# For women and girls who care about the future

#unlockyourself

# DaringCircles Women & STEM

by the Women's Forum for the Economy & Society

WOMEN'S FORUM
FOR THE ECONOMY & SOCIETY

# Foreword from **Chiara Corazza**

Our world is experiencing rapid disruption. The future is digital. It is clear that everyone in our economies and societies – not just engineers and astronauts, but also musicians and artists – will need science, technology, engineering and mathematics (STEM) skills to succeed.

Yet today there remains a serious gender imbalance in STEM. At every stage of the path to STEM leadership, there are fewer girls and women. In some crucial fields like computer science, future cohorts of women are set to be even smaller than current ones. When STEM loses women, it also loses their differentiated talents and abilities, which economies, organisations and women need to remain competitive in the digital economy transition. Existing initiatives to encourage girls and women to study STEM and embark on STEM careers are not delivering results at the pace and scale we need.

To capture the financial, social and environmental prizes that come with equal and inclusive access to STEM skills, women and men need to work together, driving solutions all the way from our schools to our boardrooms.

Based on research, we are already building a clearer picture of the obstacles and barriers for girls and women in developing STEM skills and in STEM roles. We are drawing on this understanding to better engage girls, families and schools. To develop pilot reskilling programmes for women. And to work together on a European campaign to highlight the importance and impact of girls and women in STEM.

I am pleased that the Women's Forum for the Economy and Society has brought together businesses and organisations to take action on this issue, and I am grateful to all our partners and contributors for their expertise and commitment.

The Women's Forum has also been commissioned by the French Ministers of Gender Equality and Economy to provide policy recommendations and a national action plan to create the conditions for women to thrive in fields like data science and artificial intelligence.

Growing women's representation and leadership in STEM is a long-term, system-wide task, but one that will have large-scale impact on humanity's major challenges. If businesses, governments and societies hope to take the lead on shaping the future, we will have to collaborate for better gender balance in STEM. I invite you to join us.

**CHIARA CORAZZA**
Managing Director
Women's Forum
for the Economy and Society

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> Our goal is to increase the representation, leadership and impact of women with STEM skills at all stages of the pipeline from school to boardroom

DaringCircles

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# About the Women & STEM Daring Circle

Launched in the second half of 2018, the Women & STEM Daring Circle is an initiative of the Women's Forum for the Economy & Society bringing together an ecosystem of partners to increase the representation, leadership and impact of women with STEM skills at all stages of the pipeline from school to boardroom, and to highlight the strong connection between STEM skills, access to jobs and the potential for positive societal impact. Led by Google, the Daring Circles Strategic Members are American Express, AXA, BNP Paribas, L'Oréal, Microsoft, Publicis Groupe and P&G, in collaboration with Johnson & Johnson, Lenovo and Orange as Partners and Shearman & Sterling as Insight Partner. The Circle is supported by Knowledge Partner Boston Consulting Group (BCG) and Politecnico di Milano as Academic Partner. Other member institutions and experts include: Ersilia Vaudo Scarpetta of ESA (European Space Agency), Caroline Ramade of 50inTech, Josephine Goube of Techfugees, the IMF (International Monetary Fund), the OECD (Organisation for Economic Co-operation and Development) and UNESCO (the United Nations Educational, Scientific and Cultural Organisation).

The Women's Forum for the Economy & Society is a global platform of actions to highlight women's voices and build together a more inclusive economy. With the Daring Circles, the Women's Forum's ambition is to drive innovative solutions at scale and at pace through collaboration between businesses, public entities, NGOs and the media to have impact on issues where women are disproportionately affected and where their leadership is most urgently needed. The Women's Forum for the Economy & Society is a Publicis Groupe company.

# Women in STEM: in need of a radical, new approach

For many decades now, government, not-for-profits and large corporations have poured investment into initiatives to encourage more girls and women to take Science, Technology, Engineering and Maths (STEM) options during school and university, and then to build lifelong careers using those skills. Many of these initiatives have failed to deliver at the pace and scale we need. At every stage of the STEM pipeline from schoolroom to boardroom, girls and women leak out — from 35% of STEM university graduates[1], to 25% of the total STEM workforce[2], 14% of STEM management[3] and just 9% of STEM executives[4] and CEOs.[5] Statistically, they veer away from STEM subjects at school, leaving to too few girls taking those subjects at university level.

Of the minority that do graduate in STEM disciplines, too few go on to build careers that use those STEM skills in the corporate world. Of these few, even fewer are able to work their way up career ladders. There are disproportionately fewer women at every stage, leaving the C-suite bereft of clever, experienced women in STEM. In some important fields like computer science, the pipeline actually appears to be narrowing. In the US for example, only 19% of computer science degrees in 2016 were awarded to women compared with 27% in 1997.[6] And in France, the number of women graduates in tech fields like digital and engineering decreased by 6% between 2013 and 2017.[7] Against a backdrop of increasing digital transformation across our economies and societies, it is more important than ever to engage women in STEM education, research and business. The social and economic prizes that greater inclusion can bring are significant — from increased innovation and productivity to more impactful climate action.

The pipeline is leaking female talent and with it, the investment in pro-diversity STEM initiatives. It's time for a radical, new approach.

The Women & STEM Daring Circle, a coalition of multinational companies, consultancies and public bodies from the European Space Agency to the IMF, is calling time on the male dominance of STEM. The Daring Circle has built upon past research findings and commissioned two new key pieces of research to better understand the headwinds keeping women back and to find drivers of change.

Our research collectively concludes that a holistic approach that focuses on the journey from schoolroom to boardroom is critical to improving women's participation and impact in STEM. The research also uncovers how women and girls might be motivated and encouraged by making links between their desire to change the world for the better and a purpose driven career in STEM. But this isn't just about research: this initiative is action oriented. We are already launching a range of pilot projects targeted at the pipeline with the ability to scale fast that build on our research findings.

In this report, we lay out some of our findings and offer a short set of recommendations on how companies, public authorities and individuals can join us in driving change, creating more diversity in our workforces, and championing STEM skills for a better future for all.

1. (2016) UNESCO Institute for Statistics
2. (2016) Deloitte Global
3. (2016) Credit Suisse
4. (2017) Harvey Nash & KPMG Global Survey
5. (2016) Credit Suisse
6. National Science Foundation, National Centre for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Centre for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, Accessed November 2019
7. (2019) 'Gender scan', Global Contact as reported in 'Women's opportunity in tech careers has stalled, and is even shrinking', Maddyness

> **99%** of companies have a gender diversity programme in place, but just **34%** of STEM women say they have benefitted from one

## WHY SHOULD WE CARE?

Whilst companies are almost all investing to encourage more women into STEM education and careers, their efforts aren't working. Our recent research by BCG has shown that while 99% of surveyed women in STEM roles reported their company has a gender diversity programme in place, two thirds of the women report they have not personally benefited.[8] That matters because we are entering a new economic age in which all jobs will be STEM jobs, just as all companies will be technology companies. For example, you could argue that L'Oréal is no longer a personal care company: it's a research and technology company that uses its knowledge to drive innovation and sustainability in personal care. If we can find the key to unlocking all this unused female potential, we will do much more than build a more equitable workforce.

The size of this prize is huge — supporting diversity in STEM is critical to the evolution of our future workforce and society. While the total number of jobs today held by women is set to decline by 11% (vs. 9% for men) due to automation, STEM companies and functions will grow.[9] According to BCG, digital skills make up around 70% of all fast-growing skills. And the demand for expertise in areas like artificial intelligence, the internet of things, fintech and cloud solutions show the extent that new technologies will be adopted across industries.[10] That means companies and economies that can close the skills gap will have a real advantage. The European institute for Gender Equality estimates that closing the gap in STEM education will contribute to an improvement in EU GDP per capita by €610b - €820b in 2050.[11]

8. (2019) BCG
9. Brussevich, M; Nabla-Norris, E; Kamunge, C; Karnane, P; Khalid S; Kochhar, K (2018) 'Gender, Technology, and the Future of Work', International Monetary Fund
10. Strack, R; Kaufman, E; Kotsis, Á; Sigelman, M; Restuccia, D; Taska, B (2019) 'What's Trending in Jobs and Skills', BCG
11. 'Economic Benefits of Gender Equality in the EU: How Gender Equality in STEM Education Leads to Economic Growth', European Institute for Gender Equality

Hiring, retaining, advancing, and re-skilling in STEM companies and functions therefore provides an opportunity to drive workforce equality. Furthermore, these STEM roles are shaping the future of the workforce — for example in AI where carelessly designed applications may perpetuate and exacerbate gender bias, further widening the gap in the leadership pipeline. In addition to benefiting the workforce and society, increasing the representation of women in STEM promises higher innovation and better performance for companies. BCG research has shown that companies with above-average diversity in their management teams are 19 percent more innovative—an attribute that is especially critical in STEM roles and industries — and that these companies have reported a 9 percent higher EBIT margin on average.[12]

Our chances of addressing global challenges, and capitalising on the associated opportunities, also depends on our ability to get more women and girls into STEM. Take climate change, for example. Gender-responsive climate solutions remain underrepresented in agendas for technological innovation. Women's leadership in STEM represents an opportunity to address this, with benefits for both the planet and society. Equal participation in STEM education would open up access to the estimated 18 million new jobs created in green and renewable energies in the coming years.[13] In agriculture too, increasing women's access to finance and green technologies could increase on-farm yields by 20-30%, which would improve women's income and security while also positively impacting climate resilience of communities and food security.[14]

If we want to fuel economic growth, increase innovation in public and private spheres and to help solve the biggest challenges facing us today, we have to succeed in attracting more women into STEM.

“Our chances of addressing global challenges, and capitalising on the associated opportunities depends on our ability to get more women and girls into STEM.”

12. Lorenzo, R; Voigt, N; Tsusaka, M; Krentz, M; Abouzahr, K (2018) 'How Diverse Leadership Teams Boost Innovation', BCG
13. (2018) 'Employment and the Role of Workers and Employers in a Green Economy' in 'World Employment and Social Outlook 2018 - Greening with Jobs', ILO
14. (2017) 'Migration, Agriculture and Climate Change: Reducing Vulnerabilities and Enhancing Resilience', Food and Agriculture Organisation of the United Nations

## BARRIERS AT THE STARTING-GATES

As part of our work in 2019, academic partner Politecnico di Milano investigated barriers to women and girls' access to STEM, and the importance of language for overcoming these.

The findings clearly show that from the earliest years, we can see girls are taught that STEM-related activities and fields of study are not for them. This early bias persists and deepens as girls grow up, develop their own personal identities and make academic and career choices. To change the take-up by girls of STEM subjects we have to first recruit them to STEM, then ensure they persist with these subjects and finally that they succeed in them. What are the obstacles facing them at each of these stages in the journey?

Politecnico di Milano's literature review of women and STEM reveals three critical dimensions affecting education and career paths (see figure): i) recruitment; ii) persistence; and iii) success.[15] Barriers can be grouped into three main classes, depending on the level at which they originate: **individual, context and macro**. Scholars define context as the environment in which girls and young women are immersed in their daily life – their family, their school and their community. Macro encompasses the formal and informal national and regional institutions of where girls live, including national culture and societal values, habits and norms.

A framework for barriers to STEM across the pipeline

| Stages of the pipeline | Individual Level | Context Level | Macro Level |
|---|---|---|---|
| **Recruitment** | Identity | Family support and daily exposure | Dominant culture |
| **Persistence** | Self-confidence | Exposure in education | Stereotypes |
| **Success** | Risk aversion | Mentors and role models | Shared family obligations/ policy push |

Source: Politecnico di Milano

15. Blackburn, H (2017) ,The Status of Women in STEM in Higher Education: A Review of the Literature 2007–2017", Science & Technology Libraries, Vol. 36, n.3, pp. 235-273.

From elementary to Masters education, girls and women are less likely than their male peers to choose STEM activities, subjects and majors. This is consistent across countries, though less evident in more gender-egalitarian countries or in the countries of the ex-Soviet bloc. And it varies by field - in the EU, women made up over half (53.3%) of tertiary education graduates in the natural sciences, mathematics and statistics in 2016, but were only slightly over a quarter (27.7%) of engineering, manufacturing, and construction tertiary education graduates. In Canada, the proportion of women enrolled in physical and life sciences in higher education was 55.2% in 2016, but in architecture, engineering and related technologies it was 20.5%.

Why is STEM failing to recruit girls? At the **individual level**, the main barrier is the lack of feminine identity linked to STEM at a young age. Girls are socialised from birth to conform to traditional categories that are considered feminine, while STEM is traditionally linked to masculine traits and male role-models. This is reflected in gendered toys that encourage construction and problem-solving in boys and caring in girls.[16]

At the **context level**, barriers include a lack of family support. In keeping with role-congruity, parents today are still more likely to encourage boys to choose jobs in engineering or technology, compared to encouraging girls to choose these paths.[17] This may lead to a lack of exposure to STEM in girls' daily activities, such as games and leisure activities, and early education. In their elementary school years for example, girls are encouraged to develop their linguistic abilities, while any early struggles with STEM are attributed to innate gender-based abilities, leading girls to opt out early from these fields.[18] A lack of support from teachers can also pose a barrier: an Israeli study found that teachers subconsciously awarded sixth-grade girls lower grades in math and science exams; when tests taken by the same students were graded anonymously, girls outperformed boys. The girls who received low grades were less likely to take advanced math and science courses in high school, years later.[19]

Finally, at the **macro level**, barriers are deeply intertwined with gender-related unconscious biases which pigeonhole women in care-related activities and the humanities rather than scientific or technological fields. Young women receive poor advice and lack (female) mentors and role models in STEM fields, producing a negative feedback loop in which STEM teachers and faculty members are mostly men who cannot relate to and advise on women's concerns in STEM careers.[20, 21]

What is clear is that at all levels and stages of the pipeline, language can be a powerful barrier — as well as a force for good — which individuals and organisations should consider in their efforts to support women's leadership in STEM.



16. (2017) 'Parents, Retailers and Search Engines Urged to 'Re-think the pink' Next Christmas', Institution of Engineering and Technology
17. (2019) 'Inspiring the next generation of engineers: Understanding the perceptions of engineering that parents and young people have today and how we can change them', The Institution of Engineering and Technology
18. Wang, M; Degol J.L (2018) 'Gender Gap in Science, Technology, Engineering and Mathematics (STEM): Current Knowledge, Implications for Practice, Policy and Future Directions', Educational Psychology Review, 29(1): 119–140
19. Lavy, V; Sand, E (2018) 'On the origins of gender gaps in human capital: Short- and long-term consequences of teachers' biases,' Journal of Public Economics, vol 167, pages 263-279
20. J. Price (2010) The effect of instructor race and gender on student persistence in STEM fields', Economics of Education Review, Vol. 29, n.6, pp. 901-910
21. A. Ndobo (2013) 'Discourse and attitudes on occupational aspirations and the issue of gender equality: What are the effects of perceived gender asymmetry and prescribed gender role?' European Review of Applied Psychology, vol. 63, pp. 231-241

## USING THE RIGHT LANGUAGE

Science-related discourse between parents and children exhibits gender-related differences from early childhood onwards. Studies show that parents were more likely to believe that science was less interesting and more difficult for daughters than for sons, and these beliefs predicted children's interest and proficiency in science. Further, when parents' educational language was examined (in controlled science- and non-science-based experiments that parents were instructed to carry out with their children), fathers tended to use more cognitively demanding speech with sons than with daughters during science tasks.[22]

> AT ALL LEVELS AND STAGES OF THE PIPELINE, LANGUAGE CAN BE A POWERFUL BARRIER — AS WELL AS A FORCE FOR GOOD.



This 'language barrier' extends up to the corporate level to affect women in the workforce. Studies find that women are described as more communal and less agentic than men, with communal-expressive traits (e.g. caring, emotional) regarded as stereotypically 'feminine' and agentic instrumental traits (e.g. active, decisive) viewed as 'masculine'. The strongest conceptualisation of both gender stereotypes and gender self-concepts is along this axis of 'masculine' and 'feminine' traits.[23]

Studies that investigated differences in letters of recommendation for men and women for academic positions found women are described as more communal and less agentic than men; that such differences influence selection decisions in academia; and that candidates are less likely to be hired when they are described with communal characteristics, uncovering a 'female penalty' in the decision process.[24] Likewise, analysis finds job postings use gendered language that affects hiring at all levels.[25]

Understanding how language overturns or perpetuates bias has spurred the development of new technological tools for diversity and inclusion. Such tools can quickly analyse large amounts of text and data such as job postings, showing how wording may prevent female candidates from applying or reinforce other biases.

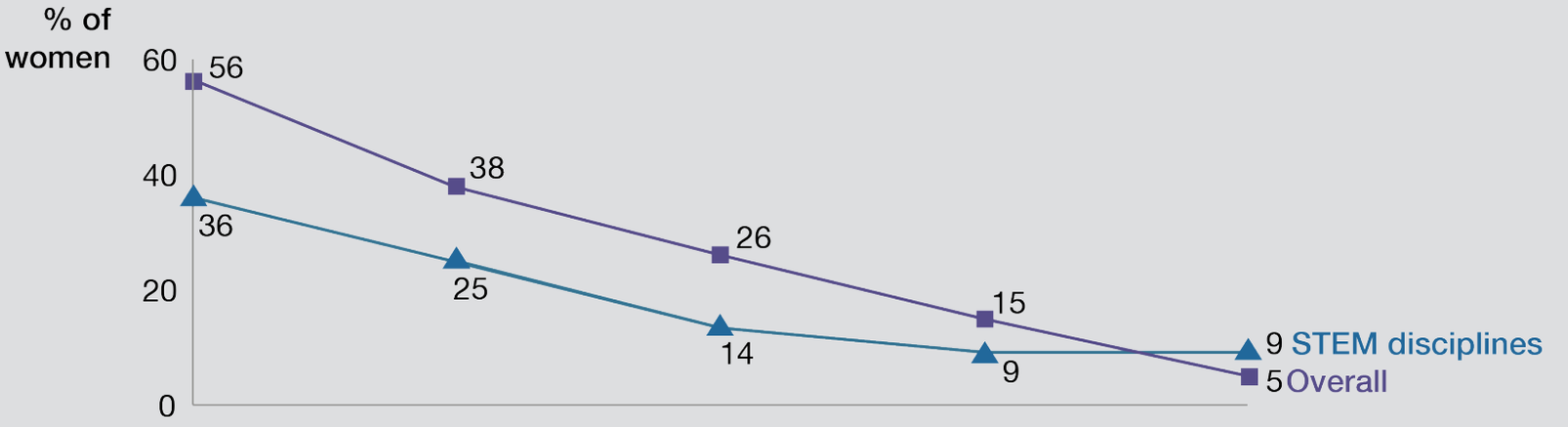
We also invoke this communal-agentic framework to model how communal goal processes may motivate people's decisions to engage in STEM. In our view, the overarching barrier to more women in STEM fields lies in that they are not perceived as affording communal opportunities to work with or help others. Understanding these perceived affordances can inform knowledge about differences between: (a) STEM and other career pathways and (b) women's and men's choices.

22. Tenenbaum, R; Leaper, C (2003) ‚Parent–Child Conversations About Science: The Socialization of Gender Inequalities?' Developmental Psychology, Vol. 39, n. 1, pp.34–47.
23. Abele, A. E (2003) 'The Dynamics of Masculine-Agentic and Feminine-Communal Traits: Findings From a Prospective Study', Journal of Personality and Social Psychology, Vol. 85, n.4, pp. 768-778.
24. Tang, S. et al. (2017) 'Gender Bias in the Job Market: A Longitudinal Analysis', Proceedings of the ACM on Human-Computer Interaction.
25. Gaucher, D. et al. (2011) 'Evidence That Gendered Wording in Job Advertisements Exists and Sustains Gender Inequality". Journal of Personality and Social Psychology, Vol. 101, n.1, pp. 1-12.

# At every pipeline stage, there are fewer women in STEM disciplines than there are women overall — except as CEOs.

**Source: BCG**

## EXHIBIT 1 | Leaky pipeline overall and in STEM disciplines




| | University Graduates | Total Workforce | Managers | Executives | CEOs |
|---|---|---|---|---|---|
| STEM women/ Overall women Ratio | .64 | .66 | .52 | .60 | **1.80** |

Sources for Overall data: UNESCO Institute for Statistics, World Bank, ILO, Credit Suisse, Catalyst
Sources for STEM data: University enrollment rates in STEM fields – UNESCO Institute for Statistics (2016); Total workforce – Deloitte Global; Managers – Credit Suisse (2016); Executives - 2017 Harvey Nash/KPMG global survey; CEOs – Credit Suisse (2016)



### MISSING RUNGS IN THE CAREER LADDER

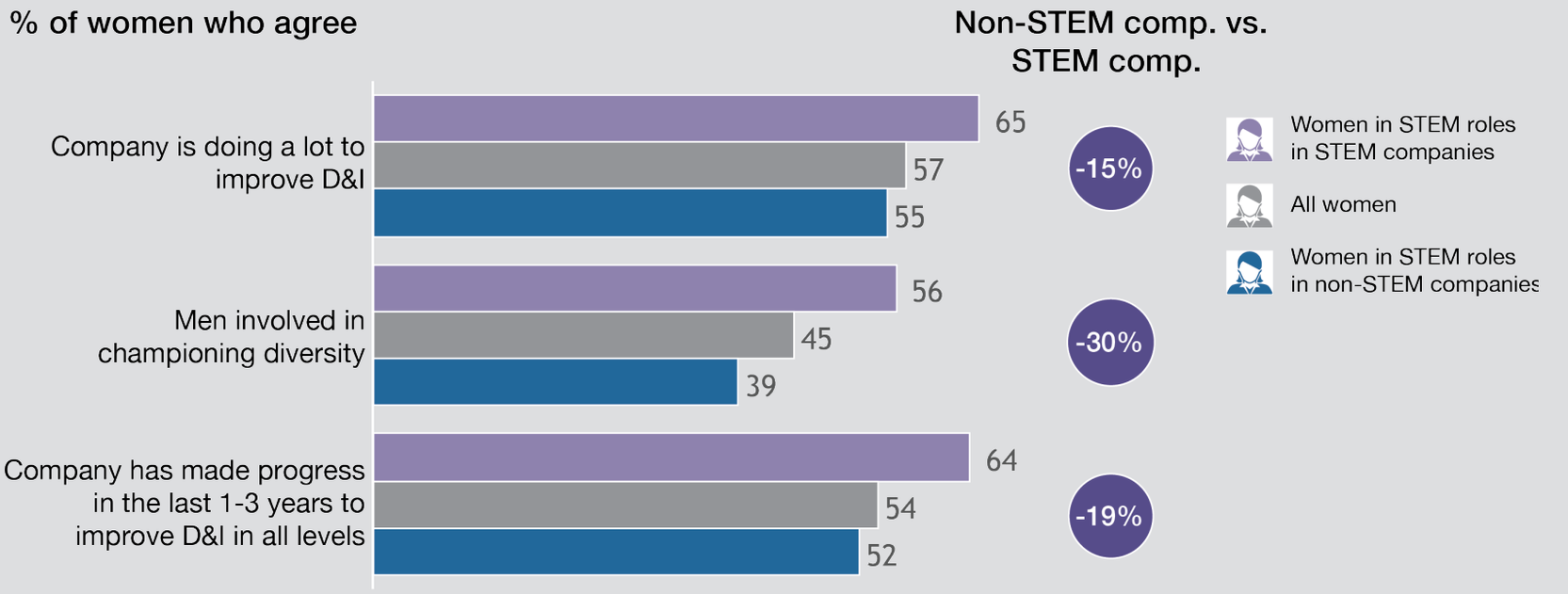
As in other industries, STEM fields and functions have a leaky pipeline to leadership (exhibit 1), and only a quarter of the total STEM workforce globally is female. In contrast to the broader workforce, the gender disparity in STEM starts with the entry to the pipeline with only 36% of STEM degrees earned by women. But even when women graduate with STEM degrees, many decide not to enter these fields. In Europe, only a third of women with STEM degrees work in a STEM role, while half of men with a STEM degree hold STEM roles.[26] Further, the representation of women in STEM drops off precipitously at the Manager level—with a female share that is about half of that of women managers generally.[27]

26. (2017) 'Work in the EU: Women and Men at Opposite Ends', European Institute for Gender Equality
27. UNESCO Institute for Statistics

# Women in STEM companies feel their employers are doing more on D&I than women in non-STEM companies.

**Source: BCG**

## EXHIBIT 2 | STEM companies focus more on D&I than non-STEM companies




Source: STEM Global Diversity Survey 2019



### CLOSING THE GENDER DIVERSITY GAP FOR STEM IN THE WORLD OF WORK

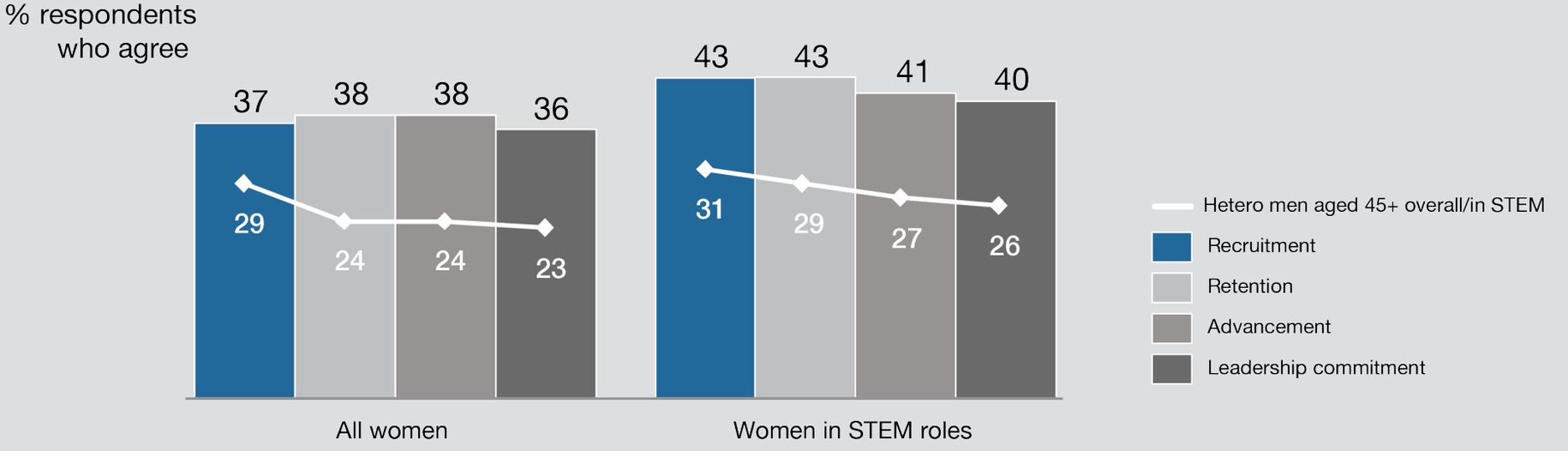
The good news: it seems that we are making some progress. Most women in STEM roles do not plan to leave their companies and roles. In fact, they are less likely (0.7x) to report that they plan to leave the company within the next three years compared to men in STEM and compared to women across industries (0.6x). Women in STEM roles also report more positively about the progress their company has made in diversity and inclusion than women across roles and industries—with the caveat that those positive results only come from women in STEM roles working in STEM companies, while answers by women in STEM roles in non-STEM companies are behind of those of women overall (exhibit 2).

# Women in STEM roles see more obstacles, especially in recruitment and retention.

**Source: BCG**

## EXHIBIT 3 | Women in STEM roles see more obstacles

"There are obstacles to gender diversity and inclusion in my company…"




Source: BCG Global Diversity Survey 2018, STEM Global Diversity Survey 2019



But even if STEM companies have taken steps to improve the situation for women, the results of these efforts are not yet being felt in their day-to-day work experience. Women in STEM see more obstacles across the employee lifecycle than women overall. Men in STEM are more aware of those obstacles (vs. men overall), but still underestimate the challenges women in STEM face by far (exhibit 3).

Companies will be most effective in improving the experience for women in STEM if they invest in the measures that women most value. To determine what these measures might be, BCG asked survey participants to evaluate the effectiveness of 31 diversity initiatives. Women and men in STEM as well as women overall are aligned on half of the top 10 interventions (exhibit 4). Interventions that women highly valued but men did not perceive to be as effective were classified as “hidden gems” — and companies could benefit from investing in them further. Examples of hidden gems include flexibility programmes, setting a specific diversity strategy, healthcare coverage and parental leave.

# Hidden gems may be different for women overall and women in STEM.

**Source: BCG**

## EXHIBIT 4 | Women in STEM ranked intervenions

| | Intervention | By women in STEM | By all women |
|---|---|---|---|
| ★ | Flexibility programs, e.g., part-time, informal flex | 1 | *2* |
| | Training, e.g., bias awareness | 2 | *4* |
| | Anti-discrimination policies | 3 | *1* |
| ! ★ | A specific diversity strategy | 4 | ***18*** |
| | Bias-free evaluation and promotion decisions | 5 | *9* |
| ★ | Appropriate healthcare coverage, e.g., for maternity | 6 | *5* |
| | Employee surveys | 7 | *10* |
| ! | Public commitment by CEO | 8 | ***20*** |
| ★ | Parental leave, including for adoption | 9 | *3* |
| | Bias-free day-to-day experience | 10 | *8* |
| ★ | Visible role models that represent diversity of leadership | 11 | *7* |
| | Diverse interview panels | 12 | *16* |
| ! ★ | Diversity leadership team/council | 13 | ***19*** |
| ! | Setting diversity goals and measuring against KPIs | 14 | ***29*** |
| | Transparency publicly around gaps and progress | 15 | *15* |

! Different to women overall

★ Hidden gems

Source: BCG Global Diversity Survey 2018, STEM Global Diversity Survey 2019

## KEYS TO UNLOCKING FEMALE STEM TALENT

In our framework, the gender gap in STEM is not only a problem of attrition. Attrition is indeed a challenge: one eight-year study found that 43% of women and 23% of men left full time STEM jobs after the birth of their first child, versus 24% of women and 16% of men who did not have children.[28] But BCG research shows that neither children nor marriage impact women's ambition in organisations that do well on diversity.[29]

Beyond dealing with attrition, closing the gender gap is also a case of attracting more women and girls to study STEM subjects and pick up STEM skills. In the most equal societies where you might expect to see higher proportions of women studying STEM and working in STEM roles and organisations, the opposite is actually true. One hypothesis is that we need to make 'pull factors' for STEM more attractive.

Highlighting the potential for social and environmental impact from STEM skills might be an important part of attracting more women to these disciplines and helping them thrive. Research shows that seventy-two percent of girls aged 5-12 surveyed in Europe felt it was important to have jobs that directly helped the world, but only 37 percent thought of STEM careers as making the world better.[30] And studies also tell us that girls who believed more strongly in the altruistic value of science careers scored higher in self efficacy and utility measures than their peers — it boosted their confidence. Their belief in the altruistic value of science also predicted their interest in science.[31] Girls want to make a difference in the world: we need to show them how a STEM path can help them achieve that goal.

> **72%** of girls
> feel it's important
> their future jobs help the world.
> Just **37%**
> know STEM careers
> can make the world better


28. Else, H (2019) 'Nearly half of US female scientists leave full-time science after first child', Nature
29. Abouzahr, K; Krentz, M; Brooks Taplett, F; Tracey, C; Tsusaka, M (2017) 'Dispelling the Myths of the Gender "Ambition Gap'', BCG
30. (2017) 'Closing the STEM Gap: Why STEM Classes and Careers Still Lack Girls and What We Can Do About It', Microsoft
31. Weisgram, E.S; Bigler, R.S (2006) 'Girls and science careers: The role of altruistic values and attitudes about scientific tasks', Journal of Applied Developmental Psychology, Vol 27:4, p.326-348

Methodology note:

### BCG and Women & STEM Daring Circle research

**Through their participation in the Women & STEM Daring Circle, BCG surveyed 1,600 women and men in STEM roles from eight countries to identify the obstacles and barriers for women in STEM, and what really works to retain and advance these women. They then compared these findings to the 16,500 responses in BCG's Diversity and Inclusion Assessment for Leadership (DIAL) database to understand how the challenges and opportunities for women in STEM compare to those for women in the workforce more broadly.**

# The action agenda of the Daring Circle

Building on this research and other work over our inaugural year, the Daring Circle has outlined its action agenda to promote STEM skills and to support women and girls.

Our pilot actions and recommendations are initiatives that companies and organisations volunteer for, collaborate on and learn from — in cooperation with public institutions or internally. Ultimately, successful pilot actions will be replicated and scaled, and the keys to their success dissected for learning. Provisionally, they include:

- Commissioned by the French Ministers of Gender Equality and Economy, The Women's Forum, led by Managing Director Chiara Corazza, is drafting recommendations to inform a proposed new law in 2020 on women's economic empowerment, focusing on how public and private sectors can create the conditions for women to thrive in STEM fields including data science and engineering.

- Working with education ministries to support the following with letters and other content resources: Encouraging proactive communication from schools to parents about girls' potential; Helping staff and students understand job market needs by better communicating with teachers and administrators of educational institutions.

- Creating a human connection between teenage girls and STEM women to give teens the tools they need to be authors of their own futures. With STEMKEY, we plan to launch a European campaign that helps girls meet like-minded STEMSISTERS who can help them change the world with STEM.

- Co-curating in-person workshops focused on digital re-skilling for women, with the potential to iterate and scale online as a co-branded MOOC.

- Producing a digital role-playing app aimed at teenage students and their teachers to highlight the benefits of diverse teams and STEM skills in a variety of roles.

# What you can do

## WHAT COMPANIES CAN DO

To reap the benefits that diversity presents in corporate innovation and productivity, companies will need to attract, retain, advance, reskill and upskill women in STEM. To address specific obstacles that women in STEM roles face, they sho uld consider launching a set of measures that data shows make a difference for women in STEM:

- **Get back to basics:** the essential measures that rank highest for women in STEM include bias awareness training, antidiscrimination policies and reducing bias in evaluations and promotions. Foster a day-to-day culture of inclusion and showcase women role models within this culture.[32]
- **Lead and commit:** leadership commitment is differentially important to women in STEM. Companies should set a diversity strategy, demonstrate CEO commitment, and engage a leadership team against KPIs.
- **Prioritise flexibility:** women in STEM rank flexibility programmes as the top intervention to support their success. Enabling women (and men) to manage professional and personal commitments through a focus on when, where, and how much they work over a career will keep women in the leadership pipeline.
- **Engage your future workforce:** Develop programmes for hosting high-school girls for short internships, apprenticeships and mentoring opportunities in parts of your company that use STEM skills. Working with schools is also opportunity to communicate the value of a STEM education among girls and their families as early as possible, which will help girls to see themselves in STEM roles and reinforce their benefits for families and societies.
- **Contribute to the narrative on STEM-for-Good:** Showing the social impact that STEM jobs can have, through real stories and concrete example helps motivate women and girls who want to do well by doing good.

## WHAT PUBLIC AUTHORITIES CAN DO

Public authorities have the opportunity to drive change by focusing on a set of programmes and policies.

- **Grow the talent pool:** public authorities can increase the participation of girls in STEM through educational programmes in schools targeted at girls (coding, maths, science and more) as well as developing public marketing campaigns that target participation and challenge stereotypes.
- **Support pipeline development:** by funding or developing public reskilling or upskilling programmes targeted at women in STEM, governments and public organizations can support growth throughout the pipeline. Programmes could focus on specific tracks like entrepreneurship — supporting women with and without university education, including relevant hard and soft STEM skills for each.
- **Promote positive messaging:** By launching or participating in campaigns and other media opportunities, public authorities can raise awareness of messaging that helps increase women's participation in STEM (for example, that STEM skills enable a fulfilling future or help you have a positive impact). Consider enforcing parity between men and women when experts are called upon to contribute on public platforms.
- **Capitalise on expertise:** Use Women STEM experts to help inform gender responsive and other policies and actions.
- **Create a coordinated framework or guidelines:** To support coordination between existing efforts to engage women in STEM, identify opportunities to create synergies and inform the creation of future initiatives.

## WHAT INDIVIDUALS CAN DO

Men and women will need to work together to create a more diverse STEM workforce.

- **At work:** By modelling more inclusive leadership styles and sponsoring/championing women at key inflection points in their career, men will create a more equal environment from which women can achieve and grow.
- **At home:** men can take on more of the task load at home, where studies show women disproportionally carry primary responsibility. Through a more equitable division of home responsibilities, women will have more time to devote to career-related activities.
- **Everyone has a platform — use it!:** Whether in your personal or professional life, giving women a platform and supporting them wherever possible helps create visible role models and breaks down stereotypes. Look for opportunities in your place of work, at events or on social media.



32. Catalyst – High Potentials in Tech-Intensive Industries

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“The STEM pipeline is leaking female talent and with it, the investment in pro-diversity STEM initiatives. It’s time for a radical, new approach.”

The Women & STEM Daring Circle is an initiative of the Women's Forum for the Economy & Society, bringing together an ecosystem of partners to advance solutions that increase the representation, leadership and impact of women with STEM skills at all stages of the pipeline from school to boardroom. Led by Google, the Daring Circle's strategic members are American Express, AXA, BNP Paribas, L'Oréal, Microsoft, Publicis Groupe and P&G in collaboration with Johnson & Johnson, Lenovo and Orange as Partners and Shearman & Sterling as Insight Partner. The Circle is supported by Knowledge Partner Boston Consulting Group (BCG) and Politecnico di Milano as Academic Partner.

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