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Technological and security issues: 2025, a pivotal year for women

The role of women in major economic and social transformations is often underestimated, yet it is fundamental. From the work of female textile workers during the Industrial Revolution of the 19th century to their involvement in hitherto male-dominated sectors such as technology, digital technology and defence, their participation has been a key driver of progress and innovation. Yet many inequalities remain, and the glass ceiling seems very hard to break for the female half of humanity in so many areas of private and professional life.

At the dawn of the fourth industrial revolution, marked by the rise of artificial intelligence, robotics and digital technologies, as well as the security challenges facing the Old Continent, the question of gender equality is being raised with renewed vigour. While significant progress has been made, particularly in Europe where the legislative framework to promote parity between men and women has been strengthened, disparities persist in terms of both representation and opportunity.

I - EUROPE: A CONTINENT OF WOMEN, DESPITE SOME STAGNATION

In Europe, 2024 was marked by a major renewal of legislative and executive institutions at European level and in many Member States. This has provided an opportunity to increase the number of women in these institutions. In the wake of the June 2024 election, more than one in three MEPs i.e. [38.47% were women](#) – and the European Union can pride itself on being a world example in terms of parity in the political representation of women. However, for the first

time since the European Parliament was elected by direct universal suffrage in 1979, the number of women elected did not increase: it has stagnated and even decreased somewhat. However, this average remains slightly higher than that of the national parliaments of the twenty-seven Member States, at [31.8% of women in single or lower chambers](#).

A similar pattern can be observed in the composition of the European executive. Despite the firm resolve of the President of the European Commission, Ursula von der Leyen, who had made parity in her college of commissioners the keynote of her second term in office, the European executive comprises eleven women and sixteen men, one less than in the previous term. The Commission, which had required Member States which wanted to replace their Commissioner to put forward two names, one male and one female, failed to convince the Heads of State and Government to choose more women.

Despite this frustrating stagnation on the road to parity, the European Union remains a model in this area, ahead of the US Congress, (28.2% women), or the Canadian House of Commons, (30.9% women), but still far behind Rwanda, which occupies first place in the world ranking of female political representation, with 63.8% women in the lower house of parliament.

Women also occupy prominent positions elsewhere in the European political landscape. Of the seven European institutions, three are headed by women: the European Commission, headed by Germany's Ursula von der Leyen for a second term, and the European Parliament, headed by Malta's

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Roberta Metsola since 2022; the European Central Bank (ECB) is headed by France's Christine Lagarde. Europe therefore leads the world in terms of women's political representation.

Although it is constantly being pushed back, the 'glass ceiling' persists in many areas. Like political representation, the world of business is still marked by sexist stereotypes that die hard, as shown by the percentage of women in positions of responsibility and the number of women on the boards of major companies. In 2024, in companies listed on stock exchanges worldwide, [women accounted for 36% of board members. This figure dropped to just 12% for general management and chairmanship positions.](#) In the European Union, the number of women directors lay at [33.8% in 2023](#), slightly below the global average. This figure is due to major disparities between Member States: 46.1% of women directors in France in 2023, compared with just 8.2% in Cyprus.

According to a [Eurobarometer survey on gender stereotypes, in 2024](#), 23% of respondents felt that women lacked the authority to be taken seriously, and a quarter of respondents felt that men are better leaders than women. This figure rises to 61% in Slovakia and 55% in Poland. As a sign that attitudes are changing, 73% of Europeans believe that joint management bodies are more effective, 55% believe that temporary measures are needed to remedy the under-representation of women in politics, and most respondents agree that greater gender equality in politics and leadership brings about better results. Women still suffer from sexist prejudices that restrict their access to positions of responsibility.

Despite this long and painstaking progress, Europe is trying to establish itself as the continent of women entrepreneurs, based on a strategy that aims to overcome the major differences between Member States, which the good results achieved by the European Union tend to obscure. In 2022, and inspired by the French model - MEPs approved the directive "[Women on Boards](#)" to achieve parity in management positions in listed European companies. By June 2026, the companies concerned, which are named in the directive, must increase the share of women on their boards to

40% regarding non-executive directors and 33% as far as directors are concerned, well above the current world average of 12.2%. Moreover, the [European directive of 10 May 2023](#) which aims to strengthen the application of the principle of achieve gender equality in the world of work, by tackling the gender pay gap. In the European Union, on average women are paid 13% less than their male counterparts. Over the course of a year, this represents around a month and a half less pay for equal work. This recent legislation is evidence of a growing awareness at European level of the barriers that still stand in the way of women's careers in Europe, but also of the European executive's genuine determination to make the Old Continent one of women entrepreneurs.

II - WOMEN, THE NEGLECTED FIGURES OF THE 4TH INDUSTRIAL REVOLUTION?

In the digital age, artificial intelligence (AI) occupies a central place in the functioning of our societies and influences access to various sectors such as health, employment and education. However, the development of AI raises specific challenges in terms of gender equality, particularly because of the risks of reproducing and amplifying sexist stereotypes on a large scale, perpetuating gender-based discrimination, which is already widespread in our societies.

The [under-representation of women](#) in ICT (information and communication technology) and STEM (science, technology, engineering and mathematics) subjects, which are essential for AI-related jobs, is one of the major causes of gender inequality in this field. Although women account for more than half of all graduates in the European Union, only a third of STEM graduates and a fifth of ICT specialists were women in 2022. Yet orientation and access to STEM disciplines, from a very early age, are determining factors in the persistence of gender stereotypes and inequalities in this sector.

This under-representation of women in academic careers is reflected in the very limited presence of women in the field of AI. According to [the report on the gender gap 2023 of the World Economic Forum](#), only 22% of people working in AI are women. In addition to this, even though more and more women are graduating and

working in technology, they often come up against an [enduring glass ceiling](#), which means that most women are confined to more junior positions, making it difficult for them to gain access to management positions. In fact, women occupy less than 14% of senior management positions in companies specialising in AI. Finally, when women do succeed in pursuing a career in this field, they face greater challenges compared to men.

The lack of representation of women in the field of AI not only limits their professional opportunities: it raises the question of their marginalisation from a rapidly expanding economic sector and also influences the design and development of these digital technologies. Indeed, [a study](#) revealed that 44% of one hundred and thirty-three artificial intelligence systems analysed showed gender bias. These result from two major problems in the way these technologies are designed and developed. Firstly, the data used to train artificial intelligence algorithms comes from the Internet and is largely imbued with gender stereotypes. They serve as a learning base for AI systems by drawing on information available on the internet, which itself reflects the existing and persistent stereotypes and prejudices in our society. If the training data is biased, AI systems risk reproducing and amplifying them, perpetuating flagrant inequalities. In addition, the under-representation of women in artificial intelligence design and supervision teams contributes to the production of gender bias. In addition to potentially sexist and discriminatory data, the lack of diversity in the design and supervision teams limits the detection and correction of these biases, as women's practices and points of view are not sufficiently taken into account. Discriminatory algorithmic biases occur when seemingly objective artificial intelligences incorporate the prejudices and stereotypes of their developers, or the data used to train them.

In 2024 UNESCO published a [report revealing sexist, homophobic and racial biases in artificial intelligence language models](#) (LLM) such as GPT-3.5 (OpenAI) and Llama 2 (Meta). These artificial intelligence models tend to produce gender stereotypes, for example describing women as domestic workers up to four times more often than men. In addition, voice assistants that use female voices by default reinforce stereotypes that women are

suitable to service roles. The Council of Europe shows that in critical areas such as healthcare, [AI may focus more on male symptoms](#), leading to women being misdiagnosed or inadequately treated. Moreover, [facial recognition systems](#) used by the authorities have greater difficulty in identifying women, particularly those of colour, which can have serious consequences for public safety. The United Nations also highlights [certain types of discrimination regarding women due to the increased use of AI](#) in recruitment processes, banking and judicial decisions. These are all examples of how artificial intelligence can repeat and even amplify the sexist stereotypes and other gender inequalities that are ingrained in our societies.

Artificial intelligence also exacerbates the risks of gender violence facilitated by technology, particularly with the emergence of deepfakes. These videos result from the manipulation of media by AI systems and alter reality by superimposing images of faces or bodies, creating videos that are falsified but look authentic. [Most deepfakes](#) available online are of a pornographic nature and almost exclusively target women. The insufficiently controlled emergence of this explicit, non-consensual content has extremely serious consequences for the mental and physical safety of women, affecting their personal and professional lives and compromising their integrity.

The development of artificial intelligence therefore presents numerous risks for gender equality and exposes women to specific vulnerabilities. Faced with the perpetuation of stereotypes and discrimination based on gender by these technologies, diversity at all levels (education, employment, decision-making, etc.) is an absolute necessity to limit the effects of algorithmic biases. To ensure that the benefits of AI are shared by all, the challenge is to institutionalise [inclusive frameworks of governance](#). To achieve this, cooperation between governments, technology companies and civil society is essential to eliminate the biases inherent in these technologies and develop AI systems that are more respectful of gender equality.

The European Union has taken steps in this direction. In 2021, UNESCO, with the participation and financial

support of the European Commission, dispatched [recommendations regarding AI ethics](#), which was adopted unanimously by the 193 Member States. In particular, the organisation plans to provide funding for gender equality, greater diversity in the design of AI and control of algorithmic biases.

Eliminating gender discrimination and sexist bias means increasing the presence of women in the artificial intelligence sector, by improving access for girls and women to education and careers in STEM and ICT fields, and by promoting their leadership in these sectors. With this in mind, the European Commission, which recognises the major importance of greater participation by women for innovation, economic growth and social inclusion, has set up various initiatives. The action programme "[Digital Compass 2030](#)", adopted in 2021, is an example of this. It aims to significantly increase the number of women in the digital professions, reduce pay inequalities and promote equal access to management positions in the ICT sector. The creation of [Women in Digital \(WiD\)](#) by the Commission in 2019, is encouraging women and girls to take up digital careers.

To ensure that women are at the heart of the digital transition, the European Commission is supporting initiatives designed to strengthen the digital skills of women and girls and to encourage female entrepreneurship in the ICT sector, through its programmes [DIGITAL Europe](#) and [Horizon Europe](#). The latter includes gender equality as a sine qua non of research and innovation funding, by imposing equality plans on beneficiaries. This programme supports specific projects such as "[Women TechEU](#)", which is investing €10 million in 130 high-tech companies run by women. DIGITAL Europe finances [educational and training programmes](#), geared towards women and girls, to enhance their skills in the fields of AI and IT.

The European Union's aim is to become [an international leader](#) in the field of artificial intelligence. Indeed, AI is now emerging as a key driver of innovation and economic growth, so much so that it is often referred to as the '4th industrial revolution'. The under-representation of women in this fast-growing and influential sector represents a considerable loss of talent and limits the full potential of the skills available.

Promoting diversity in the field of artificial intelligence therefore is now a major challenge, not only for the promotion of women but also for the European economy and competitiveness. In addition, and independently of its potential to boost the economy, well-designed and regulated AI can be a real lever for equality, offering [further opportunities](#) to reduce discrimination against women and become a vector that promotes their integration. By developing a diversified database and better representation of women in the new technologies, artificial intelligence can help rethink social models by promoting education, reducing discriminatory biases and facilitating access to professional opportunities. Through these initiatives, the European Union is taking these issues on board and providing an initial response, although it will need to continue its efforts in the face of persistent inequalities.

III - WOMEN AND DEFENCE

Long seen as an exclusively male domain, the defence sector is gradually opening up to women, who are increasingly numerous in professional armies and better represented in defence-related bodies and agencies.

Women and the Army

The gradual opening up of professional armies to women bears witness to a significant change in attitudes. Although parity in the armed forces seems illusory in the near future, European armies have no reason to be ashamed of the number of women in their ranks.

The feminisation of Europe's armies is a trend that has become established over the last few decades, driven by a commitment to modernisation and inclusion. In the vast majority of European countries, the number of women in the armed forces has risen steadily. Sweden is leading the way with [24% of women in its professional army in 2024](#). In France, women represented [17% of military staff](#) in the same year, a figure that has been rising steadily since 2000. This rate has even risen to [25% in the Air Force and space](#), making it the most feminised army corps in the country. Other countries also have a significant female presence in their armies,

such as Hungary, where women make up around 20% of the personnel, and Spain and Portugal, with rates of 12% to 13%. Germany, having opened up all army posts to women in [2001](#), has seen an increase in the number of professional women in the military. In 2024, more than [13% of the Bundeswehr](#) were women. In comparison, the American army, the largest in the world, comprised [17.7% female personnel in 2023](#).

It is the introduction of mixed military service that seems to be encouraging the feminisation of the armed forces. [Sweden set an example in 2017](#) by introducing mixed conscription - initially voluntary - encouraging men and women to serve according to the needs of the army. Norway, although not a member of the European Union, adopted a similar policy in 2015, [with semi-compulsory military service for both men and women](#). These two countries rank among the highest in the world in terms of the number of women in their armed forces. These rather encouraging figures should not blind us to the disparities that remain between European countries. Italy, for example, has well under 10% women in its army ([7.5% in 2024](#)).

As well as improving the numbers of women in Europe's armed forces, women are increasingly present in all branches of the military, including combat units. Long confined to support roles in logistics, intelligence or the medical service, they can now aspire to the same positions as their male counterparts. While many positions were closed to women, particularly those considered too physical for them, the United Kingdom, then a member of the European Union, lifted all restrictions on military careers in 2018, [by opening up the special forces to women](#). In 2021 France took a major step forward with the integration of [women into its submarine crews](#), a hitherto exclusively male domain. Despite the relatively slow pace of change, there are signs of a general awareness of the need to involve the other half of the world's population in military action, to make it more effective.

Women in positions of governance in the defence sectors

And so European armies are moving towards including more women. But are women equally represented at all levels of the military hierarchy? For a long time,

women were excluded from several army corps, in the vast majority of European countries and throughout the world. They were *de facto* less represented in senior positions. Their presence is increasingly rare in the ranks of generals and admirals, the highest military rank. [A 2020 NATO report](#) specifies the percentage of women in officer posts in twenty-three Member States of the European Union, members or partners of the Transatlantic Organisation - Cyprus being the only Member State which is neither a member nor a partner of NATO, and data for Malta, Poland and Romania were not available. Officer posts are divided into three categories: junior officer ranks, middle-ranking officer ranks and senior officer ranks. On average, women account for 15% of junior officers, 9% of middle-rank officers and 8% of senior officers. These figures are comparable to those of the US Army, which has an average of [female officers](#), and only [7% feature in the highest ranks](#). This trend can be observed in most national armies.

Another indicator of the increase in the number of women in the defence sector is the proportion of women reaching positions of responsibility in security and defence issues. In 2022, the European Commission's Directorate-General for Defence Industry and Space carried out [a survey](#) on equality, diversity and inclusion in the defence, aeronautics and space sectors of the European Union. This revealed the under-representation of women in these three sectors, which account for 22% of the workforce employed in the EU's defence, aeronautics and space industries. The insufficient presence of women in these fields can be explained by the lack of women in STEM subjects, which are essential for careers in space. Already under-represented in these sectors, women also face [discrimination once they take up their posts](#): 94 % say they have been discriminated against because of their gender. This marginalisation is reflected in the professional hierarchy, where they are mostly confined to positions of lesser responsibility and limited access to management positions. Indeed, [the majority of employers in the defence and space industry consider that](#) women occupy between 10% and 19% of middle management positions and between 10% and 29% of executive positions.

In the space sector, women rarely occupy leading positions. In 2023, only 11% of the world's astronauts

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were women. Within the European Union, the European Space Agency (ESA) committed to [promoting gender equality](#), in 2022, with concrete initiatives to promote diversity at all levels within the organisation and to encourage women to take up scientific careers. With these measures, ESA has succeeded in [increasing significantly the share of women](#) within its organisation. To date, they represent 30% of the workforce, including 20% of management positions.

Finally, women are gradually occupying a political role in the field of defence. In recent years, several European countries have entrusted their defence ministries to women. In Germany, Ursula von der Leyen headed her country's Ministry of Defence from 2013 to 2019, before becoming President of the European Commission. In France, Michèle Alliot-Marie (2002-2007), then Florence Parly (2017-2022) held the same ministerial position, as did Ludivine Dedonder in Belgium from 2020 to February 2025. At the beginning of March 2025, five EU Member States had a woman at the head of the Ministry of Defence (Austria, Spain, Lithuania, Luxembourg and the Czech Republic), representing an average of 18.5%. The European executive wishes to set an example, as demonstrated by the appointment in 2024 of Kaja Kallas, former Prime Minister of Estonia, to the post of High Representative of the European Union for Foreign Affairs and Security Policy.

The European Union's ambition to position itself as a model for the promotion of women in the spheres of power is no longer open to debate. Yet the road to equality remains long and winding, even though significant progress has been made in recent years and deserves to be highlighted. While the European Union and most Member States recognise the importance of parity in all spheres of society, changing mentalities is a much more complex challenge than simply adopting new legal standards. Although national and European legislation imposes certain requirements in terms of parity and gender diversity, sexist stereotypes persist and still hinder women's access to positions of responsibility. In the light of today's technological and security challenges, the role of women is crucial, and they have already amply demonstrated their ability to meet them. The year 2025 therefore represents a turning point for women, who will have to raise their voices to be heard and not become the forgotten victims of the 4th industrial revolution. History cannot be written without them.

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