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Women in the Innovation Ecosystem

Zooming in on Austria, the Czech Republic and Slovakia

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The CEE Her Initiative, powered by GLOBSEC, aims to amplify expert female voices in influential policy-making debates. The goal is also to create a public resource for conference organisers, think tanks, non-profits and public institutions to find women experts from and interested in the Central and Eastern Europe+ region for their panels, articles and discussions and to bolster a creation of a vivid network of female experts who seek more diverse debates and can provide a valuable perspective on contemporary societal issues. Through this initiative, GLOBSEC strives to contribute towards a more comprehensive goal of changing narratives and policies in CEE+ where gender equality can lead to more stable, secure, and prosperous region.

Executive summary

This report aims to shed light on the role of women in the innovation ecosystem, identify common challenges for entry and sustained participation, and advance recommendations to various stakeholders for improvement of gender equality and the inclusion of women. A special focus is placed on tracing commonalities and differences between the current innovation ecosystems in Central Europe, particularly Austria, the Czech Republic, and Slovakia. Furthermore, the report concentrates on women entrepreneurs and investors—an integral part of the ecosystem. The report, to this end, seeks to address a data gap in the region.

Some **pressing questions** guiding this review:

- Why are gender equality and inclusion important to the innovation ecosystem?
- What is the current state of women in the innovation ecosystems in Austria, the Czech Republic, and Slovakia?
- What barriers are preventing women's participation and inclusion in the innovation ecosystem?
- What are examples of positive developments and best practices?
- How can the entry and sustainable participation of women in the innovation ecosystem be improved upon?

Since the innovation ecosystem encompasses complex interconnected entities consisting of multiple pillars, a **mixed-method approach** was used to tackle the main questions. This included:

- Desk research
- Twelve interviews with women participating in ecosystems in Austria, the Czech Republic, and Slovakia and representing different pillars
- A survey sampling 52 additional women and men involved at various levels
- Facilitation of an informal focus group discussion with high-level stakeholders

Among the three monitored countries, Austria stands out the best performer on the gender equality and inclusion metrics. Even Austria, however, is still struggling to achieve broad gender parity. Its more developed innovation ecosystem, nevertheless, enables the country to pay special attention to the role of women and their contributions. Around 35% of all start-ups in Vienna, for instance, are founded/co-founded by women[1]. The innovation scene in both the Czech Republic and Slovakia is also 'booming'. Successful start-ups are scaling up and finding themselves the acquisition targets of large corporations. Women, that said, are severely underrepresented in this setting across Central and Eastern Europe (CEE), with only 13% of start-ups in the region founded by women[2]. And the funding of women-founded start-ups account for about 1% of all such investments in CEE, with less than 1% of investment capital being managed by all-female general partner teams (GPs)[3]. A mix of results, meanwhile, is apparent across other pillars of the innovation ecosystem. While more women are attaining doctoral degrees in Slovakia, Czech women hold more patents. Yet, no women serve in leadership positions on company boards in the Czech Republic and Slovakia.

A total of 36% of Austrian company boards, for their part, are headed by women[4]. In public administrative bodies, such as ministries, the ministers primarily responsible for innovation in all three countries are women (though the complex structure of the innovation ecosystem often dictates the involvement of more than one ministry).

1 https://sifted.eu/articles/11-vienna-female-founders-austria-entrepreneurship/
2 https://ceereport2021experiorvc.unconventional.vc/45/
3 https://ceereport2021experiorvc.unconventional.vc/5/
4 https://ceereport2021experiorvc.unconventional.vc/45/

Barriers to the entry and sustained participation of women in the innovation ecosystem, as identified by interviewees and survey respondents include:

- Gender perceptions getting in the way of women being taken seriously
- Lack of female role models
- Gender pay gap
- Limited career progression for part-time workers
- The glass ceiling
- Sexism in the workplace
- Little diversity post-graduation

Some existing **good practices,** nevertheless, were also identified by people working in the innovation ecosystem. If strengthened, these could contribute measurably to change. They include:

- Leveraging the power of role models for both recruitment and career growth purposes
- Focusing on mentorship and guidance
- Increasing women-funding opportunities (women fund other women)
- Starting with the basics – an equitable hiring process

The report puts forward concrete **recommendations** that can be implemented at the national, regional, and local levels by governments, businesses, start-ups, investors, and civil society. They encompass:

- Introducing and implementing policies that contribute to an equitable labour market
- Establishing incentive-based and 'proactive tools'
- Launching programmes to educate and motivate young girls to get interested in the innovation ecosystem
- Improving the business culture including gender perceptions
- Implementing creative work-life balance schemes
- Raising awareness and promoting role models
- Mentoring and guiding women through all stages of involvement
- Gathering and updating data

The innovation scene in both the Czech Republic and Slovakia is 'booming'.

Women, that said, are severely underrepresented in this setting across Central and Eastern Europe (CEE)

Introduction

While women in Austria, the Czech Republic, and Slovakia participate actively in political, economic, and social pursuits, gender equality has not yet been achieved. Even though women are important contributors to the innovation ecosystem, they are underrepresented across all segments in Central and Eastern Europe (CEE) and Austria despite the high demand for talent. The CEE region in 2020, for instance, saw only 1% of funding go to women-founded start-ups and less than 1% of capital managed by all-women general partner (GPs) teams[5].

Defining an innovation ecosystem is not a trivial matter. It encompasses complex interconnected entities consisting of multiple pillars. Innovation ecosystems are namely comprised of financial capital, human capital, markets, regulatory frameworks, support systems, and cultures[6]. In other words, innovation ecosystems bring together various significant players such as universities, governments, corporations, start-up accelerators, venture capitalists, private investors, foundations, entrepreneurs, mentors, and/or the media.

This report aims to provide an overview of the current state of affairs for women in the innovation ecosystem, with a focus on Austria, the Czech Republic, and Slovakia. It also puts forward policy recommendations to various stakeholders directed at improving gender equality and women's inclusion. The report, furthermore, sheds light on the participation of women entrepreneurs and investors.

Data was collected through desk research, interview fieldwork, and a survey. Desk research included a secondary source review (reports, research papers, briefs) focused on Austria, the Czech Republic, and Slovakia and drawing inspiration from the wider global ecosystem including particularly the United Kingdom and the United States.

12
interviews

52
survey responses

1
focus group

The interview fieldwork was carried out July-September 2022 - 12 interviews were conducted with women from the three countries encompassing active participants representing various segments of the innovation ecosystem. Five interviews were conducted in Slovakia with representatives from academia, an AI business, a start-up, and a government office. In the Czech Republic, four stakeholders were interviewed – one each from a capital market association, an international non-bank financial institution, the European Investment Bank, and a private equity firm. Three interviews, finally, were carried out with Austrian representatives from the Research Promotion Agency, the Angel Investors Association, and an independent association focused on digital literacy.

During the same timeframe, a survey was launched collecting additional responses from other participants in the innovation ecosystems from Austria, the Czech Republic, and Slovakia. A total of 52 responses were gathered, with the sample comprised of 34 women, 17 men, and 1 unidentified participant. The respondents broadly reflect different components of the innovation ecosystem, more specifically: 25% business support organizations, angel investors, accelerators, and funding agencies; 23% businesses, SMEs, and start-ups; 21% academia; 15% ministries and government; 10% NGOs and interest groups; 5% individual researchers; and 1% identified as other categories within the innovation ecosystem. Key insights from a focus group discussion held at Tatra Summit 2022 on this topic, moreover, were also incorporated into the report.

5 https://ceereport2021experiorvc.unconventional.vc/5/
6 https://www.globsec.org/sites/default/files/2022-06/Danube-Tech-Valley-Report.pdf

Innovation in the region through the lens of diversity

What is the innovation ecosystem?

Innovation represents the appreciation of new ideas for products and/or processes contributing to value growth, with novelty inherent to innovation. Clayton Christensen[7] categorises innovation into three groups: efficiency (doing the same thing faster or cheaper), sustaining (making current solutions better), and disruption (transforming complicated solutions into simple, accessible, and affordable options). Innovation is an incremental process, not a sudden change, and it requires collaboration. It also benefits from a diversity of opinions and experiences. "The key feature of innovation yet remains the same and that is that innovation enhances productivity and per se leads to higher output per inputs ratio. Women engage more in less patentable innovation and per se many innovations produced by women might go unnoticed[8]."

Von Leipzig and Dimitrov (2015)[9] identify five main types of actors in the innovation ecosystem: (1) **industry actors** (entrepreneurs, large enterprises, freelancers, etc...), (2) **academia** (universities, colleges, tech transfer offices, labs, technology parks, etc...), (3) **public bodies** (municipalities, regional authorities, public agencies, etc...), (4) **finance** (banks, venture capital, business angels, etc...), and (5) **other actors** (media, formal and informal networks, trade organisations, cluster organisations, etc...). All these stakeholders, in practice, are key as they play a vital role in creating value in a complex system by enabling novel ideas to be put into use[10]. The groupings, furthermore, align well with the GLOBSEC's Danube Tech Valley Report's definition of an innovation ecosystem as including **financial capital, human capital, markets, a regulatory framework, support systems, and culture**[11].

Why do we focus on women in the innovation ecosystem?

The participation of women in the innovation ecosystem has been more actively encouraged in recent years backed by two prevailing themes: economics and human capital.

The prioritization of gender equality is, notably, economically beneficial to societies. Gender diversity unlocks innovation by creating an environment where all ideas are heard and assessed[12]. Companies with diverse leadership are 45% more likely to report year-over-year growth in the market share of their firms and 70% likelier to indicate that their firms captured a new market. Aside from social and political issues, gender equality is about ensuring that a significant part of the population participates in economic development and accelerates growth for the benefit of all[13].

7 Christensen, C. M., McDonald, R., Altman, E. J., & Palmer, J. E. (2018). Disruptive Innovation: An Intellectual History and Directions for Future Research. Journal of Management Studies, 55(7), 1043–1078. https://doi.org/10.1111/joms.12349
8 Interview respondent 2022 (Puskarova SK).
9 Leipzig, Konrad & Dimitrov, Dimitar. (2015). Cluster development in the SA tooling industry. The South African Journal of Industrial Engineering. 26. 10.7166/26-3-946
10 Interview respondent 2022 (Kovacikova, SK).
11 https://www.globsec.org/sites/default/files/2022-06/Danube-Tech-Valley-Report.pdf
12 HBR https://hbr.org/2013/12/how-diversity-can-drive-innovation
13 Interview respondent 2022 (Brodani, CZ).

By diversifying innovation teams and harnessing the full potential of human capital, companies can enhance innovation and countries can meet the needs of their entire population rather than merely the male half[14]. The greater involvement of women comes with enormous potential towards bringing in new critical insights, deeper levels of cooperation and creativity, and a rich variety of ideas into innovation ecosystems. Rather than squandering the needed skills and talents of women who have undergone relevant training, in other words, there is an opportunity to leverage these capabilities. Diversity, in fact, is a key driver of innovation and a critical component towards achieving success at a global scale[15].

14 Interview respondent 2022 (Egerth, AT).
15 Interview respondent 2022 (Kovacikova, SK)

Representation of women in the innovation ecosystem

The 2021 European Commission *She Figures*[16] report draws on the latest available data to scrutinize the state of gender equality in research and innovation across Europe and beyond. This section sheds light on the three countries covered here (Austria, the Czech Republic, and Slovakia) and discusses the current state of play when it comes to the representation of women in the innovation ecosystem based on data collected by the European Commission and key insights gathered from the interviews.

Human capital (academia)

Over the past decade, the European Union has made headway towards achieving gender parity between people graduating with doctoral degrees. Women represented 49% of doctoral graduates in Slovakia in 2018, putting the country just above the European average of 48%. Austria, by contrast, was ranked 5th from the bottom and the Czech Republic 2nd lowest in the EU, with women making up, respectively, 44% and 43.7% of doctoral graduates[17].

Across Europe, between 2015 and 2019, women and men early stage researchers also published a similar number of publications. But as authors become more senior, women tend to publish less than men, underscoring a broader gender gap at higher seniority levels. All told, the share of women authors on publications stood at 25% in Austria, 27% in Czechia, and 33% in Slovakia. As it pertains to inventions, meanwhile, **for every 100 patent applications held by men, women held only 6 in Austria, 12 in Czechia,** and 5 in Slovakia. On the EU-27 level, women held 11 applications for every 100 patent applications held by men[18].

Market (industry actors)

At the European level, 54% of tertiary-educated professionals or technicians in the fields of science and technology are women. However, women's representation drops to 41% as it pertains to the employment of scientists and engineers across Europe[19]. In 2020, among the three countries examined here, only Austria (20%) ranked above the EU average (18.5%) as far as women working in the Information and Communication Technologies (ICT) sector are concerned[20]. Despite an upward trend in Slovakia, only 16% women currently work in the ICT sector. The Czech Republic ranks last in the EU at 10%[21].

Women represent less than a quarter of self-employed professionals in science and engineering and ICT put together. Austria ranks highest at 22% followed by Slovakia at 19%, and the Czech Republic at 16%[22]. Austria, especially Vienna, has witnessed a sort of 'boom' in women entrepreneurs over the past four years, with 35% of start-ups boasting at least one woman as a co-owner[23]. At the same time, only around 13%

16 https://ec.europa.eu/assets/rtd/shefigures2021/index.html
17 Ibid.
18 Ibid.
19 Ibid.
20 Eurostat 2021, Employed ICT specialists by sex, Eurostat, accessed 8 November 2022, https://ec.europa.eu/eurostat/databrowser/product/page/ISOC_SKS_ITSPS
21 Ibid.
22 https://ec.europa.eu/assets/rtd/shefigures2021/index.html
23 https://sifted.eu/articles/11-vienna-female-founders-austria-entrepreneurship/

of start-ups in the CEE region are founded by women[24].

At the European level, some slight progress has been achieved towards improving women's representation in decision-making and leadership positions. The numbers, nonetheless, are still alarming - company board membership included. As it concerns these boards, women only make up three in ten members (31%) and under a quarter of board leaders (24.5%)[25].

More closely scrutinizing the regional level, Slovakia and the Czech Republic appear to be stagnating, with no discernible improvement measured between 2017 and 2019. The **number of female leaders on boards remained at 0** in both countries and the number of female board members remained around 20% (21% in Slovakia and 17% in the Czech Republic). The situation is different in Austria, with some progress apparent. While less than a quarter of board leaders were women in 2017 in Austria, the figure increased by 15 percentage points to 36% in 2019. And though just over a third were board members in 2017, this number too grew by nearly three percentage points to 40% over a two year period[26].

These developments are transpiring as the regional start-up ecosystem begins to take off. Austria's start-up ecosystem is ranked 23rd globally and 12th in Western Europe, with a positive trend[27]. In Slovakia, Slido (a SaaS employee engagement platform that bootstrapped after an initial angel investment) was acquired by Cisco, Exponea (consumer data analytics platform) by Bloomreach and Minit (process mining software) by Microsoft. The Czech Republic has recorded even more activity: Productboard (product management platform) raised a $125M Series D and reached unicorn status along with Rohlik (e-grocery retailer) which has picked up a €100 million series C and a €1 billion valuation.

Finance (financial capital)

Among start-ups, all-women-founded companies in the CEE region received just 1% of total capital. This compares to 5% of capital going to mixed teams and an astounding 94% to all-male teams. Roughly 13% of start-ups in the CEE region are founded by women. Average round sizes at Seed and Series A are smaller for all-women teams in CEE than for mixed and all-men teams. While start-up funding to female-led teams remains minuscule, women-founded start-ups generate more revenue per euro invested and outperform the all-male-led teams in capital productivity by 96%[28].

The 2021 CEE Region report[29] shines a light on the situation facing female investors in the CEE region. The problem of the underfunding of women in the region can be partially traced back to a lack of female representation among investors. Funders and decision-makers are predominantly men. Among active funds in the CEE region, 85% of VC investment roles are held by men, rising to 93% at the Partner level. Furthermore, only 1% of capital is managed by all-women general partner teams in the region. All-male general partners hold five times more assets under management compared to all women GPs of venture funds. And, finally, only 2% of VC funds meet women Leading Partners (LPs) as frequently as men LPs during fundraising.

Regulatory frameworks (public bodies)

With its complexity, the innovation ecosystem touches upon a vast array of regulatory frameworks and naturally attracts the attention of a variety of public administrative agencies. In Slovakia and the Czech Republic, central governmental bodies like the Government Office, the national parliaments, ministries responsible for innovation and technology, ministries of economy and finance, and ministries of education are all participants in the ecosystem. Additionally, local governments – typically larger municipalities - are also at times closely involved. Meanwhile, Austria, as a Federal Republic, is characterized by an extra layer of public actors.

Across Austria, the Czech Republic, and Slovakia, women hold several ministerial positions with innovation in their portfolio: these include the Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology in Austria, the Minister for Science, Research and

24 https://ceereport2021experiorvc.unconventional.vc/45/
25 Ibid.
26 Ibid.
27 https://www.startupblink.com/startup-ecosystem/austria
28 https://ceereport2021experiorvc.unconventional.vc/
29 https://ceereport2021experiorvc.unconventional.vc/

Innovation in the Czech Republic (the country also has a deputy prime minister for digitalisation though headed by Ivan Bartoš), and the Minister of Investments, Regional Development and Informatization in Slovakia (in addition a woman is serving as the first Chief Innovation Officer at the Government Office). This backdrop suggests that women are at the table in drafting legislative proposals and guiding the regulatory framework.

Each country features some version of a National Innovation Strategy, with Slovakia also implementing a *Women in IT* national initiative and the Czech Republic a special section on gender equality in research, development, and innovation. With its *Open Innovation Strategy,* meanwhile, Austria has moved away from solely addressing the business sector and instead now pays special attention to the ecosystem and all its many components through, for example, the 'expansion of knowledge and innovation processes in science and research, civil society, and politics and public administration[30].'

Support systems and culture

Supporting actors

Numerous supporting elements are also present in the innovation ecosystems in Austria, the Czech Republic, and Slovakia. These vary from formal and informal networks, initiatives, alliances, NGOs, and institutes. Some of these entities concentrate on advocacy and pursuing legal changes, others on expanding networking and synergies, and yet another group on providing services. In Slovakia and the Czech Republic, considerable effort has been channelled towards changing the legal framework and fostering the creation and development of the innovation ecosystem, especially heeding the present export-oriented economic model of the two countries. Initiatives supporting niche roles in the ecosystem, including social innovators, can be found too (Pontis Foundation, Slovakia). While women outnumber men 58% to 42% in Slovakia in this latter area[31], little attention has generally been paid to women in the innovation ecosystem, even by supporting actors. A notable exception in Slovakia concerns the *Women's Algorithm* and in the Czech Republic *Czechitas* - these NGOs direct their work towards attracting more women into the technology space and participate in educational and advocacy work for women in the innovation ecosystem.

In Austria, supporting actors focus on enticing newcomers/start-uppers to join the innovation ecosystem, deploying data from the already well-developed ecosystem to optimize their pitch and provide comprehensive step-by-step guidance. There is a conscious effort to diversify (cross-sectionally) the ecosystem, evidenced by the use of language, visuals, and actual representation in the various networks, alliances, agencies, etc.. Furthermore, organizations like the Vienna Business Agency carry out motivational activities specifically targeted at companies that feature women as collaborative project leaders and/or use quotas in their competitions. Additionally, there are several support networks that seek to get more women into innovation and guide them through different growth stages (e.g. Female Founders, WEDO5, Female Factor).

Media

Until recently, Europe lacked an outlet or source to turn to for credible entrepreneurial news. In 2018, Sifted[32] started to address this need, providing news and analyses for an early-stage business audience. Special attention is paid to diversity and inclusion in the innovation ecosystem. By sharing untold stories of women operators in start-ups, the coverage shines a light on women partners in VCs, angel investors, and women in senior positions in start-ups. While Czechcrunch[33] is the largest online medium reporting about segments of the innovation ecosystem in Czechia and Slovakia, it fails to match Sifted's data-driven reporting and breadth of coverage including the role of women in the innovation ecosystem and topics specifically tailored to women. Regional media outlets also lack coverage of female role models in the ecosystem that could inspire younger women and girls to consider studying STEM-related subjects and/or choosing a career in the innovation space.

30 https://ec.europa.eu/research-and-innovation/en/research-area/industrial-research-and-innovation/eu-valorisation-policy/knowledge-valorisation-platform/repository/open-innovation-strategy-austria
31 https://www.nadaciapontis.sk/projekty/mapa-socialnych-inovatorov/
32 https://sifted.eu/
33 https://cc.cz/

Current developments in the innovation ecosystem

Female representation in the innovation ecosystem is improving in the region. The topic of gender equality has been placed at the top of political agendas across the EU including Austria, the Czech Republic, and Slovakia. Yet, there is still considerable room for improvement. This section addresses current developments on achieving gender parity and the inclusion of women in the innovation ecosystem.

Inclusion & gender balance

The inclusion of women at different levels of the innovation ecosystem can play an essential role in achieving gender equality. Higher education institutions and universities are particularly critical – they are ideally placed to educate and train future innovators. In Austria, for instance, clear headway has been made on introducing measures that stipulate career advancement plans for women and raising awareness about gender equality at universities[34]. In Slovakia, many universities have started to provide educational courses, workshops, and training on entrepreneurship and established technology transfer offices for training on technology commercialization. However, less attention has been paid towards the gender equality component in these education campaigns[35]. Additionally, compared to Austria, Slovakia and the Czech Republic lack career advancement and inclusion plans for female graduates. This is a notable shortcoming since many women face various challenges after completing their university studies and entering the labour market[36].

Zoning in on different industries within the innovation ecosystem, the level of gender equality and inclusion varies across countries:

34 Interview respondent 2022 (Egerth, AT)
35 Interiview respondent 2022 (Kovacikova, SK)
36 Interview respondent 2022 (Kovacikova, SK)

Austria

Austria is a frontrunner when it comes to female founders and women's involvement in start-up teams. Around 36% of start-ups have at least one woman as a co-founder[37]. This progress was enabled through a variety of awareness, support, and promotion measures for innovative female founders by both private and public organizations. There is a "gender funding gap", however, as women-run start-ups attract less investment than start-ups led by men. The significant increase in the number of female start-ups, consequently, is not reflected in the share of funding they receive. Meanwhile, considerable progress has been made in gender mainstreaming and the promotion of women in research - e.g. gender budgeting in all research funding measures, individual support measures for early-stage female researchers, and measures to improve the compatibility between career and family[38].

Czech Republic

In the Czech Republic, SMEs are far more likely to be represented by women than major corporations, with an estimated one fourth of SMEs including women in top management positions[39]. The topic, that said, informs a central part of the environmental, social, and corporate governance policies of major global and responsible companies. Profound progress in education has also been made and society is now considerably more aware and knowledgeable about the issue. The data, however, reveals a visible gap between the Czech Republic and Western Europe. The country still significantly lags when it comes to gender equality and the inclusion of women in the innovation ecosystem[40]. This comes even as some progress is forged in the private sector (e.g. implementing quotas)[41].

Slovakia

In Slovakia, numerous corporations and large companies have moved towards implementing various affirmative action schemes to achieve a more balanced ratio between men and women in their organizations. As it pertains to private companies, women generally tend to be broadly represented, with the numbers still growing steadily[42]. A strong emphasis has been placed on hiring women in many companies, educating women in the tech sector, and most importantly implementing concrete measures such as quotas[43]. But turning to the public sector, legislation is currently lacking in the country that specifically addresses gender equality and inclusion in higher education and research and innovation[44]. The decision-making components to the innovation ecosystem, moreover, need genuine work - the majority of leaders of relevant state institutions are men and the innovation agencies are also for the most part led by men[45].

37 Interview respondent 2022 (Egg, AT)
38 Interview respondent 2022 (Egerth, AT)
39 Interview respondent 2022 (Mamajova, CZ)
40 Interview respondent 2022 (Mrazova, CZ)
41 Interview respondent 2022 (Ferjencikova, CZ)
42 Interview respondent 2022 (Basilova, SK)
43 Interview respondent 2022 (Anonymous, SK)
44 Interview respondent 2022 (Kovacikova, SK)
45 Interview respondent 2022 (Krskova, SK)

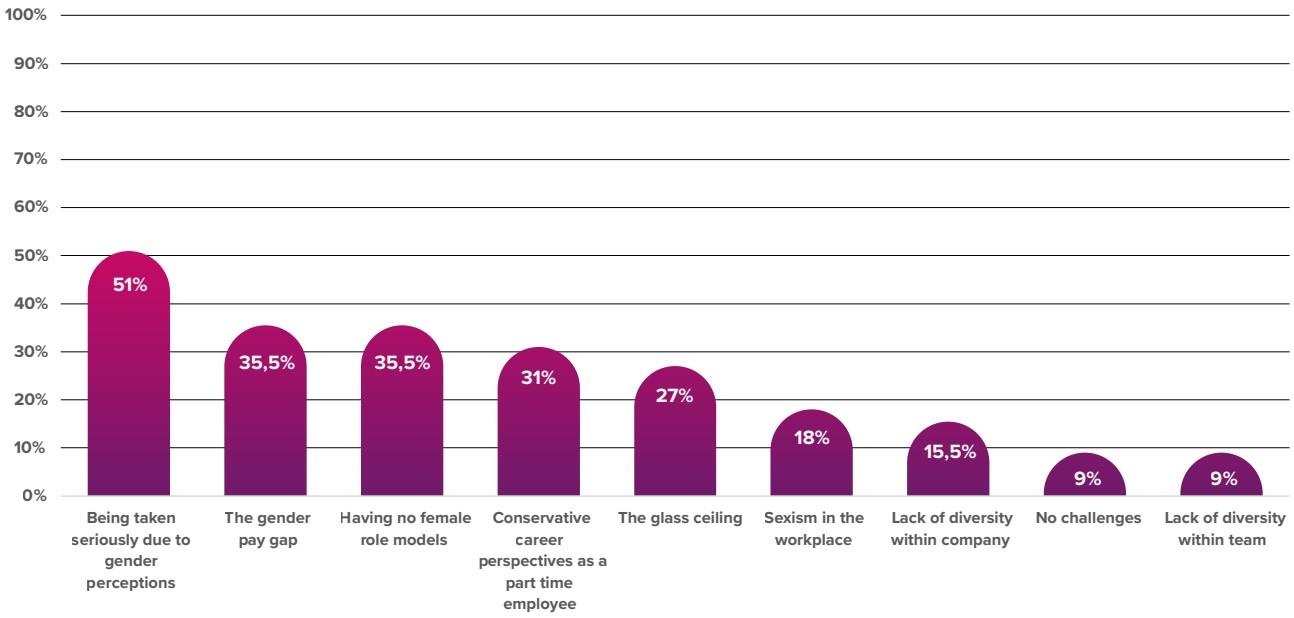
Barriers and opportunities for women in the innovation ecosystem

Barriers

While this report is primarily focused on women's representation, this issue is only one component of gender (in)equality in the innovation ecosystem. Multiple barriers recurred across all researched countries.

Table 1 summarizes key challenges for women in the innovation ecosystem as perceived by women and men in Austria, the Czech Republic, and Slovakia. There is considerable agreement (51%) that gender perceptions leading women to be taken less seriously than men pose a substantial challenge. Additional obstacles include a lack of female role models and the gender pay gap (both at 36%). This section further discusses challenges identified by respondents.

Table 1. The greatest challenges facing women in innovation ecosystem



Source: Own data – surveys collected from participants in the innovation ecosystems from Austria, the Czech Republic, and Slovakia

Not being taken seriously due to gender perceptions

Research participants identified gender perceptions as the most important factor preventing women from participating in the ecosystem. It is, in this regard, necessary to understand the underlying drivers perpetuating this situation: individual and structural gender inequality. Though many barriers to women's advancement in society have been dismantled in recent decades and discrimination against women at an individual level outlawed, structural discrimination is still embedded in the fabric of society. Structural discrimination, notably, refers to the criteria that determine economic rewards in the labour market. These criteria are unconsciously and unintentionally affected by gender beliefs such as the lower value of women's skills, competence, and abilities. Examples of structural discrimination that were identified in our qualitative research and the roundtable discussion:

- **job interviews** - a lack of equitable hiring processes
- **fundraising discussions** - while questions directed at men tend to be supportive, women are far more likely to be pushed into a defensive position
- **performance evaluation** - as more women come into positions of power, structural discrimination is likely to play a stronger role
- **the need to convince others** - women and their capabilities are associated with certain traditional roles

The lack of female role models

A lack of role models, together with the gender pay gap (see below), was identified in the survey as the second most pertinent factor impinging on women's participation in the innovation ecosystem - but who makes a good role model? A common denominator concerns a perceived sense of similarity. The need for role models changes, however, dependent on whether women are already part of the innovation ecosystem or not. Women who are considering entering the innovation ecosystem (and thus are not part of it yet) are more concerned about dissimilarity from people in the field than they are about gender stereotypes that could be a barrier to participation[46]. On the other hand, women who are already participating in the ecosystem may feel a particular identification with female role models who help to demonstrate that negative stereotypes are unwarranted and that women can succeed[47].

"Young women may lack role models to inspire them to enter the innovation industry. Also working in a male-dominated industry can be an uphill battle for women."

Dr. Henrietta Egerth

The gender pay gap

The gender pay gap also came in tied at second as the second most significant barrier. The Austrian, Czech, and Slovak gender pay gaps are among the highest in Europe - between 18-20%. They compare especially unfavourably to Luxembourg's gender pay gap of 1.3%, the lowest in Europe[48]. The presence of a smaller gender pay gap, however, does not necessarily correlate with gender equality. Larger gaps tend to be associated with countries where larger shares of women participate in part-time work or within a restricted range of professions. Some structural challenges that impact gender pay remain present too though. For instance, women make career choices influenced by family responsibilities, tend to take unpaid part-time work, and/or choose occupations such as management that are beset by enormous gender pay gaps at around 31%[49]. And women in the region are also more likely to stay on maternity leave for relatively long periods.

Limited career progression for part-time workers

Yet another barrier concerns limited career prospects for people employed in part-time work. According to Eurostat[50], only 10% of Czech women work part-time; in neighbouring Austria, the figure is 50%. The tax system is a major factor impeding women from participating in part-time work opportunities - employers must pay full social insurance contributions for part-time workers, rendering them worse value for the company than full-time employees. This dynamic can be fixed though - around 25 years ago, the Netherlands, for example, introduced tax benefits for companies that support part-time work. Now

46 Cheryan, S., Plaut, V. C., Davies, P. G., & Steele, C. M. (2009). Ambient belonging: How stereotypical cues impact gender participation in computer science. Journal of Personality and Social Psychology, 97(6), 1045–1060. https://doi.org/10.1037/a0016239

47 Lockwood, P. (2006). "Someone Like Me can be Successful": Do College Students Need Same-Gender Role Models? Psychology of Women Quarterly, 30(1), 36–46. https://doi.org/10.1111/j.1471-6402.2006.00260.x

48 https://ec.europa.eu/info/sites/default/files/aid_development_cooperation_fundamental_rights/equalpayday_factsheet.pdf

49 https://ec.europa.eu/info/sites/default/files/aid_development_cooperation_fundamental_rights/report-gender-pay-gap-eu-countries_october2018_en_0.pdf

50 Part-time employment as a percentage of the total employment, by sex and age (%), Eurostat http://appsso.eurostat.ec.europa.eu/nui/print.do

60% of women in the Dutch labour market work part-time (i.e. fewer than 30 hours a week)[51].

The glass ceiling

The glass ceiling is distinctively a gender phenomenon - it suggests that gender disadvantages are stronger at the top of the hierarchy than at lower levels and that these disadvantages worsen later in a person's career[52]. It has additionally been identified as one of the barriers preventing women from participating in the innovation ecosystem in the region. According to the International Labour Organisation, there are three aspects to the glass ceiling: availability, segregation, and retention[53].

The availability component refers to the fact that many businesses, especially small and growing enterprises such as technology start-ups, expect their workers to be on constant call. Employees are often expected to work overtime, take calls during their off hours, and answer emails on days off as a matter of course. This work culture makes it very difficult for women to effectively compete with male colleagues and rise through the ranks, as they continue to juggle family responsibilities with career priorities.

"The innovation ecosystem needs huge in-person involvement - a lot of in-person meetings and dedication are not very easy when women have kids."

Jana Brodani

"Innovation development is a risky business with venture capital involved. Most women opt in for more stable and less time and energy consuming jobs to balance their work and family life."

Dr. Paula Puškárová

The segregation aspect, meanwhile, entails that female managers tend to be concentrated in business support functions, such as HR, finance, and administration, where they have limited decision-making power and strategic input, thereby limiting their prospects for career progression. And, finally, the retention factor notes the higher up the company management chain you go, the fewer women you find. Men rather continue to dominate chief executive positions and board spots. This exclusion of women from the highest positions in business also strips them of their influence to alter the workplace culture - the cycle of male dominance consequently continues.

Sexism in the workplace

According to European Institute for Gender Equality[54], sexism is linked to power in that those with power are typically treated advantageously and those without power are more often discriminated against. Sexism is also related to stereotypes since discriminatory actions and attitudes are frequently based on false beliefs or generalisations about gender and situations where gender is deemed relevant where it is not. Examples of sexism include derogatory comments, objectification, sexist humour or jokes, overfamiliar remarks, the silencing (or ignoring) of people, gratuitous comments about dress and physical appearance, sexist body language, a lack of respect, and masculine practices that intimidate or exclude women and favour men instead. Sexist expectations and behaviour have been shown to negatively affect employee performance, their sense of belonging, mental health, and job satisfaction[55].

"Women who have the energy to pursue a career - that inherently means they will be talked down to until they prove their worth, and even then, they might be easily vilified."

Anonymous respondent

A lack of diversity

A lack of diversity, another barrier identified in our research, can be divided into two categories: diversity within companies and within particular teams. The business case for diversity suggests that organizations that manage diversity well will also see performance gains[56]. Though the Czech Republic and Slovakia provide both men and women with equal opportunities to obtain an education, women still face unequal employment opportunities. A systemic problem, once women are ready to contribute to economic productivity, they are thwarted from contributing their full potential[57]. It should additionally be pointed out that even though opportunities to

51 https://www.oecd-ilibrary.org/sites/204235cf-en/index.html?itemId=/content/publication/204235cf-en
52 Cotter, D. A., Hermsen, J. M., Ovadia, S., & Vanneman, R. (2001). The Glass Ceiling Effect. Social Forces, 80(2), 655–681. http://www.jstor.org/stable/2675593
53 https://www.ilo.org/infostories/en-GB/Stories/Employment/beyond-the-glass-ceiling
54 https://eige.europa.eu/publications/sexism-at-work-handbook/part-1-understand/what-sexism
55 https://orbi.uliege.be/bitstream/2268/6525/1/Dardenne%20et%20al_jpsp_07.pdf
56 https://onlinelibrary.wiley.com/doi/abs/10.1111/puar.12278
57 Interview respondent 2022 (Mamajova, CZ)

obtain an education are equal, significantly fewer women study STEM-related fields compared to men. Women, conventionally, have also not enjoyed the same level of encouragement to pursue careers in STEM subjects as men. The consequence is that relatively fewer women work in the types of fields responsible for most technical innovation[58].

"The participation of women starts to eliminate at technical high schools and the trend gets very visible at universities. The pipeline is straitened, and it reflects in women filling more side positions in the sector, not the technical ones at the business core."

Michaela Kršková

Diversity, in fact, is a key driver of innovation and a critical component towards achieving success at a global scale

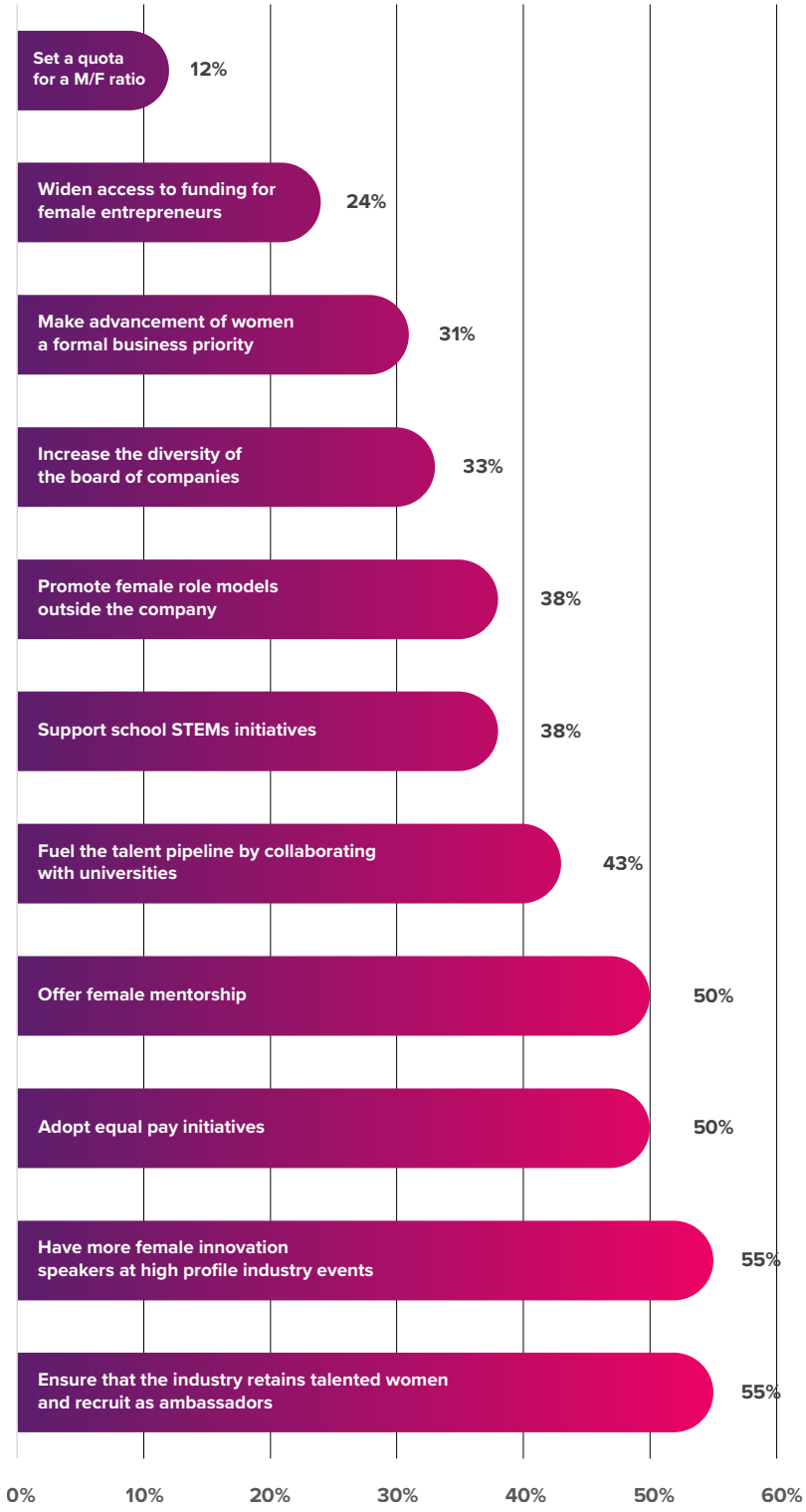
58 Interview respondent 2022 (Egerth, AT)

Opportunities and best practices

Not all is bad news - some opportunities and best practices, if further developed and adopted, could help overcome barriers and promote gender equality in the innovation ecosystem. Encouraging women to pursue careers in innovation is an important first step towards addressing gender imbalances in this area. Table 2 identifies some key practices that could spur more women to enter innovation. The top opportunities: 55% say retaining talented women to become role models, 55% also suggest facilitating stronger representation among female innovators at public discussions and events, 50% recommend adopting equal pay initiatives, and 50% indicate female mentorships are critical.

The qualitative data and focus group discussion also identified or affirmed the relevance of the following opportunities and best practices:

Table 2. How could organizations/the industry encourage women to enter innovation ecosystem



Source: Own data – surveys collected from participants in the innovation ecosystems from Austria, the Czech Republic, and Slovakia

The power of role models

Recruiting and retaining women in the innovation ecosystem requires a systemic effort. This includes elevating industry role models. As mentioned in the section, *The lack of female role models,* it is important to distinguish between role models in recruiting and retaining women.

For recruitment purposes, women need to be connected to and more willing to approach women who they find similar to themselves. There is a need, therefore, to publicise information about a broad range of women in various roles and seniority levels in the innovation ecosystem through media coverage and at public events. Companies should also avoid recycling the few known role models over and over.

For retention purposes, companies should place emphasis on demonstrating that it is possible for women to succeed in the field despite structural barriers that hold them back. Possible strategies may include inviting women to be keynote speakers at high-profile industry events, promoting female leaders outside the company, and/or creating opportunities for regular interactions and mentorship.

Increasing the number of female investors and female-founded start-ups

The data highlighted in this report underlines the fact that a systematic approach is needed to increase the number of women investors and founders in the region. Providing mentorship opportunities to women can help them gain access to capital and economic opportunities they might otherwise miss out on and better prepare themselves for opportunities when they arise.

"Women can be encouraged to enter the innovation ecosystem through awareness raising about job opportunities for women in innovation, tech, or digitalization. Specific short-term programmes for women to enter the space of innovation, technology, and digitalization (step one: fast and specific) and then training on the job (step two: learning by doing in experienced teams)".

Ulrike Domany-Funtan

It is important, however, to heed the fact that not all women require mentoring. Some rather only need direct access to opportunities and/or funding. Female investing clubs present an alternative to official mentorship programmes - these clubs gather the collective wisdom of their members and organize networking and occasionally investing opportunities[59]. Female angels have demonstrated a strong appetite for technology innovation, with FinTech, AI, AdTech, EdTech, and eHealth the most popular sectors for investment. Angel investing club members proactively engage with the innovation ecosystem, namely through incubators, accelerators, university entrepreneurship programs, and business-plan competitions. Angel investment clubs hold office hours, provide feedback to (female) founders on their start-ups, answer questions about what angels and VCs look for in any investment, and direct consultees to additional resources.

"I believe there are great initiatives in the region such as female founders or female investor clubs. There are also many opportunities and empowering organisations, it's just important these organisations get financial support so they can continue with their activities long term".

Laura Egg

Equitable hiring process

An equitable hiring process recognizes the merit of candidates who do not fit the typical image of a successful or qualified applicant and creates opportunities to openly and actively question our own thinking. The implementation of "blind hiring" practices and the development of opportunities for candidates to demonstrate skills rather than merely their credentials can increase awareness concerning how our biases influence the candidates that advance from the resume review stage to the interview. When moving to the interview stage, there is a need to apply standardized set of questions for all applicants as well as disclose salaries upfront. There are a plethora of resources published on the topic of equitable hiring.

"I see public pressure as an impactful power driving companies to behave more responsibly and inclusively through their overall ESG actions - environmental, social, and corporate governance."

Renata Mrázová

59 The lead author of this report is a co-founder of an angel investing club - Lumus Investment Collective.

Case study: women entrepreneurs and investors

Women entrepreneurs

Austria, particularly, has seen some positive developments in recent years in female entrepreneurship. The country has the highest proportion of start-ups with at least one female founder in the EU.

The country is also home to Europe's fastest-growing community of entrepreneurial women - Female Founders. The organisation boasts 45,000 members, with their initiatives spanning from promoting a greater role for female entrepreneurs to running start-up and leadership accelerators for women. In 2020, more than 45% of companies in Austria were founded by women and every third was managed by a woman[60]. Yet there is a clear divide within this overall landscape especially as it pertains to growth-oriented enterprises: the greater the growth of the company (in investment stages) and the higher the need to increase financing volumes, the fewer the relative share of women involved. All-male founding teams indeed have been able to secure record investments. The strong male dominance among business angels and venture capitals (about 90% male representation in each) is one reason for this imbalance[61].

While 36% of all Austrian start-ups are now founded by women or with female co-founders, only 16% of female start-ups attracted investment in the first half of 2022. Female start-ups (i.e. young companies with at least one woman in the founding team) have received a below-average number of investments. There is also a clear imbalance in the volume of financing directed towards them: more than 90% of capital invested in start-ups and scale-ups went to all-male founding teams[62].

While Austria is strengthening its reputation as a hub for female start-up founders, the Czech Republic and Slovakia, along with other CEE countries, remain laggards. All women-founded companies in the CEE region receive only 1% of capital, with 5% going to mixed founded teams and 94% to all male teams. This comes despite the fact that around 13% of start-ups in the CEE region are founded by women[63].

Performance of women-led start-ups

Gender equality, as an end, is not the only reason to work on changing the system — there is an economic incentive as well. Women-founded start-ups in Central and Eastern Europe outperform on capital productivity, generating 96% more revenue per euro funding than start-ups founded by men[64]. One of the most prominent venture capital funds in the world that pioneered seed-stage investing, First Round Capital, confirms this finding holds globally. After conducting a review of their investment strategy ($4 billion invested in 200 start-ups over a period of 10 years), the firm concluded that female-founded start-ups performed 63% better than all-male founding teams[65].

These findings positively correlate with data collected by McKinsey[66] at the corporate level globally, where companies with women making up more than 30% of executives were more likely to outperform companies where this share ranged between 10-30%. These

60 https://www.ft.com/content/3546b07e-d865-46d2-8130-328d3eb82e6e
61 https://www.ey.com/de_at/start-ups/start-up-finanzierungsmarkt-in-oesterreich-boys-only
62 https://www.ey.com/de_at/start-ups/start-up-finanzierungsmarkt-in-oesterreich-boys-only
63 https://ceereport2021experiorvc.unconventional.vc/45/
64 https://ceereport2021experiorvc.unconventional.vc/45/
65 http://10years.firstround.com/
66 https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-wins-how-inclusion-matters

latter companies, in turn, were more likely to outperform those with even fewer female executives or none at all. A substantially different outperformance probability— 48%—separates the most from the least gender-diverse companies.

Specific barriers women entrepreneurs face

The inability to build personal connections, discrimination, difficulty in accessing relevant knowledge about funding opportunities, and limited access to informal networks represent a non-exhaustive list of barriers women entrepreneurs face. One study indeed revealed that women are more than three times likely than men to cite the inability to build personal connections from shared experiences with investors as an obstacle to raising capital. Women are also around twice as likely to have faced issues in accessing pertinent knowledge about funding opportunities and navigating the fundraising process more broadly[67]. Discrimination, for its part, is mentioned most prevalently as a factor by the founder community - 53% of women founders in the above study indicated that they had faced some form of discrimination in the past 12 months while working in the European tech industry.

Closing the gender gap in the local innovation ecosystem

Angel investment is important, as it is typically the 'first money in'. Apart from funding, angel investors bring their experiences, networks, and strategic advice - a significant value added for starting entrepreneurs. It remains challenging to report on these datasets, though, because a large share of this funding is not made publicly available and/or suffers from significant reporting lags.

Angel investment is an important source of early-stage funding and female angel investors have a key role to play here - a significant proportion of their total investments are directed towards female founders. The UK Business Angel Association reported that 54% of female angel investors invested in at least one company funded by women and nearly 20% invested in 3-10 companies founded by women. This stands in sharp contrast with male angel investors, where only a small minority back women-led businesses[68].

The ensuing seed stage, meanwhile, sees 32% of investments of women partners put into female founding teams compared to only 16% of male Venture Capital leads. Women ostensibly share personal experiences with one another that male investors lack – these connections, in turn, assist them in identifying overlooked problems and understanding their market size[69]. On the institutional side, only 19% of Venture Capital funds in the CEE region have women in a general partner position: 16% of these funds have at least one woman and only 3% are run by women-only general partners[70]. This data all underscores that a boost in female investors could contribute significantly to bringing more women into the innovation ecosystem.

Well-established female investors[71] from the region, in fact, acknowledge that diversity is a critical ingredient to effective investments. Private equity funds should also recognize the potential of companies managed by gender balanced teams - diverse decision-making structures and leadership lead to superior results[72]. Efforts to increase the number of female investors can create virtuous cycles - ensuing rises in female entrepreneurs can, in turn, contribute to a considerable improvement to the gender balance in the overall ecosystem.

Technological progress is now unlocking newfound opportunities for many women that would otherwise be constrained by limited access to early-stage investing. Technology has markedly decreased the costs and simplified the process of syndication, significantly decreased the size of the minimum ticket needed for entry, and enabled groups to be more agile. Various platforms[73] that help pool angels and enable them to invest as little as £1,000 have now dismantled the narrative that angel investing is only an

67 https://2021.stateofeuropeantech.com/chapter/better-ideas-better-companies/article/fuelling-better-more-diverse-ideas/
68 https://www.europeanesil.eu/media/1220/2-f-ukbaa.pdf
69 https://www.kauffmanfellows.org/journal_posts/women-vcs-invest-in-up-to-2x-more-female-founders
70 https://ceereport2021experiorvc.unconventional.vc/
71 Andrea Ferancová Bartoňová, Espira Ventures & Terezia Jancova, Lumus Investment Collective
72 https://www.espirainvestments.com/approach/
73 Platforms such as Odin, Vauban, and Bunch are quickly gaining popularity in western markets (the UK and Germany)

option for affluent people. These platforms are lowering entry barriers, making it possible for angels to participate even if they cannot write five-digit cheques, and opening angel investing to a much broad cohort.

Women are substantially benefitting from these developments, with female angel investors in the region preferring to write multiple small checks at an average size of €2,000. The primary motivation for joining a female angel syndicate revolves around expanding the network, improving angel investment skills, and enhancing diversity in the region. A survey examining the CEE region revealed that many women angel investors, in fact, are first-timers (78%)[74]. Table 3 spotlights a few of the main reasons that women indicate for joining female angel syndicates - a collective sense of responsibility, an urge to participate in improving diversity in the region, and a fervent interest in expanding their knowledge.

Table 3. Reasons to join a female angel syndicate

Source: Lumus Investment Collective[75]

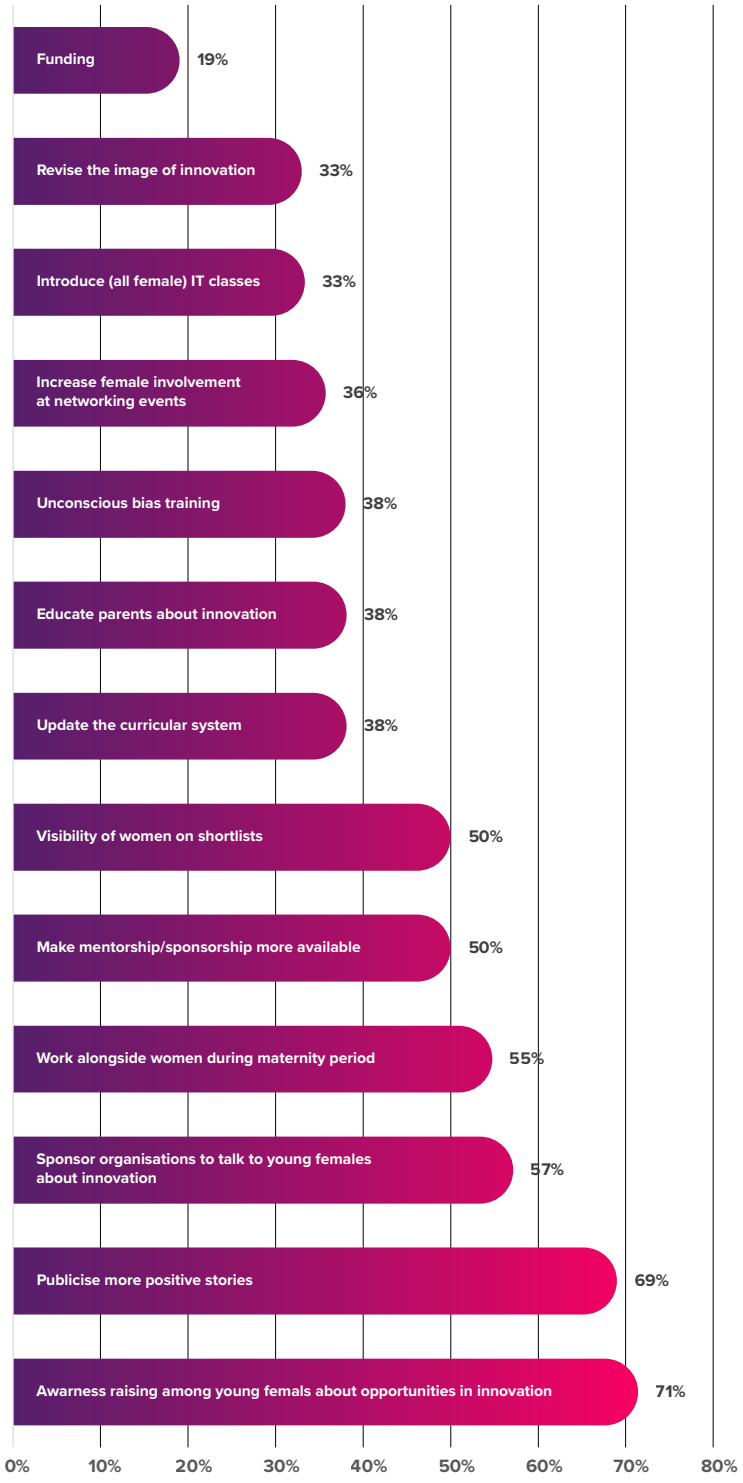
74 Survey conducted by Lumus Investment Collective. Sample size - 350 women respondents from the CEE region who are interested to join an angel investing club
75 Note: Sample size - 195 women who are or want to become angel investors. Investment focus - the CEE region.

Policy recommendations

The gender gap in the innovation ecosystem reflects widespread gender inequality across social and economic life. Table 4 illustrates the most important improvements needed to enhance women's inclusion and impact in the innovation ecosystem as perceived by both women and men. There is particularly broad agreement (71% of all respondents) that awareness raising efforts directed at young girls about opportunities within the innovation ecosystem would represent a crucial step to addressing the gender imbalance. A further 69% believe that the publication of positive stories could help and 57% think that sponsoring organizations to educate young girls would be beneficial to improving inclusion and the impact of women.

Based on the interviews, desk research, and relevant concrete progress in recent years, this report now summarizes crucial policy recommendations which, if heeded, could lead to the accelerated and more effective inclusion of women in the innovation ecosystem in the region.

Table 4. Recommendations on how to improve women's inclusion and impact in the innovation ecosystem



Source: Surveys collected from participants in the innovation ecosystems from Austria, the Czech Republic, and Slovakia

Governments

- National governments should create and implement a support system by introducing well-designed policies and strengthening existing policies related to protecting vulnerable people in the labour market, guaranteeing equal pay for equal work, providing access to childcare facilities, and establishing a modern framework for paid paternity leave.
- While quotas could be one alternative to narrow the gender gap in the innovation ecosystem, various incentive-based policies and 'pro-active tools' that reward good gender plans/policies/results and support start-ups and companies may lead to more satisfying results than strict enforcement of restrictive measures such as gender quotas.
- Programmes targeted towards educating women about entrepreneurship and motivating them to enter the field, encouraging girls to study STEM subjects and pursue a career in these fields, and efforts to battle sexism and other harmful stereotypes should be prioritised by governments at all levels.

Businesses (companies and start-ups)

- Businesses should implement targeted and systematic recruitment and training of female managers and talent, with continuous mentorship and guidance provided to women to support them over the entire career cycle.
- Developing and committing to all-inclusive (all vertical levels, all genders) training programmes tackling (un) conscious gender bias and gender stereotypes will lead to a change in culture and language over the short term and increase business performance over the medium to long-term period.
- Companies and start-ups should put in place effective work-life balance policies for women and parents. This could include, for example, changing working hours arrangements and the company culture to counteract widespread norms of fulltime/overtime work as a leadership prerequisite. This can be accomplished by introducing part-time or shared leadership positions, flexible or trust-based working time arrangements, and/or home office schemes.

Supporting actors

- Advocacy efforts and political pressure from the bottom-up that include a gender perspective should become the norm in efforts to strenghten the innovation ecosystem.
- Awareness-raising initiatives from NGOs, alliances, networks, etc... to attract more women into the innovation ecosystem and put a spotlight on the need for women's inclusion are essential elements towards fostering change. These awareness-raising campaigns can be supported by promoting successful women and creating platforms for the visibility of such role models.
- The implementation of educational, skills-building, and mentorship programmes for girls and women by NGOs can bring added value to the ecosystem.
- "Convening" – bringing women together for inspiration and encouragement should be strenghtened and bolstered.

Additional recommendations:

Start-ups & investing

- Better standardise and measure gender impact by regularly collecting and reporting data on start-ups and investing. This monitoring could better expose current gaps and pinpoint areas for improvement.
- Promote greater transparency in start-up funding allocation to attain better knowledge on the impact that different funding actors exert on the innovation system. Efforts should also be directed at developing diversity assessment guidelines in early-stage investing and making them publicly available.
- Support the development of and access to education programmes that help women understand the investing process and demystify much of the jargon around it. A better understanding of what the angel investing process entails and about specific aspects like financial, legal, and tax related processes can help women feel more knowledgeable and in control.
- Provide backing to angel investment clubs and informal networks that facilitate access to mentors and role models and encourage women to enter the innovation ecosystem. Such initiatives will help scale up member acquisition efforts and reach more women.
- Raise awareness about world-leading investor training programmes that help investors from diverse backgrounds break into and make significant changes to venture capital. This support should be targeted at talented women that are i) angel investors and considering a transition to venture capital and/or ii) early in their career in venture capital.

Notes

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