



HER TECH

What does and does not work

Compendium of the best practices in
different European countries



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Welcome Message

Welcome to “What does and does not work: Compendium of the Best Practices in Different European Countries”, developed within the HER TECH project (Her Tech, Her Terms. Engagement as the Key).

Despite growing awareness and numerous initiatives across Europe, the gender gap in Information and Communication Technology (ICT) remains persistent. Girls and women continue to be underrepresented in ICT studies and careers, not due to a lack of ability, but because of structural barriers, stereotypes, and unequal access to opportunities.

HER TECH brings together partners from seven European countries to better understand these challenges and, more importantly, to identify what truly makes a difference. This Compendium is part of that effort.

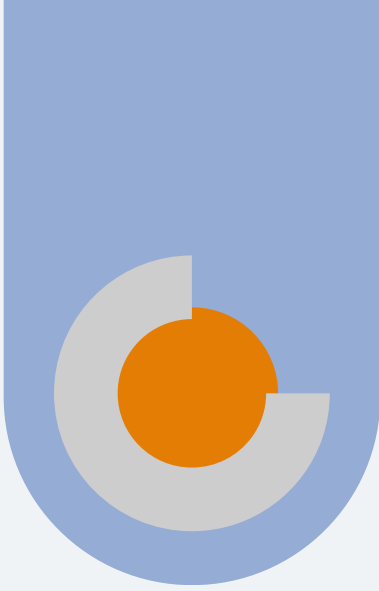
Drawing on research conducted across ten countries – Croatia, Finland, Sweden, Ireland, Italy, Belgium, Germany, Estonia, Poland, and Canada – it offers a comprehensive overview of existing initiatives aimed at increasing girls’ and women’s participation in ICT. It looks beyond intentions and examines outcomes: what works, what does not, and why.

Rather than proposing idealised solutions, this Handbook presents real practices implemented in diverse contexts. It highlights approaches that have proven effective, as well as common limitations that continue to hinder progress.

This Compendium is intended as a practical and reflective resource for educators, policymakers, and organisations working to improve gender balance in ICT. It invites readers not only to learn from existing practices, but also to consider critically how these insights can be adapted and scaled in their own contexts.

We hope it will support more informed decisions, inspire new approaches, and contribute to creating more inclusive and accessible pathways into technology.





Introduction

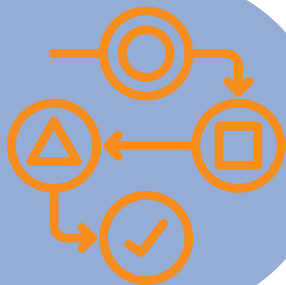
This compendium presents a selection of best practices for designing effective programmes that promote girls' and women's access to information and communications technology, as well as gender balance in ICT studies and professions. The best practices are based on an analysis of enabling and hindering factors identified in the HER TECH Transnational Report. The insights are drawn from seven National Reports from Croatia, Finland, Sweden, Ireland, Italy, Belgium, and Germany. In addition to these main reports, three supplementary national reports have been used: reports from Poland and Canada, written by Algebra University (Croatia), and the Estonia report conducted by South-Eastern Finland University of Applied Sciences (Finland).



The Research Question for the Compendium of Best Practices is:
Based on existing initiatives and programmes, what are the best practices to promote girls' and women's participation in ICT?

This compendium is specifically written for those interested in engaging girls in ICT education or promoting women's access to and success in ICT careers. The stakeholder groups include organisers of initiatives and programmes, ICT professionals, researchers specialising in pedagogy or DEI themes, policy makers, educators at all levels, and parents – in short, everyone seeking to create a more gender-balanced society, and particularly a more balanced ICT field. STEM (Science, Technology, Engineering, and Mathematics) topics are also included in this research, as they are closely connected with ICT skills.

What does and does not work: this compendium of best practices from different European countries is based on factor analysis of the key enablers and barriers identified in existing initiatives from these countries.



The compendium aims to synchronise the best practices found in the National Reports to create universal guidelines for engagement strategies, pedagogical methods, mentoring models, outreach techniques, and policy reforms. Examples of some of the most impactful initiatives are also presented. The main focus is on summarising the major commonalities and recurring patterns.

In the context of this study, "enablers" are defined as gender-related factors, types of activities, working methods, and pedagogical approaches that are seen to promote girls' and women's abilities and attitudes towards information and communications technologies as a field of study and career. In contrast, "barriers" are defined as gender-related factors that make the ICT field less appealing to girls and women.

Methodological Approach

The Compendium of Best Practices is based on a structured research process carried out across all partner countries. To ensure consistency and comparability, all partners followed a shared methodological framework and common guidelines for data collection and analysis.



The research combined three main methods. First, desk research was conducted to identify existing initiatives and programmes supporting girls and women in ICT. Second, interviews with key stakeholders provided in-depth insights into experiences, challenges and effective approaches. Third, an online survey complemented these findings by capturing broader perspectives from practitioners and experts.

By combining these methods, the Compendium offers a comprehensive and evidence-based overview of current practices across different contexts.



Clusterisation of the target groups

The attractiveness of the ICT field varies significantly for women depending on their age and life situation. For example, the needs of a 7-year-old primary school girl differ markedly from those of a woman attending an ICT-related university course or an experienced professional working in a tech company. To develop more relevant insights, project partners clustered the research around three target groups, which form the basic structure of this compendium:



Professional Life & Policies

This target group introduces initiatives aimed at bridging the gender gap from the perspectives of professional life and society. It includes representatives from ministries and other governmental agencies responsible for setting regulations, laws, and policies at national and regional levels. This cluster also comprises initiatives from companies and the third sector, such as NGOs promoting gender balance in workplaces and in society at large.



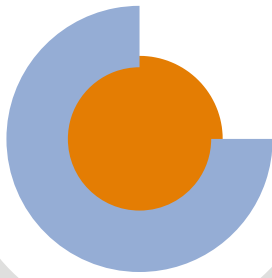
Women in Higher Education

This area of research examines the specific challenges faced by young women (aged approximately 17 to 29) in ICT education, as well as initiatives and programmes designed to address these challenges. The cluster includes professors and other representatives from tertiary education institutions, encompassing both higher education (HE) and vocational education and training (VET).



Adolescent Girls

This cluster comprises initiatives that actively contribute to the role of ICT and STEM subjects in the lives of young girls aged 5 to 16. It includes primary and secondary school teachers and administrators who possess tacit knowledge regarding underage girls. The cluster may also involve stakeholders such as representatives of NGOs, parents, members of informal clubs, and mentors such as coaches who influence girls' attitudes and career choices.



Desk research & list of initiatives

Project partners' desk research identified and listed 209 distinct initiatives or programmes aimed at promoting women's access to ICT across 10 countries. More than 10 programmes were listed in each country investigated, with Poland leading at 54 initiatives. Smaller nations had fewer total initiatives, but generally more initiatives per capita: Estonia (9.2 initiatives per million residents), Finland (4.1), Croatia (3.75), and Ireland (2.2). In contrast, larger countries such as Germany (0.30) and Italy (0.33) had the lowest per capita rates. However, these figures should be interpreted as indicative, as the number of listed initiatives depends heavily on how individual researchers have categorised activities and the extent to which regional and local initiatives have been included. Ireland and the "extra" country, Canada, listed only programmes considered highly relevant to limit the overall sample size.

Across the countries, the share of initiatives per cluster was greatest in the target group of adolescent girls:

Cluster A: Professional Life & Policies - 32%

Ireland, Sweden, Finland and Poland listings included relatively more cluster A: Professional Life & Policy initiatives than other countries.

Cluster B: Women in Higher Education - 25%

The highest shares of Cluster B: Women in Higher Education are listed for Estonia and Denmark.

Cluster C: Adolescent Girls (under 17) - 43%

This cluster had the most relative weight in Germany, Croatia and Canada.



Online survey

An online survey was conducted to gather perspectives from a larger audience and to enrich the research with quantitative data points. The survey was open to all interested individuals, but was especially disseminated to groups with a personal or professional connection to the ICT field, STEM education, or an interest in gender equality issues. It was distributed in the seven major research nations as well as three additional countries, and respondents represented 23 different nationalities in total. The survey received 315 completed responses, with the sample being predominantly female: 74% female, 23% male, and about 3% non-binary or prefer-not-to-say. As the survey was mainly distributed among ICT-related, educational, and research organisations, it is unsurprising that the majority of respondents held ICT/STEM-related qualifications or worked in science or tech organisations as ICT-related professionals.



15% of respondents identified as organisers of gender-balance programmes in some form. However, a large proportion of respondents reported no direct experience with such initiatives: 45% said they had not participated in any initiatives or programmes aimed at improving gender balance in ICT/STEM.

Interviews

Semi-structured interviews were conducted in each country during autumn 2025 with a minimum of six insightful informants per country. The interviews took place in the seven main research countries: Finland (7 interviews), Croatia (6), Sweden (6), Ireland (6), Italy (6), Belgium (6), and Germany (6). In addition, two Polish experts were interviewed



All selected research clusters – professional/policy experts; professionals specialising in women in higher education; and those working with adolescent girls – were represented. The interviews were conducted anonymously to allow the experts to freely express their thoughts, including critical reflections, without concern for professional repercussions. Altogether, 45 interviews were conducted, and over 90% of those interviewed were female. The majority of interviewees were in their 30s or 40s, and the answers mostly reflect the views of seasoned mid-career professionals.



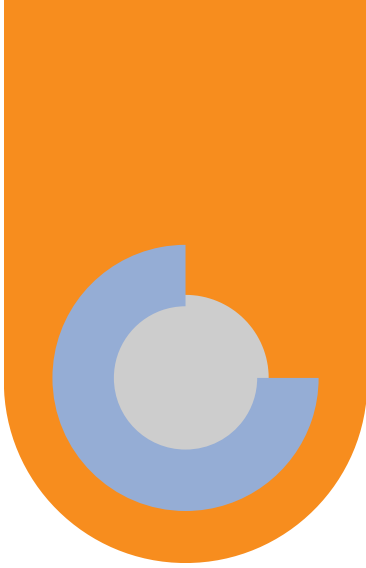
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Professional Life & Policies

Best Practices

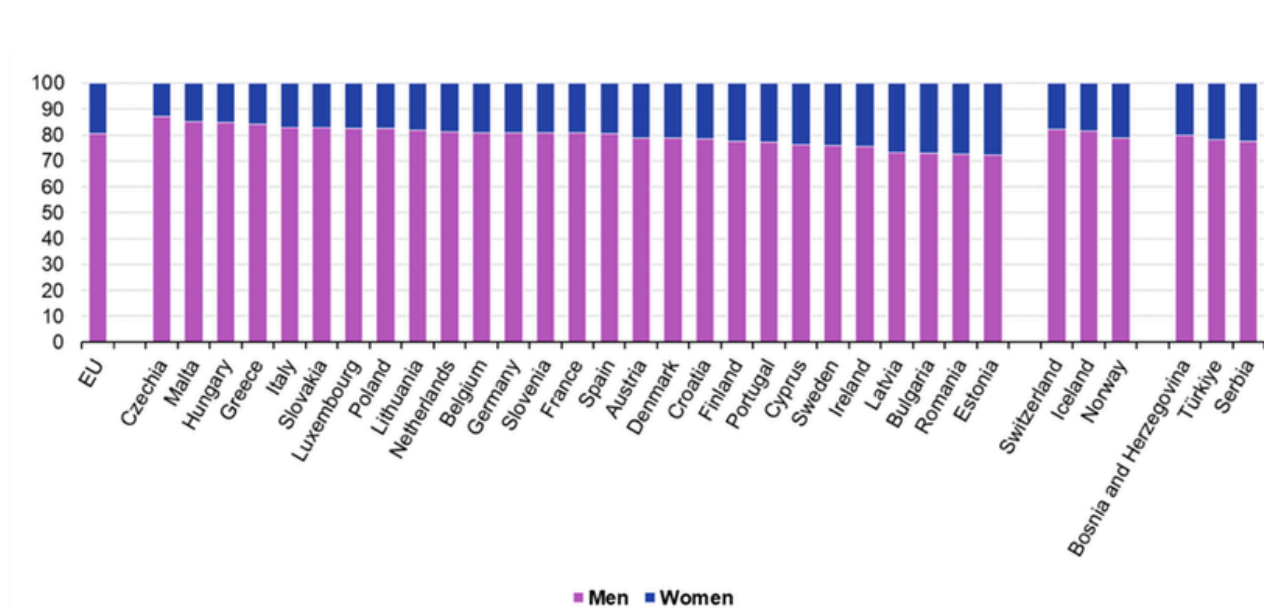


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Distribution of ICT by sex (in %), 2024

The ICT sector is an increasingly influential field and source of employment for European societies. From this perspective alone, ensuring that women have access to employment in the sector is not only a matter of societal equality but also economic prosperity. Even if studied countries signal slow increase in women's participation to ICT labour market, gender-based segregation in the ICT sector is persistent European-wide issue. Estonia is found leading the Europe in this category but even there, women accounted only for 27.6% of ICT specialists (Eurostat, 2024). In Croatia, Finland, and Sweden, women share is slightly above 20%. On the more segregated end, Italy and Poland are reported having some of the lowest shares of women among ICT specialists in EU.



Source: Eurostat (2024)

In many countries across Europe, “hard” economical constraints tend to take precedence over “soft” DEI values. In this situation, the policy makers and company leaders should remember that gender segregation hinders economic prosperity, too



A growing body of research shows that diverse teams that combine different backgrounds and perspectives tend to deliver more innovative, customer-oriented solutions than homogeneous groups. More diverse teams can reach better customer insights (Dixon-Fyle et al., 2020; Lorenzo et al, 2019), create more innovative solutions (Lorenzo et al, 2019), and enjoy higher employee satisfaction (Loeb Leadership, 2025)

This cluster contains leaders on professional ICT field and gender equality policies, as well as researchers and NGO's working on changing workplace cultures. The common existing practices revolve around policy advocacy or educational programmes on the governmental / NGO side, and mentorship, or leadership training on the private business side. Activities include integration of governmental gender-equality criteria into ICT workplace policies or founding women’s leadership networks and offering courses for mid-career women.



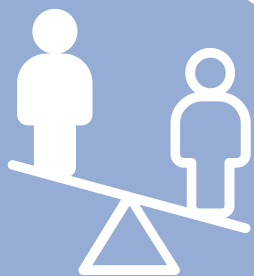
What does not work

Virtually all reports as well as the online survey respondents point toward societal biases and internalised stereotypes as the root causes preventing girls and women from imagining themselves working in ICT. At the same time, the survey respondents show a scepticism toward policy reforms as an avenue of change. This reflects a desire for tangible change in the local environment the respondents are living in: according to the survey, the most potential avenues contributing to gender equality are found from the shifts in culture and attitudes as well as local/school level activities. The survey respondents favour interventions that directly touch girls' experiences such as classroom practice and workshops, and for women pursuing ICT career more internship possibilities and networking.

When pursuing gender-balanced ICT sector through policy reformations or industry initiatives, the commonly faced obstacles are:



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Inequality in access

A recurring barrier found from the investigated countries and their initiatives is the limited scope and reach. It is very common that the programmes involve the major cities only. Limited nation-wide reach is especially problematic when organising educational programmes for underage children, as equal access to education is an important value of democratic society. The national report of Italy points limited geographical reach to be a result of political choices: "implementation of gender-sensitive policies remains uneven across Italian regions, reflecting territorial disparities in institutional capacity and political prioritisation".



Lack of grass-root engagement

Across the researched countries, grassroots support is deemed as essential for reformations. Top-down policies are necessary societal enablers but do not automatically create bottom-up change on the grassroots level. Sociocultural change needs relentless work and citizens need to be reminded about gender-segregation issues as long as they persist. Policy programmes that are implemented without engagement from grassroots stakeholders, such as NGOs and ICT companies, tend to falter.



Lack of continuous support

As the underlying cultural factors are slow to change, the problems' cannot effectively be changed with short-term projects. Also, recent EU report points towards "a lack of a systemic approach" to solve the gender balance issues (Evagorou et al, 2024) As it is rare to find a company or NGO with enough resources to organise continuous nation-wide programming, many researchers see governmental funding and support a necessity.



Lack of monitoring

Repeated cross-national theme is that equality law and strategy documents exist in most contexts, but their effectiveness in ICT field depends on monitoring of their implementation and impact.





Recommendations for Policy Makers

Egalitarian legislation forms a basis on which the societal functions, workplace practices, and many other cultural factors are built upon. The national report of Sweden points out that policy "strategy's enabling role lies in its symbolic and institutional weight. It officially recognises the under-representation of women in STEM and the responsibility of both education systems and employers. This gives advocates inside institutions a reference point when arguing for resources, structural measures or targeted interventions." Also in Germany, while the impact of policy measures is considered low in the survey, the initiatives like MINTvernetzt and MINTraum Bayern's "effectiveness depends on sustained implementation, monitoring, and the translation of political and legal frameworks into organisational practice". National anti-discrimination policies are binding to every actor involved and form a general basis on which more targeted programmes can be built on. However, to correct the widespread gender-based segregation, anti-discrimination legislation is not enough: positive action towards active promotion of more inclusive society is needed.

Make diversity a strategic part of innovation policies

As the underlying cultural factors are slow to change, the problems' cannot effectively be changed with short-term projects. Also, recent EU report points towards "a lack of a systemic approach" to solve the gender balance issues (Evagorou et al, 2024) As it is rare to find a company or NGO with enough resources to organise continuous nation-wide programming, many researchers see governmental funding and support a necessity.

Set explicit targets, measure impact and give recognition

To bring equality policies into practice, researchers call for science-based interventions and tracking impact with metrics. For example, Croatia suggests creating "measurable accountability tools (...) with clear indicators, budgets, and public reporting" to track progress. A governmental institution working to advance equality could publicly establish numerical DEI goals for companies and institutions (e.g. minimum percentage of women in ICT roles) and monitor progress. Organisations that are working actively towards gender balance and meeting the DEI goals could be given visibility and public recognition.

Fund long-term initiatives

Many of the interviewed experts regard egalitarian policies only paper if governments are not supporting their implementation with funding to top-down grassroots movements. Researchers see it as a necessity to allocate dedicated budgets for not just one-off projects or events, but sustained programmes to change ICT/STEM education and workplace cultures to become more women friendly.

Vertical collaboration between the public, private, and third sector

All reports recommend multi-stakeholder collaboration between areas of society: initiatives gain credibility and reach when governmental offices, universities, industry and NGOs collaborate. Common pattern is governmental body supporting an umbrella association that is representing ICT field at large. This type of collaboration can stir grassroots-level action, yet private sector buy-in could be beneficial for long-term sustainability of activities.

Promote role models in national campaigns

Communication about national equality and DEI projects should be regarded as integral part of the activities, not just an afterthought. Singular social media posts are not enough: collaborating with multiple stakeholders to design synchronized campaign reaches much bigger impact. Public media campaigns featuring female ICT professionals, tech enthusiasts, entrepreneurs, or game creators can widen the type of gender-, ICT- and STEM-related representations circulating in media. Highlighting success stories signals political commitment and breaks stereotypes which makes room for more diverse takes on what it "means to be a woman".

Give ICT and DEI-pedagogy for early childhood experts

The years in the primary education are formative for growing child's gender identity and sense of self-ability toward STEM subjects. ICT and DEI themes should be part of teacher education and other experts working with children. Also, governmental agencies could utilize national educational system for raising awareness about segregation issues and gender-balance programmes with existing rector networks, parent channels and school events.



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Go beyond binary and acknowledge intersectionality

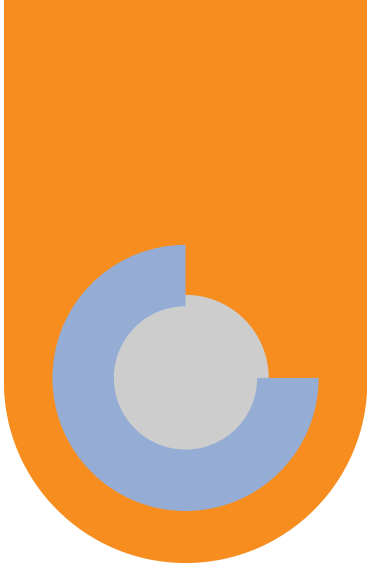
In the last decades, understanding about gender identity and gender expression have widened beyond binary views. For these reasons, policy frameworks should address non-binary existence and acknowledge intersectional issues to ensure people of colour, LGBTQ+ and other underrepresented women groups have equal opportunities in ICT field.



Recommendations for ICT companies

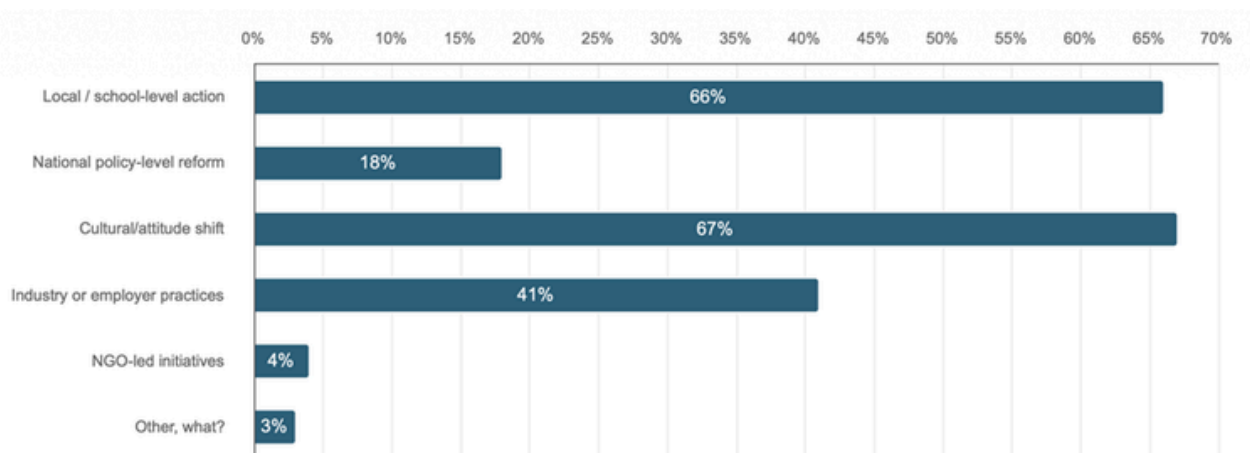
Leaky pipeline: While many initiatives focus on getting women into ICT, we must also understand why women leave to fix the so-called "leaky pipeline" of women's ICT careers. According to Finnish Women in Tech survey (2019), the four biggest reasons for leaving tech roles were desire for change, better work-life balance, more responsibility in the new role and problems in fitting in with the workplace culture. Women frequently report systemic disparities, fewer promotion opportunities, and challenges balancing work and family life (EIGE's Gender Equality Index, 2025). Women are also much more likely to experience direct misconducts, which one expert lists as structural sexism, sexual harassment, discrimination or belittling related to pregnancy and motherhood. Less inclusive workplaces are more likely to lose women talent.

Leadership's role is crucial: There are many problems in the workplace cultures that make ICT jobs less welcoming for women than for men, and many of the issues are due to the conscious decisions and unconscious biases from organisations' decision makers. Many interviewed experts highlight that especially strongly in ICT fields, women often feel they must provide more proof of competence than male peers. The leadership styles that differ from the male norm may be undervalued. Also pay gaps are persistent: women need to work 15½ months to earn what men make in a year (EIGE's Gender Equality Index, 2025): "We are at least 50 years away from reaching full gender equality, based on a revamped methodology, introducing new indicators and a renewed pace of change."



The most potential level of change

HER TECH survey respondents see changes in industry and employer practices possessing significant potential in creating more equal ICT field. Our research indicates that one of the strongest enablers for more inclusive workplace culture is the involvement of the management. However, the change can only begin if the leadership acknowledges and addresses the issues. Because 65% of managerial positions are male-occupied (EIGE’s Gender Equality Index, 2025), this means that many more men would need to start supporting gender balance initiatives in companies. Yet, significant "perception gap" exists regarding workplace gender equality: depending on country, 60–80% of men agree with the statement: "Women and men are treated in the same way at work", while less than 50% of women agree (ibid). Perhaps one source of problems is that too many men in key positions are not aware of the gender balance problems.



Source: HER TECH Survey

Build teams with diverse backgrounds

As stated before, a growing body of evidence shows that organisation's innovation capabilities are higher in companies embracing diversity. Research (for example Dixon-Fyle et al., 2020 and Lorenzo et al, 2019) indicates that teams with varied backgrounds outperform homogeneous ones by delivering better customer insights and more creative solutions – and achieving higher employee satisfaction in the process (Loeb Leadership, 2025). Thus, embracing diversity is not justified only by social reasons but to gain competitive edge, too. Ideal organisations create a robust DEI strategy together with external experts – usually with NGOs working on the topic.

Adhere to gender-neutral recruitment practices

Widen candidate pools by advertising in diverse channels, and not just tech forums. Reword job ads to avoid “male-coded” language and explicitly encourage women to apply. Use anonymised CV screening to reduce bias.

Set internal diversity goals and lead with numbers

Firms with transparent goals for female employment tend to see improvements in women's recruitment and retention as well as improved brand image among customers. Set ambitious but realistic targets in female hires and promotion, gender balance within teams, and gender pay gap. Tie these measures to Human and Resource Departments' and middle-managers' performance metrics. Stay on the pulse with annual equality and equity survey among the staff. Adopt transparent reporting of the progress for the board of directors.

Appoint inclusivity champions

Select senior executives to take responsibility for diversity goals. These champions can work on improving the workplace culture internally and also become brand's public-facing figures. Suggest your organization's CEO to adhere to United Nation's Women Empowerment Principles (WEP) and its Gender Gap Analysis Tool.

Pay attention to the everyday sociocultural environments

Inclusivity lives (or dies) in the organization's culture. Sociocultural environments, or social “micro-climates,” are formed through everyday interactions such as morning greetings at the office, informal encounters around the coffee machine, or exchanges at workstations. Inclusivity (or conversely, discrimination) is experienced and reproduced through these daily social encounters. Thus, inclusivity can be improved with inclusivity workshops for all staff. For the acute situations of harassment, set-up anonymous "whistleblowing" channels, and name Equality Contact Person and Harassment Contact Person from within your organization.

Organise diversity training for managers

It's not enough for a CEO to make a statement; the organisation should also invest in training team leaders to recognize and combat conscious and unconscious biases. Team leaders should actively foster inclusive and diverse sociocultural micro-climates even when broader organisational culture evolves slowly. Send the leaders to address the issues on the public events as well. For example, the managers who are presenting their companies on the stage in the national "Women in Tech" events are more likely to adhere to more equal practices.

Engage women talent in outreach programmes and networks

Many existing programmes pair female experts with executive mentors or peer networks. This type of activities promote women's technical, collaborative and leadership skills. Thus, it is advisable to encourage female ICT specialists to take part in outreach activities such as participating at women in tech events, hosting company tours for colleges, and speaking in schools. Provide ways for accelerated career development for high-potential women by participation in leadership development programmes as well as becoming mentors for younger women.

Set up proactive talent outreach and internship programmes

Work with schools and universities to identify female talent early. For instance, ICT firms in Estonia and Poland are found to sponsor reskilling/internship programmes and coding competitions, creating a pipeline of applicants. Human Resources can track promising students and invite them to internships.

Implement family-friendly policies and reskilling programmes

Flexible work arrangements and parental leave for all genders help all employees to maintain healthy work-life balance but are especially important to women. The recommendation is that company leadership mandate such policies rather than leave them voluntary. Ideally, there could be targeted return-to-work pathways for women re-entering ICT after career breaks. For example, in Ireland, reskilling programmes such as Women ReBoot and IBEC's Digital Skills for Women "illustrate the value of combining flexible learning formats with industry-aligned curricula and employer engagement".



Recommendations for NGOs and Researchers

Challenges that many NGOs face: While many Non-Governmental Organisation projects increase visibility and initial engagement for their cause, their impact is often limited by short duration, weak coordination, and lack of continuity into education and employment pathways. Several countries describe barriers in a similar manner. For example, Croatia’s report notes that responsibility for action often shifts to “short-term projects, motivated individuals, or isolated institutional initiatives”, while inconsistent coordination between ministries, education systems, and industry weakens long-term policy impact. In Germany, even high-profile events like Girls’ Day are seen as “one-off” efforts without follow-up support. There is only that much what a singular short-term project can do to address persistent structural and cultural gender-based segregation.



Recommendations for NGOs and researchers

Volunteering is a double-edged sword: Many NGOs rely on volunteering and goodwill activities. According to our research, this is a double-edged sword. On one hand, “bottom-up initiatives are the true drivers of change” (Croatia) in gender equality programmes, and almost all national reports regard “grassroot action” as a strong enabler, at least when contrasted to top-down policy reform or governmental programmes. On the other hand, volunteering is widely linked with limited resources. Belgium’s analysis of coding clubs finds free volunteer-driven models like CoderDojo have “limited long-term impact”. Similarly, WITS Ireland is “a national, volunteer-led organisation” with programmes that tend to concentrate in urban centres and depend on locally available volunteer capacity. Sweden makes the same point for Pink Programming, which “relies strongly on volunteers and corporate partners (...) [facing] a constant pedagogical challenge.” The volunteer-led groups struggle to sustain and scale their work.

There is a difference between volunteer-led programmes and volunteer-supported programmes. Volunteer-led “amateur” programmes are not seen stable and resourceful enough to support activities long-term. At the same time, organising a truly impactful nation-wide programme with geographical reach may be practically impossible without some form of good will or volunteering from local communities. As it is rare to find an NGO with enough resources to organise such a wide programming and pay for everyone involved, many reports see governmental or company funding and collaboration as a necessity.

Act as the balancing force between the government and companies

A typical NGO actor initiating ICT/STEM programmes is some sort of umbrella association representing regional or national ICT industry. The third sector plays a balancing role between government and the private sector in advancing diversity, equity, and inclusion. While non-discrimination legislation establishes an essential baseline, public authorities lack the flexibility and specificity of NGO-led initiatives. At the same time, private companies operate according to their commercial interests and are therefore not able to provide objectivity in research and advocacy.

Foster "Women in ICT" networks and organise conferences

Our research indicates that among the strongest enablers supporting women to find their place in ICT are professional networks. Most of the countries have national or international "Women in ICT" programme or event which form a crucial backbone for building community and visibility. Ideally, geographical reach of this type of activities could be ensured by NGOs together with governmental agencies.

Run evidence-based programmes and conduct national ICT barometers

NGOs can conduct new research or at least leverage existing research to shape science-based interventions. For example, if such a tool is missing from a country, researchers at NGOs could conduct "Women in Tech Barometer". Measured annually or biennially, this barometer collects statistics on women's representation at various levels, salary gaps, promotion rates, as well as qualitative input on workplace climate etc.



Maintain databases

Umbrella industry associations can create central repository of materials to prevent reinventing the wheel for each new initiative. The centralised online databank could include for instance, knowhow about existing initiatives and their results and approachable research data. Sharing evaluation results publicly and maintaining good-quality research library online helps to disseminate awareness and the best practices.

Don't forget internal communication within partner companies

Many NGOs have companies as their sponsors, partners or clients. Sometimes DEI project's dissemination success is only measured by the reach of its external communication, number of blog posts, impressions of social media etc. This is inadequate view. Sharing of knowledge about DEI project within partner company employees can be very transformational when it affects the leadership practices and company culture. Thus, when pushing for transformations within companies, organisational up-skilling and internal communication should be fully utilized and measured as well as external communication.



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Women in Higher Education

Best Practices



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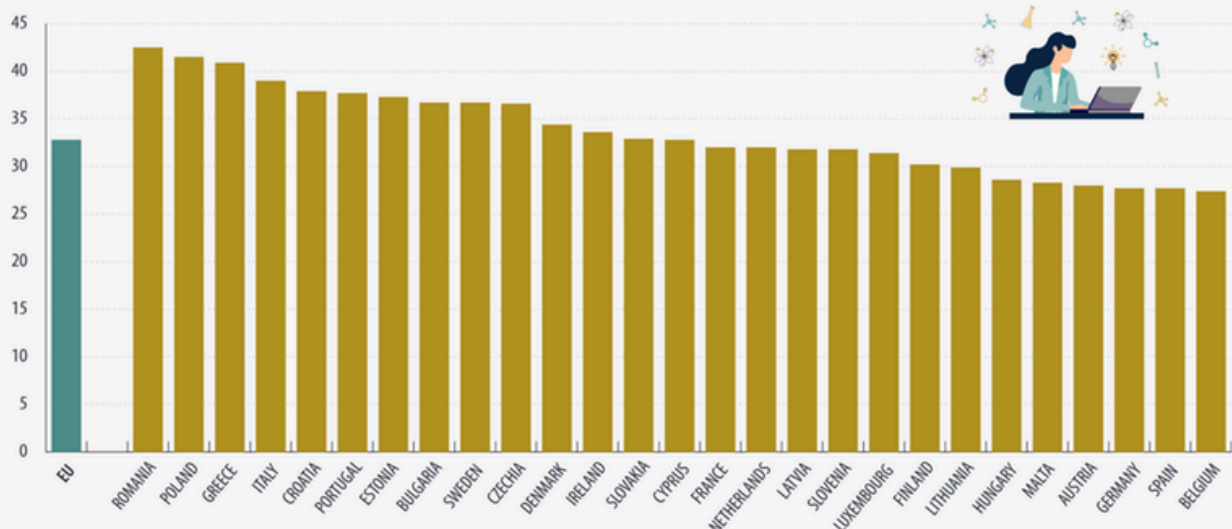


Women share from tertiary education

There is a particular demand in the ICT field for highly educated professionals, as approximately two-thirds of ICT specialists in the EU have completed tertiary education (Eurostat, 2024). Reducing segregation in the ICT sector therefore requires vertical initiatives across the entire education system, extending from the primary school all the way to higher education. From the researched countries, the best balance is found from Poland with more than 40% of STEM-graduates being women. Italy, Croatia, Estonia, and Sweden are few percentage points below that. The more segregated countries, on the other hand, are Belgium and Germany with only around 28% share of women STEM graduates. The increasing share of women graduating from STEM fields could be expected to correlate with better gender balance in STEM-related work places in the near future.

Women graduating in STEM education fields, 2021

(% of all tertiary education graduates in STEM education fields)



Source: Eurostat (2024)



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What does not work

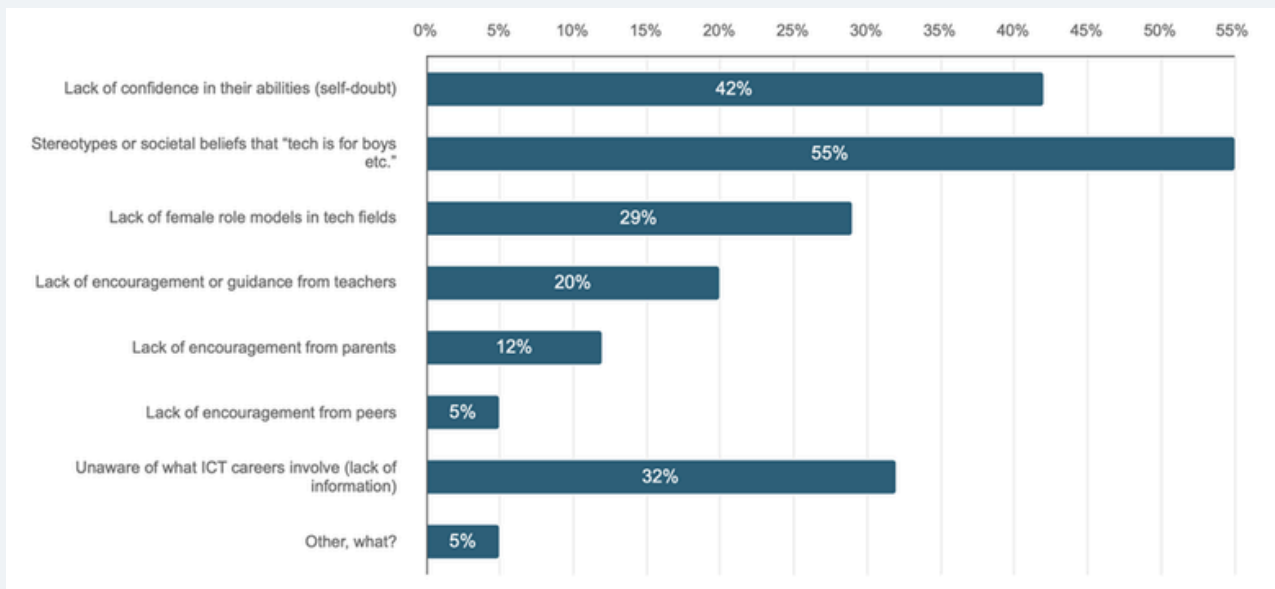
Gender Performance–Confidence Paradox: The 315 HER TECH survey respondents identify societal stereotypes and self-doubt as the main causes preventing girls from imagining themselves in ICT studies or careers. In the research literature it is called as Gender Performance–Confidence Paradox (GPCP): despite adolescent girls performing evenly or better than boys in STEM subjects, their self-confidence in the subject remains lower (Stoet & Geary, 2018; Ellis et al, 2015; Whitcomb et al, 2020; University of Eastern Finland, 2024). This lack of confidence contributes on discouraging girls from pursuing STEM and ICT education. Boys tend to assume more active and leadership-oriented roles during group-based science activities, while girls are more likely to remain less involved (ibid). The Gender Performance–Confidence Paradox intensifies as girls transition into lower secondary education (grades 7–9). Polish experts points out that insufficient teacher training means gender stereotypes go unchecked in classrooms, and many girls begin to self-select out of computing by ages 11–13, deterred by fear of failure.



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But the Gender Performance–Confidence Paradox or impostor syndrome can follow women to adult lives as well. Even at university level, Italy report describes impostor syndrome being “widespread... particularly in male-dominated degree programmes,” reinforcing girls’ doubts about their abilities.

Ireland’s report highlights a persistent “confidence gap” for women re-entering the tech workforce (for example after career breaks), which can hinder them from seizing new ICT opportunities.



Source: HER TECH Survey

Gender biases at universities: Usually unintentionally, university lecturers and existing student culture can perpetuate gender bias in formal higher level ICT education. The Polish report observes that “some lecturers unintentionally reinforce stereotypes” and notes that women are too seldom “represented as lecturers, researchers and leaders” in computing faculties. The lack of awareness about DEI practices and pedagogy in teacher training means that lectures and materials remain male-oriented, making ICT feel alien to many female students. Similarly, the Italian and Finnish analysis highlights a campus culture where male students dominate labs, classes, and student associations, reinforcing the perception that engineering and tech are “not for women” and strengthening the “impostor syndrome”. When faculty and pedagogical practices are not supporting the minority of women, higher education loses potential female talent.



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Recommendations for Higher Education Organisers

Universities and technical colleges are behind most programmes in the target cluster of higher education. These initiatives are frequently organised in collaboration with tech industry associations or single company. Common formats are summer schools or “boot camps” in STEM fields, mentoring schemes, internships organised with partner companies, or other project-based study modules highlighting real-world applications. These interventions typically target female undergraduates through women-in-STEM student societies or targeted scholarship calls.



Establish and support women networks and peer clubs

Again, recurring notion is that a supportive peer environment helps women thrive. Several reports name women-only study groups, clubs and online communities as impactful practice. As an example from Sweden, Women in Tech Sweden and WiDS networks provide supportive female STEM student “micro-cultures”. An Italian expert observes that mentoring and peer networks in higher education can significantly boost a woman’s career progress. Canada and Estonia reports also emphasise alumni networks and tech women’s associations that support women after graduation.

Showcase female role models

Seeing women professors, alumnae, and researchers is helpful for students. Inviting women speakers and adjunct lecturers can provide role model visibility even if most of the full-time faculty are male. Mentorship programmes linking female students to women in industry or academia can guide students through challenges such as coping on male-majority classes and finding internships.

Inclusive and encouraging pedagogy

Revise courses to emphasise collaborative, project-based learning environments. Prioritise cooperation over competition to support students who benefit from communal learning approaches. Many national reports also call for pedagogical practices that explicitly build confidence, addressing the Gender Performance–Confidence Paradox. Key methods include continuous encouragement and constructive feedback from educators. Creating space for trial-and-error learning can help reduce perfectionism and frame failure as part of the learning process. In addition, teaching formats should actively engage all students, rather than allowing a small group, often male students, to dominate classroom discussions. Offer DEI training for educators and professors to strengthen inclusivity.

Interdisciplinary curriculum

Gender-related pedagogies enabling more women to thrive include collaborative work, projects that address social challenges, and practical hands-on methods. Teaching ICT with meaningful, purposeful and practical goals usually resonates with young women. That is also why interdisciplinary study degrees and courses that combine ICT with domains such as health, sustainability, social sciences, arts, or well-being can make ICT studies more relevant and attractive for women. To support hands-on tinkering and creativity, provide makerspaces, hackathons and “coding play” sessions.

Check your branding and communication materials

Review your branding and communication materials such as websites, videos, brochures, and visual imagery to ensure that external messaging reflects diverse representations of people and their role in the context of ICT.

Campus visits and collaboration with other stakeholders

Universities can make ICT field more inviting for the next generation of young women by organising open days and campus workshops targeting secondary level girls. Many existing programmes have witnessed clear positive effects with on-site visits.



Recommendations for ICT companies and NGOs

The extracurricular ICT programmes targeted for young women are usually organised by tech industry associations or companies. Their goal is usually to strengthen belonging and clarify career relevance. Companies are usually motivated by their need to find new talent and make recruits.

Several reports call for more rigorous data-driven evaluation of impactfulness and evidence-based programme design. Experts encourage using science-based methods, longitudinal studies, surveys and performance metrics, so that positive effects of programmes are documented and can be scaled up.

Provide mentorship and role-models

As stated before, mentorship programmes and role models are widely regarded as key factors for supporting women who are starting their ICT career. Examples include Poland's IT for SHE mentoring platform and Sweden's Datatjej network, which organise peer-to-peer study groups and women-only lessons. Reports from Croatia and Ireland especially praise schemes where female alumni mentor undergraduate women. Indeed, in Germany, programmes like BayFiD and Informatica Feminale pair students with senior women engineers. Across the board, female students in tech are encouraged with female success stories – whether on campus event or through media.

Support tinkering and trial-and-error

Many women students report lower confidence in practical skills despite equal academic performance. Thus, supporting tinkering and "trial and error" culture is beneficial. Ideally, this should happen in a low-pressure settings such as summer workshops, non-competitive hackathons, or weekend coding clubs. Programmes like international Rails Girls coding club allow women to build and showcase coding skills in a supportive setting.

Create internships programmes and collaborative projects with universities

Practical work experience is repeatedly noted as a strong motivator for students. Partnering with universities might be especially fruitful when designing new interventions. One type of collaboration is a project course organised together with an ICT company. For example, HK Unicorn Squad in Estonia has developed game-based learning activities for kids together with Tallinn technical university. Also upskilling programmes that lead to internship positions are seen especially effective.



Organise reskilling studies that support collaborative pedagogy

Many reports highlight the importance of reskilling and supplementary courses in addition to traditional university degree programmes. Some interviewed experts mention academic curricula lagging behind industry needs, which highlights the need for short applied courses and certificate programmes to fill the gap- The Canadian and Irish studies stress that such courses should be practical and industry-aligned. These upskilling initiatives often target graduates from non-technical backgrounds or women returning after breaks. As an example from Finland, company-funded Hive school offers 1.5-year full-time programme to produce software developers. Hive uses pedagogical model and admission practices that emphasize collaboration which many female students find more appealing



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Adolescent Girls

Best Practices

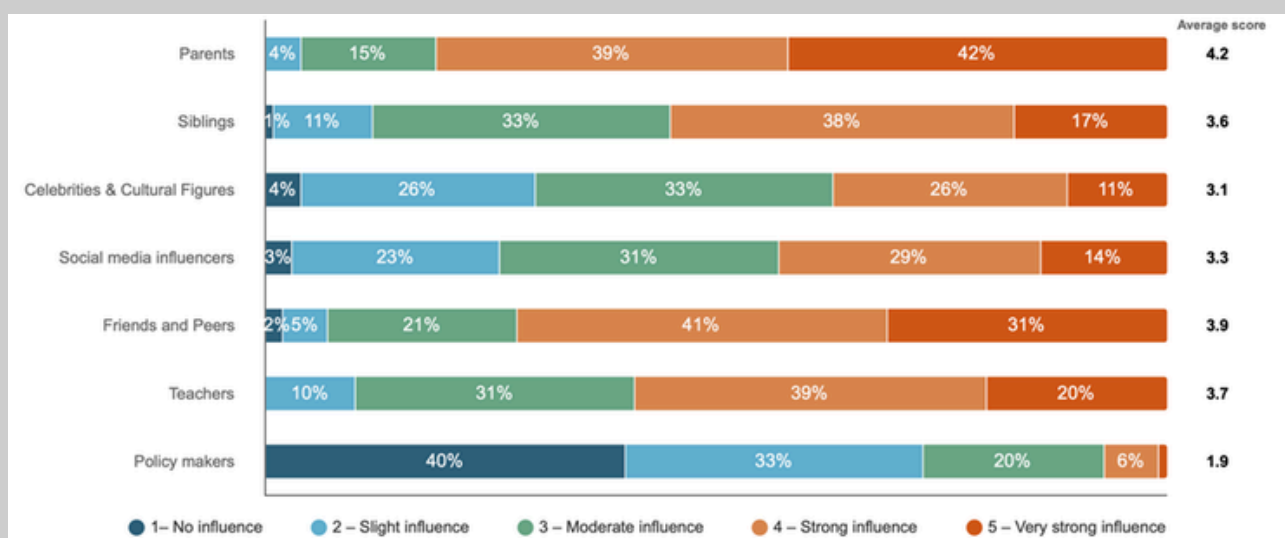


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Influencing girls aged 7-12

The survey reveals the most critical actors shaping the young girls' interest in ICT/STEM: Over 83% of respondents rated parents' influence as “strong” or “very strong” (average score 4.2/5.0), making them the top influencers in 7–12-year-olds career considerations. Peer groups (3.9) Teachers (3.7) are seen significantly influencing young girls' as well. The results show that girls are mostly swayed by immediate relationships, and that the potentially negative and positive contributors to girls ICT/STEM aspirations come from the closest adults around them. Based on previous research, several national reports highlight the age window between 7 and 12 as highly formative for children's later career aspirations, and call for targeted actions for this age group as the biases and stereotypes have not yet been solidified.



Source: HER TECH Survey

Differences between National Reports is not in whether culture matters but in which circumstances it is seen to especially influence women. In some reports, culture is framed through workplace norms and organisational practices, while in others it is framed through early education and family role expectations.



Encouragingly, most reports see hopeful trends, especially among younger people. Poland notes that “younger generations encounter a different landscape”, more attuned with gender equality. In some reports, evolving gender training for teachers is seen to bring more awareness to the gender balance issues in the future.

Many initiatives specifically target Gen Z girls with social media role models and interactive experiences. However, national reports also caution that even young people are internalising stereotypes if not directly addressed.



What does not work

Internalised stereotypes: As said, societal biases and internalised stereotypes are regarded widely root causes preventing girls from imagining themselves in ICT careers. The cultural gendered media representations are especially affecting growing girls. Across nations, lack of visible role models in media and weak messaging around and about initiatives are seen as notable barrier factors. Commonly communication and media influence is linked with fighting culturally ingrained stereotypical gendered imagery. Persistent stereotypes and limited female role models are obstacles, as low visibility of women makes ICT seem unrealistic for adolescent girls. As Polish report says: “Lack of visibility reduces the likelihood girls will consider [ICT] as realistic career options.”

Gendered pedagogy and materials: Some national reports point out that textbooks, examples and school kits still use gendered imagery or language. A Belgian expert notes that materials often portray boys as coders or scientists, and similarly, Finland report mentions that early lessons sometimes reinforce traditional gender roles for example, defaulting to male characters in programming problems. When curriculum and media present ICT as a “boys’ club,” many girls fail to identify with it.



Perceived lack of purpose: Among key barrier is the perception among young girls that technology fields lack meaningful purpose. Several countries report girls are more motivated by subjects linked to helping others or creativity, and struggle to see how tech fits these goals and their interests. Girls want to make a difference, so STEM topics not tied to real-world impact feel unappealing. This conflict of values means many girls disengage once abstract coding or science is introduced.



Recommendations for Parents

From all the actors influencing girls, the role of family and peers is seen as the most influential. Parents' perceptions of what is considered "for boys" or "for girls" are often transmitted from one generation to the next. Some parents, often unconsciously, withdraw girls from STEM activities that challenge traditional norms. Many gender stereotypes and disparities stem from repetitive habits and entrenched mental patterns. These can be challenged, too. Raising awareness among parents would be especially beneficial in fighting outdated views about women's and men's occupations. Research indicates that supportive parents and visible role models significantly increase the likelihood that girls will continue with STEM studies (Carlana & Corno, 2024; Trotman, 2017; Hencke & Eck, 2023). Parents, as well as adults working closely with children, can play a decisive role in shaping aspirations.



Check your biases and challenge stereotypes

When parents are aware of gender stereotypes and avoid reinforcing them, it can broaden their children's academic and career choices. The unconscious biases are transmitted through things like what kinds of play or toys do we guide them towards and what do we ask from children. By reflecting on and correcting biases, parents can nurture their children's STEM-aspirations.

Introduce your kids to computers through play and out-of-school activities

Provide positive exposure to computing concepts in fun way. Examples of playful early introductions to computers are maker kit toys, board games, and books. Encourage and possibly transport girls to local coding clubs or STEM camps. Positive experiences shape children's later aspirations.

Provide ongoing support and role models for teenagers

Keep nurturing child's tech interests as she grows. Girls start to lose confidence in the teenage years due to stereotypes that STEM or ICT topics "are not for girls". Parents can counter this by encouraging her to join computer clubs, robotics workshops or girls-in-tech programmes provided by school or third sector organisations. At home, story-driven PC games or physically activating VR experiences may provide meaningful and fun computer experiences for teenage girls.



Recommendations for Primary and Secondary Level Educators

Across countries, early exposure to tech and coding is reported as a key predictor of later field choice, and the transition from general schooling to specific tracks is repeatedly described as a critical filtering point. Croatia and Germany both link early socialisation and educational choices to later ICT participation. It makes a difference how “ICT as a field” is framed to children and families. Belgium’s overview discusses STEM participation trends and VET-level patterns, while still highlighting low ICT specialist representation in the labour market. Estonia and Finland highlight the need for government-backed programmes that create bridges between primary school curriculum to secondary level ICT teaching.

Replace stereotype-enforcing teaching materials

All the stakeholders should make sure the gendered disparities are removed from all the teaching material and replaced with diverse character presentations. However, to target adolescent girls with "girly" educational material is not seen helpful either. Rather, it is seen to potentially strengthening the gendered stereotypes rather than freeing individuals from them. Thus, it is more advisable to produce educational material with diverse gender-representations. Use storylines and examples that include female characters in tech roles.

Maintain inclusive classroom and combat gendered stereotypes

Foster inclusive classroom practices and combat stereotypes head-on by discussing famous women in STEM history during lessons. Dismantle "boys dominate computer lab" scene with pair programming and team projects.

Integrate computing into both official curriculum and extra-curriculum activities

The introduction of coding as a part of primary school curriculum is recommended across nations. For young girls, engaging factors are creativity, self-expression, problem-based learning, storytelling, and playfulness. In order to provide extra-curriculum activities, collaboration with NGOs and ICTs are recommended. For older students, when teaching ICT-related subjects, it is advisable to include information about diverse careers of ICT such as game designer, AI engineer, or app developer. Invite female professionals to speak about their job or organise field trips to tech companies. Given limited resources, collaboration is an enabler.



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Take part in gender-sensitive pedagogy and inclusivity training programmes

Some of the interviewed teachers admit that without training, they might unconsciously steer girls away from STEM. In summary, pedagogy that is interactive, relevant, and confidence-building is usually succeeding in engaging girls with STEM. All national reports underline the benefit of collaborative and social learning: girls tend to enjoy learning in groups and seeing how things apply to real life. Girls tend to like problem-based projects: tackling issues like climate change through tech, or using coding to build community apps, making ICT a meaningful tool. Finally, several experts mention the importance of explicitly address the Gender Performance–Confidence Paradox by praising effort and normalizing mistakes. For confidence-building, the use of girl-only peer group settings is seen helpful, especially for teenager groups. Several countries fund girls-only coding camps or mentoring circles so girls feel safe to experiment. As one expert put it, creating “girls-only safe spaces” allows participants to participate fully without stereotype threat.





Recommendations for NGOs and ICT companies creating programmes for girls

Typical activities organised by NGOs and companies may include creative after-school coding clubs, competitions, hackathons, and summer camps. Family and community are involved via outreach: for example, some initiatives run girls-only tech workshops or involve parents in encouragement sessions. Programmes sometimes also leverage media and social campaigns to raise awareness. Teachers and parents play a central role as role-models and contact persons also in terms of extracurricular programmes.



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Offer advocacy and consultancy for educators

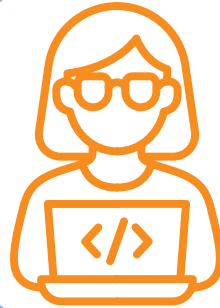
Many NGOs have specialists who could advise schools and companies on gender-sensitive educational practices. Researchers engaged directly with schools to help teachers adopt better methods. NGOs and pedagogy specialists could also develop STEM/ICT teaching materials that feature female role models such as women scientists.

Organise STEM clubs and competitions

Sponsor extracurricular activities that appeal to girls' interests such as robotic or science weekend clubs or summer camps. Key success factors are female instructors, collaborative projects, and parental involvement. Design activities that align with girls' interests: e.g. apps for social good, fashion-tech design, environmental monitoring gadgets. When girls see peers receiving recognition or winning awards in mixed-gender teams, it builds their own aspiration. Ensure girls (as much as boys) have leadership roles in such clubs.

Scholarships for secondary students

Offer small scholarships or prizes for girls excelling in ICT subjects. Several countries have STEM scholarships for high school girls that include summer programmes at universities, which the reports say kept many girls engaged through the transition to higher education.



"Big sisters" as role models and mentors

Pair girls with women employees as mentors. Having a relatable and admirable ICT woman or STEM "big sister" can make a huge difference for a teenage girl. Especially programmes where female ICT specialists or scientists meet and coach class of students over longer periods or over a summer course can be effective for their later ICT aspirations.

Design media campaigns in collaboration with other stakeholders

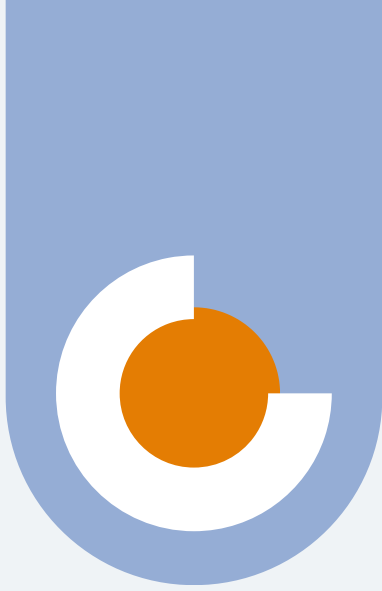
Finally, there are no fast methods to dismantle cultural stereotypes, but the cross-national research indicates that continuous attention should be given to the type of gendered representations circulating in culture and media. Here, the influential actors include pop idols, actors and fictional characters in films and games, models in advertisements, as well as the top politicians and business leaders seen in media. From these standpoints, it would be beneficial for companies and NGOs to create media campaigns and social media presence that connotes ICT-field positively with female figures and things girls care about. Through widening gender-, ICT- and STEM-related representations our growing women encounter, it is possible to make room for more diverse and expansive takes on "what a girl or a woman can do".



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Conclusion





Conclusion

Increasing girls' and women's participation in ICT requires moving beyond fragmented, short-term initiatives towards coordinated and sustained action at all levels of society. The findings of this compendium clearly indicate a set of priorities that should guide future efforts.

1

First, engagement must start early and continue throughout education. Interventions limited to a single stage are insufficient. Girls need repeated, positive exposure to ICT from primary school through higher education, supported by age-appropriate activities, inclusive teaching practices, and opportunities to build confidence over time.

2

Second, initiatives must be designed for scalability and accessibility. Programmes concentrated in urban centres or reliant on short-term funding fail to reach those who could benefit most. Ensuring broader geographical coverage, stable funding, and long-term continuity is essential for meaningful impact.

3

Third, role models, mentoring, and community-building should be core components, not optional additions. Visible and relatable examples of women in ICT help challenge stereotypes, while networks and mentoring structures provide the social support necessary for persistence in the field.

Conclusion

4

Fourth, education systems and workplaces must actively address structural and cultural barriers. This includes integrating gender-sensitive pedagogy, training educators and managers to recognise and counter bias, and creating inclusive environments where women can develop and progress without additional obstacles.

5

Fifth, stronger collaboration between policymakers, education providers, industry, and NGOs is critical. No single actor can address the issue alone. Effective initiatives combine policy support, educational innovation, industry engagement, and grassroots action into a coherent ecosystem.

6

Finally, all actions should be evidence-based and systematically monitored. Setting clear targets, measuring outcomes, and learning from both successes and failures are necessary steps to move from isolated good practices to sustainable, system-level change

Together, these priorities indicate a shift from isolated interventions to a more strategic, long-term approach. Only through such coordinated efforts can the ICT sector become more inclusive and better reflect the diversity of the society it serves.



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XAMK - South-Eastern Finland University of Applied Sciences

March, 2026

Suggested citation:

Her Tech, Her Terms. Engagement as the key (2026). *What does and does not work: Compendium of the best practices in different European countries.* HER TECH Consortium.



**Co-funded by
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