environments in research performing organisations (RPOs) by implementing gender equality plans (GEPs) and fostering the importance of gender inclusive R&I programmes in research funding organisations (RFOs). CHANGE works with a responsible research and innovation approach, by involving key actors (for instance Transfer Agents in all partner organisations) and relevant stakeholders from the beginning, establishing regional communities of practice (CoPs) and co-producing gender equality knowledge for and with science and research (see: https://www.change-h2020.eu/).

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it had been discussed how to tackle gender bias in research evaluation and maintain GE as a priority in the new funding programme Horizon Europe (ERAC 2018[2], p. 16).

But how are these priorities and recommendations incorporated in national science policies and research funding programmes? Several EU GE related projects[3] discuss good practices and policies to mitigate gender gaps in research funding processes, from individual support instruments to organisational approaches such as gender mainstreaming (GM) to regional and national regulation. All practices seem relevant, and it has been suggested that a combination of several good practices addressed both to the individual and the structural levels might be effective (Benschop & Verloo, 2011), and that GE policies and legislation in government institutions are not enough—there is a need to allocate resources for GM at both local and regional level (the Knesset, 2013).

However, little is the empirical evidence on how GE policymaking and strategies implementation actually works in practice of research funding. Of special interest are countries, which dedicate a relatively high budget to science and research: How well do they integrate gender equality and mainstreaming in their science policies and research funding practices? Are their good practices proved to be effective in terms of gender balance in research and innovation?

1.1 High Innovator Countries of CHANGE

According to the Frascati Manual research and experimental development (R&D or R&I[4]) comprise creative and systematic work undertaken in order to increase the stock of knowledge and to devise new applications of available knowledge. Research activities are implemented and funded[5] in: business enterprise (BE), higher education (HE), governmental (GOV) or private non-profit (PNP; OECD, 2015). While industrial research (BE) is considered almost exclusively applied, academia (HE) is also involved with basic research (Almog & Almog, 2020).

As Austria, Germany and Israel[6] have higher research intensities than the EU average of 2.419% gross domestic expenditures on research and development as percentage of their nominal gross domestic product (GDP): Austria – 3.142%,

[2] All included European policy documents and reports stem from 2018 4in order to have comparable data for the latest available “She Figures 2018”, published by the European Commission in 2019.

[3] See an elaborated list of GE related projects: https://www.change-h2020.eu/sister_projects.php

[4] R&D and R&I are often used interchangeably – see the Forward chapter in the Frascati Manual (OECD 2015).

[5] Note that a certain sector can finance research implementation in another sector; For example, the BE or GOV sectors can fund research implementation in the HE sector.

[6] Six countries are in the project CHANGE: Austria, Germany, Israel, Portugal, Slovakia and Slovenia (see all involved partners here: https://www.change-h2020.eu/team.php).

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Germany – 3.118%, and Israel – 4.846%, they are marked as 'high innovator countries' in the European innovation scoreboard (OECD 2018).

Austria declared in 2011 the aim of becoming 'innovation leader' within the European research landscape by 2020 (Republik Österreich, 2011). According to Statistics Austria, the Austrian national statistics office, in 2019, 12.8 billion Euro had been spent on R&I in Austria. The research intensity has increased from 3.05% in 2015 to 3.19% in 2019. This is the second highest share spent on R&I (behind Sweden) in the EU (Federal Ministry of Education, Science and Research; Federal Ministry for Transport, Innovation, and Technology & Federal Ministry for Digital and Economic Affairs, 2019).

In Austria, the total budget for research and development comprises 12.69 billion Euro, 3.66 billion Euro from that total budget stem from public funding and 6.04 billion Euro from Austrian companies. As a logical consequence the largest proportion of research expenditure is with 69.9% in the BE sector and the HE sector is far behind with 22.4% the GOV sector accounted for 7.1% and the PNP sector 0.5% (Federal Ministry of Education, Science and Research et al. 2020; see figure 1).

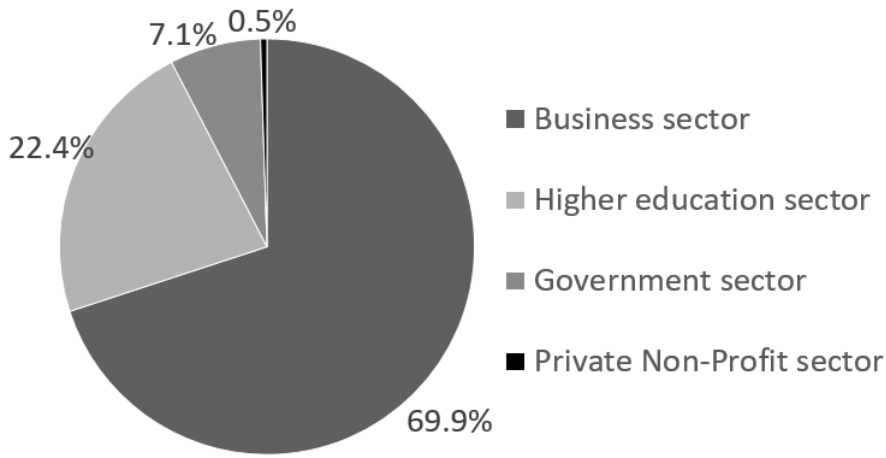

Fig. 1: Proportion of research expenditure in Austria by sector (Source: Federal Ministry of Education, Science and Research et al. 2020)

Promoting gender equality in research has been explicitly mentioned in the Austrian Research and Technology Report:

> "*Women have represented over 50% of university graduates in Austria since 2000, but they are still under-represented in many areas of research, especially at higher hierarchical levels, in industrial research, in many natural sciences, and in most engineering sciences. The RTI strategy therefore included the goal of gender balance amongst those involved in research work.*" (ibid. p. 111)

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This is defined by the three actions: gender budgeting in all research funding measures, individual support measures for early-stage female researchers, and measures to improve compatibility between career and family (ibid. p. 112). However, although this strategic aim and its actions have been declared in 2011 already, gender balance (let alone gender equity) is still not reached: Austria's share of women researchers is with 29.5% below the EU average (33.4%; European Commission 2018b).

In Germany, governmental research funding is organized on a division between the Federal Government and the States due to the federal structure. At the federal level, the three ministries Federal Ministry of Education and Research, Federal Ministry of Economics and Technology and Federal Ministry of Defense finance the majority of the federal funds for research and development by providing long-term institutional funding and temporary direct project funding. The States provide the majority for the universities.

The German government has set a target of spending 3.5% of GDP on research and development in 2025. The share of expenditure has already risen from 2.9% in 2016 to 3.13% in 2019. In total, 109.5 billion euro were spent on research and development in Germany in 2019. Looking at the financing of the budget for research and development, the Federal Statistical Office of Germany states for 2018 that 66% of the budget comes from the private sector, 28% from the public sector and 6% from abroad (Federal Statistical Office, 2021a). Therefore, as logical consequence the largest amount goes back into the BE sector (as in Austria). In 2019, 75.6 billion euro (69 %) of the research and development expenditure was spent in the BE sector, 19.0 billion euro (17.3 %) in HE institutions (HEI) and 15.0 billion euro (13.7 %) in PNP (non-university research institutions) and the GOV sector (Federal Statistical Office, 2021a; see figure 2).

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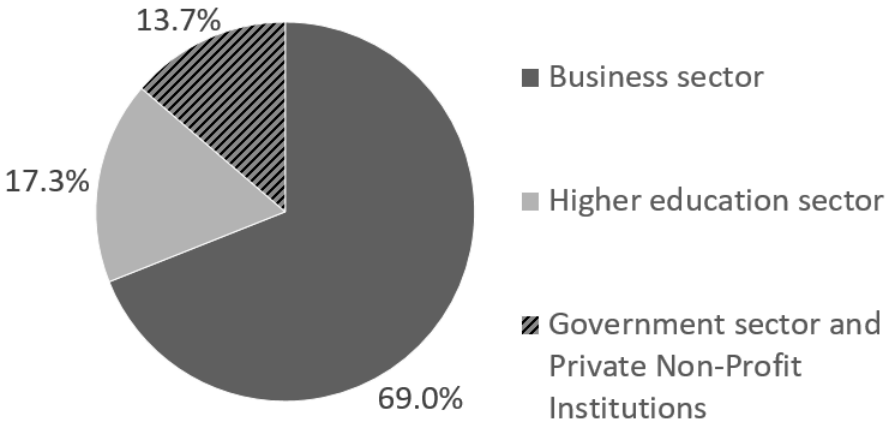

Fig. 2: Proportion of research expenditure in Germany by sector (Source: Statistisches Bundesamt, 2020)

Gender equality is a declared goal of the German Federal Government. In 2020, the national GE strategy "Towards a stronger future" was agreed. In the strategy, the Federal Government specifies how equality between women and men is to be implemented in legislation and in its funding programmes. The GE strategy sets out nine goals for GE and corresponding measures to achieve these goals. One goal is equal presence and participation of women and men in culture and science (Federal Ministry of Family Affairs, Senior Citizens, Women and Youth, 2020). However, the share of female researchers is with 28% lower than in Austria. In the higher education sector, although 38.7 % of researchers are female, the business sector has only a 14.7% share of women researchers, which is below the EU-28 average of 20.2% (SHE Figures 2018).

In sum, similar to the Austrian situation, it seems that the gender gap in research in Germany is bigger in industry/businesses[7] compared to academia. The reason for that gap is that governmental policies and budget regulates German academia more, to promote or encourage certain participation of women, while industry research is driven by industrial money and is not regulated by gender-inclusive governmental policies.

[7] In Germany, the main BE are automotive industry with a total turnover of EUR 439 billion in 2019, mechanical engineering with a total turnover of EUR 257 billion in 2019 and chemical and pharmaceutical industry with a total turnover of EUR 198 billion in 2019 (Statista, 2020). However, employees in the metal, automotive and mechanical engineering sectors are only between 12 and 13% female. In the chemical sector, women have a share of 21%. The pharmaceutical industry has the highest share of women among the most important industrial sectors in Germany with 41% (Pharma Fakten e.V., 2019).

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However, gender gaps exist in academia as well. In fact, both in academia and in BE, the higher the position, the bigger the gap, regardless of sector or discipline.

In Israel, the highest percentage of R&I expenditure is also in the BE sector (88.9%), and the rest is in HE (8.6%), GOV (1.5%) and PNP (1%) institutions (CBS, 2019 – see figure 3). Within the BE sector, the highest expenditure on R&D in 2017 was 26.5 billion ILS in computer programming, consultancy, and related activities (considered the main source of R&D growth in this sector), followed by 19.7 billion ILS in scientific research and development and 12.8 billion ILS in manufacturing, mining and quarrying (CBS, 2020a).

In terms of financing, the R&D resources stem both from local and foreign funding: more than half of the civilian R&D expenditure (52.5%) is financed by funds from abroad, about one third (35.7%) is financed by the business sector, 10.7% by the government, 0.3% by higher education and 0.8% by the private non-profit sector. The BE R&D is mainly financed by funds from abroad (57.4%) and the BE sector itself (39.4%), whereas HE R&D is mainly financed by the government (67.2%) and funds from abroad (20%) (CBS, 2020b – table 14, p. 83).

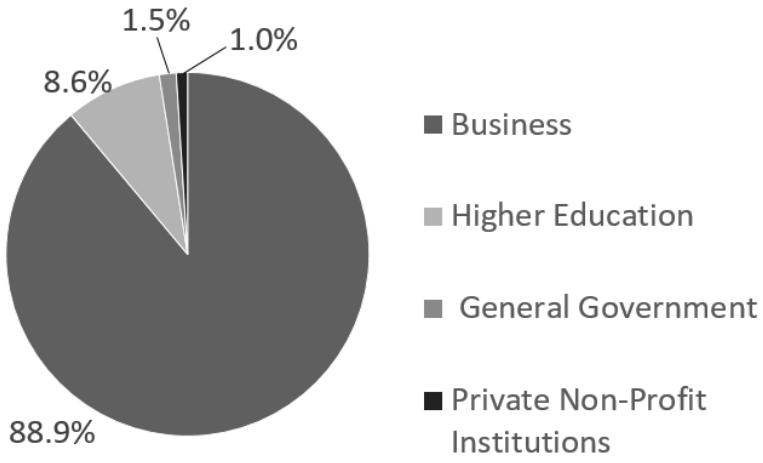

Fig. 3: Proportion of research expenditure in Israel by sector (Source: State of Israel, Central Bureau of Statistics, 2019)

Despite its relatively modest share of R&D expenditure, most, if not all, of Israel's basic scientific research[8] takes place in the HE sector, meaning research universities and some academic colleges[9] (The Israel Academy of Sciences and Humanities, 2013 and 2019). The HE research is mainly funded by the government (GOV) through the

[8] It is mentioned, however, that in recent years the distinction between basic and applied research is sometimes "blurry" (The Israel Academy of Sciences and Humanities, 2013).

[9] Although research infrastructure in colleges is 'modest' and college researchers are less supported in their research work (ibid, 2013).

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Council for Higher Education (CHE) and its Planning and Budgeting Committee (PBC) and through public research funds (partly financed by the government). Other sources for research in HE are private donations from abroad, the business sector (whether local or from abroad), foreign funds or internal budget (ibid).

Regarding gender equality, all public institutions in Israel are subordinate to state laws and government resolutions regarding GE in the work force and the civil service. In addition, there are governmental bodies or policymaking committees that constantly examine gender issues and promote gender equality national policies and regulations in certain sectors[10].

In recent years there has been a growing concern regarding gender gaps in Israeli R&D. However, regulatory efforts to mitigate these gaps have been especially evident in the Israeli academia, as for instance, by means of all public HEIs are obliged to nominate Gender Equality Officers (GEO)[11], or by financial incentives given to HEIs based on their GE outputs,[12] while no such regulations exist for RF in the BE or PNP sectors.

In sum, in all three countries gender equality is well embedded in regulations and policies to promote GE in the HE sector. However, the implementation of gender mainstreaming on a broader scale in all (especially BE) R&I sectors is lagging behind.

1.2 Gender imbalances in science and research

In terms of women's presence in research and research funding all three countries manifest gender imbalances (see graphs 4 and 5):

Austria's share of women researchers is 29.5% (EU average: 33.4%), of which the share of women researchers in HE is 39.9%, and only 17.1% in BE (European Commission, 2018 – graph 4).

In Germany, the share of female researchers is 28% to 38.7% in HE, but only 14.7% in BE (EU-28 average: 20.2%; European Commission, 2018 – see figure 4).

In Israel, although the percentage of female doctoral graduates is higher than the EU average and is almost 50% (IL 49.7%; EU: 47.9%[13]), their share in R&I positions is lower than the men's in all sectors (see figure 5): BE – 29.7% (CBS, 2011a), HE:

[10] Such as: The Authority for the Advancement of the Status of Women in the Prime Minister's Office; the Ministry for Social Equality; the Committee on the Status of Women and Gender Equality in the Israeli Parliament; the Steering and Judgment Committee for the Promotion of Gender Equality in the CHE/PBC; and the Council for the Advancement of Women in Science and Technology in the Ministry of Science and Technology (consisting of three sub-committees: Academia, Industry and Education).

[11] According to CHE resolution 3/4/2012 regarding the promotion of women in academia. Link (in Hebrew)

[12] CHE/PBC newsletter 28/8/2020. Link (in English).

[13] SHE Figures, 2018, Figure 2.1, p. 19.

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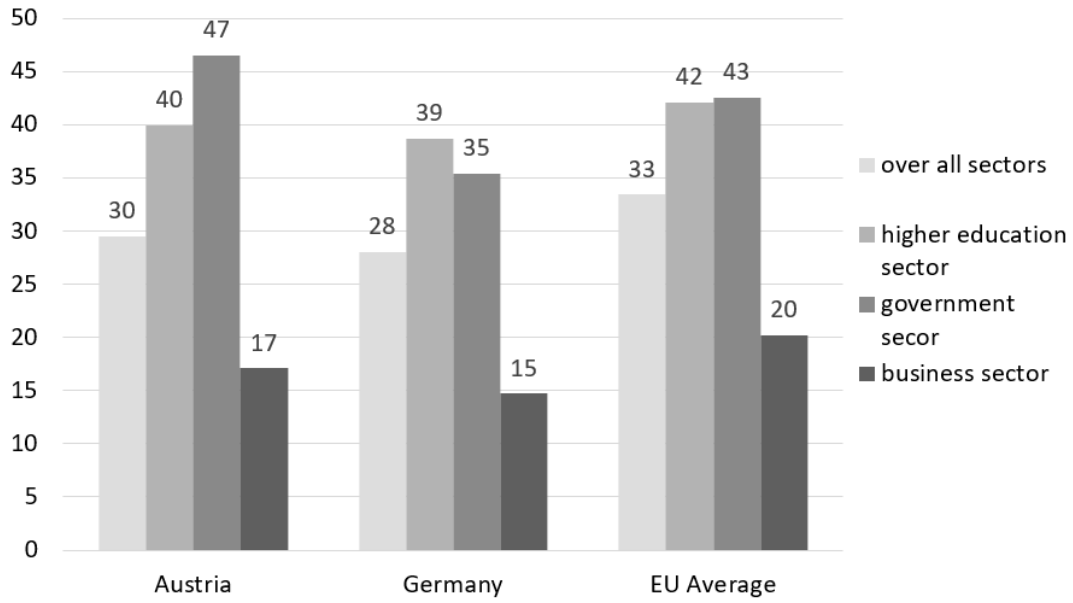
universities – 32%, colleges – 43% (the Knesset, 2018), GOV – 30.9% and PNP – 24.9% (CBS, 2011b).



Fg. 4: Share of women researchers in different sectors in Austria, Germany and EU average (own graph, data from: European Commission, 2018, figure 4.1, 4.5, 4.6, 4.7)

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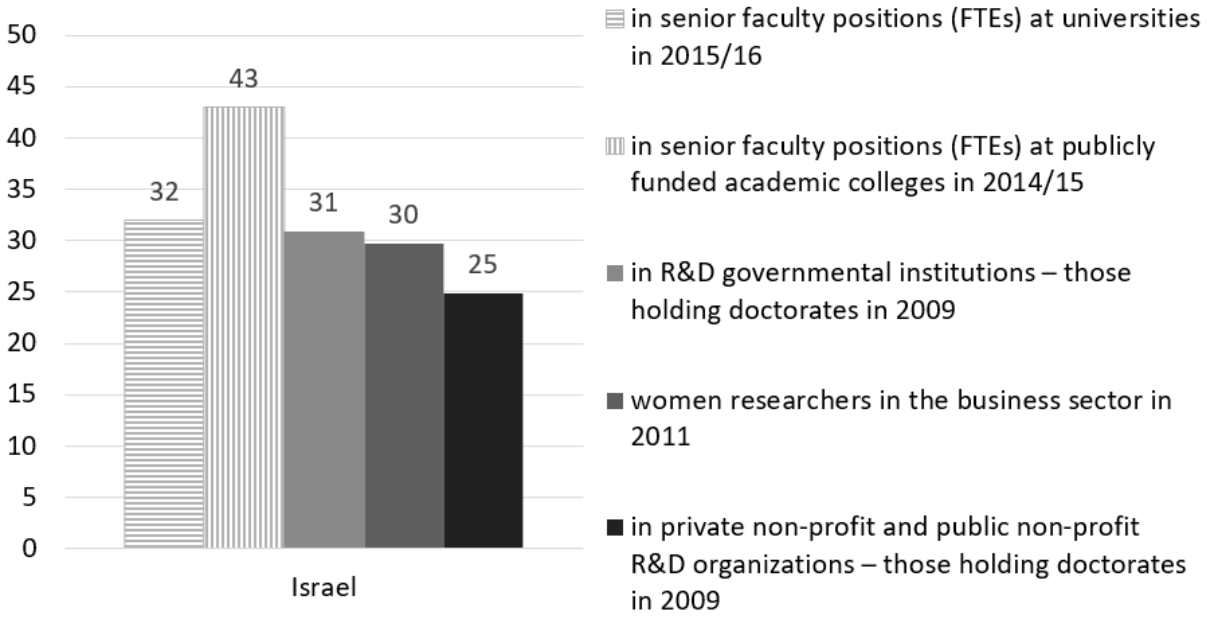

Fig. 5: Share of women researchers in different sectors in Israel (own graph, data from The Knesset, 2018 – higher education sector; CBS, 2011b – governmental and non-profit sector; CBS, 2011a – business sector)

Moreover, under representation of women is more prominent in senior positions, which are usually more accessible to research funding, as for example in academia (SHE Figures 2018)[14] or in high-tech technology management positions or entrepreneurship (Israel Innovation Authority, 2020).

2. Gender in research funding in Austria, Germany and Israel

Could RFOs be seen as potential enablers of gender equality, by incorporating budgets to respective research programmes and corresponding objectives to their evaluation, and thus putting GE science policies into practice?

2.1 Methodology

After a stakeholder mapping and exhaustive desk research, 41 experts in Austria, Germany and Israel were interviewed, between November 2019 and March 2020, in order to explore gender in science policies as well as research programmes and funding. An in-depth preparation of the interviewers has been proven a crucial factor for successful and rich interviews on eye-level with policy and experts from research

[14] Cf. SHE Figures, 2018, Figure 6.6 Glass Ceiling Index, 2013-2016.

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funding organisations (RFO). In Austria, the majority of interviews have been conducted face-to-face with a team of two interviewers, only two have been conducted via phone and video-call. In Germany, the participating RFOs are spread all over the country. Therefore, most of the interviews have been conducted by phone and three in person. All interviews have been transcribed in full length; their summaries translated in English. The interviewed experts are all stakeholders from RFOs[15] and policy makers from governments and ministries, which are significantly involved in science and research. All interviewed experts are either in charge of science and/or research in general, research funding in particular (e.g., heads of specific funding programmes), and/or gender in science and research (see details about the sample in figure 6).

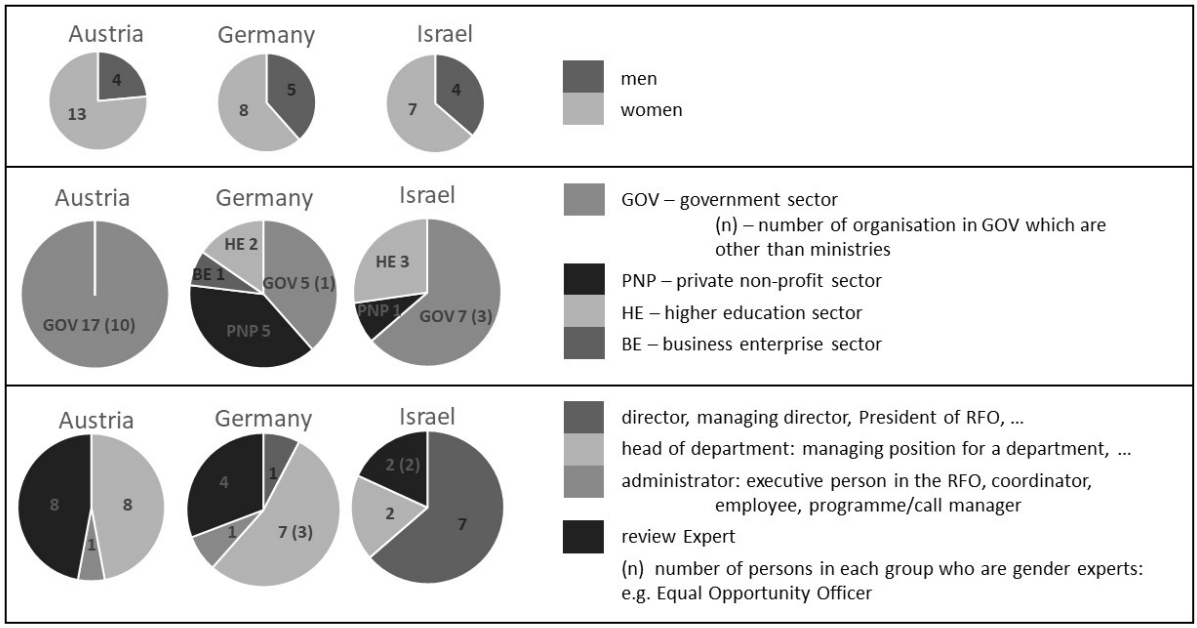

Fig. 6: The composition of the expert interview sample

2.2 Results

2.2.1 Policies, practices and gender gaps in Austria

As pointed out, Austria's share of women researchers lies below the European average, however, many of the interviewed experts agreed that especially the gender imbalance in industrial research (BE) is a huge issue, which cannot be governed as

[15] In this context RFOs (research funding organisations) are organisations, which operationally organise research fundings, they can also be RPOs (research performing organisations) or other organisations with implemented research funding programmes.

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easily as gender mainstreaming in universities. This has to do with several Austrian regulations and laws.

Since 1995 Austria is member of the European Union, and several interview partners see this very fact as a catalyst for gender equality efforts. In 2000, the Austrian government committed to gender mainstreaming, which goes back to Austria signing the Treaty of Amsterdam in 1998. Since 2002 gender equality is a leading principle for all universities, regulated by a university law ("Universitätsgesetz 2002"), and since then gender equality offices and gender equality plans are obligatory at all Austrian universities.

Additionally, policy makers from ministries pointed out that several judicial changes and budget reforms helped tremendously in governing changes towards more gender equality. For instance, in the budgeting reform of 2009/2013 gender has been included as one of five impact goals, which should also lead to more gender equality in Austria. Although the consequent implementation of gender budgeting is seen as international good practice example, the data to assess the gender impact and the assignment of resources to the gender impact goals could be improved (Saliterer & Korac 2018).

However, the private business sector cannot be governed like the public sector. Therefore, R&I funding has been recognised as important steering tool and leverage point. One interviewee explains the motivation for implementing gender mainstreaming and diversity issues in businesses and industrial research:

> "*There are three motives: One motive is justice. But, the second motive is that innovation comes from diversity and because there are verifiably product developments, which stumbled, because mono-cultural teams worked on them. And the third is that there is a skilled labour shortage and with the leaky pipeline there is an underused potential of labour there. I think, we already stated that in 2005 and I believe it is still true.*" (AT_RFO07_F_EI09)

The three interviewed federal ministries and the national funding agency FFG (managing research programmes for two ministries[16]) are operating based on the mentioned Austrian gender mainstreaming policy from 2000, and the Gender budgeting law, where gender mainstreaming is a goal within the so called 'impact orientation' since 2013. One interviewee explains the importance of this law and its concrete consequences on implementing gender as evaluation criterion in research funding etc.:

> "*And I believe remembering, the actual impulse happened at an event in the ‚Haus der Forschung[17]' about gender budgeting and a head of department of the finance*

[16] The Federal Ministry for Digital and Economic Affairs and the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology are owners of FFG.
[17] The 'Haus der Forschung' translates to 'house of research', and it accommodates several RFOs and RPOs and hosts several networking activities and other research events.

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ministry gave the talk, and he was very euphoric, because he received the news immediately before or during the event that gender budgeting has been accepted. ... And as far as I can remember, I was not in our organisation back then, but the anecdotal evidence is that the head of our basic research programme said ‚No, we have to do something!', and so they started with the gender criteria in the basic research programmes. And based on that we developed that further. Yes." (AT_RFO02_F_EI02)

These three federal ministries, the FFG plus the Vienna Business agency, which operates on a regional level, promote gender mainstreaming in their organisations, have several gender experts additionally to GEOs, so the gender expertise is broadly distributed in these organisations, and they all offer at least gender trainings for management. Moreover, all of these five organisations have a strong evidence based and impact-oriented evaluation culture, which is why they are all members of the Austrian platform for research and technology evaluation[18]. This evaluation platform has been established in 1996 and set the gender dimension as standard criterion for evaluations.

However, the interviewed provincial government, and two other RFOs of the Austrian sample have less commitment to GM in their organisations and in their research funding activities, although single good practices were identified, which are rather efforts of individuals committed to gender equality than broadly implemented governance instruments and good practices for GM in science policy and research funding. But this very fact has been identified as success factor, to implement governance structures based on GM policies and legal requirements instead:

"*Yes, this would be an effect of improvement. When the topic is stabilized and you do not have to run after people with your vendor's tray ... I for instance gave up to run after people and look where else can I add the gender dimension? This was so incredibly cumbersome and everybody was reluctant and it was so tiring. And with those governance instruments and because it became a legal requirement, ... this has changed something*." (AT_RFO01_F_EI01)

One interviewee points out the diplomatic skills involved in setting a focus on gender equality in a research funding call in an organisation, where gender mainstreaming is not a guiding principle:

"*... it was a challenge to construct this research fund in this way, to explicitly realise the call in the area of equality, and it is still a challenge to bring equality-focused projects forward, because it exists an institutional bias towards equality oriented, feminist research projects. The reason therefor lies in the committees, ... This is a structurally conservative organisation although it is progressive in its whole spectrum,*

[18] Plattform Forschungs- und Technologiepolitikevaluierung: https://www.fteval.at/

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however as an institution it works conservatively and this indicates the mentality of this house." (AT_RFO08_M_EI08)

Room for improvement has been identified in those cases where research funding procedures are less formalised, less transparent and evaluated internally or decided by a political board (after an external evaluation with mostly Austrian evaluators). One interviewee says about not using standardised evaluation criteria:

"*Well, we do not have such a formalism, we submit the proposal to the evaluator and he evaluates that then. So we do not have any criteria, but rely on the expertise.*" (AT_RFO05_F_EI17)

In total, several good practices could be identified in our interviews. For instance, the Vienna Business Agency is funding in the "FemPower-calls" only research and development projects, whose project leaders are women and/or main executors in the project and if the core focus of the project is an issue of gender mainstreaming. Additionally, they award all projects with a "Women Bonus" of 10,000 euro on top, if the project leaders are women. These measures proved to support women researchers' careers (Thaler & Hofstätter 2014). The Vienna Business Agency has now been a cooperation partner in the EU project GEECCO and learned there about the influence of unconscious bias. Our interview partners reported about their on-going efforts to improve their research funding procedures and their current plans to integrate obligatory unconscious bias e-learning training in their review process:

"*Businesses submit, projects are evaluated, projects are accompanied and operated by us. This means it is a whole process of things which take place, and accordingly you can turn several screws und one screw is 'how do we get women in the pipeline'. And another screw, which we will turn this year is to change the process of evaluation a little bit, because we say all who evaluate projects - internal and external people - must get a certificate, participating an online-tool on unconscious bias.*" (AT_RFO07_F_EI10)

The FFG, as the main national funding agency for applied research (focus on industrial research) and innovation in Austria, provides the funding services for the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) and the Federal Ministry for Digital and Economic Affairs (BMDW). Occasionally funding programmes from other Ministries are managed as well. Beside national funding programme management, the FFG also manages cooperative European (e.g., ERANETs, National contact point for EU Framework Programmes) and international programmes (e.g. Beyond Europe Programme). In sum the FFG currently manages 45 programmes and funding instruments, which cover various types, ranging from a basic programme (thematically open) to thematic calls (energy, cities and the environment, mobility, materials and production, ICT, safety and security, and space), training programmes, career development, to infrastructure funding.

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For funding instruments specifically directed towards supporting women in R&I (Talente programme: FEMtech research projects, FEMtech career, FEMtech internships; w-fFORTE; Laura Bassi) approximately 2% of the total funding budget of the FFG are allocated. Besides that, gender issues represent an integral part of the standard criteria for funding, which are applied for any type of programme managed by the FFG. This means that gender issues are considered in the project evaluation as part of the assessment of 'social aspects' of R&I projects, which embrace criteria such as the value of society, the level of qualifications, labour and social law norms, etc. This was initiated in 2010 for funding within the basic programme and was then stepwise expanded to all other programmes in order to foster equal opportunities for women and men (so not particularly focussed on 'women'). The evaluation criteria include I) gender aspects in the project content and potential impacts, II) gender-balance in the project team, and III) gender-balanced working conditions. The quantitative weighing of gender related evaluation criteria vary between different programmes, in average it counts for 10% of the overall evaluation. However, in case shortcomings are detected, adequate measures are required to be implemented by the projects, which are in consequence also monitored in the scope of project progress evaluations. For instance, in the 'Comet' programme (Competence centres for Excellent Technologies), five goals are evaluated, one of them is focused on human resources, which comprises career models in the respective competence centre and gender equality, which needs to be tackled with a gender equality plan. One interviewee explains how RFOs can increase gender equality in research with such an instrument:

"*However, we do have indicators for human resources as well. Generally, about the structure of the centre, how many persons are there, but we also take a look at how many female researchers are there. And if we see that these are not very ambitious goals, then we … with our jury … set the goals higher, … each RFO has this leverage. When we do not get what we want then there is no money flow. … And yes we are connecting such requirements with paying the instalments. And our competence centres must be a limited liability company. And this means this is connected to liquidity, … so this is really critical, if the money would not come, and we handle this with care, because we do not want to – and we never had a case – that a centre gets problems with their liquidity, but we can make pressure. Yes, and then we receive the gender concept and we let them evaluate internally.*"

(AT_RFO02_M_EI06)

So, if gender mainstreaming is not already part of the initial Comet centre concept, this has to be considered at the midterm review, and FFG evaluates this with concrete indicators, which are dependent on women's share in respective disciplines etc. only then the next part of the budget is paid. To support the research centres in developing

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a gender mainstreaming concept they can additionally apply in the FEMtech career programme to pay for external gender expertise and implement a gender equality plan.

The FFG funding programmes undergo regular impact assessments as well, which includes a gender monitoring that is not only based on counting heads, but also refers to gender balance in lead positions. Based on the programmes' impact assessment, the evaluation criteria are revised accordingly.

Some funding programmes are evaluated in house, which means that FFG experts do the review; either the thematic expert holds gender expertise her/himself, or in case not, one of the FFG gender experts is consulted on that matter. For the bigger funding programmes, external experts are contracted, which are chosen according to their specific expertise on the research topic, and at least one of them needs to hold gender expertise. Moreover, the aim is to set up a gender balanced evaluation panel according to FFG rules (which in reality does not always work out).

Through the manifestation of gender issues as basic criteria for all FFG funding activities, it was institutionalised in a sustainable way, and within a very broad spectrum of R&I activities, essentially all funding programmes of two Austrian Ministries and even beyond.

2.2.2 Policies, practices and gender gaps in Germany

In Germany, the share of female researchers is below the European average as well. The political equality goals are not as closely intertwined with the academic assessment system as in Austria. Therefore, there is not such a strong incentive for gender equality in science. Furthermore, there is a big and extensive research landscape with many different kinds of funding organisations, which makes a uniform approach more complicated.

Nevertheless, since November 2001, the 'Law on Equality of Women and Men in the Federal Administration and in the Courts of the Federation' (Bundesgleichstellungsgesetz, BGleiG) has been in effect in Germany, which regulates equality at the federal level.

Under the umbrella of the Joint Science Conference (GWK), science ministers and federal and state finance ministers coordinate federal and state science funding in Germany. Details of the joint funding are regulated in so-called implementation agreements (Ausführungsvereinbarungen, AV). The 'Implementation Agreement to the GWK Agreement on Equality between Women and Men in Joint Research Funding' (AV-Glei) of 2008, regulates that the principles of the BGleiG also apply to the research institutions jointly funded by the Federal Government and the States. In addition, the implementation of the legal mandate for the advancement of women and gender

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equality for university research institutions is regulated in the higher education laws of the respective federal states.

However, all legal requirements provide a good basis for achieving gender equality within research funding organisations.

Most of the interviewed experts see positive effects caused by it in the past years:

"… More than 10 years ago, the funding discrepancy [between male and female participants] was noticeably different, but in recent times this is hardly noticeable." (DE_RFO1_F_EI01)

Almost all interviewees describe GE-oriented policies and legal instruments (like monitoring the distribution of sexes) as the most powerful and effective tools to assimilate gender equality in their funding processes:

"That is because we are responsible for implementing the law ... we are required to fill the positions with women on a regular basis. And this is also evaluated quite well ... how many women we have ... this is published. So, there is also a sensitisation." (DE_RFO3_F_EI03)

"The chair remains empty, if no woman is found, it is not filled by a man, but the chair remains empty. This is due to the changes in the last amendment of the Federal Equality Law and it is bearing fruit." (DE_RFO3_F_EI03)

However, dealing with and implementing GE in an organisation always depends on how important this issue is to the top management of an organisation. As a logical consequence, it is important to convince the leaders and get support for changing the system towards more GE:

"... The fact that we try to give the director the topic in order to have the support, or at the level of the heads of department, is very important to push the topic forward." (DE_RFO3_F_EI03)

A point worth highlighting is, as soon as the BE is involved, the funding organisation considers mainly technological factors and social factors are less important. For example, one industry-driven RFO stated that the research institutions funded by the RFO are already committed to equal opportunities and the RFO therefore would not need to take any additional measures:

"Of course, we are ... motivated to promote women in research as well. But we do this in agreement with our cooperation partners in science: as all research organisations which apply for our grants, anyway committed themselves in order that women will be employed and supported in the projects ..." (DE_RFO02_M_EI02)

"We have stated in the Articles of Association that the institution must become younger and more feminine. However, this is not pushed by regulations – this is good in our opinion, because the focus is on promoting technology." (DE_RFO02_M_EI02)

Some RFOs do not employ gender experts or gender sensitisation tools. Either they do not seem to perceive them as necessary, or they are confident that they are

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educated enough to overcome any possible biases as described above, the issue of women's empowerment is written into law especially for academia:

"In this sense I see myself as a gender expert. This has to do with my biography: I was in various positions. ... There is no organisation in which promoting of women is not an important issue." (DE_RFO02_M_EI02)

Another reason given by smaller RFOs (e.g., foundations) for not having gender experts is that they have few employees and could not afford an additional expert. Actually, each consultant has to have gender knowledge (beside other expert knowledge). As most of the employees have a PhD the RFOs expect their employees to instruct themselves into several themes:

"… so of course, it stands and falls partly with the people [involved in the funding process]. And there have been and are changes over the years, which certainly has an influence on how the topic gender is positioned." (DE_RFO6_M_EI07)

Similar to lower percentage of women in evaluation committees, certain domains of science and technology are known to have lower percentage of women researchers, which (along with other biases) is followed by a low percentage of women's submissions or applications in those domains:

"Justice can only be achieved on the funding side if justice is obtained on the applicant side. This will not be the case if not more women do come to positions of responsibility and submit more applications." (DE_RFO10_M_EI11)

All funding organisations (beside the industrial driven RFOs) monitor the numbers regarding the distribution of women and men. Mainly RFOs in the higher education sector are implementing unconscious bias trainings for evaluators. Furthermore, it is important that the large funding organisations (e.g., European Commission) in particular act as role models, as the smaller RFOs usually take up on their processes. So, European research funding guidelines provide German RFOs with a procedure for how funding can be structured on an equal basis. Processes such as the accurate and detailed evaluation of applications have been adopted by some RFOs.

In the German research funding landscape, there are promising approaches, such as the 'Offensive for Equal Opportunities for Women and Men Scientists' (German Council of Science and Humanities, 2006), in which the major German science organisations have jointly committed themselves to implementing concrete measures and deploying resources to significantly increase the participation of women scientists in research. However, there is still a lack of strict and legal obligations, which slows down the implementation of equality.

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2.2.3 Policies, practices and gender gaps in Israel

As mentioned above, basic research in Israel is mostly implemented in HEIs financed by GOV and funds from abroad[19],. Consequently, almost the only way for researchers in HE to apply for funds is by being affiliated and in senior or tenured positions in Israeli academia. Therefore, the first gender gap lies in the fact that the percentage of women among 'eligible researchers' to apply for funds are initially low (see figure 5), especially in certain domains as STEM. Similarly, the major gender gap in BE research funding is probably the under-representation of women in senior positions:

"...There are not so many women entrepreneurs."(IL_RFO5_M_EI05)

The second, and probably most significant, gender gap in the funding process is in the submission phase, as indicated by a report by the Israeli Ministry of Science (MOS, 2019) on four of the leading public research funds in the country[20]. Women apply less to funds (23% of all applications), which is less than their respective share in senior academic staff members (34%)[21]. In average 68% of grants are given to men, 24% to women and 8% to combined teams of women and men:

*"The bottom line is that men get more [*research funds] than women [...] the problem is [...] the proposals submission phase. Therefore, the [*intervention] work should focus on the [*submitting] institutions. Are women in those institutions networked and know exactly what to do? Do they need assistance with managing the submission, maybe a research assistant etc." (IL_RFO8_F_EI11)*

Meaning, less women tend to apply for research grants relatively to their percentage in academic staff members. Once they do apply, their chances to be granted are rather proportionate to their percentage in total submissions. This finding suggests that the main barrier or bias in the process is related to women's feasibility to apply, resulting from prerequisites or other factors such as promotion criteria in academia and (lack) of supportive instruments given to them by their home-base institutions. This issue should be further investigated and analysed, for better understanding of the roots of the bias.

Another observation based on the expert interviews is, that unlike HEIs, where a gender equality officer (GEO) is mandatory, in most (if not all) public funds in Israel GE is neither included as a crosscutting issue in the policy nor in the routine procedures

[19] Consequently, most RFO expert interviews in the BBC framework were conducted either in GOV or HE organisations.

[20] Major governmental academic funds, Ministry of Science and Technology, Israel Scientific Foundation (ISF), The U.S.-Israel Binational Science Foundation (BSF) and The German-Israeli Foundation for Scientific Research and Development (GIF) in 2017-2018.

[21] Senior academic staff members in universities and grant applications(ibid).

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of the funding process. Moreover, gender equality is sometimes perceived as a challenge to excellence or meritocracy:

"The focus is on our work ethics. Gender is not an issue. What is important is the quality of the researchers. I can't tell about men and women figures. It's not a criterion we focus on." (IL_RFO2_F_EI02)

Finally, a gender gap which is more focused on is the post-doctorate phase. As being the entry point to senior academic positions in universities, and as required to be held abroad, this phase was recognized as a major barrier for young female researchers in Israel (MOS, 2015). In an attempt to mitigate this barrier, a few postdoc programmes for young excellent female researchers in the field of life sciences are implemented in the country. The aim of these programmes is to assist young women by allocating extra funding for their families, thus supporting their relocation abroad:

*"We have learned that the source of the problem is the spouse's position. There is no difference in the abilities of men and women. […] We have realized that when a man has to go [*abroad] to his postdoc, […] A male scientist's mobility with his family is much more common and accepted than a female scientist's […]Women don't even get to the point where they raise and discuss the question of mobility.[…] We decided to add a scholarship of 25 thousand $ to make it easy on the family to economically adjust to this change. We have found out that this tool encourages women to go to postdoc. This programme has been operating for the last 12 years and has impressive achievements so far." (IL_RFO6_M_EI06)*

In sum, the gender gap in Israeli research funding stems from the low percentage of women in senior academic ranks. Specific postdoc programmes for young female researchers in life sciences and training and incentive programmes female entrepreneurs (IIA, 2020) are good-practice examples on an individual level, however their impact on the systemic or national levels is unclear. Regulatory strategies to promote GE in science and research on the national level are still needed to have more gender-balanced research funding processes in the country.

3. Conclusions

The following conclusions are based on exhaustive desk research and 41 interviews with RFO experts and policy makers in the three high innovator countries Austria, Germany and Israel.

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3.1 Research budgets and gender imbalances

Findings from the expert interviews on research budgets, gender policies and practices confirm on the one hand general gender imbalances in funding processes regardless of place, policy, regulation or budget. This means that despite the efforts put into research in the examined strong-innovator countries, their high scientific potential might not be fully materialised due to unconscious biases along the 'leaky pipeline' of grant application and evaluation. On the other hand, the specific imbalances differ across the three countries:

Although the allocated budget for R&I in HE in Israel, Austria and Germany is different (9%, 17% and 22% respectively), the share of women researchers in the academic staff is still less than half in all three countries.

The disparity between budgets and women's participation in research is especially apparent in BE sector in Austria and Germany, where almost 70% of the total research budget is allocated, but only 15% respectively 17% are women researchers.

3.2 The hidden potential lies in gender policies for all research sectors

Despite significant regulative measures taken in HE, academia is still gender biased or gender imbalanced. This fact has an impact on women's career progression, including their chance to be funded and supported for their research.

Nevertheless, HE and research funding on a national level manifest more GE policies and GM practices than BE and research funding on regional levels. Therefore, one of the main challenges is to transfer gender-inclusive policies and practices from the national to the regional level, and from academic to industrial research.

Based on the expert interviews, it can be recommended to combine different policies and practices at all systemic levels (not only individual measures), in order to achieve effective and sustainable change:

1. Gender national policy and legislation in research funds, similarly to those implemented in HEIs.
2. Sharing of knowledge between research performing organisations and RFOs, in order to identify gender gaps and biases in their organisational processes, as well as intersections or matching points, where women might face more challenges, and thus procedures could be adapted or gender sensitisised.
3. Further investigations on the roots of gender gaps in funding processes and the development of tailor-made solutions (e.g. biased prerequisites).
4. Gender as cross-cutting issue in research funding programmes, with detailed explanations and examples in the guidelines for applicants.
5. Support of the management of the organisation to improve the implementation of gender equality in the individual divisions.

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6. Gender as a general evaluation criterion for grant reviews, carefully explained in reviewer briefing material.
7. Compulsory gender and/or unconscious bias training for staff of RFOs and reviewers to raise awareness and to foster a sense of commitment of RFO practitioners to promote GE within their organisations.
8. Constant monitoring and impact evaluation of research funding programmes, incl. gender dimensions in the whole research funding cycle.

Finally, there exists a window of opportunity in the ERA right now, as with the European Commission's 'Horizon Europe' research funding programme, the inclusion of gender equality plans (GEPs) is communicated as an eligibility criterion for proposal applications[22]. However, this momentum of connecting research budgets to gender policies has only the full possible impact, if this eligibility criterion will in future be applied to all sectors including BE, and if the request for GEPs will be regularly and qualitatively monitored, e.g., in the scope of the mandatory project reviews.

References

Almog, O., & Almog, T. (2020). The academia's lies: what went wrong in the university model and what will come in its place. Rishon Letzion: Yediot Ahronot Press, Israel (in Hebrew). Chapter 2.

Benschop, Y., & Verloo, M. (2011). Gender Change, Organizational Change and Gender Equality Strategies. In E. Jeans, D. Knights, & P. Yancey-Martin, *Handbook of Gender, Work and Organization* (pp. 277-290). London: John Wiley.

Bornmann, Lutz; Mutz, Ruediger & Daniel, Hans-Dieter (2007). Gender differences in grant peer review: A meta-analysis. Journal of Infometrics. 1. 226–238. 10.1016/j.joi.2007.03.001.

Central Bureau of Statistics (CBS). (2011a). Table 25: R&I Personnel in the business sector international comparison. Download: https://www.cbs.gov.il/he/publications/DocLib/2014/1550/excel/t25.xls. (April 27, 2021).

CBS. (2011b). Press release: Survey on Research and Development in Government Institutions and in Research Institutions and Units 2009. Download:

[22] https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/democracy-and-rights/gender-equality-research-and-innovation_en#gender-equality-plans-as-an-eligibility-criterion-in-horizon-europe

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DOI: 10.3217/978-3-85125-855-4-20

https://www.cbs.gov.il/he/mediarelease/doclib/2011/292/12_11_292e.pdf. (April 27, 2021).

CBS. (2019). The National Expenditure on Civilian R&I 2019, Media release 345/2020. Download: https://www.cbs.gov.il/he/mediarelease/DocLib/2020/345/12_20_345e.pdf. (April 27, 2021).

CBS. (2020a). Business Research and Development 2016-2017, publication no. 1786 (English and Hebrew). Download: https://www.cbs.gov.il/he/publications/DocLib/2020/1786/e_print.pdf; https://www.cbs.gov.il/he/publications/DocLib/2020/1786/h_print.pdf (April 19, 2021).

CBS. (2020b). National Expenditure on Civilian Research and Development 1990-2018, publication no. 1777. Download: https://www.cbs.gov.il/he/publications/DocLib/2020/1777_civilian_rd_2018/e_print.pdf. (April 19, 2021).

EIGE. (2016). Institutional Transformation: Gender Mainstreaming Toolkit. (P. O. Luxembourg, Ed.) Download: https://eige.europa.eu/publications/institutional-transformation-gender-mainstreaming-toolkit. (April 28, 2021).

European Commission (2018a). European innovation scoreboard 2018. Download: https://op.europa.eu/en/publication-detail/-/publication/8e458033-74fc-11e8-9483-01aa75ed71a1/language-en/format-PDF/source-99539237 (April 27, 2021).

European Commission (2018b). She Figures. Download: https://ec.europa.eu/info/publications/she-figures-2018_en (April 21, 2020).

European Research Area and Innovation Committee (ERAC, 2018). 2018 Annual Report. Download: https://era.gv.at/public/documents/4039/ERAC_Annual_Report_2018_adopted.pdf (April 27, 2021).

Federal Ministry of Education, Science and Research; Federal Ministry for Transport, Innovation, and Technology & Federal Ministry for Digital and Economic Affairs (2019). Austrian Research and Technology Report. Download: https://www.bmbwf.gv.at/dam/jcr:2edd3ea0-c373-456e-8f09-faf5f984d3f7/FTB_2019_english.pdf (April 21, 2020).

Anita THALER, Maya ASHKENAZI, Madlen BAUMERT, Janne HAACK, Hana HIMI, Sandra KARNER
DOI: 10.3217/978-3-85125-855-4-20

Federal Ministry of Family Affairs, Senior Citizens, Women and Youth (2020). Gleichstellungsstrategie der Bundesregierung. Download: https://www.gleichstellungsstrategie.de/resource/blob/158356/b500f2b30b7bac2fc1446d223d0a3e19/gleichstellungsstrategie-der-bundesregierung-data.pdf (May 24, 2020).

Federal Statistical Office (2021a). Bildungsausgaben – Budget für Bildung, Forschung und Wissenschaft 2018/19. Download: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Bildungsfinanzen-Ausbildungsfoerderung/Publikationen/Downloads-Bildungsfinanzen/bildungsausgaben-pdf-5217108.pdf?__blob=publicationFile (May 24, 2020).

Federal Statistical Office (2021b). Press release regarding the expenditures for research and development in Germany 2019. Download: https://www.destatis.de/DE/Presse/Pressemitteilungen/2021/02/PD21_079_217.html (May 24, 2020).

German Council of Science and Humanities (2006). Exzellenz in Wissenschaft und Forschung: Neue Wege in der Gleichstellungspolitik. Documentation of the conference on 28/29 November 2006 in Cologne. Download: https://www.wissenschaftsrat.de/download/archiv/ChancGleichDoku.pdf?__blob=publicationFile&v=1 (May 24, 2020).

Israel Innovation Authority (2020), High-Tech Human Capital Report 2020. Download: https://www.suvelocity.org/wp-content/uploads/2020/02/Start-Up-Nation-Centrals-High-Tech-Human-Capital-Report-2019.pdf (May 29, 2021).

Ministry of Science & Technology (MOS; 2015). Promotion and Representation of Women in Higher Education Institutions: Committee Report. Ministry of Science and Technology and The Council for Higher Education- Planning and Budgeting Committee. Jerusalem (in Hebrew).

Ministry of Science & Technology (MOS; 2019). The State of Gender Equality in Research Funds in Israel 2017-2018. In Ministry of Science and Technology and The Council for the Advancement of Women in Science and Technology. Jerusalem, Israel: Ministry of Science & Technology (in Hebrew).

Anita THALER, Maya ASHKENAZI, Madlen BAUMERT, Janne HAACK, Hana HIMI, Sandra KARNER
DOI: 10.3217/978-3-85125-855-4-20

OECD. (2015). Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development, The Measurement of Scientific, Technological and Innovation Activities. Paris, France: OECD Publishing.

OECD (2018). Gross domestic spending on R&I (indicator). doi: 10.1787/d8b068b4-en (May 23, 2021).

Pharma Fakten e.V. (2019). Pharmaindustrie als attraktiver Arbeitgeber für Frauen. Download: https://www.pharma-fakten.de/news/details/881-so-weiblich-ist-die-pharmaindustrie/ (July 27, 2021).

Republik Österreich (2011). Realising potentials, increasing dynamics, creating the future. Becoming an Innovation Leader. Strategy for research, technology and innovation of the Austrian Federal Government. Download: https://www.bundeskanzleramt.gv.at/en/topics/rti-strategy.html (Feb. 19, 2020).

Saliterer, Iris & Korac, Sanja (2018). Externe Evaluierung der Haushaltsrechtsreform des Bundes im Jahr 2017. Download: https://www.bmf.gv.at/themen/budget/haushaltsrechtsreform/externe-evaluierung-bundeshaushaltsrecht.html (Feb. 28, 2020).

Statista (2020). Umsätze der wichtigsten Industriebranchen in Deutschland in den Jahren von 2017 bis 2019. Download: https://de.statista.com/statistik/daten/studie/241480/umfrage/umsaetze-der-wichtigsten-industriebranchen-in-deutschland/ (July 27, 2021).

Thaler, Anita & Hofstätter, Birgit (2014) Promoting women researchers' careers. An evaluation of measures in life sciences and ICT. 8th European Conference on Gender Equality in Higher Education, Vienna University of Technology, Austria, September 3-5, 2014. Download: https://gender2014.conf.tuwien.ac.at/fileadmin/t/gender2014/Full_Papers/Thaler_GEHE_Paper_2014_Thaler_Hofstaetter_final-bio.pdf (April 22, 2020).

The Israel Academy of Sciences and Humanities. (2013). Report on the State of the Sciences in Israel – 2013 (in Hebrew). Download: https://www.academy.ac.il/SystemFiles/21708.pdf. (April 19, 2021).

The Israel Academy of Sciences and Humanities. (2019). Report on the State of the Sciences in Israel – 2019 (full report in Hebrew). Download:

Anita THALER, Maya ASHKENAZI, Madlen BAUMERT, Janne HAACK, Hana HIMI, Sandra KARNER
DOI: 10.3217/978-3-85125-855-4-20

https://www.academy.ac.il/SystemFiles2015/State_of_Science_report_digital_7.1.2020.pdf. (April 19, 2021).

The Knesset, Research and Information Center. (2013). The Impact of Legislation on Gender Equality – Implementation and Comparative Analysis. Download: https://m.knesset.gov.il/EN/activity/mmm/me03376.pdf (April 19, 2021).

The Knesset, Research and Information Center. (2018). Representation of Women in the Israeli Academia - Compilation of Data. Download: https://m.knesset.gov.il/EN/activity/mmm/me040618.pdf. (April 19, 2021).

Van Wijk, J., Zietsma, C., Dorado, S., de Bakker, F. G., & Marti, I. (2019). Social Innovation: Integrating Micro, Meso, and Macro Level Insights From Institutional Theory. Business & Society, 58(5), p. 887–918.

Wroblewski, Angela (2017). Das Gleichstellungsparadox in Wissenschaft und Forschung in Österreich. In: Jennifer Dahmen & Anita Thaler (eds). Soziale Geschlechtergerechtigkeit in Wissenschaft und Forschung. Wiesbaden: Budrich Verlag. Download: https://www.researchgate.net/publication/316830144_Soziale_Geschlechtergerechtigkeit_in_Wissenschaft_und_Forschung (June 23, 2020).