

The EPO's Women Inventors report: getting to the roots of women's disproportion in patenting

Faye Waterford, Editor of *The Patent Lawyer Magazine*, evaluates the key findings of the recent EPO Women Inventors report, informed through an interview with Ilja Rudyk, Senior Economist at the EPO and Co-Author of the report, to explore the position of women in patenting and the motives for seeking improvement.

Diversity discussions are not rare and recent decades have seen an uptake in the inclusion of improvement pledges in company goals. If the mere notion of acceptance is not enough to encourage equal opportunities irrespective of gender, sexual orientation, race, or disability, then the overwhelming research that indicates diverse teams are key to success should be. In fact, McKinsey & Company found, based on a study conducted between 2008-2010, that companies with diverse top teams were top financial performers, obtaining a return on equity 53% higher compared to those with less diverse teams.¹ But it's not all about top teams or profit, Deloitte's investigation reported in 2022 found that "research shows that diversity of thinking is a wellspring of creativity, enhancing innovation by about 20%. It also enables groups to spot risks, reducing these by up to 30%. And it smooths the implementation of decisions by creating buy-in and trust".² These points scratch the surface of the reasons why we should all be pushing for diversity.

However, STEM sectors are still overwhelmingly lacking when it comes to gender diversity. A recent report published by the European Patent Office (EPO), *Women's Participation in Inventive Activity*³, investigated the percentage of women inventors in Europe sourced from a total of 4,105,286 applications filed at the EPO between 1976-2021. The intention was to present a picture of gender and patenting today to provide key



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insights for policymakers and businesses to assist in facilitating a more diverse future in the field. In its opening pages, the report points out the necessity for innovation in the face of the challenges to public health, energy supply, and the environmental and geopolitical stability in Europe, innovation that could be harnessed from the expansion to more diverse teams. It has been suggested that patenting in the United States could be quadrupled if women, minorities, and children from low-income families became innovators at the same rate as men.⁴ There are also concerns about the inclusivity of technology due to the lower figures of women inventors, with men's patents tending to focus on men-specific health problems before the health concerns of women.⁵

The EPO report confirmed that the gender gap for inventors remains despite a steady increase, with only 13.2% of inventors in Europe being women. Herein find details of further key findings identified by the report.

Women inventors by country

The key findings for women inventors by country, assigned based on the addresses listed on the patent applications, were taken between 2010-2019. Over the nine-year period, it was found that the following countries have the highest proportion of women inventors: Latvia (30.6%), Portugal (26.8%), Croatia (25.8%), Spain (23.2%) and Lithuania (21.4%). Curiously, the countries found at the bottom

¹ <https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/is-there-a-payoff-from-top-team-diversity>

² <https://www2.deloitte.com/us/en/insights/deloitte-review/issue-22/diversity-and-inclusion-at-work-eight-powerful-truths.html>



Madiha Derouazi,
European Inventor
Award 2022 winner

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of the rankings for the proportion of women inventors sit amongst the top 10 patenting countries at the EPO, being Netherlands (11.9%), Germany (10.0%) and Austria (8.0%).

An interesting conclusion relating to jurisdiction was drawn from the research; a key element to reducing the gender gap in patenting in EPO countries is international mobility. Women inventors that reach out to inventors in other countries consequently increase their internationalization which is key for increasing women inventors globally.

Women inventors by technology field

The EPO study also looked at women inventors in each technology field in a bid to better understand the positions of women inventors today. The technology sector with the highest share of women inventors is Chemistry (including biotechnology and pharmaceuticals) with 22.4% of applications coming from women (between 2010-2019). In biotechnology and pharmaceuticals specifically, the share of women inventors exceeded 30%. One hypothesis for this is women's preferences for education based on family role models, another is the working conditions of the sectors and their impact on work-family balance, encouraging women into sectors that offer a more equal balance. Mechanical engineering was found to have the lowest share with just 5.2%.

A positive finding was that the share of women inventors increased over time in all five of the sectors assessed.

An interesting analysis was drawn to suggest that women are over-represented among the less prolific inventors and under-represented among the most productive ones. This is based on the assumption that talent is equally distributed amongst men and women but that the productivity, leadership, and visibility between

them differ. Reasons could include barriers to promotion or tenured positions in academia, fewer business connections, or fewer opportunities for women to access IP protection.

It is suggested that sectors with a more acute gender gap should look to the science-based sectors for work practices and a mode of cultural acceptance to encourage more women inventors into the other sectors as the science-based sectors present broader inclusivity.

Leaking pipeline

There are many possible reasons for the low participation of women in patenting, with women in STEM professions often deemed to undergo a more challenging selection process in comparison to their male counterparts. The EPO report explains that the 'leaking pipeline' phenomenon sees the number of women decrease at each stage of career progression due to invisible barriers, for example, women STEM students grossly outweigh the number of women academics or senior R&D staff. Women's under-representation also increases the higher their position, and they are less likely than their male co-authors to be credited as inventors in corresponding patents.

This lack of recognition is reflected financially, with women in R&D earning less than men despite

- ³ <http://www.epo.org/women-inventors>
- ⁴ Bell, A. et al., "Do tax cuts produce more Einsteins? The impacts of financial incentives versus exposure to innovation on the supply of inventors," *Journal of the European Economic Association*, 2019.
- ⁵ Koning, R., Sampsa, S., Ferguson, J.-P., "Who do we invent for? Patents by women focus more on women's health, but few women get to invent", *Science*, 372.6548: 1345-1348, 2021.

Résumé

Faye Waterford, Editor-in-Chief

Managing content across CTC Legal Media's channels, including globally renowned intellectual property magazines *The Patent Lawyer* and *The Trademark Lawyer*, Faye implements creative vision and industry research to deliver up-to-date content across print and digital.

With knowledge acquired from attending global IP events, interviewing industry experts, and forging long-term relationships with IP professionals, Faye has implemented new content and brand strategies resulting in significant readership growth.

contributing equally to the development of high-quality inventions. Evidence even suggests that women are less likely to obtain and maintain patent rights, a clear disincentive for women inventors.

Teams are more likely to be led by men than women, and men are more likely to be in positions of authority within teams despite the findings that women are as central to inventions as men. That said, the presence of women inventors is increased in team analysis.

The trends highlighted by the report suggest that the number of women inventors will continue to increase with the support of appropriate policies and human resource management practices, which can be informed by the findings in the EPO report.

Ilja Rudyk, Senior Economist at the EPO and Co-Author of the report, commented:

We had a benchmark for the report as similar studies have been completed in the UK and US, but we were striving to discover where Europe stands. I think it is clear that the share of women inventors is relatively low, which was not a surprise, and far away from being comparative to the positions of their male counterparts. We wanted to produce the study to make people more aware of the current circumstances and encourage thinking, especially within private businesses, about what can be done to encourage women to contribute to innovation. We also encourage this innovation through our awards in which we have recognized many women inventors. Two of the four EPO Young Inventors Prize winners in 2022 were women, Rafaella de Bona Gonçalves and Erin Smith⁶. And we honor many inspiring women inventors through our annual European Inventor Award⁷. Further, we have Women in Leadership programs to assist in women's development in the sector. We want to show women as early as possible that there is a route for them to make a difference, that they can have an impact. And we want to encourage companies to facilitate opportunities.

Closing remarks

The report highlights the increasing contribution women are making to patenting – remarking that the gender gap is due to a different distribution of opportunities between genders and not a reflection of talent – but it remains that women inventors are too few which could harm the development of technologies.

Susi Fish, Partner at Boulton Wade Tennant and Co-Chair of the Women in IP Group at IP Inclusive, commented:

The EPO publishing data relating to the position of women in patenting is a really important step.



Erin Smith, joint 1st place winner of the Young Inventors prize, European Inventor Award 2022



Rafaella de Bona Gonçalves, 2nd place winner of the Young Inventors prize, European Inventor Award 2022

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Elena García Armada, European Inventor Award 2022 winner



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Previously data has been provided by the USPTO (Progress and Potential: 2020 update on U.S. women inventor-patentees | USPTO⁸) WIPO (Identifying the gender of PCT inventors (wipo.int)⁹) and the UKIPO (Gender profiles in worldwide patenting: An analysis of female inventorship (2019 edition) (publishing.service.gov.uk)¹⁰). Having the data from the EPO presented in such a comprehensive report helps to further understand the gender gap in the patent systems. This further understanding will enable the patent offices, corporations, and others involved in the patent systems to identify and develop strategies that work to increase participation by women in innovation. The fact that data is now being gathered and presented in such accessible forms will enable the impact of implemented strategies to be more easily monitored.

The findings of this report must be reviewed to assist in addressing the changes that need to be made to increase the presence of women in patenting.

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⁶ <https://www.epo.org/news-events/events/european-inventor/young-inventors/2022.html>

⁷ <https://www.epo.org/news-events/events/european-inventor/young-inventors/2022.html>

⁸ <https://www.uspto.gov/ip-policy/economic-research/publications/reports/progress-potential>

⁹ <https://www.wipo.int/publications/en/details.jsp?id=4125&plang=EN>

¹⁰ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/846363/Gender-profiles-in-worldwide-patenting-2019.pdf