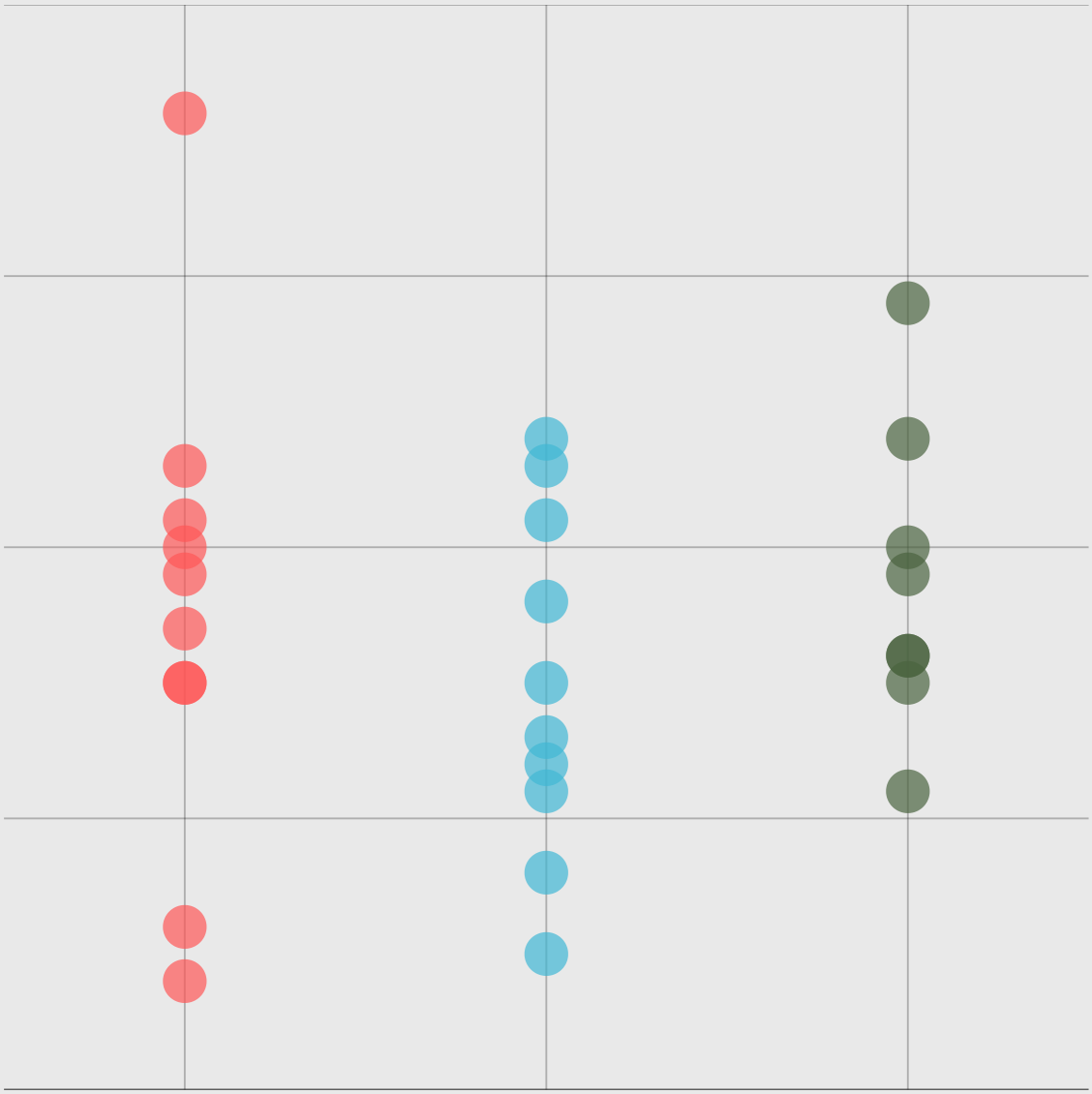
# GENDER & CLIMATE REPORT

## Power, Inequality and the Green Transition



An intersectional analysis of global patterns with effects on Europe and selected countries (Czechia, Slovakia and Italy)

2026



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Read more about the project here: https://sites.google.com/view/greenclusivity/about-project?authuser=3

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# Preface

”The climate crisis is often described through the language of technology, emissions curves, and economic indicators. Far less attention is paid to the fact that environmental change is also a matter of power, inequality, and everyday lived experience. Who bears the consequences of pollution, energy poverty, or climate disasters? Who performs unpaid care work in times of crisis? Who gets to shape the transformation, and whose voices remain unheard in these debates?

We wrote this publication, *Power, Inequality and the Green Transition*, with the conviction that environmental issues cannot be separated from questions of gender and social justice more broadly.

The aim of the text you have just opened, whether in print or online version, is not to offer a single definitive interpretation of the climate crisis, nor a simple guide to solving it. Rather, the publication seeks to create space for critical reflection on how environmental problems are intertwined with social structures, the economy, political representation, and cultural ideas about gender, work, care, and responsibility.

The publication brings together academic research, feminist and environmental theory, quantitative data, case studies, and concrete experiences from both European and global contexts. It focuses not only on the everyday lives of ordinary people, but also on broader questions of climate policy, energy systems, research, and environmental justice itself. Although each chapter can be read independently, together they form a picture of a world in which the ecological crisis is not an isolated problem of nature, but a consequence of the ways we organize society and shape relationships both among people and with the environment around us.

We hope this publication will contribute to the debate on a more just and sustainable future. The future which is built not only on technological innovation, but also on solidarity, care, and the ability to imagine different ways of living together.”

- *the GreenClusivity project team*

The issue of the interconnectedness of environmental and social inequalities is gradually gaining attention around the world. One of the people exploring these intersections and bringing them closer to the wider public is journalist and commentator Veronika Perková. We therefore greatly appreciate that she accepted our invitation to write a personal introductory reflection on why it is important to address this topic in all its complexity:

“For most of my life I believed that you could either be a feminist or an environmentalist but definitely not both. In my eyes, feminists were courageous women who fought for reproductive rights, ending gender-based violence, equal pay, higher representation of women in leadership positions and equally divided childcare and household labor. On the other side, environmentalists were inspiring folks who were protecting nature reserves, boycotting development projects, asking to end illegal wildlife trade and shouting for de-growth.

This clear image became much more blurred when I started interviewing grassroots activists from Africa, Asia and South America for my podcast Nature Solutionaries. First of all I realized there were many more issues that previously didn't dawn on me, like the fact that 224 million women want to avoid pregnancy but don't have access to safe and modern contraception. Or the fact that nearly half of all pregnancies – 121 million – are unintended and more than 60% of these pregnancies end in abortion.

These were shocking numbers to me and what was even worse was that neither governments nor philanthropists cared very much to help these women. Between 2021 and 2022, women's rights organizations obtained less than 1% (USD 142 million) of humanitarian aid. It's a paradox that our patriarchal society pushes women to have children but once they have them, they get zero help.

The other thing I learned while having conversations with frontline activists is that everything in the world is interconnected. If we want to live healthy lives, we need to live in a healthy environment and to have a healthy environment, we need to protect nature. Not slash forests, kill wildlife, pollute the ocean, burn crops for biofuel, mine rare-earth minerals to produce solar panels and build endless roads and housing estates. No. To stop the ecological crisis our population and consumption needs to stop growing in the first place and then start declining to more sustainable levels.

These realizations helped me become who I wanted to be: a feminist and an environmentalist in one! Nowadays I organize regular feminist meetups and fight for planting an ecological corridor to connect fragmented pieces of habitat. I support girls' education in Uganda and teach students about the bright green myths of solar panels and wind turbines. You, too, can do both if you feel like it.

It's been a long time since our patriarchal and capitalist society has lost its connection to nature and come to see everything as a resource to be exploited – whether it is soil, an animal, a woman, a child or an old disabled person. This is wrong. We need to understand that we are not detached from nature and from each other but that we need to mutually respect each other, care for each other and grow next to each other. We need to imagine better futures. More egalitarian, more community-based, more local and more respectful to nature. The less we work, the more space we will have for each other, for enjoying life, for nature and for future generations."

- *Veronika Perková*

**Veronika Perková** is an award-winning social impact storyteller with publications in *The Guardian, BBC* and *Scientific American*. She has written a book "Ask Great Questions, Get Great Answers", produced two podcasts (*Nature Solutionaries* and *Population 8 Billion)* and teaches interviewing at the Masaryk University, Czech Republic. She also hosts regular feminist meetups in Brno and organizes hikes in nature for mothers and children.

# 1. Introduction

In a world facing an escalating environmental crisis, it is becoming increasingly evident that the impacts of climate change, environmental degradation, and the depletion of natural resources are not distributed equally. The question of justice – who suffers, who makes decisions, and who cares, has become a central part of the environmental discourse. At the same time, a growing body of research and activism affirms that gender relations and environmental issues are not separate realms, but are deeply interconnected and mutually shaped.

The aim of this document is to explore the connections between gender and the environment through an interdisciplinary lens, drawing from sociology, ecofeminism, environmental politics, and cultural critique. In this context, gender is understood as a dynamic social construct that shapes roles, power relations, and access to natural resources. The term environment is used not only to refer to the natural world but also to the institutions, policies, and narratives that shape and regulate it.

Historically, women and other marginalized groups have played crucial yet often invisible roles in caring for nature, communities, and everyday survival. At the same time, these groups are frequently the most affected by environmental disasters and climate change while being the least represented in decision-making processes. In response to these disparities, a range of approaches have emerged that seek to integrate ecological and gender justice, including ecofeminism, queer ecology, and global climate justice.

This document addresses several key questions: How does gender influence the impacts of and responses to environmental challenges? What social, cultural, and political factors shape gendered experiences of the climate crisis? What alternative frameworks (e.g., care, sustainability, community) can offer different, non-technocratic approaches to the environment?

The text is loosely divided into three main sections, which build on each other and are related to each other. First of these sections is the individual level of the problem, such as the approach of men, women and others to the topic of environmental-friendly behaviour (waste sorting, food management, fashion, means of transport, etc). In this section, the so-called **eco gender gap** is central. The **eco gender gap** refers to the difference between genders (typically between men and women) in terms of environmental attitudes, behaviors, and engagement, with research often showing that women tend to be more environmentally conscious and active than men.

The second section reacts on the national level of connection between gender and environmental issues. The text reflects on the political and practical implications and offers proposals for more gender-just environmental policies. The topics are, for example, women's representation in politics, national laws, etc.

And the third section is the global level, with the specific focus on the European Union. This section studies diverse geographical and social contexts that illustrate concrete impacts and strategies of resistance or adaptation, such as migration or ecocide.

The importance of these topics today cannot be overstated. In an era searching for pathways to a sustainable future, we need not only technological innovation but also a deeper understanding of the social structures and power dynamics that shape the kind of world we are building and for

whom. A gender perspective can significantly contribute to creating more inclusive and equitable environmental solutions.

## 1.1 The EU does not exist in a vacuum i.e. Europe's footprint beyond its borders

Although this project focuses primarily on European Union countries, particularly the Czech Republic, Italy, and Slovakia (see below), it is inevitable and necessary to take into consideration a global perspective. Climate change is a global phenomenon, and gendered impacts are often most visible in the Global South. Moreover, European policies are connected to global supply chains, migration, raw materials, and geopolitics.

A global perspective on environment and gender matters deeply to Europe because its consumption patterns, trade, and energy use have far-reaching effects well beyond its borders. European demand for raw materials, textiles, and agricultural products often drives environmental degradation and disproportionately impacts producer countries that are typically more exposed to climate risks and resource scarcity. At the same time, the EU plays a central role in shaping international climate and environmental agreements, making it responsible for ensuring that gender equality and social justice are integrated into global solutions.

This Desk report should serve as a background resource for European education, advocacy, or policy-making efforts. In some cases, and for example in the cited studies, it is also possible to transfer findings relating to the environment in connection with gender from countries outside Europe to EU countries. We consider drawing inspiration from examples of good practice from abroad to be an effective way to improve. It is not always necessary to "reinvent the wheel".

## 1.2 Project context

This document was produced as part of the three-year international project called Greenclusivity, which is financially supported by the European Union. The aim of the project is to make the academic and general public aware of how environmental and social injustice are interrelated, how they are projected and how they deepen.

The organisations working on the project are: Gender Information Centre NORA, o.p.s. (Brno, Czech Republic); the Czech Women's Lobby (Prague, Czech Republic); EnviroStopa (Zvolen, Slovakia); LEARNABLE SOCIETA' COOPERATIVA A R.L (Fano, Italy).

## 1.3 AI as a Tool: Critical Reflections on Use, Impact, and Ethics

We used generative artificial intelligence (AI), specifically the language model ChatGPT, to assist in selected parts of this report. AI was not used as a replacement for human authorship, but rather as a tool that enables more efficient handling of information, structural planning, language editing, or orientation within source material. We therefore consider it one of the supportive environments in the creative process.

Using AI, however, is not without consequences – especially in environmental terms. According to calculations by the International Energy Agency, electricity consumption by data centers could increase by up to 60% by 2026, with the growing use of AI playing a significant role in this rise (IEA, 2024). This creates new challenges for the environmental sustainability of digital tools. Also, to keep the servers from overheating, water systems are often used to absorb the heat and carry it off to cooling towers to evaporate. Which means that globally, ChatGPT uses around 39.16 million gallons daily.[1]

At the same time, we recognize that all technological tools are products of specific social and economic contexts and AI is no exception. Our report's gender-sensitive reflection thus also includes the very tool (ChatGPT) we chose to use: who builds it, what data it is trained on, who benefits from its use, and who may be excluded. In our case, AI is understood as a means, not a guarantor-of quality, expertise, or neutrality.

We also acknowledge that, when used critically and intentionally, AI can serve as a supportive element for researchers, especially those whose work is affected by time constraints, care responsibilities, or the need to balance professional and personal life. In this way, AI may contribute to more inclusive and flexible research practices.

While we argue for a critical and limited use of AI, we also recognize that an outright refusal to engage with such technologies could hinder our ability to respond to evolving debates and to ensure accessibility and clarity in our communication. Our use of ChatGPT was therefore guided by a reflective approach: employing AI as a tool, not a substitute for expertise or ethical judgment. We remain aware of the power dynamics embedded in AI development, including issues of data bias, knowledge production, and inclusion. At the same time, avoiding AI altogether could limit the report's efficiency, depth of analysis, and ability to connect complex interdisciplinary insights in a coherent and accessible way.

For these reasons, we believe it is important to transparently disclose AI's role, while also grounding its use in broader reflections on climate justice, access to knowledge, and structural inequalities including gendered ones. These issues will be examined further in chapter Artificial Intelligence in the Context of Climate and Gender Justice, as with any other tool, is in our view an essential part of any responsible research practice.

[1] Wright, I. 2025. ChatGPT Energy Consumption Visualized. Business Energy UK [online]. Available from: https://www.businessenergyuk.com/knowledge-hub/chatgpt-energy-consumption-visualized/

# 2. Conceptual Framework: Environment, Gender and Power

## 2.1 Understanding Environment as a Living System

The environment is defined as everything around us creating natural living conditions and prerequisites for further development. It includes all aspects of the surroundings of humanity encompassing the built environment, natural environment and natural resources.

Environment and ecology are commonly misinterpreted. While the environment represents the space in which life occurs, ecology helps us understand how life systems function within it. This distinction is important as solving environmental problems often requires both a broad understanding of environmental systems and a deep knowledge of ecological interactions.

The environment includes biotic (living organisms) and abiotic factors. Abiotic factors are defined by chemical and physical characteristics and can be generally divided into three basic categories: climatic (humidity, sunlight, etc.), edaphic (soil, geography of the land, etc.) and social.[2] In other words, the environment represents a combination of biosphere with technosphere elements and their interrelations. While the biosphere covers living organisms and their surroundings, the technosphere involves technological objects and systems manufactured by humans.

The biosphere covers large geographically defined regions reflecting specific climate conditions called biomes. Basically, five types of biomes exist: desert, aquatic, tundra, grassland and forest. Biomes provide living conditions for different kinds of ecosystems which communicate and influence each other. Ecosystems may be seen as localized communities of various living organisms and their interactions within a specific area providing biodiversity essential for the health and stability of the planet and human well-being.[3]

Biodiversity ensures ecosystem processes like pollination, nutrient cycling, water purification, and soil formation. Diverse plant and animal species provide a wide range of ecological networks where species depend on each other. Loss of some can destabilize entire ecosystems by disturbing integrity. Genetic diversity in crops and livestock increases resilience to pests, diseases, and climate change. Vegetation helps regulate the climate by storing carbon and influencing rainfall and temperature. Ecosystems with high biodiversity are more resilient to disturbances such as extreme weather events, diseases, and human activities.

**Environment versus development**

One of the most crucial moments in technosphere formation came with the industrialization era. The technological changes introduced novel ways of working and living and fundamentally transformed society and the whole environment both positively and negatively. Increasing pressure on the environment, pollution and health problems gradually led to the need for environmental protection tools. The turning point was the Earth Summit held in Rio de Janeiro, Brazil in 1992, a landmark event that brought together leaders from over 170 countries to

[2] Brite, K. 2022. Five Different Types Of Abiotic Factors. SCIENCING [online]. Available from: https://www.sciencing.com/five-different-types-abiotic-factors-7762257/
[3] Difference Between Biome and Ecosystem: Key Distinctions. testbook [online]. Available from: https://testbook.com/key-differences/difference-between-biome-and-ecosystem

address global environmental and development challenges that laid the foundation for future international cooperation on sustainability. Since then, environmental protection has begun to develop.[4]

In 2009 a group of renowned scientists proposed a concept of planetary boundaries identifying nine critical Earth system processes such as climate change, biosphere integrity, biogeochemical cycles, freshwater use, land-system change, ocean acidification, ozone depletion, atmospheric aerosols, and novel entities like chemicals and plastics that together maintain the stability and resilience of the planet. All nine boundaries represent components of the Earth system critically affected by anthropogenic activities and relevant to Earth's overall state.[5]

Boundary processes are deeply interconnected. Exceeding one doesn't happen in isolation but can intensify pressures on others, increasing the risk of cascading tipping points. Since 2023 two thirds of boundaries have been transgressed: climate change, biosphere integrity, biogeochemical flows (nitrogen and phosphorus), freshwater use, land-system change, and novel entities; with several posing high or escalating risk. Crossing defined thresholds increases the risk of triggering irreversible, large-scale environmental change, potentially destabilizing the conditions that supported human civilization over thousands of years.[6]

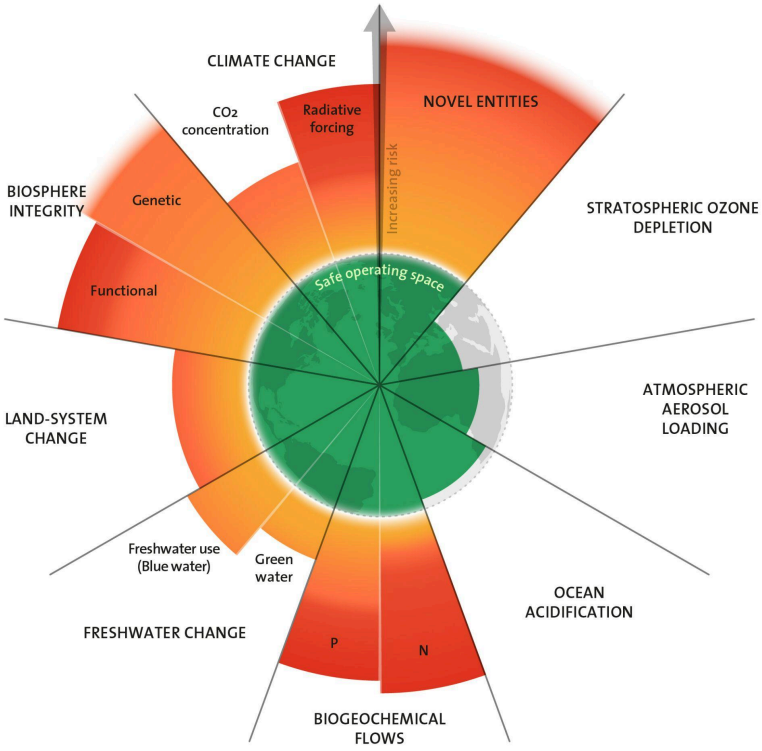



*Figure no. 1: Planetary boundaries.*[7]

[4] United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, 3-14 June 1992. United Nations [online]. Available from: https://www.un.org/en/conferences/environment/rio1992
[5] Planetary Boundaries. Stockholm Resilience Centre [online]. Available from: https://www.stockholmresilience.org/research/planetary-boundaries.html
[6] Richardson, K. et al. 2023. "Earth beyond six of nine planetary boundaries". *Science Advances* 9(37). DOI: 10.1126/sciadv.adh2458
[7] Planetary Boundaries. Stockholm Resilience Centre [online]. Available from: https://www.stockholmresilience.org/research/planetary-boundaries.html

Nowadays, adverse environmental impacts of humans are trying to be distanced and minimized through policy regulations and international actions based on principles of sustainable development goals (see chapter Sustainability as a Political and Ethical Project). A set of 17 sustainable development goals are defined by the United Nations Member States as an action plan to growth and human development aiming to meet the needs of the present without compromising the ability of future generations to meet their own needs, covering environmental, social and economic parameters.[8]

Environmental issues are among the most urgent challenges facing the world today. They refer to the negative impacts of human activities and natural processes on the planet's systems, including air, water, soil, and ecosystems. These issues range from climate change and pollution to biodiversity loss and resource depletion, affecting both human well-being and the health of the Earth.

As environmental issues become more complex and intensified by global processes such as climate change and urbanization there is a growing need to address them in an integrated way. This includes considering social dimensions, such as how environmental impacts differ across gender, class, and geography. By doing so, we can work toward more effective, inclusive, and sustainable solutions.[9]

**Key takeaways from this chapter:**

- The environment includes everything around us that creates conditions for life, including natural systems, built spaces, and resources. While the environment describes where life exists, ecology studies how living organisms interact within it.
- Biodiversity is essential for ecosystem stability and processes like pollination, nutrient cycling, and climate regulation. However, human activities, especially since industrialization, have increased environmental pressure and pushed several planetary boundaries beyond safe limits.
- To reduce damaging impacts of human activities, global policies such as the United Nations' Sustainable Development Goals aim to support sustainable development. Solving environmental problems requires integrated solutions that consider both environmental and social factors.

[8] United Nations. 2015. Transforming our world: the 2030 Agenda for Sustainable Development. United Nations [online]. Available from: https://sdgs.un.org/2030agenda

[9] Guedes, W. P., Branchi, B. A., Sugahara, C. R., Ferreira, D. H. L. 2024. "Gender-based climate (in)justice: An overview". Environmental Science & Policy 162: 103934. https://doi.org/10.1016/j.envsci.2024.103934

## 2.2 Gender as a System of Power and Meaning

Gender is a socially constructed system of roles, behaviors, and identities that societies ascribe to individuals based on perceived biological sex. Unlike sex, which refers to biological characteristics such as chromosomes, hormones, and reproductive anatomy, gender is shaped by cultural norms, historical contexts, and power relations.[10] [11]

### 2.2.1 The Gendered Construction of Knowledge and Power

One of the key aspects of gender in environmental discourse is the way in which dominant societal norms, often shaped by patriarchal and androcentric (male-centered) worldviews, define what counts as "valid" knowledge, authority, and even reality itself. Even when we look at history, for example, the Enlightenment era's focus on rationality, objectivity, and control over nature was deeply tied to a masculine ideal of dominance, which has historically shaped Western science and environmental policy.[12]

This legacy continues to influence how expertise, authority, and rationality are distributed today, whose voices are heard, and whose experiences remain invisible in environmental decision-making.

One of the other key aspects of gender in environmental discourse is Raewyn Connell's (2002) concept of hegemonic masculinity describes how certain masculinities are positioned as superior and associated with control, rationality, and leadership, while femininity and non-dominant masculinities are framed as emotional, passive, or closer to nature.[13] Such hierarchies are not abstract; they translate into the institutional cultures of science, policy, and economics, shaping what kind of knowledge is valued and who is considered credible. This has consequences for environmental governance, where scientific expertise, technological solutions, and economic frameworks, often constructed through a patriarchal lens, are prioritized over Indigenous knowledge, lived experience, and alternative ecological understandings.[14]

This male-centered approach has led to policies and practices that prioritize extractive industries, large-scale technological interventions, and market-based environmental solutions rather than regenerative, community-driven, or relational approaches to environmental stewardship.[15] As ecofeminists argue, these frameworks often devalue not only women's knowledge but also the knowledge of Indigenous communities, subsistence farmers, and other marginalized groups whose ways of interacting with the environment are not based on domination.

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[10] Butler, J. 1990. Gender Trouble: Feminism and the Subversion of Identity. London: Routledge.
[11] Connell, R. W. 2002. Gender. Cambridge: Polity Press. Available from: https://archive.org/details/gender0000conn/mode/2up
[12] Merchant, C. 1980. The Death of Nature Women, Ecology and the Scientific Revolution. New York: HarperSanFrancisco.
[13] Connell, R. W. 2002. Gender. Cambridge: Polity Press. Available from: https://archive.org/details/gender0000conn/mode/2up
[14] Shiva, V. 1988. *Staying Alive : Women, Ecology, and Development*. London: Zed Books.
[15] Merchant, C. 1980. The death of nature: Women, ecology, and the scientific revolution.

These power structures not only define what counts as legitimate knowledge but also shape everyday expectations of who acts, leads, or cares in environmental contexts – linking epistemic hierarchies to gendered social roles discussed in the following section.

## 2.2.2 Gender Norms and Stereotypes: From Structure to Behavior

In environmental contexts, technical or infrastructure-oriented actions are often coded as masculine, while care-, health- or household-related practices are framed as feminine. These distinctions silently allocate authority and responsibility, influencing who is perceived as competent or credible in sustainability debates. How is this perception created? Gender stereotypes are behind it.

### 2.2.2.1 Gendered Expectations and Social Roles

Gender stereotypes are broad ideas about how people "should" act based on whether they are male or female. These are predetermined ideas that assign certain characteristics and roles to people based on whether they are male or female.[16] For instance, traits like assertiveness and technical competence are often labeled as "masculine", while nurturing and caregiving are viewed as "feminine".[17] [18] These stereotypes function as social expectations, e.g. assumptions about how every person within a gender group is supposed to act, regardless of their personal qualities or interests.[19]

While gender stereotypes can sometimes appear positive (e.g., "women are naturally caring" or "men are athletic"), they are often overgeneralized, inaccurate, and resistant to new information.[20] These generalizations become problematic when they are applied to all members of a gender group, overlooking individual differences and creating barriers to human development and self-expression.[21] Such categorization extends to environmental actions, where activities like recycling or using reusable products are stereotypically labeled as feminine, while technical solutions (e.g. installing solar panels) are framed as masculine.[22]

### 2.2.2.2 Identity, Perception, and Masculinity

Gender and Gender Identity are not just about roles, it's about self-concept. When we talk about gendered environmental behavior, it's important to make a clear distinction between gender and gender identity. Gender usually refers to whether someone is seen as male or female based on their biological sex. Gender identity, on the other hand, is about how someone personally identifies – for example, as feminine, masculine, both, or neither. This difference matters,

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[16] Ellemers, N. 2018. "Gender Stereotypes". Annual Review of Psychology 69: 275–98. https://doi.org/10.1146/annurev-psych-122216-011719
[17] Jacobs, T. 2019. How Gender Stereotypes Affect Pro-Environment Behavior. Pacific Standard [online]. Available from: https://psmag.com/environment/how-gender-stereotypes-affect-pro-environment-behavior/
[18] Zhao, Z., Gong, Y., Li, Y., Zhang, L. and Sun, Y. 2021. "Gender-Related Beliefs, Norms, and the Link With Green Consumption." Frontiers in Psychology 12: 710239. https://doi.org/10.3389/fpsyg.2021.710239
[19] Stereotype. Wikipedia [online]. Available from: https://en.wikipedia.org/wiki/Stereotype
[20] Myers, D. G. 2022. Intuition: Its Powers and Perils. New Haven: Yale University Press.
[21] Selemin, J. 2024. What Are Gender Roles and Stereotypes?. WebMD [online]. Available from: https://www.webmd.com/sex-relationships/what-are-gender-roles-and-stereotypes
[22] O'Berry, M., Mancha, J. 2021. "Linking Gender Perception Stereotypes to Eco-Friendly and Sustainable Consumption". Undergraduate Research Showcase 73. Available from: https://scholarworks.boisestate.edu/under_showcase_2021/73

because research has found that how people see themselves in terms of gender identity often shapes their environmental choices more than their assigned gender does.[23] Because "green" tends to be stereotypically feminized, some men avoid "green" choices to protect their masculine self-image. This is supported by research that has found that when men feel that their masculinity is threatened, they are less motivated to engage in pro-environmental behavior, especially if it's seen as "feminine".[24] For women, however, it is quite the opposite – there is less discomfort when women engage in "masculine" behaviors. This is because men often face stronger social pushback when they don't conform to traditional ideas of masculinity, which can make them more careful about how they present their gender identity.[25] Survey data collected by OgilvyEarth[26] suggests that the idea of 'going green' is viewed as more feminine than masculine by most American adults, which only adds to the challenge for men when it comes to engaging in pro-environmental behaviors.

#### 2.2.2.3 Social Pressures and Gendered Sustainability

Moreover, when individuals engage in gender-atypical pro-environmental behaviors (for example, men adopting vegetarian diets or women engaging in home insulation projects), observers are less certain about the actors' heterosexual identity.[27] Daily consumption choices, such as diet, are similarly influenced. People do not decide purely based on scientific arguments or rational self-interest; rather, choices are filtered through gendered social norms. This underlines how deeply environmental choices are entangled with social perceptions of gender and sexuality, often pressuring individuals to conform rather than act according to their environmental values.

Women, traditionally seen as caregivers, are often expected to integrate green practices into everyday life, particularly when such practices promise both environmental and economic benefits.[28] However, this expectation can lead to a double burden. On one hand, women are socially encouraged, and even judged, on their ability to consume sustainably; on the other, they are simultaneously stereotyped as highly consumeristic, creating contradictory pressures.[29] Women themselves internalize these contradictions, often blaming themselves for not achieving perfect sustainable consumption, which can lead to feelings of guilt and stress.[30]

In sum, conflicts of interest at the individual level arise not only from internal struggles between values and gender expectations, but also from social pressures that penalize deviation from prescribed roles, often making sustainable action more difficult for both men and women.

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[23] Phillips, D. M., Englis, B. G. 2022. "Green Consumption Is Both Feminine and Masculine—Just Ask the Androgynous Consumer." Journal of Consumer Behaviour 21(5): 1028–39. https://doi.org/10.1002/cb.2052
[24] Ibid.
[25] Brough, A. R., Wilkie, J., Ma, J., Isaac, M., and Gal, D. 2016. "Is Eco-Friendly Unmanly? The Green-Feminine Stereotype and Its Effect on Sustainable Consumption." Journal of Consumer Research 43(4): 567–82. https://doi.org/10.1093/jcr/ucw044
[26] Björk, J. 2011. Mainstream Green: Moving Sustainability from Niche to Normal. Goodlifer [online]. Available from: http://www.goodlifer.com/2011/04/mainstream-green-moving-sustainability-from-niche-to-normal/
[27] Swim, J. K., Gillis, A., and Hamaty, K. J. 2020. "Gender Bending and Gender Conformity: The Social Consequences of Engaging in Feminine and Masculine Pro-Environmental Behaviors". *Sex Roles* 82(5): 363–85. https://doi.org/10.1007/s11199-019-01061-9
[28] Wang, S. 2016. "Green Practices Are Gendered: Exploring Gender Inequality Caused by Sustainable Consumption Policies in Taiwan." *Energy Research & Social Science* 18: 88–95. https://doi.org/10.1016/j.erss.2016.03.005.
[29] Bloodhart, B., Swim, J. 2020. "Sustainability and Consumption: What's Gender Got to Do with It?" Journal of Social Issues 76(1): 101–13. https://doi.org/10.1111/josi.12370
[30] Wang, S. 2016. "Green Practices Are Gendered: Exploring Gender Inequality Caused by Sustainable Consumption Policies in Taiwan." *Energy Research & Social Science* 18: 88–95. https://doi.org/10.1016/j.erss.2016.03.005.

This gendered divide extends to how we view everyday environmental behaviors. People often associate products like reusable grocery bags - a symbol of eco-consciousness, with women, attaching feminine traits to those who use them more so than to those who opt for plastic bags.[31] Men, on the other hand, are more likely to support environmental causes when the branding or image of the organization aligns with traditional masculine traits. For example, they tend to donate more to environmental nonprofits that use overtly masculine logos or branding.[32]

Interestingly, this rigid division between gender roles and environmental behavior may be more flexible within queer communities, where there is often greater acceptance of behaviors that don't strictly adhere to traditional gender norms. This could explain why those with queer identities tend to engage more broadly in activism, including environmental causes.[33]

These psychosocial dynamics help explain patterns observed in Chapter Gendered Consumption: Everyday Life in the Age of Sustainability. They also clarify why purely green informational campaigns needn´t be successful when they are blind to gender norms.

**Key takeaways from this chapter:**

- Gender is a socially constructed system of roles, behaviors, and identities shaped by culture, history, and power relations. Unlike biological sex, gender reflects social expectations about how people should behave and what roles they should fulfill in society.
- Dominant knowledge systems have often been influenced by patriarchal and male-centered perspectives. As a result, scientific authority and environmental decision-making frequently prioritize technological and economic approaches while overlooking community knowledge and lived experiences.
- Gender stereotypes also shape environmental behavior. Technical and infrastructure-focused actions are often seen as masculine, while everyday sustainable practices such as recycling or caring for the household environment are viewed as feminine.
- Gender identity can influence environmental choices. Because environmentally friendly behavior is sometimes perceived as feminine, some men may avoid it to protect their masculine identity, while women often face stronger expectations to behave sustainably in everyday life. People may be judged for acting outside traditional gender roles, showing that environmental actions are influenced not only by values and knowledge but also by social norms.

[31] Brough, A. R., Wilkie, J., Ma, J., Isaac, M., and Gal, D. 2016. "Is Eco-Friendly Unmanly? The Green-Feminine Stereotype and Its Effect on Sustainable Consumption." Journal of Consumer Research 43(4): 567–82. https://doi.org/10.1093/jcr/ucw044
[32] Ibid.
[33] Bloodhart, B., Swim, J. 2020. "Sustainability and Consumption: What's Gender Got to Do with It?" Journal of Social Issues 76(1): 101–13. https://doi.org/10.1111/josi.12370

## 2.3 Ecofeminism: Rethinking Power, Care and Nature

Ecofeminism is an evolving framework that examines the interconnectedness of ecological and social justice struggles, challenging the systems of oppression, such as patriarchy, colonialism, capitalism, and heteronormativity, that shape human relationships with nature. It critiques the ways in which dominant power structures justify the exploitation of both marginalized communities and the environment, offering instead an alternative vision rooted in relationality, care, and sustainability. Ecofeminism is not a singular perspective but a diverse framework incorporating various intellectual traditions and activist movements.

Early ecofeminist thought often drew parallels between the oppression of women and the degradation of nature, emphasizing how both were subjected to control and commodification. However, contemporary ecofeminism expands beyond this binary to address broader questions of power, identity, and agency, incorporating perspectives from materialist, spiritual, queer, posthumanist, and indigenous traditions.

For some, ecofeminism is fundamentally a critique of capitalist expansion and economic structures that reinforce environmental and gendered inequalities. Scholars such as María Mies and Vandana Shiva[34] highlight how corporate-driven development displaces communities, privatizes essential resources, and exploits the labor of women, particularly in the Global South. This materialist perspective sees ecological destruction as inextricably linked to the commodification of both human and nonhuman lives, necessitating resistance to economic systems that prioritize profit over well-being.

Others approach ecofeminism from a spiritual or epistemological standpoint, emphasizing how patriarchal worldviews have constructed nature as something to be controlled rather than respected. Indigenous traditions, for instance, often challenge Western dichotomies between humans and the environment, recognizing the land as a living entity with intrinsic rights rather than a passive resource. Figures such as Winona LaDuke[35] and Robin Wall Kimmerer[36] emphasize the importance of reciprocal relationships with the nonhuman world, positioning indigenous knowledge as an essential counterpoint to exploitative environmental policies.

This rejection of rigid dualisms extends into queer and posthumanist ecofeminism, which critiques not only gender binaries but also the hierarchies that separate humans from nonhuman beings. Anthropocentrism, e.g. the belief that human life is inherently superior to other forms of existence, mirrors the same structures of domination that underpin sexism, racism, and colonialism. Scholars such as Catriona Sandilands[37] and Greta Gaard[38] explore how heteronormative and capitalist logics reinforce ideas of control, exclusion, and hierarchy, limiting the ways in which relationships between species, bodies, and ecosystems are understood.

Building on these critiques, multispecies ecofeminism emerges as a powerful challenge to human exceptionalism, insisting that justice must extend beyond human societies to include the

[34] For example see: Shiva, V. & Mies, M. 2014. Ecofeminism. Zed Books Ltd.
[35] For example see: LaDuke, W. 1999. All Our Relations: Native Struggles for Land and Life. South End Press.
[36] For example see: Kimmerer, R. W. Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants. Minneapolis: Milkweed Editions, 2015.
[37] For example see: Sandilands, C. 1999. The Good-Natured Feminist: Ecofeminism and the Quest for Democracy. University of Minnesota Press.
[38] For example see: Gaard, G. (ed.). 1993. Ecofeminism: Women, Animals, Nature. Temple University Press.

well-being of animals, plants, and entire ecosystems. Rather than treating environmentalism solely as a human concern, multispecies ecofeminism reframes the discussion around interdependence, asking how ethical co-existence can be fostered in a world where all life forms are deeply entangled. This perspective is reflected in the work of Donna Haraway[39], who argues for "companion species" relationships that move beyond traditional notions of human superiority, and Carol J. Adams[40], who examines the intersections of gender, animal rights, and capitalist consumption.

A central tenet of ecofeminism is its critique of hierarchical dualisms: such as man/woman, culture/nature, reason/emotion, and human/nonhuman. These have historically been used to justify domination. The idea that rational, civilized "man" must control wild, chaotic "nature" has shaped Western environmental policies and contributed to ecological degradation. By questioning these binaries, ecofeminism offers a more relational, ethical approach to environmentalism – one that values care, interdependence, and diversity over domination and extraction.

Rather than treating environmental issues as separate from broader social struggles, ecofeminism insists that solutions to ecological crises must also address economic inequality, gendered labor, indigenous sovereignty, and racial justice. It is not merely about "women and nature" but about rethinking power, agency, and responsibility in a world that is deeply interconnected.

### 2.3.1 Queer Ecology: Beyond Binaries in Nature and Society

Queer ecology is an interdisciplinary field that combines queer theory and ecological thought to challenge normative ideas about nature, sexuality, and the environment. It questions binary thinking, such as male/female, natural/unnatural, or human/non-human, and critiques how dominant environmental narratives often reinforce heteronormative, patriarchal, and anthropocentric values. It's both a theoretical and activist approach that reimagines environmentalism as more just, inclusive, and resistant to social norms that exclude or marginalize.[41]

In essence, queer ecology critiques the idea that "natural" equals "heterosexual" or "binary"; highlights how marginalized sexual and gender identities intersect with environmental issues; encourages more inclusive, diverse, and fluid understandings of both ecosystems and identities; and explores how ecological systems themselves exhibit diversity, fluidity, and interdependence, echoing queer perspectives.[42]

[39] Haraway, D. J. 2003. *Companion Species Manifesto*. Chicago: Prickly Paradigm Press
[40] Adams, C. J. 1990. *The sexual politics of meat: A feminist-vegetarian critical theory*. Continuum.
[41] Sandilands, C. Queer Ecology. Keywords for Environmental Studies [online]. Available from: https://keywords.nyupress.org/environmental-studies/essay/queer-ecology/
[42] Ibid.

**Key takeaways from this chapter:**

- Ecofeminism examines the links between environmental problems and social inequalities. It argues that systems such as patriarchy, colonialism, and capitalism contribute to the exploitation of both nature and marginalized communities, and it promotes values of care, sustainability, and interdependence. Ecofeminism also challenges traditional dualisms such as man/woman, culture/nature, and human/nonhuman. By questioning these divisions, it promotes a more relational and ethical approach to environmental responsibility.
- Queer ecology builds on these ideas by challenging rigid categories in nature and society. It highlights diversity and fluidity in both ecosystems and human identities and encourages more inclusive approaches to environmental thinking.

## 2.4 Sustainability as a Political and Ethical Project

Sustainability stands for the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs. It encompasses three dimensions: environmental, economic, and social. Environmental sustainability focuses on reducing resource extraction and waste production, thereby lowering greenhouse gas emissions and mitigating climate change. Economic sustainability creates new business opportunities and jobs through innovative recycling and reuse processes. Social sustainability is gained through social equity, justice, human rights preservation, and strong community building.

The 2030 Agenda for Sustainable Development (Agenda 2030) comes as the framework of 17 Sustainable Development Goals (SDGs) that all United Nations Member States adopted in 2015. Altogether 169 targets describe critical points that reflect global threats facing humanity and provide future direction to maintain a worthwhile living environment for every living organism. In SDGs, environmental consciousness and actions goes hand in hand with gender justice and appropriate economic growth. Goals are both specific and interconnected.[43] No single goal can succeed on its own. For example, good education can reduce poverty, and clean energy can improve health and fight climate change. The importance of the goals lies in the provision of a shared vision for peace, prosperity, and environmental protection. They help countries focus their efforts and measure progress. Without this common roadmap, global cooperation would be much harder. In a world facing climate crises, inequality, and conflict, the Agenda 2030 offers hope. It reminds us that sustainable development is not only possible, but necessary.[44]

[43] Chen, M., Chen, L., Cheng, J., Yu, J. 2022. "Identifying interlinkages between urbanization and Sustainable Development Goals". Geography and Sustainability 3(4): 339-346. Available from: https://www.sciencedirect.com/science/article/pii/S2666683922000694

[44] UN. 2015. Transforming our world: the 2030 Agenda for Sustainable Development. United Nations [online]. Available from: https://sdgs.un.org/2030agenda




*Figure no. 2: The 17 Sustainable Development Goals.*[45]

### 2.4.1 Circular Economy and the Promise of Regeneration

The concept of a circular economy represents a key framework within sustainability debates. It offers a systemic alternative to the traditional *linear economy* model – based on extraction, production, consumption, and disposal – by aiming to keep materials and products in use for as long as possible and to regenerate natural systems.[46]

A circular economy operates on three interconnected principles:

1. **Eliminating waste and pollution** through thoughtful design and innovation.
2. **Circulating products and materials** via reuse, repair, refurbishment, and recycling.
3. **Regenerating natural systems** by promoting practices that restore ecosystems and biodiversity.

While the linear economy relies on continuous extraction and growth, the circular economy seeks to decouple prosperity from resource depletion. It connects environmental, economic, and social goals by reducing emissions, conserving resources, and creating new forms of employment in repair, remanufacturing, and recycling sectors.

However, feminist and gender-sensitive perspectives reveal that the transition to a circular economy affects women and men differently and reflects existing social and economic inequalities. Expert consultations from the Czech Republic indicate that many women-led

[45] UN. The 17 Goals. United Nations. Available from: https://sdgs.un.org/goals
[46] EPA. 2025. What is a Circular Economy? United States Environmental Protection Agency [online]. Available from: https://www.epa.gov/circulareconomy/what-circular-economy

enterprises in agriculture, food production, and sustainability-oriented services intentionally adopt local, small-scale business models that align with degrowth and community-based values. These enterprises prioritise ecological integrity and social responsibility over rapid expansion. Yet, this approach often becomes a barrier when seeking financial support: most investment and innovation schemes (e.g. startups) remain designed around scalability, export potential, and profit growth. As a result, women entrepreneurs pursuing locally rooted, environmentally sound business models face structural disadvantages in accessing funding and visibility, despite their significant contribution to sustainable development.[47]

**Key takeaways from this chapter:**

- Sustainability has three interconnected dimensions: environmental (protecting natural resources and reducing emissions), economic (creating jobs and innovation), and social (promoting equity, justice, and strong communities).
- The circular economy is a key sustainability model that replaces the traditional linear "take–make–waste" system with one focused on reducing waste, reusing materials, and regenerating natural systems.
- Sustainability transitions can reproduce social inequalities, as gender-sensitive research shows that women-led sustainable businesses often face structural barriers to funding because many financial systems prioritize large-scale growth rather than local, community-based sustainability models.

## 2.5 Consumerism and Capitalism: Systems That Shape the Planet

**Consumerism** is a social and economic ideology that encourages the acquisition of goods and services in ever-increasing amounts. It's not just about buying things, it's about defining identity, status, and success through consumption. In a consumerist culture, people are often seen more as consumers than as citizens, and personal fulfillment is linked to material possessions.[48]

This is also related to the capitalist setting of society. **Capitalism** is an economic system based on private ownership of the means of production and profit-driven markets. Core features include competition, wage labor, capital accumulation, and market-based exchange. Under capitalism, businesses aim to maximize profits, and the economy grows through production, innovation, and consumption.[49]

[47] Kubálková, P. 25. 9. 2025. Cats2cats [presentation]. As a part of the meeting of the working and advocacy group Gender and climate. Online.
[48] Lage, C., Lins, S., Aquino, S. 2022. Consumerism. DOI:10.4324/9780367198459-REPRW118-1
[49] Guy-Evans, O. 2024. What is Capitalism? Simply Psychology [online]. Available from: https://www.simplypsychology.org/capitalism.html

The environmental crisis is deeply connected to both capitalism and consumerism. Together, they encourage overconsumption of natural resources, leading to deforestation, pollution, biodiversity loss, and rising carbon emissions. Capitalist economies often rely on mass production and global supply chains, which not only intensify environmental degradation but also contribute to global inequalities by outsourcing ecological harm to poorer regions. Consumerism reinforces these patterns by fostering a culture of disposable goods, planned obsolescence, and a disconnection from the natural world. Products are frequently designed to break or go out of fashion quickly, pushing people to replace them and thereby generating more waste and emissions.

### 2.5.1 Consumerism, capitalism and its environmental impact

Carbon emissions present one of the clearest ways we can see how consumerism and capitalism affect the planet. In a system that depends on constant economic growth, companies are pushed to produce more goods, more quickly, and at lower cost. This usually means large factories, energy-intensive production, and long global transport routes all of which rely heavily on fossil fuels like coal, oil, and gas. At the same time, consumer culture encourages people to buy more than they actually need, replace items frequently, and follow fast-changing trends. Every new phone, shirt, or piece of furniture carries a “carbon footprint” from the raw materials, manufacturing, packaging, shipping, and treatment activities. When billions of these purchases are repeated year after year, emissions rise dramatically. According to research by Ivanova et al. (2015), household consumption is responsible for more than 60% of global GHG emissions and about 50% to 80% of natural resource use, while wealthier countries generate higher environmental impacts per capita than the poorer.[50] For example, African countries account for 1 ton of carbon emissions annually while American countries' footprints are around 30 times higher.[51]

Elevated GHG concentrations trap heat in the atmosphere, causing global temperatures to rise, sea levels to climb, and weather patterns to become more extreme.[52] Such warming has already increased the frequency and intensity of heatwaves, droughts, floods, and storms, disrupting ecosystems and contributing to biodiversity loss worldwide. Ecosystems are shifting in response to climate change, with species ranges and behaviors altering and ecosystem services becoming less reliable.[53] Health impacts are becoming severe as climate change worsens air pollution and increases heat stress, respiratory and cardiovascular diseases, and infectious disease risks. Extreme heat events alone are now responsible for hundreds of thousands of deaths annually and contribute to food insecurity by reducing crop yields.[54] Air pollution from the combustion of fossil fuels deeply tied to consumer demand for energy, transport, and goods

[50] Ivanova, D. et al. 2015. "Environmental Impact Assessment of Household Consumption". *Journal of Industrial Ecology* 20 (3): 526-536. https://doi.org/10.1111/jiec.12371
[51] Pelley, J. 2009. "Consumer culture keeps carbon emissions high." *Environmental Science & Technology* 43 (16). https://pubs.acs.org/doi/10.1021/es901774u
[52] Laino, E., Iglesias, G. 2025. "Extreme weather events and environmental contamination under climate change: A comparative review of ten European coastal cities". Current Opinion in Environmental Science & Health 45, 100606. https://doi.org/10.1016/j.coesh.2025.100606
[53] Kim, H. et al. 2024. "Understanding the role of biodiversity in the climate, food, water, energy, transport and health nexus in Europe". *Science of The Total Environment* 925, 171692. https://doi.org/10.1016/j.scitotenv.2024.171692
[54] Schmitt, J. et al. 2022. "Extreme weather events cause significant crop yield losses at the farm level in German agriculture". *Food Policy* 112, 102359. https://doi.org/10.1016/j.foodpol.2022.102359

remains a leading cause of premature death.[55] Mental health is also affected, as climate-related disasters and environmental degradation increase anxiety, depression, and trauma.[56]

Moreover, capitalism's dependence on perpetual growth makes it resistant to sustainable alternatives, as reducing consumption is seen as a threat to profits and economic stability. As a result, efforts to address the environmental crisis often confront structural obstacles embedded in both capitalist systems and consumerist mindsets. Tackling ecological breakdown thus requires not only technological solutions but also a fundamental rethinking of how we produce, consume, and value the world around us.

This economic model is built on endless production and consumption that keeps carbon emissions high and makes climate change worse. The more a society is oriented toward consumption as a marker of success and identity, the higher its per-capita emissions tend to be, making carbon reduction far more difficult.

**Key takeaways from this chapter:**

- Consumerism and capitalism shape modern society and environmental impact. Consumerism encourages people to define identity and success through consumption, while capitalism promotes continuous production, competition, and profit-driven economic growth.
- Both systems contribute significantly to environmental degradation. Overconsumption, mass production, and global supply chains increase resource extraction, pollution, deforestation, biodiversity loss, and greenhouse gas emissions.
- Household consumption plays a major role in climate change. Research suggests it accounts for over 60% of global greenhouse gas emissions and 50–80% of resource use, with wealthier countries having much larger environmental footprints than poorer regions.
- Environmental and health impacts are already visible. Rising emissions contribute to climate change, extreme weather events, ecosystem disruption, air pollution, food insecurity, and increased risks of disease and heat-related deaths.
- Structural economic factors make change difficult. Because capitalist economies depend on constant growth and consumption, reducing consumption challenges the system itself, meaning that solving environmental crises requires not only technological solutions but also changes in consumption patterns and economic values.

[55] Zhang, S. et al. 2024. "Effect modification of air pollution on the association between heat and mortality in five European countries". *Environmental Research* 263 (1), 120023. https://doi.org/10.1016/j.envres.2024.120023
[56] Reis, J. et al. 2025. "Climate-related challenges to brain health: A European perspective review". *Revue Neurologique* 181 (8): 713-724. https://doi.org/10.1016/j.neurol.2025.07.010

## 2.6 Frameworks of Justice: Connecting Social and Environmental Inequalities

### 2.6.1 Environmental Justice: Equal Rights to a Healthy Planet

The current environmental debate increasingly shows that environmental protection cannot be seen as a technical or ecological issue as it represents a fundamental human right and a social justice issue. The concept of **environmental justice** refers to the equal treatment and inclusion of all people regardless of race, class, origin or gender in the formulation, implementation and enforcement of environmental standards, policies and decisions. The right to a healthy environment means that everyone should have access to an environment that is healthy, safe and sustainable and no one should bear a disproportionate burden of environmental risks or be excluded from access to natural resources or from decisions about their use. This is where the gender aspect becomes important: women, girls, and other vulnerable groups, such as people of color and low-income populations, often bear a disproportionate burden of environmental challenges. In many countries, women are underrepresented in decision-making processes, have limited access to land ownership, and possess less influence over environmental policies, which weakens their ability to exercise their right to a healthy environment for themselves and their communities.[57]

### 2.6.2 Climate Justice: Who Bears the Weight of the Crisis?

A type of environmental justice with a specific focus is climate justice. **Climate justice** is a framework that recognizes the disproportionate impacts of climate change on historically marginalized communities, particularly those who have contributed the least to global greenhouse gas emissions. It is "not a fixed concept but ever-expanding and ever-changing"[58] reflecting the need to adjust justice frameworks to specific historical, cultural and social contexts. Central to this approach is the principle that the most vulnerable groups of people, especially women and marginalized groups, should not bear the heaviest burdens of a crisis, to which they have contributed only minimally compared to the major polluters (such as the transport and energy industries). Climate justice also involves **intergenerational equity**, which is defined as fairness across generations, acknowledging that today's decisions will shape the lives of future generations.[59]

### 2.6.3 Environmental Racism: When Pollution Follows the Lines of Power

**Environmental racism** refers to the systemic placement of environmentally hazardous sites and infrastructure in or near communities of color and low-income populations. It includes the inequitable distribution of environmental burdens, such as pollution and climate risks, and the

[57] OECD. 2021. Gender and the Environment: Building Evidence and Policies to Achieve the SDGs. OECD Publishing [online]. Available from: https://www.oecd.org/content/dam/oecd/en/publications/reports/2021/05/gender-and-the-environment_016cfd67/3d32ca39-en.pdf

[58] Lam, C. 2023. *What is Climate Justice?*. Earth.org [online]. Available from: https://earth.org/what-is-climate-justice/

[59] Mary Robinson Foundation. 2017. A case for guardians for future generations: Fairness between generations – a climate justice perspective (2nd ed.). Mary Robinson Foundation: Climate Justice [online]. Available from: https://www.mrfcj.org/wp-content/uploads/2017/03/Position-Paper-The-Case-for-Guardians-for-Future-Generations-Mary-Robinson-Foundation-Climate-Justice-Feb-2017.pdf

exclusion of affected groups from decision-making processes.[60] In a climate context, environmental racism can manifest in the lack of flood protection, inadequate infrastructure, and limited recovery support for marginalized neighborhoods.

Examples of environmental racism can vary. For instance, in some Indigenous communities the water from household taps is not safe to drink. Another example is that landfills and waste dumps are often located close to places where certain ethnic communities live.[61]

**Key takeaways from this chapter:**

- Environmental justice links environmental protection with human rights. It emphasizes that everyone should have equal access to a healthy, safe, and sustainable environment and should not face disproportionate environmental risks.
- Social inequalities influence environmental impacts. Women, marginalized communities, and low-income groups often face greater environmental burdens while having less power in environmental decision-making.
- Climate justice focuses on unequal responsibility and impact. Communities that contributed the least to greenhouse gas emissions often suffer the most from climate change, and justice frameworks emphasize fairness for both vulnerable populations and future generations.
- Environmental racism highlights systemic inequalities. Hazardous industries, pollution, and environmental risks are often placed near communities of color or low-income populations, while these groups are frequently excluded from decision-making.
- Justice frameworks show that environmental problems are also social problems. Addressing climate and environmental crises requires tackling inequality, power imbalances, and exclusion in environmental governance.

[60] Read more on: UN Human Rights Council. 2021. The human right to a clean, healthy and sustainable environment: resolution / adopted by the Human Rights Council on 8 October 2021. United Nations [online]. Available from: https://digitallibrary.un.org/record/3945636?v=pdf

[61] GCEF. 2025. Environmental justice, climate justice - what's the difference? Greenpeace: Greenpeace Canada Education Fund [online]. Available from: https://www.greenpeace.org/canada/en/story/70066/environmental-justice-climate-justice-whats-the-difference/

# 3. Gendered Consumption: Everyday Life in the Age of Sustainability

## 3.1 Understanding the Consumption Footprint

The concept of consumption footprint refers to the total environmental impact associated with the consumption patterns of individuals, households, or societies, encompassing resource use, greenhouse gas emissions, water consumption, and land use. Unlike production-based accounting, the consumption-based perspective highlights how wealthy countries and individuals often shift the environmental burden of their consumption to other regions, particularly to the Global South. Consumption habits are tightly linked to global sustainability challenges. Consumer behaviour covers the whole system of acquiring, using, and discarding market products, services, and experiences. Waste production comes as one of the outcomes. Sustainable practices focus on consumption patterns that do not deplete resources or cause ecological harm.[62] This approach is vital for understanding not only environmental outcomes but also their intersection with social and gender inequalities. In short, the consumption footprint makes visible not only the environmental costs of our choices, but also how these costs are unequally distributed across societies and genders.

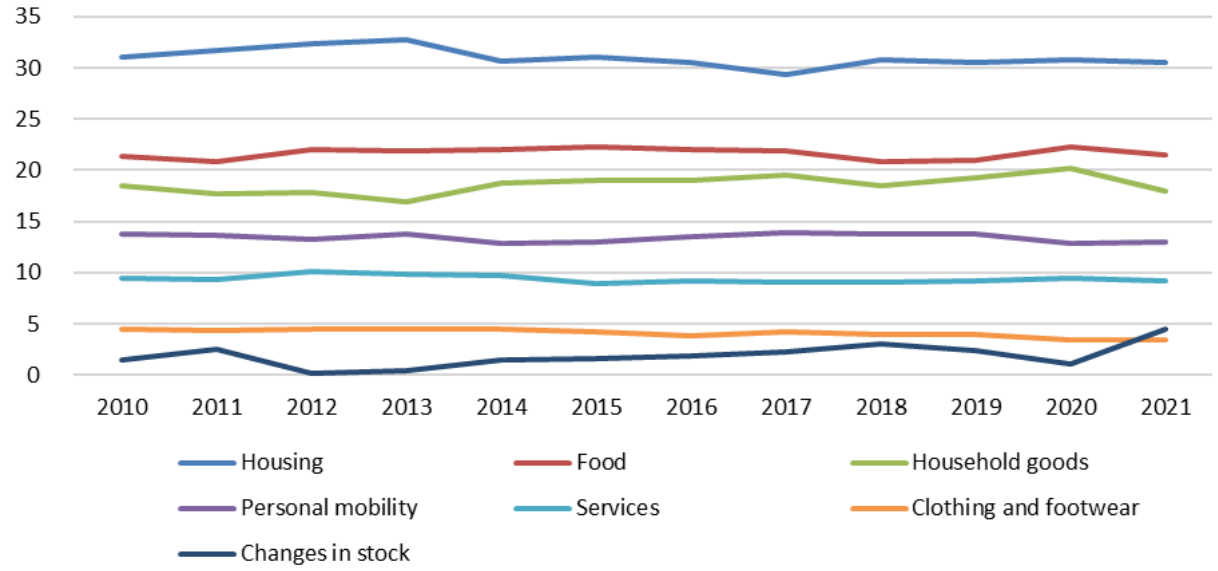



*Figure no. 3: Percentual development of EU emissions according to the given consumption domains (retrieved from metadata).*[63]

The consumption footprint assesses the environmental impacts of consumption and production patterns. The figure above addresses the footprint of EU's consumption behaviour by translating

[62] Consumption footprint (based on life cycle assessment) in Europe. 2024. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/indicators/consumption-footprint-based-on-life
[63] Global impacts from European consumption. 2024. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/indicators/global-impacts-from-european-consumption

monetary transactions of economic sectors into emissions to the environment. Housing, food and household goods cause around 70% of the total EU's impacts. A change in preferences came in 2022, when food consumption contributed the most (49%) to the total environmental impact in the EU, followed by housing (17%) and mobility (16%).

The largest contributions to the consumption footprint were related to climate change (23%), the use of fossil resources (13%) and particulate matter release (11%).[64]

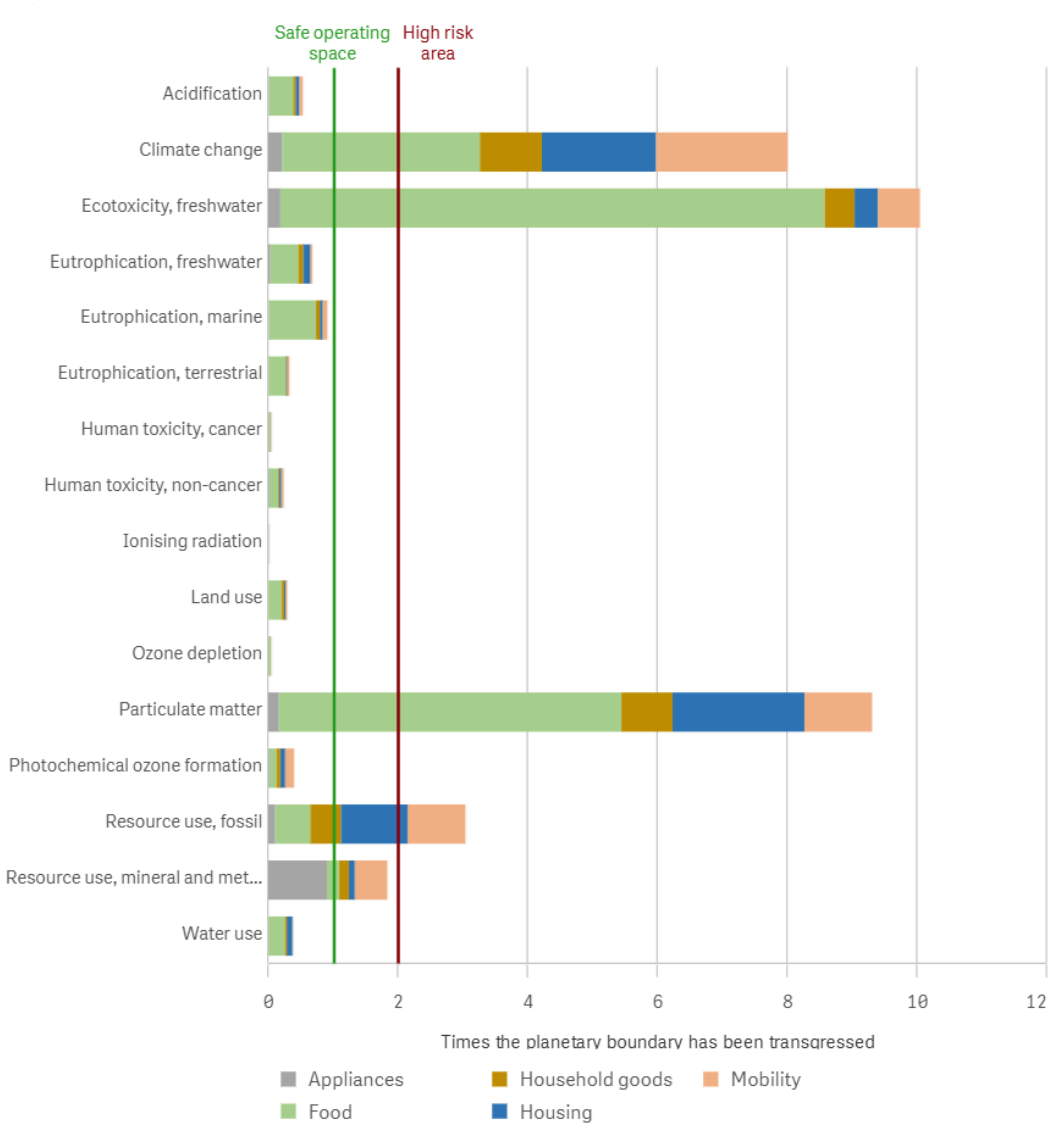



*Figure no. 4: EU consumption footprint across the 16 impact categories in 2023.*[65]

The EU consumption footprint indicator methodology is based on life cycle assessment. It uses the European Commission's environmental footprint method to assess environmental impacts in

[64] Global impacts from European consumption. 2024. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/indicators/global-impacts-from-european-consumption
[65] Consumption Footprint Platform | EPLCA. European Commission [online]. Available from: https://eplca.jrc.ec.europa.eu/ConsumptionFootprintPlatform.html

16 different categories including climate change, particulate matter formation or freshwater ecotoxicity.

### 3.1.1 EU Consumption Footprint: Results and Insights

Current EU consumption patterns are unsustainable, as impacts related to climate change, freshwater ecotoxicity, particulate matter, and resource use exceed planetary boundaries by several times. To move toward sustainability, it is essential to significantly reduce these impacts through measures such as:

- **Consuming differently:** shifting to less environmentally harmful goods and services (circular economy principles).
- **Consuming less:** extending product lifespans and reducing total throughput (degrowth approaches).
- **Scaling up eco-design:** designing for durability, repairability and recyclability from the outset.[66]

**Social and Gender Dimensions of the Consumption Footprint**

The social and gendered dimensions of the consumption footprint are often less visible, yet decisive. However, social and gendered dimensions of consumption footprint are less visible. Studies have shown that high-income households, often dominated by men in decision-making, tend to consume more energy-intensive goods and services, resulting in higher carbon footprints. Conversely, women, especially in lower-income brackets, tend to consume less and show greater engagement in environmentally responsible behaviours. At the same time, low-income groups may lack the resources to invest sustainably (e.g., paying premiums for Fairtrade), even when willingness is high, which risks shifting costs of “sustainable” choices onto those least able to pay.[67]

Gendered consumption patterns reflect broader systemic inequalities. Men statistically contribute more to emissions through their transport and dietary habits – favoring private car use and higher meat consumption. While women are more involved in daily household purchasing, and often show a higher preference for sustainable and ethical products.[68, 69] Despite lower personal environmental footprints, women and marginalized groups frequently bear the brunt of the environmental consequences; and the impacts of unsustainable consumption are not evenly distributed geographically.

These inequalities are mirrored on a global scale. High consumption rates in Europe and North America contribute to pollution, land degradation, and climate instability that often materialize in

[66] Global impacts from European consumption. 2024. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/indicators/global-impacts-from-european-consumption
[67] OECD. 2008. Promoting Sustainable Consumption: Good practices in OECD countries. OECD [online]. Available from: https://www.oecd.org/en/publications/promoting-sustainable-consumption_351d2dc6-en.html
[68] Berland, O., Leroutier, M. 2025. The gender gap in carbon footprints: determinants and implications. Grantham Research Institute on Climate Change and the Environment Working Paper 424. London: London School of Economics and Political Science. Available from: https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2025/05/working-paper-424-Berland_Leroutier.pdf
[69] Osorio, P., Tobarra, M.-A., Tomás, M. 2024. Are there gender differences in household carbon footprints? Evidence from Spain. Ecological Economics 219: 108130. Available from: https://addi.ehu.es/bitstream/handle/10810/66162/JA-2205.pdf;jsessionid=2A999B9311F21CB233B4317337C4BCAB?sequence=1

regions with weaker environmental protections and greater social vulnerability. These unequal ecological exchanges reinforce existing global inequalities and deepen gender disparities. As an example, we can use a case study from Slovakia after the collapse of the USSR, where marginalized groups of people (Roma) without property are displaced to areas (segregated Roma settlements) where they are exposed to poor living conditions, such as proximity to waste incinerators or factories, where they are forced to work due to a lack of other jobs in the area. At the same time, the only source of drinking water in this area is contaminated by the operation of these factories and incinerators; and women are in more frequent contact with it, as they are also responsible for taking care of the household, which is connected to the water supply.[70]

Also, in the Global South, this dynamic is even more evident. Women often work in informal and precarious conditions in waste management, textile production, or agriculture, i.e. sectors that serve the consumption needs of more affluent countries. Furthermore, women frequently have less access to healthcare, decision-making, and economic resources to adapt to environmental harm.[71] Marginalized people with less economic and political capacity have fewer environmental benefits, while suffering greater damage.

In connection to consumption habits, the **Earth Overshoot Day** is being set to remind humanity of the availability of natural resources. Earth Overshoot Day marks the date when humanity's demand for ecological resources and services in a given year exceeds what Earth can regenerate in that year. Nowadays, humanity consumes the resources of **1.8 Earths every single year** for more than 10 years in a row.[72]

**Key takeaways from this chapter:**

- Consumption footprint measures the environmental impact of consumption, including resource use, greenhouse gas emissions, water use, and land use. Environmental costs are unequally distributed globally and socially. High consumption in wealthy regions leads to pollution and environmental damage in poorer areas, where marginalized communities, often including women, face worse living conditions and fewer resources to respond to environmental harm.
- In the EU, food, housing, and mobility account for the majority of the consumption footprint, with food alone contributing the largest share in recent years.
- Current consumption patterns are unsustainable. Environmental impacts from EU consumption exceed planetary boundaries. Nowadays, humanity consumes the resources of 1.8 Earths every single year for more than 10 years in a row.
- Consumption is shaped by social and gender inequalities. Men tend to have higher carbon footprints due to transport and dietary habits, while women often engage more in sustainable purchasing but may lack resources to afford sustainable options.

[70] Harper, K., Steger, T., Filčák, R. 2009. "Environmental Justice and Roma Communities in Central and Eastern Europe." Environmental Policy and Governance, 19(4): 251-268. DOI:10.1002/eet.511
[71] Global Gender and Environment Outlook (GGEO). 2018. UN Environment programme [online]. Available from: https://www.unep.org/resources/report/global-gender-and-environment-outlook-ggeo
[72] Earth Overshoot Day. 2025. [online]. Available from: https://overshoot.footprintnetwork.org/

## 3.2 Where Does “Away” Go? The Hidden Life of Waste

### 3.2.1 Global and EU Waste Trends

With rapid population growth and urbanization, annual waste generation is expected to increase by 73% from 2020 levels to 3.88 billion tonnes in 2050.[73] What is interesting is that only 16 percent of the world’s population, which are high-income countries, generate about 34 percent, or 683 million tonnes, of the world’s waste.[74] It means that a relatively small share of the world carries a disproportionately large responsibility for environmental burdens, which raises questions of consumption patterns, sustainability, and global justice.

Compared with the EU average, Czechia has long generated less waste per capita and has managed to stabilize its levels. Italy has followed a similar trajectory, remaining slightly below the EU average in recent years. Slovakia, by contrast, has seen a renewed increase after an earlier decline and currently exceeds the EU average, meaning its inhabitants generate more waste per person than most Europeans.[75]

### 3.2.2 Gender and the Circular Economy

To address these environmental burdens, the European Commission adopted the Circular Economy Action Plan (CEAP) in March 2020 as one of the main pillars of the European Green Deal, Europe’s strategy for sustainable growth. The aim is to ease pressure on natural resources, foster sustainable economic development, and create jobs through the transition to a circular economy.[76]

Yet gender dimensions remain overlooked in this process. The power and utilities sector (central to circularity) remains overwhelmingly male-dominated. Similarly, in high-value circular activities such as industrial eco-design, the development of circular products, and other technology-intensive fields, women’s participation is limited. This underrepresentation stems in part from persistent gender socialization and the gendered division of labor, which continue to restrict women’s participation in STEM fields. In contrast, research shows that women are disproportionately represented in lower value, informal, and end-of-pipe activities of the circular economy, such as recycling, reuse, and waste management.[77]

Moreover, women have historically contributed[78] to circular and resource-conscious practices in everyday life, for example handing down clothes and toys, creating meals from limited supplies, growing their own food, and engaging in community-based exchange systems such as sharing

[73] Solid Waste Management. 2022. World Bank Group [online]. Available from: https://www.worldbank.org/en/topic/urbandevelopment/brief/solid-waste-management
[74] Trends in Solid Waste Management. The World Bank [online]. Available from: https://datatopics.worldbank.org/what-a-waste/trends_in_solid_waste_management.html
[75] Generation of waste by waste category, hazardousness and NACE Rev. 2 activity. 2025. Eurostat [online]. Available from: https://ec.europa.eu/eurostat/databrowser/view/env_wasgen__custom_15150225/default/table?lang=en
[76] Circular Economy Action Plan. 2020. European Commision [online]. Available from: https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en
[77] Albaladejo, M., Arribas, V., Mizaro, P. 2022. Why adopting a gender-inclusive approach towards Circular Economy matters. Industrial Analytics Platform [online]. Available from: https://iap.unido.org/articles/why-adopting-gender-inclusive-approach-towards-circular-economy-matters
[78] Palm, J. et al. 2024. A gender perspective on the circular economy: A literature review and research agenda. Journal of Industrial Ecology 28(6): 1670-1683. https://doi.org/10.1111/jiec.13554

or bartering. Still, women's engagement often reflects their situation, shaped by disadvantage and inequality. This should not remain their only role in the circular economy. Women must have equal access to opportunities that enable them to act as leaders of circular change across all sectors.

Unfortunately, the current Circular Economy Action Plan lacks a gender perspective. This risks channeling much of the funding for circular transition into energy and public utility sectors, i.e. domains dominated by men, which could further entrench existing gender inequalities.

Closing the gender gap is not only a matter of justice but also a catalyst for accelerating the circular transition. A 2020 study found that companies with greater gender diversity on their boards between 2013 and 2018 were 60% more likely to reduce energy consumption intensity, 39% more likely to cut GHG emissions, and 46% more likely to lower water use compared with less diverse companies.[79] This suggests that the underrepresentation of women could actually slow progress toward circularity. Policies that actively support the recruitment, promotion, and retention of women in leadership roles are therefore essential if the circular economy is to succeed.

### 3.2.3 Intersectional Dimensions of Waste

The findings of the survey about attitudes and practices towards waste reduction revealed that gender, age, educational level, and income as socio-demographic variables seemed to influence in diverse ways citizens' attitudes and behaviors toward waste management.[80] In the context of waste generation and sorting, we can therefore say that intersectionality plays a role.

Specifically, it was observed that women exhibited a higher participation in environmental activities, whereas citizens' knowledge of waste management emerged as a critical factor for the effectiveness of environmental practices. The traditional roles attributed to women, especially those concerning household duties, may be regarded as a significant factor influencing their heightened involvement in waste management and sustainability initiatives. In numerous cultural contexts, the oversight of household matters is predominantly regarded as a responsibility of women, which may elucidate the inclination for women to take a more active role in waste minimization and recycling activities.[81]

Also Guerrero et al. (2013) reported the generation of waste is influenced by family size, their educational level and monthly income. Although the effectiveness of education and awareness varied depending on the socio-cultural environment.[82]

However it is necessary to bear in mind that factors such as the availability of appropriate infrastructure for waste management are also important.[83] Depending on the country or region, women or men may have different access to waste separation options, which may influence

[79] Foreign Policy Analytics. 2020. Women as Levers of Change. FP Analytics [online]. Available from: https://womenasleversofchange.com/static/pdf/Women-As-Levers-Of-Change.pdf
[80] Konstantinidou, A., Ioannou, K., Tsantopoulos, G., Arabatzis, G. 2024. "Citizens' Attitudes and Practices Towards Waste Reduction, Separation, and Recycling: A Systematic Review". *Sustainability* 16(22): 9969. https://doi.org/10.3390/su16229969
[81] Ibid.
[82] Guerrero, L. A., Maas, G., Hogland, W. 2013. "Solid waste management challenges for cities in developing countries". Waste Management 33(1): 220-232. https://doi.org/10.1016/j.wasman.2012.09.008
[83] Konstantinidou, A., Ioannou, K., Tsantopoulos, G., Arabatzis, G. 2024. "Citizens' Attitudes and Practices Towards Waste Reduction, Separation, and Recycling: A Systematic Review". *Sustainability* 16(22): 9969. https://doi.org/10.3390/su16229969

their behavior. In order for waste management plans to be gender mainstreamed (which means systematically taking gender differences, roles and inequalities into account in the design, implementation and evaluation of policies[84]), one can adopt both strategies: a) increased women's participation in the development of the waste management plan that will allow for women's perspectives to be included in its design and eventually delivery; and b) mainstreaming gender in overall waste management approach from waste generation; onsite handling, storage, and processing; waste collection; waste transfer and transport; recycling, waste processing, and recovery; and disposal.[85]

### 3.2.4 The Waste puzzle

Waste management in the EU is not a uniform challenge but rather a puzzle composed of distinct streams with different environmental and gendered implications. Four areas stand out as particularly significant:

1) Food waste, the EU's largest household source of emissions, driven mainly by landfill methane, highlights gendered patterns in pro-environmental behaviour.
2) Electronic waste and artisanal mining, the fastest-growing waste stream and the source of critical raw materials for the green transition, where women and children are disproportionately exposed to toxic risks.
3) Construction and demolition waste, by far the largest waste stream in terms of volume, rooted in the male-dominated building sector and carrying heavy environmental consequences.
4) Fast fashion, embedded within household goods consumption, which illustrates how global inequalities and gendered divisions of labour translate into unsustainable patterns of production and waste.
5) Packaging waste, fueled by e-commerce and fast consumption, highlights the environmental impact of our throwaway culture.

Together, these five "puzzle pieces" account for the bulk of Europe's consumption footprint. They also highlight how waste is not only an environmental issue but also a mirror of structural inequalities: who consumes, who bears the risks, and who is excluded from the benefits of circularity.

**Ad 1) Food Waste: The Largest Household Stream**

Food waste deserves particular attention as it belongs amongst the world's largest emitters of greenhouse gases. Reducing food waste is therefore considered one of the most effective and actionable measures to mitigate climate change. At the same time, food waste reflects how gender and socio-demographic factors shape everyday practices, and it is explicitly targeted by the European Commission's commitment to halve food waste by 2030. Its primary climate

[84] What is gender mainstreaming? 2025. Council of Europe [online]. Available from: https://www.coe.int/en/web/genderequality/what-is-gender-mainstreaming
[85] Nalas. 2022. How to include Gender in Solid Waste Services. [online]. Available from: https://www.nalas.eu/wp-content/uploads/2022/12/Guide-22Including-gender-in-solid-waste-services22.pdf

impact arises from landfill decomposition: when organic matter breaks down in oxygen-poor conditions, it releases methane, a greenhouse gas far more potent than $CO_2$.[86]

In 2023, each inhabitant of the EU accounted for approximately 130 kg of food waste. Almost 70 kg of this came from households.[87] Since households play such a major role in food waste generation, understanding individual behaviors is crucial. China´s research from 2024 also shows that women are three times more likely than men to engage in composting activities, and more responsive to interventions encouraging household waste separation.[88] Iran´s research from 2022 also confirms that women often display higher levels of pro-environmental behavior, particularly in applying the 3Rs (Reduce, Reuse, Recycle), although these patterns vary by context.[89] Some of these studies originate from outside Europe and cannot be mechanically transferred to the European context. However, they illustrate a broader trend, also documented in Europe, that women tend to display greater sensitivity in pro-environmental behavior.[90, 91] At the same time, this raises the question of why men are less engaged in such practices. Addressing the role of masculinities, i.e. how norms of male identity shape attitudes toward household and environmental responsibilities, should therefore be part of any comprehensive solution (see chapter Gender Norms and Stereotypes: From Structure to Behavior).

### Ad 2) Electronic Waste: The Fastest Growing Stream

It is necessary to emphasize that the electrical waste (e-waste) is one of the fastest growing waste streams in the world, and its impacts are not gender neutral. Women, especially in developing countries, often work in the informal sector of e-waste collection and processing, where they perform physically demanding and dangerous tasks without protective equipment, health insurance, or adequate financial compensation. It is estimated that around 12.9 million women work in the informal waste sector globally; unfortunately, data focused only on the European Union does not exist in this context.[92] This work involves exposure to toxic substances such as lead, mercury, and dioxins, which have serious consequences for reproductive health, including negative impacts on fetal development in pregnant women.[93] Furthermore, women are often excluded from technical or decision-making positions in the

[86] EEA. 2022. Methane emissions in the EU: the key to immediate action on climate change. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/publications/methane-emissions-in-the-eu-the-key-to-immediate-action-on-climate-change

[87] Food waste and food waste prevention - estimates. 2024. Eurostat [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/SEPDF/cache/110448.pdf

[88] Zhang, Q., Pingping, L. 2024. Are There Gender Disparities in Household Kitchen Waste Separation? Proceedings of the 2024 9th International Conference on Modern Management, Education and Social Sciences (MMET 2024). DOI:10.2991/978-2-38476-309-2_96

[89] Alimoradiyan, H. et al. 2024. Fostering community participation in sustainable municipal solid waste management at multiple scales in Tehran, Iran. Results in Engineering 22. https://doi.org/10.1016/j.rineng.2024.102174

[90] Konstantinidou, A., Ioannou, K., Tsantopoulos, G., Arabatzis, G. 2024. “Citizens’ Attitudes and Practices Towards Waste Reduction, Separation, and Recycling: A Systematic Review”. *Sustainability* 16(22): 9969. https://doi.org/10.3390/su16229969

[91] Rybova, K. 2019. Do Sociodemographic Characteristics in Waste Management Matter? Case Study of Recyclable Generation in the Czech Republic. Sustainability 11(7). https://doi.org/10.3390/su11072030

[92] WHO. 2021. Soaring e-waste affects the health of millions of children, WHO warns. World Health Organization [online]. Available from: https://www.who.int/news/item/15-06-2021-soaring-e-waste-affects-the-health-of-millions-of-children-who-warns

[93] McAllister, L., Mageem, A., Hale, B. 2014. Women, E-Waste, and Technological Solutions to Climate Change. Health and Human Rights 16(1). Available from: https://www.researchgate.net/publication/264381053_Women_E-Waste_and_Technological_Solutions_to_Climate_Change

waste management sector[94] and face systemic disadvantages in access to technology and job opportunities.[95]

To tackle growing e-waste, the EU introduced the WEEE (Waste Electrical and Electronic Equipment) Directive first in 2002. Later revision in 2012 enhanced its focus on preventing and reducing negative impacts from WEEE by promoting separate collection, recovery, recycling, and preparation for reuse. A key element of the directive is Extended Producer Responsibility (EPR), which requires producers of electrical and electronic equipment (EEE) to finance the collection and treatment of WEEE, shifting the burden from consumers and governments to manufacturers and promoting more sustainable product design. Since the adoption of the revised directive, WEEE collection in the EU has grown significantly by around 65% between 2012 and 2021. In 2022, the target of 65% for the collection of WEEE remained out of reach for many EU countries. However, Bulgaria, Latvia, and Slovakia managed to achieve this goal, meeting the collection rate based on the amount of such equipment placed on the market in the three previous years.[96] According to the latest survey, in 2023 an average of 11.6 kg of e-waste was officially collected per inhabitant in the EU while 32.2 kg of new EEE were placed on the market per person.[97]

Recycling is a very effective solution for handling electronic waste, as well as waste from batteries and accumulators. Close to one-half (46%) of the portable batteries and accumulators sold in the EU were collected for recycling in 2022. From 2009 to 2022, the collected amount doubled. In 2022, 244 000 tonnes of portable batteries were sold in the EU, and in the same year, 111 000 tonnes of used portable batteries were collected for recycling.[98] In fact, electrical waste contains rare metals that can be effectively recycled and returned to production. Among the most valuable are gold, silver, cobalt, platinum, and copper. For example, mobile phones can contain up to 30 different metals, some of which are essential for the production of new technologies. Recycling these materials reduces the need for primary raw material extraction, which has an economic effect in the form of savings in the production of new devices, but the environmental benefits are particularly significant. At the same time, recycling has a direct and significant impact on human lives, primarily because it reduces the need for continuous extraction of new elements.

**Mining and Extractive Waste: Inequality and Survival**

Artisanal and small-scale mining is a vital source of livelihood for millions of people across the Global South, especially in regions where other income opportunities are limited. For many communities, it represents one of the few accessible options to earn a living: often flexible, immediately available, and tied to global markets with rising demand for "green" technologies,

[94] EIGE. 2021. Decision-making in environment and climate change: women woefully under-represented in the EU Member States. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-statistics/dgs/data-talks/decision-making-environment-and-climate-change-women-woefully-under-represented-eu-member-states?lang=hr&utm
[95] UNEP. 2025. Gender and Waste management. UN environment programme [online]. Available from: https://www.unep.org/ietc/index.php/what-we-do/gender-and-waste-management
[96] Eurostat. 2024. Waste statistics - electrical and electronic equipment. Eurostat: Statistics Explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/SEPDF/cache/32212.pdf
[97] Eurostat. 2025. Over 32 kg/person of new electrical & electronic gear. Eurostat [online]. Available from: https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20251030-2
[98] Eurostat. Waste statistics - recycling of batteries and accumulators. Eurostat: Statistics Explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Waste_statistics_-_recycling_of_batteries_and_accumulators

precious metals, and gemstones. During commodity price booms, artisanal and small-scale mining provides relatively quick returns, often exceeding those from agriculture or other forms of rural labor. For some households, mining offers a temporary form of economic stability or a pathway to social mobility.[99] [100]

Although mining is commonly associated with large corporations and heavy machinery, an estimated 40.5 million people around the world make a living from small-scale mining – often working informally, by hand, with limited equipment and outside the reach of state regulation. These workers typically organize their own working conditions, share both risks and profits, but also bear full responsibility for the consequences of their activity, including health and environmental impacts.[101]

Artisanal and small-scale mining typically takes place in ecologically sensitive areas, causing deforestation, water contamination, biodiversity loss, and emissions, while also deepening social and gender inequalities.

**The Invisible Workers of Transition: Men/boys and women/girls**

On average, 70% of the artisanal and small-scale mining workforce worldwide is men, but the percentage of men in Africa is 50–60%. Men face extremely hazardous working conditions: digging in unstable shafts, handling toxic substances (mercury, cyanide, lead), exposure to dust, noise, exhaustion, and often a lack of drinking water or sanitation. They earn less than $2 per day for this work.[102]

These men – and many of them are adolescents or children – work without protective gear, medical care, or legal safeguards. Boys perceived as "suitable" due to their small size and agility. They are used to entering narrow shafts and working there where others can´t fit, but they also transport materials, or act as couriers and smugglers. This work prevents them from accessing education and exposes them to severe health risks from injuries to chronic lung disease and neurological damage due to heavy metal exposure.[103, 104] For example, in the Democratic Republic of Congo, which supplies approximately 70% of the world's cobalt, 40 000 of the 255 000 miners are children (both boys and girls).[105] Even seven-year-olds are sent to search for metal tens of metres underground, working up to 12 hours a day for as little as one to two dollars.[106]

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[99] Maconachie, R. 2022. "Artisanal Mining and Livelihoods in the Global South". In Nunan, F., Barnes, C., Krishnamurthy, S. (eds.). *The Routledge Handbook on Livelihoods in the Global South*. London: Routledge. pp. 346-352. doi:10.4324/9781003014041-35.
[100] Kara, S. 2023. Cobalt Red: How the Blood of the Congo Powers Our Lives. New York: St. Martin's Press.
[101] IGF. 2017. Global Trends in Artisanal and Small-Scale Mining (ASM): A review of key numbers and issues. International Institute for Sustainable Development (IISD) [online]. Available from: https://www.iisd.org/system/files/publications/igf-asm-global-trends.pdf
[102] Ibid.
[103] Rundle, M. 2016. Child labour revealed at heart of battery supply chain. WIRED [online]. Available from: https://www.wired.com/story/cobalt-mining-amnesty-international/
[104] IGF. 2017. Global Trends in Artisanal and Small-Scale Mining (ASM): A review of key numbers and issues. International Institute for Sustainable Development (IISD) [online]. Available from: https://www.iisd.org/system/files/publications/igf-asm-global-trends.pdf
[105] Lawson, M.F. 2021. The DRC Mining Industry: Child Labor and Formalization of Small-Scale Mining. Wilson Center [online]. Available from: https://www.wilsoncenter.org/blog-post/drc-mining-industry-child-labor-and-formalization-small-scale-mining
[106] Amnesty International. 2016. "This is what we die for": Human rights abuses in the Democratic Republic of the Congo power the global trade in cobalt. London: Peter Benenson House. [online]. Available from: https://www.amnesty.org/fr/wp-content/uploads/2021/05/AFR6231832016ENGLISH.pdf

Although underground mining (performed mostly by men) is considered the “main” work, with higher prestige and pay, women’s work in more processing involves prolonged and intense exposure to toxic substances and dust[107]. Most in the area of safety and health protection risks in sub-Saharan Africa are borne by women, due to this division of tasks between male and female miners.[108] On average, 30% of the artisanal and small-scale mining workforce worldwide is female, but the percentage of women is highest in Africa, ranging from 40% to 50%. In some regions, 60% to 100% of the artisanal mining workforce is female.[109] [110] Their roles are usually limited to less visible, undervalued and lower-paid tasks, particularly in ore processing, sorting, crushing, washing materials and other support activities. These tasks are carried out above ground, often in open areas near mining sites, where women clean the extracted material by hand using water, chemicals (such as cyanide) or basic tools.[111]

Women, just as men, typically work without adequate protection, women often barefoot and without gloves, in direct contact with contaminated water.[112] This leads to dermatological, respiratory, and reproductive health issues. Despite their high level of exposure and labor, their work is systematically undervalued, reinforcing the gender wage gap. As a result, girls often drop out of school early, losing access to education and a path out of generational poverty. Many women continue working during pregnancy or while caring for small children, who are often present at the worksite. Health risks are therefore not just individual, but intergenerational. This situation is further exacerbated by the combination of environmental burdens and gendered expectations: women are not only mining workers, but also carry responsibilities for cooking, washing, and other domestic chores, often involving contaminated water.[113]

In addition to physical and economic burdens, women in artisanal and small-scale mining communities face a higher risk of sexual harassment, violence, and social stigma. The lack of legal protection and patriarchal power structures mean that abuse is often silenced or seen as a “normal part” of the mining environment. Especially vulnerable are single women, migrants, or those economically dependent on middlemen or buyers.The rate of prostitution is also high.[114] It

[107] Armah, F. A., Boamah, S. A., Quansah, R., Obiri, S., & Luginaah, I. 2016. “Working conditions of male and female artisanal and small-scale gold miners in Ghana: Examining existing disparities”. *The Extractive Industries and Society* 3 (2): 464-474. https://doi.org/10.1016/j.exis.2015.12.010

[108] IGF. 2017. Global Trends in Artisanal and Small-Scale Mining (ASM): A review of key numbers and issues. International Institute for Sustainable Development (IISD) [online]. Available from: https://www.iisd.org/system/files/publications/igf-asm-global-trends.pdf

[109] Onuh, B., 2002. Nigeria: Salt Women of Keana. AllAfrica.com [online]. Available from: http://allafrica.com/stories/200211190755.html

[110] ILO. 1999. Social and Labour Issues in Small-scale Mines: Report for discussion at the Tripartite Meeting on Social and Labour Issues in Small-scale Mines. Geneva. International Labour Organization [online]. Available from: https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40ed_dialogue/%40sector/documents/meetingdocument/wcms_714371.pdf

[111] Hinton, J. J., Veiga, M. M., & Beinhoff, C. 2003. Women and Artisanal Mining: Gender Roles and the Road Ahead. In G. Hilson (Ed.), The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries. London: Taylor & Francis. Available from: https://web.archive.org/web/20160910103259/http://siteresources.worldbank.org/INTOGMC/Resources/336099-1163605893612/hintonrolereview.pdf

[112] Armah, F. A., Boamah, S. A., Quansah, R., Obiri, S., & Luginaah, I. 2016. “Working conditions of male and female artisanal and small-scale gold miners in Ghana: Examining existing disparities”. *The Extractive Industries and Society* 3(2): 464-474. 1016/j.exis.2015.12.010

[113] Basu, N. et al. 2015. "Integrated assessment of artisanal and small-scale gold mining in Ghana--part 1: human health review." *International journal of environmental research and public health* 12 (5): 5143-5176. DOI: 10.3390/ijerph120505143

[114] Tychsen, J. (ed.). 2022. Artisanal and Small-Scale Mining Handbook for English-Speaking Eastern and Northern African Regions. Copenhagen, Denmark: Geological Survey of Denmark and Greenland [online]. Available from: https://pub.geus.dk/da/publications/artisanal-and-small-scale-mining-handbook-for-english-speaking-ea

should be emphasized that many of these children (boys, girls) work in environments where violence and abuse are daily realities.[115]

**An Ecosystem of Inequality: When Poverty Extracts and Nature Pays**

Artisanal and small-scale mining often occurs in ecologically valuable and fragile regions, such as along rivers, in tropical forests, in biodiversity hotspots, or even protected areas.[116] In order to meet basic survival needs, miners engage in large-scale deforestation for cooking fuel and metal smelting, causing soil erosion and disruption of waterways. River-based mining leads to contamination with toxic substances such as mercury, cyanide, and acid runoff, which enter the food chain. Heavy metals accumulate in fish and other aquatic organisms, returning to human bodies – most severely affecting children, pregnant women, and miners themselves.[117]

Why is it important to talk about this in the context of the European Union, when mining takes place mainly in countries of the "Global South"? The extraction of heavy and rare metals such as cobalt, lithium, or platinum is closely linked to modern technologies on which European society depends (from the production of batteries for electric vehicles, through electronics, to renewable energy sources). And the EU's demand for these materials is growing rapidly, because this sector is considered essential to achieving climate neutrality and is receiving substantial investment and political support through **the European Green Deal** and other international climate strategies.[118] Although most of these mineral resources are located outside Europe – for example, South Africa is responsible for supplying 71% of the EU's needs for platinum metals[119] – their availability directly affects the EU's ability to meet its climate goals and strengthen technological self-sufficiency. This large-scale import and rising demand place the EU in the role of a significant player towards the countries where the mining of these resources takes place. There is therefore a certain degree of co-responsibility on the part of the EU for the processes of mining.

For the EU, which positions itself as a leader in sustainability and the protection of human rights,[120] it is essential to address whether the raw materials used in European industries (electric vehicles, solar panels, wind turbines, and batteries for renewable energy storage rely on cobalt, lithium, zinc, gold) are extracted under fair and responsible conditions (read more about the sustainability paradox and the decarbonisation divide in chapter Artificial Intelligence in the Context of Climate and Gender Justice.. This means not only establishing stricter rules for

[115] Rundle, M. 2016. Child labour revealed at heart of battery supply chain. WIRED [online]. Available from: https://www.wired.com/story/cobalt-mining-amnesty-international/
[116] Butsic, V., Baumann, M., Shortland, A., Walker, S., & Kuemmerle, T. 2015. Conservation and conflict in the Democratic Republic of Congo: The impacts of warfare, mining, and protected areas on deforestation. *Biological Conservation*, *191*: 266–273. https://doi.org/10.1016/j.biocon.2015.06.037
[117] Hentschel, T., Hruschka, F., Priester, M. 2002. Global report on artisanal and small-scale mining. International Institute for Environment and Development (IIED). Available from: https://www.iied.org/sites/default/files/pdfs/migrate/G00723.pdf
[118] IGF. 2017. Global Trends in Artisanal and Small-Scale Mining (ASM): A review of key numbers and issues. International Institute for Sustainable Development (IISD) [online]. Available from: https://www.iisd.org/system/files/publications/igf-asm-global-trends.pdf
[119] ANSA. 2025. Can the EU win in the rare earths game? ANSA English [online]. Available from: https://www.ansa.it/english/news/2025/03/26/can-the-eu-win-in-the-rare-earths-game_7a91d803-e139-4102-b673-a8ba682f9f10.html
[120] EEAS. 2020. EU takes global lead in protecting and supporting human rights and democracy. European External Action Service [online]. Available from: https://www.eeas.europa.eu/eeas/eu-takes-global-lead-protecting-and-supporting-human-rights-and-democracy_en

supply chains, but also supporting projects that improve living conditions in mining regions (for example, emphasizing transparency, fair labor conditions, and environmental standards).

At the same time, attention to this issue represents an opportunity for innovation within the EU itself. Investments in the recycling of rare metals, research into alternative materials, and more efficient use of resources can reduce dependence on imports and strengthen the resilience of the European economy. Combining technological progress with responsible foreign policy can therefore bring not only economic benefits, but also strengthen the EU's global role as an actor promoting fairer and more sustainable rules for the management of natural resources.

### Ad 3) Construction & Demolition Waste

The management of construction and demolition (C&D) waste is a critical challenge for environmental policy in the European Union. Although C&D wastes are considered among the most easily recyclable, with a potential for reuse of up to 97%, they constitute one of the largest volumes of all waste in the EU.[121]

In 2022, construction and demolition waste made up 38.4% of all waste generated in the EU.[122]

Although the official EU recovery rate is reported at 89%,[123] this is mostly due to the reuse of materials such as soil and stones.[124] In contrast, materials like wood, glass, or plastics are recycled much less.[125] Moreover, a growing share of hazardous C&D waste is exported outside the EU,[126] raising concerns about both transparency and environmental justice.

The European construction industry remains one of the most gender-unbalanced sectors, with women making up only about 10% of the total workforce.[127] This imbalance becomes especially problematic in the context of the green transition. Investments in green construction and waste management are expected to generate new jobs and opportunities,[128] yet women's persistent underrepresentation and the barriers they face mean that they risk being excluded from these benefits. Instead of closing gaps, such investments may inadvertently deepen unequal access to employment and financial opportunities, reinforcing gender disparities in the labor market.

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[121] Eurostat. 2024. Waste statistics. Eurostat: Statistics Explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php/Waste_statistics
[122] Eurostat. 2024. Waste statistics. Eurostat: Statistics Explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Waste_statistics
[123] Caro, D. at al. 2024. Environmental and socio-economic effects of construction and demolition waste recycling in the European Union. Science of the Total Environment, 908, Article 168295. https://doi.org/10.1016/j.scitotenv.2023.168295
[124] EPA. 2023. Construction & Demolition Waste Statistics for Ireland. Environmental Protection Agency [online]. Available from: https://www.epa.ie/our-services/monitoring--assessment/waste/national-waste-statistics/construction--demolition/
[125] Ibid.
[126] Eurostat. 2024. Waste shipment statistics. Eurostat: Statistic Explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Waste_shipment_statistics
[127] iBinder. Why we need more women in construction. iBinder [online]. Available from: https://ibinder.com/en/knowledge-hub/why-we-need-more-women-in-construction/
[128] Sharma, N., Pundir, V., Goel, M., Bhatt, V. 2022. Green Entrepreneurship: Prospects and Challenges. International Conference on Fourth Industrial Revolution Based Technology and Practices (ICFIRTP): 96–100. https://doi.org/10.1109/ICFIRTP56122.2022.10059446

This issue is particularly significant as data[129] show a clear link between women's empowerment and the development of financial flows that support a sustainable economy. In other words, when women have better access to decision-making positions, capital, or investment opportunities, the volume of funds directed towards environmentally friendly projects (or such as sustainable construction or construction waste management) grows substantially. Evidence also shows that gender diversity in leadership not only improves the quality of environmental management but also enhances the long-term performance of companies.[130]

But this gender imbalance translates into significant health and safety risks for women. Women in construction report a higher rate of perceived stress and work-related injuries compared to men. This is often a direct result of the male-dominated culture, lack of properly fitting personal protective equipment, and inadequate sanitary facilities. Women also face a higher incidence of gender discrimination, bullying, and sexual harassment, which can lead to the withholding of essential practical training and an increased risk of injury.[131]

The health risks associated with C&D waste extend beyond occupational hazards. When disposed of improperly, construction waste releases hazardous substances such as asbestos, heavy metals, and lead into the environment, polluting the air, soil, and water and contributing significantly to the development of serious diseases, particularly lung cancer, mesothelioma, asbestosis, and cardiovascular disease. Between 1994 and 2010, the European Region registered 106 180 deaths from mesothelioma and asbestosis, accounting for 60% of such deaths worldwide.[132] Men face significantly higher risks because they make up the majority of the on-site workforce in construction and demolition. Their daily tasks often involve direct exposure to asbestos, heavy metals, dust, and other hazardous substances at much higher concentrations than in the general environment. Prolonged exposure in these settings explains why men show substantially higher rates of mesothelioma, asbestosis, and other occupational diseases compared to women.[133] Women are also a risk group, either through secondary exposure (e.g., washing contaminated work clothes) or due to higher biological sensitivity to certain toxins.

These patterns are further reinforced by gender differences in preventive health behavior and healthcare-seeking practices. Research on differences in healthcare utilization (2025) consistently shows that women are more likely to use outpatient and preventive services, while men tend to engage with healthcare systems less frequently until more serious conditions arise. Although hospitalization rates remain relatively similar, the gap in routine and preventive care varies significantly across European countries, pointing to the role of cultural norms, health policies, and access barriers in shaping these behaviors. Addressing these disparities therefore

[129] Chen, F.-H. 2024. Green finance and gender equality: Keys to achieving sustainable development. *Green Finance* 6(4): 585–611. https://doi.org/10.3934/GF.2024022
[130] Ibid.
[131] Curtis, H., Meischke, H., Stover, B., Simcox, N., Seixas, N. 2018. Gendered Safety and Health Risks in the Construction Trades. Annals of Work Exposures and Health 62(4): 404–415 DOI:10.1093/annweh/wxy006
[132] Kameda, T., Takahashi, K., Kim, R., Jiang, Y., Movahed, M., Park, E.K., Rantanen, J. 2014. Asbestos: use, bans and disease burden in Europe. Bull World Health Organ 92(11): 790-797. doi: 10.2471/BLT.13.132118
[133] Alpert, N., van Gerwen, M., Taioli, E. 2020. Epidemiology of mesothelioma in the 21st century in Europe and the United States, 40 years after restricted/banned asbestos use. Transnational Lung Cancer Research 9(1). Available from: https://tlcr.amegroups.org/article/view/33627/html

requires targeted, context-sensitive interventions that reduce gender-specific obstacles and promote more balanced healthcare utilization.[134]

At the same time, national-level data illustrate that these trends are not always uniform. For instance, findings from the Czech Republic indicate a more nuanced picture: a slightly higher proportion of men reported attending a preventive check-up with a general practitioner within the past year compared to women, while women were more likely to have had check-ups within a longer time frame or to engage more consistently in certain monitoring practices, such as blood pressure measurement.[135] These variations suggest that gender differences in prevention are complex and context-dependent, but overall they still point to a broader pattern in which men are less engaged in regular, preventive healthcare, potentially increasing their vulnerability to late diagnosis and more severe health outcomes.

Furthermore, the issue of environmental justice is apparent in the disproportionate impact of waste disposal on vulnerable communities. Marginalized groups, such as the Roma and Traveller communities in Europe, are often forced to live near landfills and industrial zones. This exposure to pollution is a form of **environmental racism** that leads to a life expectancy for these communities that is 10-15 years shorter than other Europeans.[136]

### Ad 4) Fast Fashion: Recycling, Waste, and Gender Contexts

Fast fashion is not only a story of consumption and production inequalities (see chapter Textile Industry) but also a growing waste challenge. Clothing has the fourth highest impact on the environment of all categories of EU consumption, but the impact is often felt in non-EU countries. At the end of the fashion life cycle, the industry faces mounting challenges in managing waste, with significant gendered implications. Globally, less than 1% of materials used to produce clothing are recycled back into new garments[137]; most discarded clothes end up in landfills or incinerators, often in or near communities in the Global South[138]. These disposal sites disproportionately impact marginalized populations, where women frequently shoulder the burden of managing household waste and navigating its health consequences. Women in these communities are often employed in informal waste-picking economies, sorting

[134] Golinelli, D., Sanmarchi, F., Guarducci, G., Palombarini, J., Benetti, P., et al. 2025. “Gender differences in healthcare utilization across Europe: Evidence from the European Health Interview Survey”. *Health Policy* 162, 105448. https://doi.org/10.1016/j.healthpol.2025.105448

[135] Čapková, N., Lustigová, M. 2022. *Zdravotní stav české populace: Výsledky studie EHES 2019*. Státní zdravotní ústav [online]. ISBN 978-80-7071-416-4 (pdf). Available from: https://szu.gov.cz/wp-content/uploads/2023/01/ehes2022.pdf#:~:text=X%20Preventivn%C3%AD%20prohl%C3%ADdku%20u%C2%A0praktick%C3%A9ho%20l%C3%A9ka%C5%99e,interval%20preventivn%C3%AD%20prohl%C3%ADdky%20del%C5%A1%C3%AD%20ne%C5%BE

[136] Heidegger, P., Silk, R., Doghi, L. 2024. Bearing the brunt: Roma and traveller experiences of environmental racism in Western Europe. European Environmental Bureau [online]. Available from: https://eeb.org/wp-content/uploads/2024/01/roma-report-WEB-1.pdf

[137] Šajn, N. 2019. Environmental impact of the textile and clothing industry: What consumers need to know. European Parliament [online]. Available from: https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI(2019)633143_EN.pdf

[138] Wohlgemuth, V. 2022. How fast fashion is using the Global South as a dumping ground for textile waste. Greenpeace International [online]. Available from: https://www.greenpeace.org/international/story/53333/how-fast-fashion-is-using-global-south-as-dumping-ground-for-textile-waste/

through textile waste under hazardous conditions without legal protections or adequate pay.[139] Furthermore, discarded fast fashion items frequently flow into second-hand markets in African and South Asian countries, undermining local textile industries and creating new dependencies that erode local economic resilience.[140]

It is necessary to talk about waste made by clothes in this Desk report, because EU citizens are one of the main fashion consumers. Around 12 kg of clothing per person is dumped each year in the EU.[141] In 2019, almost half of the used textiles exported from the EU went to African countries and 41% were exported to Asian countries, according to the European Environment Agency (EEA). The amount of used textiles exported from the EU has tripled over the past two decades from slightly over 550,000 tonnes in 2000 to almost 1.7 million tonnes in 2019.[142]

Textile production involves over 1,900 chemicals, 165 of which are classified as hazardous in the EU.[143] However, because ultra-fast fashion retailers operate exclusively online and have no physical presence within EU member states, they are not subject to the same regulatory obligations regarding toxic substances that apply to domestic brick-and-mortar stores. At the same time, a significant portion of this low-quality clothing also ends up in second-hand shops within the EU, which are exempt from REACH chemical safety regulations,[144] creating a regulatory blind spot that increases the risk of circulation of ultra fast fashion items such as those from TEMU or Shein. While circular solutions (such as improved recycling technologies, extended producer responsibility, and upcycling) hold promise, they risk remaining technocratic fixes if they do not address the gendered and social inequalities embedded in global waste systems. A truly sustainable and just approach to fashion waste must center the voices, labor, and rights of the women most affected across the global recycling chain.[145] [146]

[139] Dias, S., Ogando, A.C. 2015. From Theory to Action: Gender and Waste Recycling A Toolkit for Teachers, Researchers and Practitioners. Book One: Concepts, Tools and Good Practices. WIEGO [online]. Available from: https://www.wiego.org/wp-content/uploads/2019/09/Dias-Ogando-gender-and-waste-toolkit-book-one.pdf
[140] Suarez-Visbal, L. J., Rosales-Carreón, J., Corona, B., Alomoto, W., Worrell, E. 2024. Walking the circular talk: Analyzing the soft and hard aspects of circular economy implementation of ten business cases within the textile and apparel value chain. *Journal of Cleaner Production 476*, 143683. https://doi.org/10.1016/j.jclepro.2024.143683
[141] EU strategy for sustainable and circular textiles. European Commission [online]. Available from: https://environment.ec.europa.eu/strategy/textiles-strategy_en
[142] EEA. 2023. Europe's used textiles are an increasing waste and export problem. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/newsroom/news/europes-used-textiles-are-an
[143] Šajn, N. 2019. Environmental impact of the textile and clothing industry: What consumers need to know. European Parliament [online]. Available from: https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI(2019)633143_EN.pdf
[144] European Commission. 2018. *Commission Regulation (EU) 2018/1513 of 10 October 2018 amending Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as regards certain substances classified as carcinogenic, mutagenic or toxic for reproduction (CMR), category 1A or 1B*. Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=PI_COM:C(2018)6521
[145] Suarez-Visbal, L. J., Rosales-Carreón, J., Corona, B., Alomoto, W., Worrell, E. 2024. Walking the circular talk: Analyzing the soft and hard aspects of circular economy implementation of ten business cases within the textile and apparel value chain. *Journal of Cleaner Production 476*, 143683. https://doi.org/10.1016/j.jclepro.2024.143683
[146] Suarez-Visbal, L. J., Rosales-Carreón, J., Corona, B., Hoffman, J., Worrell, E. 2024. Transformative circular futures in the textile and apparel value chain: Guiding policy and business recommendations in the Netherlands, Spain, and India. *Journal of Cleaner Production 447*, 141512. https://doi.org/10.1016/j.jclepro.2024.141512

## Ad 5) Packaging Waste: The Hidden Cost of Convenience

Packaging waste reflects the growing pressures of modern consumption and the rapid rise of e-commerce. As people buy more, especially online, products are shipped individually, often wrapped in multiple layers of paper, plastic, and cardboard for protection and branding. This surge in parcel deliveries has led to a steady increase in packaging materials being used and discarded.

While packaging plays a crucial role in protecting goods and ensuring safe delivery, its short lifespan from unboxing to disposal makes it one of the most visible symbols of a throwaway culture. The growing volume of packaging waste not only strains recycling systems but also contributes to resource depletion, greenhouse gas emissions, and pollution. Addressing this issue requires rethinking how products are packaged, promoting reusable materials, and encouraging consumers and businesses alike to make more sustainable choices.[147]

In 2023, the EU generated nearly 80 million tonnes of packaging waste which equals to about 178 kilograms per person. Although this represents a slight decrease compared with 2022, Europeans still produced more packaging waste than a decade ago. Most of it came from paper and cardboard (40%), followed by plastic (20%), glass (19%), and wood (16%).[148]

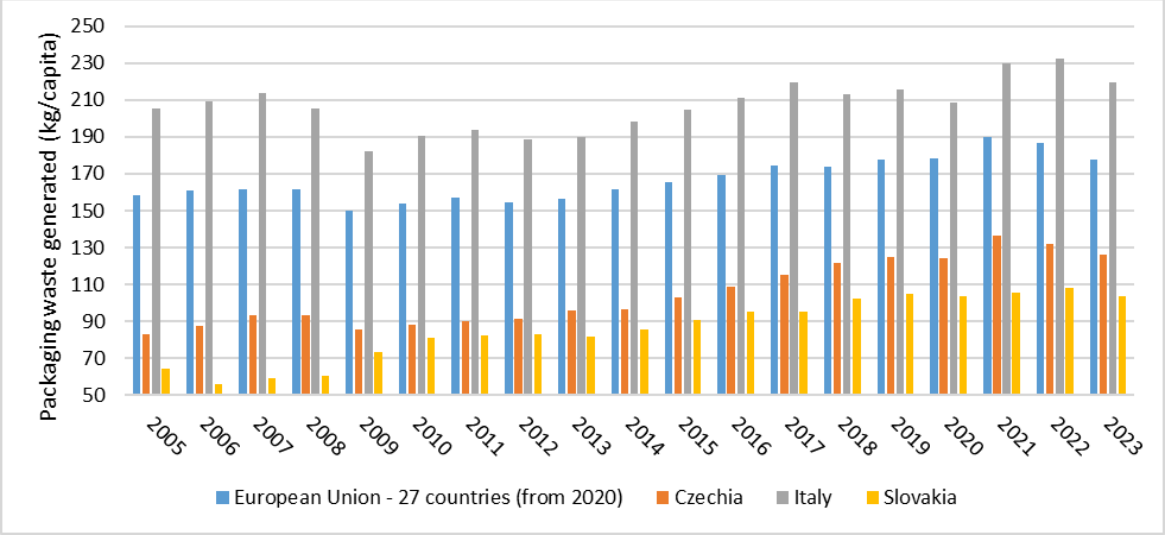



*Figure no. 5: Packaging waste generation in the EU between 2005 and 2023.*[149]

When it comes to plastics, each EU resident generated an average of 35 kilograms of plastic packaging waste, of which only around 15 kilograms was recycled.[150] While the amount of plastic waste fell only slightly from the previous year, recycling rates showed a modest improvement, highlighting both progress and the persistent challenge of reducing plastic dependence across the EU. However, in 2023, Belgium, Netherlands, Italy, Czechia, Slovenia,

[147] Eurostat. 2025. Packaging waste statistics. Eurostat: Statistics Explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging_waste_statistics&oldid=690329
[148] Ibid.
[149] Eurostat. 2025. Generation of packaging waste per capita. Eurostat: Data Browser [online]. Available from: https://ec.europa.eu/eurostat/databrowser/view/cei_pc040__custom_18837765/default/table?lang=en
[150] Eurostat. 2025. Plastic packaging waste in the EU: 35.3 kg per person. Eurostat [online]. Available from: https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20251022-1

Slovakia and Spain recycled more than 70% of the packaging waste generated, the target to be reached by 2030.[151]

**Key takeaways from this chapter:**

- Global waste is rapidly increasing, projected to rise 73% by 2050 to 3.88 billion tonnes, with high-income countries generating a disproportionate share. In the EU, Czechia and Italy produce below-average waste, while Slovakia exceeds the EU average.
- High-income countries represent only 16% of the world's population but generate 34% of its waste, raising critical questions about global justice and consumption patterns.
- While the EU's Circular Economy Action Plan (CEAP) aims for sustainable growth, it lacks a gender perspective; this risks channeling funds into male-dominated technical sectors while overlooking women's underrepresentation in leadership and STEM-related circular roles.
- Companies with greater gender diversity on their boards are significantly more likely to reduce energy consumption, cut emissions, and lower water use, suggesting that closing the gender gap is essential for a successful circular transition
- Europe's footprint is driven by five key streams with distinct gendered impacts: Food Waste (largest household stream), E-waste (fastest growing), Construction (male-dominated volume), Fast Fashion (global labor inequality), and Packaging (e-commerce surge).
- Women play a critical but often overlooked role in the circular economy, particularly in recycling, reuse, and household sustainability practices, while high-value sectors remain male-dominated. Gender diversity in leadership improves environmental outcomes, emphasizing the need for inclusion across all waste management stages.
- Construction and demolition waste is the EU's largest volume stream, dominated by men, creating gendered barriers to green jobs. Fast fashion and packaging waste reflect global consumption patterns, with women disproportionately affected in informal and hazardous roles. Overall, waste reflects both environmental and social inequalities, requiring gender- and context-sensitive solutions.

[151] Eurostat. 2025. Packaging waste statistics. Eurostat: Statistics Explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging_waste_statistics&oldid=690329

## 3.3 Everyday Practices and Sustainability

### 3.3.1 Water in Everyday Life

Water is a fundamental resource for human health, daily life, and sustainable development. Globally, water scarcity already affects half of the world's population for at least part of the year, and demand continues to grow due to urbanization, agriculture, and climate change. Between 1970 and 2000, water deficits were linked to a 10% increase in global migration (see chapter Climate Mobility & Gendered Risks), this shows that lack of water is not only an environmental problem, but also social and political, because it triggers the movements of the population.[152] Access to and use of freshwater, however, are not gender-neutral. Women and men engage with water in different ways, shaped by social roles and structural inequalities. These patterns are further influenced by whether the context is the Global South or the Global North.

Research has long highlighted a binary narrative: women are portrayed as responsible for reproductive tasks – such as collecting water, cooking, hygiene, and cleaning – while men are associated with productive uses of water, particularly in agriculture and livestock. This framing has been embedded in research, policies, and advocacy in the water sector, both in the global South and the global North, but in different ways. Earlier critiques[153] of the global South emphasized that water policies and projects often focused mainly on women's practical needs, because women and girls frequently carry the main responsibility for water collection. This is a physically demanding and sometimes dangerous task that limits their opportunities for education, paid work, and political participation. In the global South, many interventions therefore concentrated on improving household infrastructure, while neglecting structural inequalities such as women's underrepresentation in technical and decision-making roles. Although many recent initiatives, including those promoted by UN-Water, now stress that gender-responsive safely managed water, sanitation and hygiene requires both addressing practical needs and ensuring women's active participation in planning, governance, and management, persistent inequalities remain.[154] These inequalities persist today: women remain closely associated with unpaid domestic water management, yet continue to be underrepresented in technical roles and excluded from decision-making positions that shape water governance. Recognition of this unpaid work in the water sector is essential for gender equality and for a fairer distribution of labor in the global South.[155]

While these dynamics are most visible in the global South, where women's unpaid responsibility for water collection remains a central issue, similar patterns can also be traced in industrialised regions. As most EU Member States report full coverage of high-quality water, the discourse in Europe shifts away from access and towards efficiency and water-saving measures.[156]

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[152] UN World Water Development Report. 2024. Statistics: Water demand and use. UNESCO [online]. Available from: https://www.unesco.org/reports/wwdr/en/2024/s

[153] Moser, C. 1989. Gender planning in the third world: Meeting practical and strategic gender needs. World Development 17(11): 1799-1825. https://doi.org/10.1016/0305-750X(89)90201-5

[154] UN. 2025. Gender and Water. United Nations [online]. Available from: https://www.unwater.org/water-facts/water-and-gender

[155] The state of women in the water domain. 2024. *Nat Water* 2, 803. https://doi.org/10.1038/s44221-024-00313-7

[156] EIGE. 2025. Gender-responsive evaluation for a sustainable future for all: Specific objective v. Promoting access to water and sustainable water management. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-mainstreaming/toolkits/gender-responsive-evaluation-greena/tool-8/step-1/specific-objective-v

Within this context, research shows that women in industrialised regions tend to frame water management primarily through the domestic sphere[157] [158] [159] – reducing household consumption and improving efficiency – while men more often focus on irrigation systems and farm-level solutions. This difference is not simply a matter of preference, but reflects structural inequalities: women have less ownership of farmland, less involvement in agricultural business property, and lower participation in water allocation policies. As a result, women are often excluded from formal water governance and decision-making.[160]

Women's tendency to save water in the household should therefore not be understood as their main or natural contribution to water governance – this would mean repeating the mistake of many non-industrialized contexts, where the focus was limited to household infrastructure and women's voices were excluded from decision-making processes. Research (2021) from Andalusia (Spain) shows that women report saving more water at home, but this alone does not explain why they see domestic savings as the best solution. In fact, domestic savings are not the most effective measure compared to irrigation, which has a far greater impact on water efficiency, yet many women still perceive the household as the main space for action. The reasons are shaped by both women's greater environmental engagement and by structural inequalities, such as unequal access to land, irrigation, and decision-making. In other words, their position in society pushes them to focus on the household, as they have fewer opportunities to influence water management elsewhere.[161]

If we accept the narrative that women's role in water governance is primarily domestic, we reinforce traditional gender divisions and risk excluding them from where the biggest water savings are actually needed, such as agriculture or hydrological planning. A gender-sensitive approach to water governance in Europe therefore requires more than praising women's household behaviours. It must actively remove the barriers that prevent women from entering decision-making spaces, provide equal access to knowledge and resources, and create conditions in which women's perspectives can meaningfully influence water policies. Such inclusion can strengthen the social and environmental effectiveness of water governance, but given the many structural and contextual factors at play, it cannot be assumed that women's participation alone will automatically solve ecologic problems. Rather, it should be understood as one of the key tools for making governance more just, transparent, and responsive.[162]

Finally, however, it is important to note that even in Europe, the availability of freshwater is uneven. Southern and densely populated areas face significant water stress, particularly during summer months, due to high demand from agriculture, public supply, and tourism.[163]

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[157] Granda, L. et al. 2024. Pro-environmental behaviour in household water use. A gender perspective. Sustainable Water Resources Management 10(49). https://doi.org/10.1007/s40899-023-01027-6

[158] Alvarado Espejo, J.M., Ontaneda, W., Padilla N., Ochoa-Moreno, W. 2021. Water saving practices conditioned by socioeconomic factors: a case study of Ecuadorian households. Journal of Environmental Manage 293: 112818. https://doi.org/10.1016/j.jenvman.2021.112818

[159] Martínez-Espiñeira, R., García-Valiñas, M., Nauges, C. 2014. Households' pro-environmental habits and investments in water and energy consumption: determinants and relationships. Journal of Environmental Manage 133: 174–183. https://doi.org/10.1016/j.jenvman.2013.12.002

[160] Lafuente, R.m Paneque, P., Cañadas, J.L. 2021. The Gender Gap in Water Management Preferences: Analyzing the Influence of Environmental Concern and Political Knowledge. Society & Natural Resources 34(11): 1472-1491. https://doi.org/10.1080/08941920.2021.1971808

[161] Ibid.

[162] Ibid.

[163] EEA. 2025. Water scarcity conditions in Europe. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/indicators/use-of-freshwater-resources-in-europe-1#:~:text=Water%20scarcity%20affected%2034%25%20of,situation%20has%20intensified%20since%202010.

Interestingly, this partly overlaps with the results of the 2023 survey on gender mainstreaming in water management: while the Czech Republic and Slovakia report high scores (80–100), Italy – a southern country exposed to some of the highest levels of water stress – scored only medium–low (40–50). This suggests that regions under the greatest environmental pressure also struggle with weaker institutional support for gender equality in the water sector. Such findings highlight the above-mentioned link between equality and environmental protection.[164]

### 3.3.2 Eating and Food Systems

Food systems are intrinsically linked to the environment. Agriculture is one of the major drivers of environmental change, contributing significantly to greenhouse gas emissions, biodiversity loss, water depletion, and soil degradation. Globally, food systems are estimated to account for about one-quarter of greenhouse gas emissions;[165] within the European Union, agriculture alone is responsible for roughly 11% of total emissions[166] and uses around 40% of the Union's land area[167]. These figures illustrate the substantial environmental footprint of food production. At the same time, environmental change – particularly climate change – directly affects food security[168] and availability by shaping crop yields, water supplies, and the overall viability of farming systems[169].

Approaches to eating – from what we choose to consume to how that food is produced – therefore need to be assessed through their environmental impacts and gendered dimensions. Gender roles, responsibilities, and power relations influence how people interact with food systems: who is most vulnerable to environmental shocks, who benefits from sustainable food initiatives, and whose concerns are prioritized in dietary and production choices.

**Dietary choices**

Gender intersects with various approaches from dietary choices such as veganism, vegetarianism, reduced meat consumption, local and seasonal food. Choosing plant-based diets (veganism/vegetarianism) or significantly reducing meat consumption is widely recognized as having a lower environmental footprint regarding GHGs, land use, and water use compared

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[164] Global Water Partnership. (2025). *Mainstreaming gender equality in water resources management* (Policy Brief). Stockholm: GWP. Retrieved from https://www.gwp.org/globalassets/global/about-gwp/publications/policy-briefs/mainstreaming-gender-equality-in-water-resources-management_2025_en.pdf

[165] Jia, G. et al. 2019. Land–climate interactions. In: Shukla, P. R. et al. 2022. *Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. Cambridge University Press. Available from: https://doi.org/10.1017/9781009157988.004

[166] EEA. 2022**.** *Annual European Union greenhouse gas inventory 1990–2020 and inventory report 2022: Submission to the UNFCCC Secretariat* (EEA Report No 23/2022). European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/publications/annual-european-union-greenhouse-gas-1

[167] Eurostat. 2020. *Farms and farmland in the European Union – statistics.* Eurostat [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Farms_and_farmland_in_the_European_Union_-_statistics#Highlights

[168] Jia, G. et al. 2019. Land–climate interactions. In: Shukla, P. R. et al. 2022. *Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. Cambridge University Press. Available from: https://doi.org/10.1017/9781009157988.004

[169] EEA. 2022**.** Annual European Union greenhouse gas inventory 1990–2020 and inventory report 2022: Submission to the UNFCCC Secretariat (EEA Report No 23/2022). European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/publications/annual-european-union-greenhouse-gas-1

to diets high in animal products.[170] Meat consumption is culturally linked to masculinity, strength, and status in many societies. Carol J. Adams' foundational work, "The Sexual Politics of Meat" argues that this link contributes to the objectification of both animals and women within patriarchal structures. This means that women and animals are treated like objects rather than living beings. Adams says that just as women's bodies are often seen only as sexual parts (for example in pornography or sexist advertisements), animals' bodies are turned into "meat", hiding the fact that they were once living creatures. This process erases the real subject behind the body (the woman or the animal) so people feel less responsible for the harm done to them. Adams believes these patterns come from the same system of power, where masculinity is linked with control and domination over women and animals is normalized.[171] And meat consumption is also culturally tied to masculinity, strength, and status, which leads to the fact that shifting to plant-forward diets can be perceived as a challenge to male identity and thus act as a barrier for men.[172]

Studies suggest potential gender differences in the primary motivations for adopting diets like vegetarianism or veganism; while both men and women cite health, ethics, and environment, the emphasis placed on each can differ.[173] Societal pressures around body image, often disproportionately impacting women and driven by marketing, can also influence the adoption of diets framed as "healthy" or for weight management, sometimes overlapping with environmental motivations. Women *may* show slightly higher rates of vegetarianism in some EU countries and may be more likely to cite environmental or ethical concerns, although motivations are complex and vary greatly individually.[174] But dietary choices are not only about individual preferences – they are embedded in the everyday work of handling food.

**Food Preparation, Consumption, and Waste**

The environmental benefits of household dietary shifts depend on how food is planned, prepared, and consumed. Data consistently shows that women in the EU perform a disproportionate amount of unpaid work related to household management, including food and cooking. For instance, OECD data from various EU countries shows women spending an average of 2-3 hours more per day on unpaid work than men.[175] Women's important role in managing food, as the primary 'gatekeepers' of household nutrition, women are central to every dimension of food security, including budgeting and meal preparation. They serve as key agents in reducing waste and ensuring stability through strategies of food preservation and the processing and storage of food grains, which directly reduces post-harvest losses. Their expertise includes food preservation techniques (such as drying, pickling, or fermenting) that help maintain a steady household supply.[176]

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[170] Poore, J. & Nemecek, T. 2018. Reducing food's environmental impacts through producers and consumers. *Science*, 360: 987–992. https://doi.org/10.1126/science.aaq0216
[171] Adams, C. J. 1990. *The sexual politics of meat: A feminist-vegetarian critical theory*. Continuum.
[172] Fonseca, R. P., De Groeve, B., & Graça, J. 2025. Masculinizing plant-based diets as an appeal for dietary change among men. *Food Quality and Preference, 123*, 105341. https://doi.org/10.1016/j.foodqual.2024.105341
[173] Rosenfeld, D. L. 2020. Gender differences in vegetarian identity: How men and women construe meatless dieting. *Food Quality and Preference, 81*, 103859. https://doi.org/10.1016/j.foodqual.2019.103859
[174] Ruby, M.B. 2012. Vegetarianism. A blossoming field of study. Appetite 58(1): 141-150. DOI: 10.1016/j.appet.2011.09.019
[175] OECD. 2021. Bringing Household Services Out of the Shadows: Formalising Non-Care Work in and Around the House. OECD Publishing [online]. Available from: https://doi.org/10.1787/fbea8f6e-en.
[176] Meighan, K. 2024. "Food Systems and Gender: The Groundbreaking Role of Rural Women". Journal of International Affairs [online]. Available from: https://jia.sipa.columbia.edu/news/food-systems-and-gender-groundbreaking-role-rural-women#!#_ftn7

At the same time, the decision to purchase products with less packaging or seek out more environmentally friendly options (to reduce plastic waste) during grocery shopping often falls on the person primarily responsible for this task, which is frequently a woman. However, women often face a disproportionate burden of unpaid labor, resulting in time poverty that can reduce the time available for food preparation and compromise the quality of care and nutrition. Because women must adapt their food systems work to their heavy domestic and care burdens, their management efforts are frequently unrecognized. Furthermore, in rural areas their potential to secure household food is frequently hindered by structural and systemic barriers, such as limited access to productive resources like capital, technology, and land.[177]

At the same time, the decision to purchase products with less packaging or seek out more environmentally friendly options (to reduce plastic waste) during grocery shopping often falls on the person primarily responsible for this task, which is frequently a woman. While this central role gives women significant agency in making environmentally positive choices at the household level (e.g. reducing meat consumption, composting), it also places an unequal burden of labor and responsibility on them to manage the environmental impact of household food consumption, especially if partners or other family members do not equally share tasks.

Food waste makes this link tangible. In the EU, over 59 million tonnes of food are wasted every year, while more than 42 million people cannot afford a quality meal every second day.[178] Also, food waste contributes significantly to greenhouse gas emissions in landfills. Energy use in cooking and food storage also has an environmental footprint, for example choosing less processed food can reduce energy use and waste associated with manufacturing and packaging.[179]

Individual consumer choices, however, are not enough. The way food is produced is shaped by deeper inequalities in access to land, resources, and decision-making, which are discussed further in chapter Who Owns Land, Water, Energy? Gendered Access to Resources. Beyond households, women also play a vital role in shaping collective food practices and movements

**Food Activism and Movements**

Women play an important role in grassroots food activism and environmental justice initiatives. Across the EU they often lead community gardens, local farmers' markets, seed-saving networks, or permaculture groups, bringing perspectives grounded in care, health, and social equity. These initiatives show that women's engagement extends beyond households into community-level practices that create more sustainable and resilient food systems. A truly transformative approach recognizes that environmental sustainability and gender justice are mutually reinforcing goals: empowering women within these movements strengthens both ecological outcomes and social justice.[180]

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[177] Meighan, K. 2024. "Food Systems and Gender: The Groundbreaking Role of Rural Women". Journal of International Affairs [online]. Available from: https://jia.sipa.columbia.edu/news/food-systems-and-gender-groundbreaking-role-rural-women#!#_ftn7

[178] European Commission. 2025. Food Waste. European Commission [online]. Available from: https://food.ec.europa.eu/food-safety/food-waste_en

[179] Sasaki, Y., Oriksa, T., Shiina, T., 2024. Is food packaging harmful to the environment? A discussion of the direct and indirect influences of food packaging systems. *Food Science and Technology Research*, 31(2). https://doi.org/10.3136/fstr.FSTR-D-24-00188 .

[180] Allen, P. 1999. *Reweaving the Food Web: Bringing Together Food, Women's Studies, and Sustainable Agriculture*. In J. L. Little & R. M. Nigh (Eds.). *Eating for Pleasure, Eating for Power: A Sociological Study of Food and American Culture* (pp. 13-30). Ohio University Press.

Despite women's strong presence in grassroots food movements, their visibility decreases in formal agricultural and environmental institutions. Research highlights that while women's contributions are vital, they remain underrepresented in the leadership and decision-making bodies of larger agribusiness, agricultural organizations, and policy frameworks. This imbalance limits the integration of gender-sensitive perspectives into agricultural governance and risks reproducing systemic inequalities.[181]

**Intersectional Considerations**

These experiences are not uniform. Within Europe, gender intersects with factors such as class, migration status, age, or ethnicity, which shape how people engage with food systems. For example, migrant and seasonal women workers often face precarious conditions in food production and distribution chains, while low-income households may struggle to afford sustainable food choices despite being more exposed to environmental risks. Addressing these overlapping inequalities is therefore essential for making food systems both environmentally sustainable and socially just.

### 3.3.3 Mobility and Transport

Addressing the environmental impact of transport requires looking beyond technological fixes (such as electric vehicles) or infrastructure changes, and recognising how social roles and behaviours shape mobility. A gender perspective is essential because women and men in the EU have different mobility needs, unequal access to transport, and face transport-related harms in different ways.[182] These differences also matter ecologically: men's greater reliance on private cars contributes more heavily to environmental burdens, while women are more likely to depend on public and low-emission modes of travel.[183]

Transport is a cornerstone of European life, enabling economic activity and access to services, but it is also responsible for about one-fifth of EU greenhouse gas emissions[184] and remains a major source of air pollution, noise, and land use change. Road transport (cars and trucks) contributes the largest share, followed by aviation and maritime travel.[185] Combustion engines drive climate change and urban air pollution (e.g. nitrogen oxides, particulates), while transport infrastructure fragments habitats and consumes vast areas of land. Noise from transport affects

[181] European Commission. 2025. InfoPoint conference: Cultivating change - Advancing gender equality in food systems. European Commission [online]. Available from: https://international-partnerships.ec.europa.eu/news-and-events/events/infopoint-conference-cultivating-change-advancing-gender-equality-food-systems-2025-04-09_en

[182] Policy Department for Citizens' Rights and Constitutional Affairs, Directorate-General for Internal Policies. 2021. *PE 701.004*. European Parliament [online] Available from: https://www.europarl.europa.eu/RegData/etudes/STUD/2021/701004/IPOL_STU(2021)701004_EN.pdf

[183] EIGE. 2017. *Relevance of gender in the policy area: Transport*. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-mainstreaming/policy-areas/transport

[184] European Parliament. 2018. Climate change in Europe: Facts and figures. European Parliament [online]. Available from: https://www.europarl.europa.eu/topics/en/article/20180703STO07123/climate-change-in-europe-facts-and-figures#the-eus-biggest-greenhouse-gases-emitters-countries-and-sectors-6

[185] European Environment Agency. 2022. Transport and environment report 2022: Digitalisation in the mobility system – challenges and opportunities (ISBN 978-92-9480-519-5). European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/publications/transport-and-environment-report-2022

millions of Europeans' health, quality of life and ecosystems.[186] [187] Because of these impacts, transport is a central focus of EU climate policy, with the European Green Deal aiming for a 90% reduction in transport emissions by 2050.[188]

**Gendered Mobility Patterns and Mode Choice in the EU**

Research consistently shows gender differences in travel patterns and mode choice within the EU, largely shaped by differing social roles and economic realities. Women's travel is more likely to involve 'trip chaining' – multiple short journeys linked to care, shopping or errands – rather than simple home-to-work commutes.[189] These patterns reflect how women's mobility is closely tied to care responsibilities and local travel needs.

Data from Madrid illustrate this clearly: out of 3,323 recorded trips, 66% were made by women, averaging over five trips daily, compared to 34% by men, who averaged fewer than three. Women's urban mobility was predominantly linked to care activities (66% of their trips versus 9% for men).[190] These figures highlight that women's mobility is both more complex and, in many ways, more sustainable, since it relies more on public transport, walking, and shorter trips – but also more constrained, because it is driven by unpaid care and limited infrastructure support.

Although car ownership among women is increasing, men still have greater access to and use of private cars. This gap is partly driven by economics – women have lower incomes on average and are therefore less likely to be able to afford to own a car or invest in new, greener technologies such as electric cars. This reinforces their greater reliance on public transport while also reducing their individual carbon footprint. Likewise, men´s reliance on cars is not only about convenience but also culturally linked to ideals of masculinity, independence, and status.[191]

The relationship between gender and transport, particularly automobility, is not incidental but culturally produced and continuously reproduced. Research on car cultures shows that motor vehicles offer boys and young men a domain in which masculinity can be practiced and recognised. Technical mastery, risk, speed, peer recognition, and the experience of controlling powerful machines are all symbolically coded as masculine. Popular culture, advertising, and motor sports repeatedly frame cars as vehicles of freedom, excitement, and autonomy with

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[186] Ibid.
[187] Damarad, T., Bekker, G.J. 2003. COST 341 - Habitat Fragmentation due to Transportation Infrastructure: Findings of the COST Action 341. Office for official publications of the European Communities, Luxembourg. European Commission Directorate General Transport [online]. Available from: https://www.iene.info/content/uploads/2013/10/COST341_final_report.pdf
[188] European Commission. 2021. A fundamental transport transformation: Commission presents its plan for green, smart and affordable mobility. European Commission [online]. Available from https://transport.ec.europa.eu/transport-themes/mobility-strategy_en
[189] Scheiner, J., Holz-Rau, C. 2017. Women's complex daily lives: A gendered look at trip chaining and activity pattern entropy in Germany. *Transportation* 44: 117–138. https://doi.org/10.1007/s11116-015-9627-9
[190] Sánchez de Madariaga, I., Zucchini, E. 2019. 'Measuring Mobilities of Care, a Challenge for Transport Agendas'. Cited In: Policy Department for Citizens' Rights and Constitutional Affairs, Directorate-General for Internal Policies. 2021. Women and Transport. European Parliament [online]. Available from: https://www.europarl.europa.eu/RegData/etudes/STUD/2021/701004/IPOL_STU(2021)701004_EN.pdf
[191] EIGE. 2017. *Relevance of gender in the policy area: Transport*. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-mainstreaming/policy-areas/transport

minimal constraints. In this symbolic universe, the car becomes more than a mode of transport; it becomes a material expression of independence and authority over one's own fate.[192]

Studies of motoring media further show how this symbolism is gendered. Across different cultural contexts, the pleasure associated with handling and controlling machines plays a role in sustaining gender orders and hegemonic forms of masculinity. Historically and in contemporary representations, the "typical" driver imagined in car culture is often a straight, white man, for whom the car signifies not only mobility but status, competence, and personal freedom.[193]

These meanings matter for environmental politics because they shape resistance to changes in mobility systems. Efforts to reduce emissions through restrictions on combustion engines, promotion of public transport, or pricing mechanisms such as emissions trading are often perceived not merely as technical or economic measures but as symbolic threats to autonomy and masculine-coded freedoms. In this sense, opposition to climate policies in transport can mobilise deeply rooted gendered imaginaries of the car as the "last space of freedom".

This dynamic is visible for example in the Czech context in the rhetoric of the political party Motorists for Themselves (in Czech: Motoristé sobě). Its public messaging frames the car as a symbol of personal liberty and national way of life, and presents European climate policies such as the phase-out of combustion engines or the ETS2 system as illegitimate restrictions on freedom.[194] Their campaign imagery frequently draws on masculine aesthetics associated with motorcycling, toughness, and defiance. While articulated as a defence of drivers' rights, this discourse resonates strongly with gendered notions of autonomy, control, and resistance to perceived external regulation. The car is not discussed only as infrastructure but as an identity marker, a cultural object through which ideas of independence and authority are expressed.[195]

Since cars, especially those with combustion engines, have a much higher environmental footprint per passenger kilometre than public transport or trains[196], men's greater reliance on them[197] – combined with the fact that they travel 20% longer daily distances than women[198] – significantly raises their ecological impact. However, some studies show that younger urban men in certain contexts are beginning to adopt alternative, less car-dependent forms of mobility and even "car-free" masculine identities[199]. This indicates that the link between masculinity and private car use is not fixed and therefore open to change. Nevertheless, as long as cars remain strongly tied to ideals of freedom and masculine independence, transport transitions toward

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[192] Gottzén, L., Mellström, U., & Shefer, T. 2020. *Routledge international handbook of masculinity studies*. Routledge. ISBN: ISBN 9781032176345.
[193] Ibid
[194] Paseková, E. 2025. Auto je symbolem svobody. „Potřebuje ho každý," říká Šťastný z Motoristů. Česká justice [online]. Available from: https://www.ceska-justice.cz/2025/09/auto-je-symbolem-svobody-stastny-z-motoristu/
[195] Lobkowicz, J. 2025. MOTORISTÉ: Znepokojivé tóny. Neviditelný pes [online]. Available from: https://neviditelnypes.lidovky.cz/politika/motoriste-znepokojive-tony.A251020_194358_p_politika_nef
[196] European Environment Agency. 2022. Transport and environment report 2022: Digitalisation in the mobility system – challenges and opportunities (ISBN 978-92-9480-519-5). European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/publications/transport-and-environment-report-2022
[197] Ministry of Transport. 2021. A survey showed differences in travel behaviour between men and women. Ministry of Transport [online]. Available from: https://md.gov.cz/Media/Media-a-tiskove-zpravy/Pruzkum-ukazal-rozdily-v-dopravnim-chovani-muzu-a?lang=en-GB
[198] Karpenko, K. 2019. Men drive 20% more women daily: Smart Driving Laboratory. Smart Driving Labs [online]. Available from: https://smartdriving.io/en/blog/men-drive-20-more-women-daily-smart-driving-laboratory/
[199] Gottzén, L., Mellström, U., & Shefer, T. (2020). Routledge international handbook of masculinity studies. Routledge.

lower-carbon systems will continue to encounter not only economic and infrastructural barriers, but also cultural and gendered ones.

Women's greater reliance on public transport, partly due to lower car ownership and care-related travel, results in a smaller carbon footprint. However, this comes at a cost: public transport exposes them to higher risks of harassment, and safety concerns may even prevent women from travelling at night[200], limiting both their mobility and opportunities. Gendered inequalities thus create a paradox where women contribute more to sustainable mobility, but under conditions that restrict their freedom and safety.[201] These disadvantages are compounded for low-income women, elderly women, migrant women, or women with disabilities, who face the steepest barriers to affordable, safe transport and often live in areas more heavily affected by traffic-related pollution.[202]

Research project called "Women's Travel Behaviour in Data" from Czechia confirms this imbalance: among respondents dissatisfied with the ability to travel freely at any time (16% overall), nearly two thirds were women, highlighting how transport services often fail to accommodate these more complex mobility needs.[203]

**Gender, Environmental Consciousness, and Transport Behaviour**

While some studies suggest women may express higher levels of environmental concern generally, translating this into transport choices is complex. Despite potential higher concern, the practicalities of daily life mean that behaviour (actual mode choice) is often more influenced by structural factors (availability, cost, safety, convenience) than attitude alone. Therefore, focusing solely on individual consciousness without addressing systemic barriers is insufficient for promoting sustainable transport shifts, especially for women.

The design and governance of transport systems are not gender-neutral. Women are significantly underrepresented in transport sector leadership, infrastructure planning roles, and engineering. EIGE data shows that transport is one of the most male-dominated sectors in the EU, with women making up only about 22% of the workforce.[204] This lack of diversity in decision-making bodies can lead to transport systems being designed primarily from a male perspective, often prioritizing linear, peak-hour commuter flows (typical male work trips) over the complex, multi-stop, off-peak journeys more characteristic of women's mobility patterns.[205, 206] This results in public transport networks that may be less convenient, less frequent, or less accessible for women's travel needs.

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[200] EIGE. 2017. *Relevance of gender in the policy area: Transport*. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-mainstreaming/policy-areas/transport
[201] Roberts, N. J. 2019. Gender, sexual danger and the everyday management of risks: the social control of young females. *Journal of Gender-Based Violence*, *3*(1): 29-43. https://doi.org/10.1332/239868018X15265563342670
[202] EIGE. 2017. *Relevance of gender in the policy area: Transport*. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-mainstreaming/policy-areas/transport.
[203] Ministry of Transport, The survey revealed differences in the travel behaviour of men and women. 2021. In Czech: Ministerstvo Dopravy. *Průzkum ukázal rozdíly v dopravním chování mužů a žen.* 2021. Accessible at: https://md.gov.cz/Media/Media-a-tiskove-zpravy/Pruzkum-ukazal-rozdily-v-dopravnim-chovani-muzu-a
[204] EIGE. 2021. *Transport in the EU: Too few women in decision-making*. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-statistics/dgs/data-talks/transport-eu-too-few-women-decision-making
[205] Roberts, N. J. 2019. Gender, sexual danger and the everyday management of risks: the social control of young females. *Journal of Gender-Based Violence 3*(1): 29-43. https://doi.org/10.1332/239868018X15265563342670
[206] EIGE. 2017. *Relevance of gender in the policy area: Transport*. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-mainstreaming/policy-areas/transport.

Large-scale infrastructure projects (like new motorways or high-speed rail lines primarily for inter-city business travel) may receive more funding and attention than investments in local, accessible public transport, safe cycling lanes[207], or improved pedestrian environments – infrastructure often more crucial for women's daily mobility and local environmental quality (reduced local pollution, noise).

In this sense, the male-dominated governance of transport systems reinforces environmentally harmful mobility patterns, while neglecting the forms of mobility most relevant to women and most beneficial for sustainability.

### 3.3.4 Home Comfort and Energy Use

Research on sex difference in cold perception (2018) has shown that women prefer a warmer environment and feel less comfortable than men in the same thermal condition.[208] Comfort temperatures were estimated as 24.2 for women and 23.5 °C for men. It is noted that the thermal comfort temperature for females is 0.7 °C higher than for males.[209] Therefore, it is possible to talk about sexist air-conditioning in the workplace. Indoor climate regulations in public spaces are based on an empirical thermal comfort model that was developed in the 1960s – it is catering to men's preferred temperatures; the optimal office climate has been tailored to the work clothing and metabolic rates of a 70-kilos, 40-year-old man.[210] This temperature problem is about more than just comfort. The study on gender and the effect of temperature on cognitive performance (2019) shows that women are more productive and perform better on math and verbal tasks in warmer temperatures.[211]

Ensuring convenient and comfortable indoor conditions stands on the techniques that are responsible for providing the indoor environment with the needed thermal quality while being economically feasible; around 80% of the energy used in EU homes is for heating, cooling and hot water.[212] In winter, heating systems depend almost entirely on fossil fuel energy such as coal, oil and natural gas (also electricity itself is generated from a mix of fossil fuels and low-carbon energy). Heating systems have huge impacts on the environment especially because of some common usages, for instance; central heating is most frequently used depending on coal-fired boilers followed by thermal power plants then by gas-fired boilers. The

[207] Rensvala, E. 2020. Impediments for cycling infrastructure funding: The case of Sweden (Master's thesis, Stockholm University, Department of Human Geography). Available from: https://urn.kb.se/resolve?urn=urn:nbn:se:su:diva-183295

[208] Kaikaew, K. et al. 2018. Sex difference in cold perception and shivering onset upon gradual cold exposure. Journal of Thermal Biology 77: 137-144. https://doi.org/10.1016/j.jtherbio.2018.08.016

[209] Maykot, J. K., de Oliveira, C. C., Ghisi, E., Rupp, R. F. 2022. Influence of Gender on Thermal, Air-Movement, Humidity and Air-Quality Perception in Mixed-Mode and Fully Air-Conditioned Offices. Sustainability 14(15), 9722. https://doi.org/10.3390/su14159722

[210] Kashdan, J. 2015. Why are women cold at work? Science explains the office A/C gender war. CBS News [online]. Available from: https://www.cbsnews.com/news/woman-feel-colder-office-old-formula-set-temperature-based-men-study-reveals/

[211] Chang, T. Y., Kajackaite, A. 2019. Battle for the thermostat: Gender and the effect of temperature on cognitive performance. PLOS One [online]. Available from: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0216362

[212] European Commission. 2025. Energy Performance of Buildings Directive. European Commission [online]. Available from: https://energy.ec.europa.eu/topics/energy-efficiency/energy-performance-buildings/energy-performance-buildings-directive_en

need for bigger heating is accompanied by severe environmental risks such as gas emissions, global warming and noise pollution.[213] Also, study on gender differences in thermal comfort[214] shows that men use thermostats more actively: 51% of respondents said that the more active thermostat user is a male and 35% said it is a female. However, this may be due to technical confidence: men often report that they have a better understanding of how heating and air conditioning systems work. Men tend to adjust the thermostat settings more often, which may include turning off the heating when they leave the apartment.[215]

If we look at the issue of maintaining the ideal room temperature from the other side – i.e. room cooling, research shows that men tend to adjust the temperature on the air conditioner (AC) units to a lower setting, both in the home and in the work environment.[216] Because men are more likely to lower AC settings, their choices carry a higher energy and climate footprint.

In Europe around 20% of homes use AC units to cool their inside temperature (by way of contrast nearly 90% of US homes use air conditioning).[217] But as our planet warms, the number of air conditioning units is expected to triple from 1.6 billion units today to 4.8 billion in 2050.[218] AC units are dangerous for the environment though based on the way they work: warm air from inside is pushed through a vent or window AC unit, where it passes over a coil filled with chemicals called “refrigerants” that absorb heat. The cooled air gets sent back into the house, while its heat is released outside.[219] Not only does this process use a lot of electricity, but AC units also tend to leak refrigerants; in Europe the most polluting are banned and replaced by more environmentally friendly alternatives.[220]

**The role of gender in electricity demand**

Electricity use in households is not only about technology but also about behavior and daily routines. A study examining the role of gender in electricity demand (2020) reveals that men and women differ in the timing and type of electricity demand. Women are less likely to run appliances such as washing machines during peak demand periods, indicating a more energy-efficient usage pattern.[221] These female consumption patterns can be more

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[213] Mahmoud, M. et al. 2021. The impacts of different heating systems on the environment: A review. Science of The Total Environment 766, 142625. https://doi.org/10.1016/j.scitotenv.2020.142625
[214] Karjalainen, S. 2007. Gender differences in thermal comfort and use of thermostats in everyday thermal environments. Building and Environment 42(4): 1594-1603. https://doi.org/10.1016/J.BUILDENV.2006.01.009
[215] Sintov, N. D., White, L. V., Walpole, H. 2019. Thermostat wars? The roles of gender and thermal comfort negotiations in household energy use behavior. PLON One 14(11), 0224198. https://pubmed.ncbi.nlm.nih.gov/31721769/
[216] Lafuente, R.m Paneque, P., Cañadas, J.L. 2021. The Gender Gap in Water Management Preferences: Analyzing the Influence of Environmental Concern and Political Knowledge. Society & Natural Resources 34(11): 1472-1491. https://doi.org/10.1080/08941920.2021.1971808
[217] Paddison, L., McCluskey, M., 2025. European summers are getting brutally hot. So why is air conditioning so rare? CNN Climate [online]. Available from: https://edition.cnn.com/2025/07/02/climate/europe-air-conditioning-heat-wave-intl-latam#:~:text=While%20nearly%2090%25%20of%20US.%2C%20the%20figure%20is%203%25.
[218] IEA. 2018. Air conditioning use emerges as one of the key drivers of global electricity-demand growth. IEA.org [online]. Available from: https://www.iea.org/news/air-conditioning-use-emerges-as-one-of-the-key-drivers-of-global-electricity-demand-growth
[219] Norford, L., Gribkoff, E., 2025. Heating and Cooling. Climate Portal [online]. Available from: https://climate.mit.edu/explainers/heating-and-cooling
[220] EEA. 2023. EU continues phasing out use of chemicals that harm the ozone layer. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/newsroom/news/eu-continues-phasing-out
[221] Grünewald, P., Diakonova, M. 2020. Societal differences, activities, and performance: Examining the role of gender in electricity demand in the United Kingdom. Energy Research & Social Science 69, 101719. https://doi.org/10.1016/j.erss.2020.101719

environmentally efficient, but they are also the product of gendered divisions of care and routine work rather than free choice.

For single-person households, men's electricity consumption is on average 13% higher than women's, linked to activities such as screen time, microwave use, and personal care. Women's electricity use is more often tied to household tasks like washing, dressing, or preparing meals.[222] These differences show that gendered household roles and routines influence electricity demand. Understanding such behavioral patterns is key for designing demand-side management, time-of-use tariffs, and energy-saving interventions that are both effective and equitable.

The EU electricity sector is projected to play a key role in achieving climate change mitigation goals by 2030. After a temporary rise in fossil fuel use during 2021 and 2022 (largely driven by the post-COVID economic recovery and the war in Ukraine) the greenhouse gas (GHG) emission intensity of power generation in the European Union has resumed its long-term downward trend. In 2023, generating one kilowatt hour of electricity produced, on average, 19% less $CO_2$ than in 2022 and 35% less than in 2013. This decline reflects the success of climate and energy policies in reducing reliance on carbon-intensive sources, leading to less coal use, increased deployment of renewables, and a more efficient energy mix across the EU.[223]

Systemic shifts in electricity generation are essential for climate goals. While these largely depend on policy and technology, household-level differences in energy use shaped by gender roles remind us that the social dimension cannot be overlooked when designing fair and effective demand-side measures.

### 3.3.5 Hygiene, Housework and Care

Household activities, encompassing hygiene practices and housework, are fundamental yet often unequally distributed aspects of daily life. Despite significant changes in women's labor force participation, traditional gender roles continue to heavily influence the allocation of domestic responsibilities.[224] Women continue to bear the greater share of unpaid domestic work, including tasks directly linked to energy use, water consumption, and the use of chemical cleaning products.

However, gender alone is not a strong predictor of a household's total carbon footprint.[225] Differences in climate impact are not primarily caused by being a woman or a man, but by structural factors, especially income. However, there are noticeable patterns in society that repeat themselves in relation to emissions: Women's households tend to have more emissions from things like housing and food, while men's households produce more from transport and eating out.[226]

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[222] Grünewald, P., Diakonova, M. 2020. Societal differences, activities, and performance: Examining the role of gender in electricity demand in the United Kingdom. Energy Research & Social Science 69, 101719. https://doi.org/10.1016/j.erss.2020.101719.
[223] EEA. 2025. Greenhouse gas emission intensity of electricity generation in Europe. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/indicators/greenhouse-gas-emission-intensity-of-1
[224] UN Women. 2024. Facts and figures: Economic empowerment. UN Women [online]. Available from: https://www.unwomen.org/en/articles/facts-and-figures/facts-and-figures-economic-empowerment
[225] Osorio, P., Tobarra, M.-Á., & Tomás, M. 2024. "Are there gender differences in household carbon footprints? Evidence from Spain". *Ecological Economics* 219, 108130. https://doi.org/10.1016/j.ecolecon.2024.108130
[226] Ibid.

In relation to the environment, it should be emphasized that laundry, cleaning, cooking, and maintaining household hygiene account for a substantial share of residential energy and water use across the EU.[227] Heating water for washing clothes and cleaning, running appliances, and using hot water for hygiene are among the most energy-intensive activities in households.[228] Because women perform a disproportionate share of these tasks, gender roles indirectly shape patterns of resource consumption and household-level greenhouse gas emissions. Social expectations around cleanliness and care do not only structure time use but also influence how much energy, water, and chemical products flow through homes every day.

**The Unpaid Work Burden: A Statistical Divide**

The unpaid care burden in the European Union represents a profound and persistent statistical and economic disparity. Deep research, drawing on Eurostat and the European Institute for Gender Equality (EIGE), confirms this significant gap in the amount of time dedicated to domestic and care responsibilities. Across the EU, women consistently spend an average of 2.5 to 3 times more hours per day on unpaid domestic and care work than men do; this care work includes housework, cooking, childcare, and eldercare.[229] [230] This is a common pattern, demonstrated by EIGE data showing that 92% of women are "regular carers", compared to 68% of men.[231] This chronic imbalance was starkly highlighted during the COVID-19 lockdowns, when European women reported spending 18.4 hours per week on cooking and housework, compared to 12.1 hours for men during the same period.[232]

This unequal distribution directly translates into a huge economic cost for women. The "unpaid care penalty", which means the estimated foregone earnings due to these unbalanced responsibilities, is estimated to reach at least €242 billion per year in the EU.[233] This burden is the primary factor limiting women's participation in the labour market; in 2023, 27.2% of women cited caregiving as their main reason for working part-time, compared to only 6.8% of men,[234] [235] which in turn drives the Gender Pay Gap (GPG) and the Gender Pension Gap. Furthermore, this labor provides a massive hidden subsidy to the EU economy. If monetized, this unpaid work

[227] Eurostat. 2025. Energy consumption in households. Eurostat: Statistics Explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_consumption_in_households
[228] Kazmi, H., Mehmood, F., Lodeweyckx, S., Driesen, J. 2018. Gigawatt-hour Scale Savings on a Budget of Zero: Deep Reinforcement Learning based Optimal Control of Hot Water Systems. *Energy* 159-168. Available from: https://arxiv.org/pdf/1801.01467
[229] Sustainable Development Goals. 2025. Goal 5: Achieve gender equality and empower all women and girls. Sustainable Development Goals [online]. Available from: https://www.un.org/sustainabledevelopment/gender-equality/
[230] Hanna, T. et al. 2023. Forecasting time spent in unpaid care and domestic work. UN Women [online]. Available from: https://data.unwomen.org/publications/forecasting-time-spent-unpaid-care-and-domestic-work
[231] Lopez, L.F., Schonard, M. 2022. An ambitious future for Europe's women after COVID-19: mental load, gender equality in teleworking and unpaid care work after the pandemic. European Parliament [online]. Available from: https://www.europarl.europa.eu/cmsdata/245252/IPOL_BRI(2022)719547_EN.pdf
[232] EIGE. 2025. Unpaid care and housework. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/newsroom/covid-19/unpaid-care-and-housework
[233] Fernandes, M., Navarra, C. 2022. What if care work were recognised as a driver of sustainable growth? European Parliament [online]. Available from: https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2022)730333
[234] ILO. 2024. Unpaid care work prevents 708 million women from participating in the labour market. International Labour Organization [online]. Available from: https://www.ilo.org/resource/news/unpaid-care-work-prevents-708-million-women-participating-labour-market
[235] Eurostat. 2025. Gender equality in the EU - 10 years in review. Eurostat: Statistics Explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Gender_equality_in_the_EU_-_10_years_in_review

could represent a substantial share of national GDPs, such as in Germany where the monetary value of care for children and relatives alone was estimated at €1.2 trillion in 2021.[236]

Beyond the purely economic figures, this issue is framed by an ecofeminist critique, which argues that the systemic devaluation of unpaid care work and the exploitation of nature share a common ideological root: a growth-based capitalist system that externalizes costs and undervalues everything outside the market sphere.[237] [238] A key component of this undervalued work is the often invisible labor of environmental management within the home, which some researchers term the "third shift". As an extension of their role as primary caregivers and household managers, women bear a greater responsibility for managing the household's environmental footprint.[239] This critical work includes everything from minimizing water and energy consumption to managing packaging waste and mitigating chemical pollution from household cleaning and hygiene routines. In this sense, unpaid care and household work function as a kind of a hidden environmental infrastructure. When environmental protection depends mainly on private effort instead of strong regulation and public investment, the burden quietly shifts onto households and becomes another layer of unpaid, gendered labor. Recognizing this helps us see that real sustainability should be supported by systemic solutions, not only by individual responsibility.

While this framework has been effective in engaging women in the movement, it has also contributed to today's trend of individualized "preventive consumption", where people (typically women) are expected to address the risks of pollution or toxic substances through their purchasing decisions. According to the author Cousins (2021), this diverts attention from the systemic causes of environmental problems and shifts responsibility to individuals who often have no real control over them. Individualized responsibility can also exacerbate social inequalities, as not all households have the same opportunities to buy "safe" or "green" products (based on finances or geographical accessibility of purchases, for example).[240] The excessive time spent on this combined care and environmental work leads to "time poverty" – because women are overburdened with additional tasks, which limits women's ability to engage in collective environmental activism or to participate in political decision-making and environmental leadership.[241]

On the other hand, men can often be found in top positions in larger, more formalized environmental social movement organizations, but they have not been at the forefront when it comes to localized environmental justice struggles and household level proenvironmental behavior or precautionary consumption. As studies across the EU confirm, informal caregivers,

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[236] The invisible value of care work. 2024. Prognos [online]. Available from: https://www.prognos.com/en/news/invisible-value-care-work
[237] Cousins, E.M. 2021. Mobilizing motherhood: The gendered burden of environmental protection. Sociology Compass 15(5): 1-14. https://doi.org/10.1111/soc4.12879
[238] Tur-Sinai, A., Bentur, N., Lamura, G., Rodrigues, R., Di Rosa, M., Socci, M. 2024. The Sustainability Spillover: Uncovering the Link Between Informal Elder Care and Eco-Conscious Behaviors Across the European Union. *Innovation in Aging* 9(3). https://doi.org/10.1093/geroni/igae108
[239] Cousins, E.M. 2021. Mobilizing motherhood: The gendered burden of environmental protection. Sociology Compass 15(5): 1-14. https://doi.org/10.1111/soc4.12879
[240] Ibid.
[241] Sustainable Development Goals. 2025. Goal 5: Achieve gender equality and empower all women and girls. Sustainable Development Goals [online]. Available from: https://www.un.org/sustainabledevelopment/gender-equality/

predominantly women, engage in eco-friendly actions significantly more frequently than non-caregivers, especially regarding sustainable consumption choices.[242] [243]

Despite this daily environmental stewardship, women are rarely acknowledged as environmental actors in policy or sustainability discourse. This reinforces a systemic tendency to prioritize large-scale, paid, and male-dominated solutions over local, social, and care-based ones, with which men do not have as much experience. Experts contend that tackling this requires a transformative policy approach: a care-centred approach to sustainability[244], that moves beyond simple recognition of the work. This approach should adopt the 5R framework: to Recognize the value of all care work; Reduce the total burden through infrastructure; Redistribute the burden between genders and between families and the state; Reward paid care workers with fair conditions; and ensure Representation for carers in political and economic decision-making.[245]

**Impact of the Gendered Attitudes Towards Hygiene and Cleanliness**

Gender differences extend to attitudes surrounding hygiene. Surveys show women often report stricter hygiene standards which also have material consequences. More frequent clothes washing, greater use of cleaning and personal care products, and higher expectations for spotless homes all increase the consumption of water, energy, packaging, and chemical substances. For example, frequent washing of synthetic textiles contributes to the release of microfibres into wastewater, which are now a recognized source of microplastic pollution in European seas.[246] What appears as a private matter of “being clean” is therefore connected to wider environmental pressures shaped by gendered expectations about care, respectability, and responsibility.

Historian Nancy Tomes' work suggests the historical burden of upholding domestic hygiene standards fell on women, potentially leading to internalized stricter norms; this aligns with the "doing gender" perspective, where maintaining high hygiene standards may function as a performance of femininity.[247] Interestingly, the global study about sex differences in hygiene norms (2022) found the gender gap in hygiene norms peaked in moderately egalitarian societies, narrowing in the most egalitarian and sometimes reversing in highly unequal ones.[248] This suggests cultural context and power dynamics mediate the expression of these norms.

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[242] Tur-Sinai, A., Bentur, N., Lamura, G., Rodrigues, R., Di Rosa, M., Socci, M. 2024. The Sustainability Spillover: Uncovering the Link Between Informal Elder Care and Eco-Conscious Behaviors Across the European Union. *Innovation in Aging* 9(3). https://doi.org/10.1093/geroni/igae108

[243] Orso, L. 2024. Public attitudes to net zero and climate change are evolving. *Nesta* [online]. Available from: https://www.nesta.org.uk/blog/public-attitudes-to-net-zero-and-climate-change-are-evolving/

[244] Tur-Sinai, A., Bentur, N., Lamura, G., Rodrigues, R., Di Rosa, M., Socci, M. 2024. The Sustainability Spillover: Uncovering the Link Between Informal Elder Care and Eco-Conscious Behaviors Across the European Union. *Innovation in Aging* 9(3). https://doi.org/10.1093/geroni/igae108

[245] UN Women. 2023. The Climate-care Nexus: Addressing the linkages between climate change and Women's and Girl's unpaid care, domestic and communal work. UN Women [online]. Available from: https://www.unwomen.org/sites/default/files/2023-11/working-paper-the-climate-care-nexus-en.pdf

[246] EEA. 2022. Microplastics from textiles: towards a circular economy for textiles in Europe. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/publications/microplastics-from-textiles-towards-a-circular-economy-for-textiles-in-europe

[247] Eriksson, K., Dickins, T.E., Strimling, P. 2022. Global sex differences in hygiene norms and their relation to sex equality. PLOS Glob Public Health 2(6): e0000591. doi: 10.1371/journal.pgph.0000591

[248] Ibid.

These gendered expectations around hygiene extend beyond social norms and into product use, especially in the case of menstrual hygiene. Products like tampons are marketed as tools for cleanliness, discretion, and control, reinforcing the cultural pressure on women to manage their bodies in ways that align with these high standards. However, the very products designed to meet these expectations may carry hidden risks. In addition to toxicological concerns, menstrual hygiene products also represent a significant but often overlooked environmental issue. Disposable pads and tampons contain plastics, superabsorbent polymers, and chemically treated materials that are difficult or impossible to recycle. Across the EU, 49 billions of these single-used items are used every year, contributing to residual waste streams and, in some cases, marine pollution when flushed or improperly disposed of.[249] Sustainable alternatives such as menstrual cups or reusable pads can significantly reduce waste, but their adoption is shaped by affordability, access to water and sanitation, cultural norms, and comfort. This highlights that environmental choices are embedded in social and gendered realities rather than being purely individual preferences.

Recent toxicological research reveals that menstrual hygiene products (MHPs), especially tampons made from conventional cotton, can expose users to a range of hazardous chemicals, including pesticides like glyphosate[250], toxic metals (lead, arsenic, cadmium), and endocrine-disrupting chemicals (EDCs) such as phthalates and parabens[251]. Due to the high vascularity and permeability of the vaginal mucosa, these substances can bypass the liver's detoxification process and enter systemic circulation directly, making even trace amounts potentially harmful.[252] Studies from 2023–2025 confirm the presence of these contaminants in widely available products, highlighting a significant regulatory failure in the EU[253] [254]. The EU's creation of a voluntary Ecolabel[255] banning many of these chemicals tacitly acknowledges the risks in non-certified products but leaves most consumers unprotected.

This pattern isn't limited to menstrual products. Across other domains of domestic life where women are expected to uphold cleanliness, such as household cleaning, similar exposure risks emerge. Cleaning products often contain a variety of chemical substances (surfactants, solvents, disinfectants, etc.) which are designed for its efficacy, but also which affect the health of people who use them, so based on the data, women are in higher exposure to harmful substances. Harmful substances like volatile organic compounds (VOCs) are commonly found in products such as air fresheners, aerosol sprays, detergents, oven cleaners, and even in items

[249] Cabrera, A., Garcia, R. 2019. "The environmental and economic costs of single-use menstrual products, baby nappies and wet wipes: Investigating the impact of these single-use items across Europe." Zero Waste Europe [online]. Available from: https://zerowasteeurope.eu/wp-content/uploads/2019/12/bffp_single_use_menstrual_products_baby_nappies_and_wet_wipes.pdf

[250] Toxic Chemicals Detected in Common Menstruation Products. 2025. Beyond Pesticides [online]. Available from: https://beyondpesticides.org/dailynewsblog/2025/06/toxic-chemicals-detected-in-common-menstruation-products-tampons/

[251] Shearston, J.A. et al. 2024. "Tampons as a source of exposure to metal(loid)s." *Environment International* 190: 108849. https://doi.org/10.1016/j.envint.2024.108849

[252] Ibid.

[253] Ibid.

[254] Upson, K., Shearston, J.A., Kioumourtzoglou, M.A. 2022. "Menstrual Products as a Source of Environmental Chemical Exposure: A Review from the Epidemiologic Perspective." *Current Environmental Health Reports* 9 (1): 38–52. doi: 10.1007/s40572-022-00331-1

[255] European Commission. About the EU Ecolabel: The EU official voluntary label for environmental excellence. *European Commission* [online]. Available from: https://environment.ec.europa.eu/topics/circular-economy/eu-ecolabel/about-eu-ecolabel_en.

advertised as environmentally friendly.[256] Several experimental and epidemiological studies confirmed that exposure to these chemicals has been shown to aggravate chronic respiratory conditions and provoke allergic responses.[257] Cleaning products can damage the bronchi and contribute to the development of numerous lung diseases including asthma, other respiratory disorders, and allergic reactions.[258]

The story does not end once these products are rinsed down the drain. Many of the same substances that pose health risks indoors also enter wastewater systems and eventually rivers, soils, and ecosystems. Surfactants, synthetic fragrances, preservatives, and endocrine-disrupting chemicals have been detected in European water bodies, where they can affect aquatic organisms, accumulate in sediments, and disrupt hormonal systems in wildlife.[259] This means that the gendered division of cleaning labor is also linked to gendered patterns of environmental exposure and environmental impact. Women are more exposed at the point of use, while ecosystems bear the long-term burden of chemical pollution.

However, exposure to cleaning products, particularly frequent or occupational, can carry health risks also like skin irritation, and potential reproductive or carcinogenic effects.[260] Moreover, some studies, such as study about exposure to endocrine disruptors during adulthood (2017) suggest that chemicals found in common cleaning products could trigger early onset menopause.[261] Endocrine-disrupting chemicals (EDCs), which interfere with the body's hormonal system by affecting hormone production and function, are a particular concern among health professionals. Often invisible and unrecognized, these chemicals represent a significant risk to long-term health.[262]

Research about Gender differences in experience of symptoms among cleaning staff (2021) consistently shows women perceive various risks, including those from chemicals, as more serious than men. The same study confirms women report greater concern about chemical exposure. However, this heightened perception doesn't always align with behavior. While female cleaning staff report experiencing acute symptoms (irritation, etc.) more often than men, they are significantly *less* likely to report these symptoms to supervisors.[263]

Factors influencing this perception-reporting gap include supervisor support (which seemed to mitigate symptom experience, but not reporting, among women) and intersecting factors like

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[256] Halios, C. H., Landeg-Cox, C., Lowther, S., Middleton, A., Marczylo, T., Dimitroulopoulou, S. 2022. "Chemicals in European residences – Part I: A review of emissions, concentrations and health effects of volatile organic compounds (VOCs)." Science of the Total Environment 839:156201. https://doi.org/10.1016/j.scitotenv.2022.156201

[257] Nurmatov, U.B., Tagiyeva, N., Semple, S., Devereux, G., Sheikh, A. 2015. "Volatile organic compounds and risk of asthma and allergy: a systematic review". *European Respiratory Review* 24 (135): 92-101. https://doi.org/10.1183/09059180.00000714

[258] Writer, S. 2024. Using cleaning products may raise women's risk of asthma, respiratory conditions. Harvard T.H. Chan: School of Public Health [online]. Available from: https://hsph.harvard.edu/news/using-cleaning-products-may-raise-womens-risk-of-asthma-respiratory-conditions/

[259] Wildlife and the Environment: Endocrine disruptors. CHEMTrust [online]. Available from: https://chemtrust.org/edcs-wildlife/

[260] Halios, C. H., Landeg-Cox, C., Lowther, S., Middleton, A., Marczylo, T., Dimitroulopoulou, S. 2022. "Chemicals in European residences – Part I: A review of emissions, concentrations and health effects of volatile organic compounds (VOCs)." Science of the Total Environment 839:156201. https://doi.org/10.1016/j.scitotenv.2022.156201

[261] Rattan, S., Zhou, C., Chiang, C., Mahalingam, S., Brehm, E., & Flaws, J. A. 2017. "Exposure to endocrine disruptors during adulthood: consequences for female fertility". *Journal of Endocrinology*, *233*(3), R109-R129. https://doi.org/10.1530/JOE-17-0023.

[262] Endocrine Disruptors. National Institute of Environment Health Sciences [online]. Available from: https://www.niehs.nih.gov/health/topics/agents/endocrine

[263] Lee, S-J., Kyung, M., Leung, C., Hong, O. 2021. "Gender differences in experience and reporting of acute symptoms among cleaning staff". American Journal of Industrial Medicine 64 (6): 528-539. DOI: 10.1002/ajim.23246

ethnicity and education (e.g. workers with lower education reported less). This suggests workplace dynamics, fear of repercussions, or cultural factors may create reporting barriers for women, potentially leading to underestimation of health burdens in occupational health surveillance.[264]

**Conventional vs. Eco-Friendly: Gendered Preferences?**

Growing health and environmental concerns fuel demand for "green" cleaning products featuring plant-based, biodegradable ingredients and sustainable packaging (efforts to reduce water pollution from chemicals such as phosphates and surfactants, air pollution from VOC emissions and the reduction of plastic packaging waste). Women generally exhibit more positive attitudes towards green consumption, aligning with findings on stricter hygiene norms and higher risk perception, potentially driving a preference for eco-friendly cleaners. However, broad consumer surveys often lack specific gender breakdowns for cleaning product preferences[265], because it was not essential for them to collect this data at that time. Efficacy and cost remain key drivers for all consumers, with perceptions of lower effectiveness or higher cost sometimes acting as barriers to green product adoption.[266]

On the other hand, an important factor affecting adoption, especially among men, is the “green-feminine stereotype” (the belief that environmentally friendly behavior is associated with femininity). Men, often concerned with maintaining a masculine identity, may avoid green behaviors or products perceived as feminine. Research demonstrates that threatening men's masculinity reduces their preference for green products, while affirming it increases preference.[267] Masculine branding can also make green products more appealing to men.[268]

## 3.3.6 Textile Industry

The global fashion industry represents a significant driver of the contemporary ecological crisis. Globally, the sector is responsible for an estimated 2-8% of carbon emissions,[269] with projections that it could absorb up to one quarter of the global carbon budget by 2050;[270] it also generates around 20% of industrial wastewater.[271]

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[264] Lee, S-J., Kyung, M., Leung, C., Hong, O. 2021. "Gender differences in experience and reporting of acute symptoms among cleaning staff". American Journal of Industrial Medicine 64 (6): 528-539. DOI: 10.1002/ajim.23246
[265] Onion, R. 2020. The Long History of the Hand-Washing Gender Gap. State [online]. Available from: https://slate.com/technology/2020/02/women-hand-washing-more-than-men-why-coronavirus.html
[266] Ibid.
[267] Zinober, I. 2026. "The Green Gender Gap: Environmental attitudes and pro-environmental vote choice across Europe". Electoral Studies 101, 103062. https://doi.org/10.1016/j.electstud.2026.103062
[268] Brough, A., Wilkie, J., Isaac, M., Ma, J. 2016. "Is Eco-Friendly Unmanly? The Green-Feminine Stereotype and Its Effect on Sustainable Consumption". Journal of Consumer Research 43(4), ucw044. DOI:10.1093/jcr/ucw044
[269] Sadowski, M., Perkins, L., McGarvey, E. Roadmap to Net Zero: Delivering Science-based Targets in the Apparel Sector. World Resources Institute & Apparel Impact Institute [online]. Available from: https://files.wri.org/d8/s3fs-public/2021-11/roadmap-net-zero-delivering-science-based-targets-apparel-sector.pdf?VersionId=LxrwUSv9dHytM7zybuQgoJ8LUHBZVgM1
[270] Ellen MacArthur Foundation. 2019. Fashion and the circular economy – deep dive. Ellen MacArthur Foundation [online]. Available from: https://www.ellenmacarthurfoundation.org/fashion-and-the-circular-economy-deep-dive
[271] Ellen MacArthur Foundation. 2017. A new textiles economy: Redesigning fashion’s future. Ellen MacArthur Foundation [online]. Available from: https://content.ellenmacarthurfoundation.org/m/6d5071bb8a5f05a2/original/A-New-Textiles-Economy-Redesigning-fashions-future.pdf?_gl=1*1malucs*_up*MQ..*_ga*NjE5ODAzMTg2LjE3OTE1NDQwOTM.*_ga_V32N675KJX*czE3OTE1NDQwOTIkbzEkZzEkdDE3OTE1NDQwOTIkajYwJGwwJGgw

Clothing accounts for between 2% and 10% of the environmental impact linked to household consumption in the EU,[272] even though it represents only about 4% of household spending.[273] Fast fashion's model (mass production, low prices, high turnover and lower-quality materials[274]) has made apparel more accessible. European consumers have increased their clothing purchases by 40% in just a few decades, creating a continuous cycle of extraction and waste generation. Garments are increasingly viewed as "nearly disposable", with a significant portion of European wardrobes remaining unused for at least a year before being discarded.[275]

To sustain this linear "make-take-waste" paradigm, multinational corporations offshore resource-intensive manufacturing to the Global South to exploit low labor costs and lax environmental regulations.[276] [277] The geographical separation of the fashion supply chain ensures that the most acute material consequences of production remain localized in the Global South, far from the consumer markets of the Global North. While high-income nations drive demand, the physical degradation of ecosystems is concentrated in producing regions, where the industry functions as a primary polluter of air, water, and land.

To mitigate their visible environmental impact, many fashion brands promote initiatives that are often rooted more in marketing and advertising than in substantive systemic change. This practice of greenwashing is widespread; research indicates that up to 96% of sustainability claims made by major retailers can be characterized as misleading or unsustainable in practice.[278] A central component of this narrative is the promotion of a "circular economy" that frames textile waste as a resource for reuse and recycling, despite the reality that less than 1% of used clothing is currently recycled back into new garments.[279]

**Consumer Behaviour and Sustainability**

In Europe and other high-income regions, women drive most of the fast fashion consumption.[280] While this consumption is often framed as an expression of individual identity, empowerment, or

[272] Šajn, N. 2019. Environmental impact of the textile and clothing industry: What consumers need to know. European Parliamentary Research Service [online]. Available from: https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI(2019)633143_EN.pdf
[273] Eurostat. 2024. Household consumption by purpose. Eurostat: statistics Explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Household_consumption_by_purpose
[274] Šajn, N. 2019. Environmental impact of the textile and clothing industry: What consumers need to know. European Parliamentary Research Service [online]. Available from: https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI(2019)633143_EN.pdf
[275] Ibid.
[276] Bonelli, F., Caferra, R., & Morone, P. 2024. "In need of a sustainable and just fashion industry: Identifying challenges and opportunities through a systematic literature review in a Global North/Global South perspective". *Discover Sustainability* 5 (1), 186. https://doi.org/10.1007/s43621-024-00400-5
[277] Kanter, M. 2023. *Modern Slavery as a Product of Transnational Corporate Supply Chains: An Ecofeminist Evaluation of Systems to Address the Linkage Between Modern Slavery, Climate Change, and Gender Injustice.* [Bachelor of Science in Urban and Public Affairs and University Honors, Portland State University]. https://doi.org/10.15760/honors.1450
[278] Ibid.
[279] Šajn, N. 2019. *Environmental impact of the textile and clothing industry. European Parliamentary Research Service (EPRS)*. Members' Research Service, PE 633.143.. [online]. Available from: https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI(2019)633143_EN.pdf
[280] Mensah, J. 2023. The Global South as a Wasteland for Global North's Fast Fashion: Ghana in Focus. American Journal of Biological and Environmental Statistics, 9(3), 33–40. DOI:10.11648/j.ajbes.20230903.12

even feminist self-expression,[281] it paradoxically sustains an industry deeply rooted in environmental harm and labor invisible female labour behind garments.[282] [283]

While consumer awareness of sustainability is growing, a 2024 study covering 20 countries shows that women are often more willing than men to pay a premium for sustainable products.[284] Yet they are also subject to conflicting pressures around fashion trends and affordability, which complicate their ability to consistently make sustainable choices. These pressures are an important factor in explaining why good intentions often encounter structural barriers.[285]

Moreover, sustainability is frequently perceived as a feminine concern, a framing that not only shapes women's consumption patterns but also reinforces gendered expectations and social norms about what women should or should not do. Importantly, this "green-feminine stereotype" does not only affect women: it also discourages men from engaging with sustainable products, as sustainability is often culturally coded as incompatible with masculinity.[286] Addressing the ecological and social challenges of fast fashion thus requires a critical examination of how production systems and consumption practices are intertwined with these gendered narratives, which not only perpetuate overconsumption but also reinforce stereotypes and constrain choices for all consumers in the Global North. If meaningful change is to occur, it will require looking beyond the technical aspects of how we produce clothing to critically consider how we talk about fashion, how we market it, and how we construct social expectations around it.

**"Made in China" in Everyday Shopping: Temu vs. Regulated Retail**

While global retail chains offer European consumers affordable and often low-priced products labeled "Made in China", the fundamental difference lies in the level of oversight and accountability associated with different distribution channels. Products sold through mainstream retailers (such as DM, Lidl, or H&M) are subject to EU safety and regulatory standards, including chemical restrictions under REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals), EU safety standards, and consumer protection laws.[287]

As demonstrated by a recent test of waterproof jackets by the Danish consumer organization Forbrugerrådet Tænk, jackets from online marketplaces such as Temu, Shein, and Amazon contained PFAS (per- and polyfluoroalkyl substances), including substances banned under EU law, while most jackets sold by EU-based retailers complied with current regulations. PFAS are

[281] Banet-Weiser, S. 2012. *Authentic™ the Politics of Ambivalence in a Brand Culture*. Journal of Consumer Culture 14(1): 129-135. https://doi.org/10.1177/1469540513511020
[282] Bick, R., Halsey, E., Ekenga, C. C. 2018. *The global environmental injustice of fast fashion*. *Environmental Health*, 17(1), 92. DOI:10.1186/s12940-018-0433-7
[283] Crewe, L. 2017. *The Geographies of Fashion: Consumption, Space, and Value*. Bloomsbury Publishing.
[284] Goedertier, F., Weijters, B., Van den Bergh, J. 2024. Are consumers equally willing to pay more for brands that aim for sustainability, positive societal contribution, and inclusivity as for brands that are perceived as exclusive? Generational, gender, and country differences. *Sustainability, 16*(9), 3879. https://doi.org/10.3390/su16093879
[285] Lopes Vassalo, A., Marques, C. G., Simões, J. T., Fernandes, M. M., Domingos, S. 2024. Sustainability in the fashion industry in relation to consumption in the digital age. *Sustainability, 16*(13), 5303. https://doi.org/10.3390/su16135303
[286] Brough, A., Wilkie, J., Ma, J., Isaac, M., Gal, D. 2016. Is Eco-Friendly Unmanly? The Green-Feminine Stereotype and Its Effect on Sustainable Consumption. *Journal of Consumer Research* 43(4), December 2016, 567–582. https://doi.org/10.1093/jcr/ucw044
[287] Forbrugerrådet Tænk. 2025. Almost guaranteed to contain PFAS in jackets from Amazon, Shein, and Temu (orig.: Næsten garanti for PFAS i jakker fra Amazon, Shein og Temu. Forbrugerrådet Tænk [online]. Available from: https://taenk.dk/test/kemitest-jakker/pfas-i-jakker (translated with online translator).

a group of chemicals valued for their water- and oil-repellent properties, commonly used in outdoor clothing. However, they are extremely persistent in nature and they are accumulating in soil, water, and in the bodies of animals and humans. A study by the Danish Forbrugerrådet Tænk (2025) has shown that PFAS can disrupt the hormonal system, increase cholesterol levels, weaken the immune system, and may raise the risk of certain types of cancer. Given these risks, Europe-wide restrictions are currently being prepared – and in some cases, complete bans, as is the case in Denmark.[288]

The difference is not only legal but material: products entering through regulated retail routes are far more likely to meet environmental and health standards. Online marketplaces such as Temu, Wish, Shein or parts of Aliexpress enable direct purchases from anonymous manufacturers, often bypassing these safeguards entirely.[289] In this regard, consumers support supply chains marked by low labor standards, gendered exploitation, and environmental harm, frequently in informal economies where women make up the majority of the workforce. This highlights the importance of EU regulation and enforcement: while global supply chains remain gendered and exploitative, stronger EU oversight determines whether harmful substances like PFAS reach European consumers and ecosystems.

But regulated supply chains often also overlook structural gender inequalities – such as unequal pay, lack of women in leadership roles, or inadequate protections against harassment – despite meeting chemical and safety standards. While improvements in fire safety and ventilation have been widely documented in supplier factories, especially following international pressure, multiple investigations[290] [291] show that critical gender-based issues (such as verbal abuse, pregnancy-based discrimination, and sexual harassment) frequently go undetected by social audits.[292] These issues show that social and environmental sustainability are closely linked in the fashion sector, since inequalities make fast fashion cheaper and more profitable, supporting high and ever-increasing levels of waste.

The waste dimension of fast fashion: landfills, second-hand flows, and recycling gaps, is discussed in chapter Waste Puzzle.

**Global Redistribution of Fashion's Waste and Harm**

The textile industry frequently uses the concept of reuse as a pretext for "ecological imperialism,"[293] exporting vast quantities of used clothing from the Global North to the Global

[288] Forbrugerrådet Tænk. 2025. Almost guaranteed to contain PFAS in jackets from Amazon, Shein, and Temu (orig.: Næsten garanti for PFAS i jakker fra Amazon, Shein og Temu. Forbrugerrådet Tænk [online]. Available from: https://taenk.dk/test/kemitest-jakker/pfas-i-jakker (translated with online translator).
[289] Ibid.
[290] Human Rights Watch. 2019. *Combating sexual harassment in the garment industry*. Human Rights Watch [online]. Available from: https://www.hrw.org/news/2019/02/12/combating-sexual-harassment-garment-industry
[291] Asia Floor Wage Alliance. 2022. *Fact-finding report into labour violations at Shahi factory, Kuppam, Andhra Pradesh, India*. Asia Floor Wage [online]. Available from: https://asia.floorwage.org/fact-finding-report-into-labour-violations-at-shahi-factory-kuppam-andhra-pradesh-india/#GBVH
[292] Human Rights Watch. 2019. *Combating sexual harassment in the garment industry*. Human Rights Watch [online]. Available from: https://www.hrw.org/news/2019/02/12/combating-sexual-harassment-garment-industry
[293] The term ecological imperialism describes a dynamic where powerful nations in the Global North externalise their environmental burdens or exercise control over the natural resources and ecological policies of the Global South. This process is a hallmark of a global capitalist economy that treats the nature of the South as "cheap" and its communities as "dispensable". The term is often used interchangeably with eco-colonialism or ecological colonialism.

South.[294] This process often functions as a form of "pollution shifting," as nearly 50% of these exports lack market value and end up directly in landfills, oceans, or incinerators in receiving nations like Kenya.[295] Voluntary in-store collection schemes, such as those that offer rewards for discarded garments, often serve as tools for "impression management". These programs allow corporations to build a reputation for environmental responsibility while simultaneously encouraging a "throwaway" culture that continues to fuel overproduction. By presenting waste as an easily recyclable byproduct, the industry effectively masks the "slow violence" - the gradual, often invisible environmental destruction that incurs irrecoverable damage over time - inherent in its production model, ensuring that the true material costs remain externalized and out of sight.[296] [297] This process often systematically targets the poor through economic and ecological worthlessness; in such cases it is referred to by some experts as a "poorcide".[298]

The emergence of "sacrifice zones" – resource-rich lands associated with marginalized communities deemed dispensable for economic gain – illustrates how the logic of profit conveniently erases human rights and environmental stability. Despite corporate initiatives promoting "sustainable" farming, many brands ignore the social exploitation embedded in their supply chains, relying on the "backgrounding" of cheap labor to sustain capital accumulation.[299]

Globalized fashion operates on an economy-first model of development that facilitates a "race to the bottom" as firms relocate to regions where environmental and labor regulations are lax to maximize profits at the expense of human health.[300] [301] Consumption within the EU alone is estimated to be responsible for approximately 375 fatal and 21,000 non-fatal occupational accidents annually across international textile supply chains regarding import of clothing and textile products from Asian countries only.[302] Furthermore, more than 13% of the world's forced labor in the cotton industry can be attributed to the final demand for apparel and textiles in the EU and the United States.[303] These impacts are obscured by highly fragmented and multi-layered supply chains that lack transparency and traceability, making accountability for human rights and environmental governance complex.[304] Europe, as one of the big importers and consumers, is a central actor in maintaining this system, in which people from non-European countries are exploited, as described below.

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[294] Bonelli, F., Caferra, R., & Morone, P. 2024. “In need of a sustainable and just fashion industry: Identifying challenges and opportunities through a systematic literature review in a Global North/Global South perspective”. *Discover Sustainability* 5 (1), 186. https://doi.org/10.1007/s43621-024-00400-5
[295] Ibid.
[296] Ibid.
[297] Milne, E., Davies, P., Heydon, J., Peggs, K., & Wyatt, T. (Eds). 2023. *Gendering green criminology*. Bristol University Press.
[298] Ibid.
[299] Loscialpo, F. (2023). Ethno-racial capitalism in contemporary fashion. In A.-M. Almila & S. Delice, *Fashion’s Transnational Inequalities* (1st edn, pp. 29–46). Routledge. https://doi.org/10.4324/9781003219675-2
[300] Kanupriya. (2024). Linkages among trade, gender and environment: A review in the context of India’s textile sector. *DECISION*, *51*(3), 397–409. https://doi.org/10.1007/s40622-024-00397-w
[301] Kanter, M. (2023). *Modern Slavery as a Product of Transnational Corporate Supply Chains: An Ecofeminist Evaluation of Systems to Address the Linkage Between Modern Slavery, Climate Change, and Gender Injustice* [Bachelor of Science in Urban and Public Affairs and University Honors, Portland State University]. https://doi.org/10.15760/honors.1450
[302] Malik, A., Lafortune, G., Carter, S., Li, M., Lenzen, M., & Kroll, C. 2021. “International spillover effects in the EU’s textile supply chains: A global SDG assessment”. *Journal of Environmental Management*, *295*, 113037. https://doi.org/10.1016/j.jenvman.2021.113037
[303] García-Alaminos, Á., Monsalve, F., & Zafrilla, J. 2024. “Disentangling social impacts in global value chains through structural path analysis: Investigating forced labor in the cotton industry”. *Journal of Industrial Ecology 28* (2): 303–319. https://doi.org/10.1111/jiec.13359
[304] Tamtéž.

**State Complicity**

It is also important to recognize that not only companies but states themselves can play a decisive role in sustaining exploitation, whether by overlooking abuses or actively enabling them. Many ecologically destructive practices – such as clear felling forests for textile production or releasing untreated effluent in areas with weak oversight – persist precisely because state regulatory frameworks permit or ignore them, allowing legally sanctioned actions to inflict profound social and environmental harm.[305]

One bright example of state-sponsored systems of racialised and gendered exploitation is cotton sector in China's Xinjiang Uyghur Autonomous Region (XUAR) where Uyghur and other ethnic minority labourers are subjected to highly controlled, coercive work programmes that combine surveillance, paramilitary-style management, and restricted movement. Workers' identities are closely monitored and often confiscated, limiting their ability to organise or advocate for rights. Factories in XUAR and related supply chains have been described as "liminal spaces between labour camps and private industry," where the transformation of ethnic minority citizens into compliant, productive workers occurs under conditions of systematic dehumanisation, overcrowding, and lack of basic necessities.[306]

Women in these systems face the dual pressures of racialised and gendered hierarchies. For example, they face reproductive violence which manifests itself in a systematic state campaign to control the bodies and reproductive functions of Uyghur women, serving the dual goals of cultural assimilation and the consolidation of a patriarchal order. This violence manifests through a range of invasive medical procedures, sexual abuses, and biopolitical strategies aimed at reducing the Uyghur population and dismantling their social fabric. Testimonies from camp survivors provide harrowing details of how reproductive functions are targeted as part of the "re-education" process. For example, reports from survivors and even former guards describe a system of organized rape and torture within the women's re-education camps. Survivors recount being humiliated and made to feel ashamed of their bodies as Muslims, with sexual attacks used as a primary tool for systematic dehumanization.[307]

Historically and within the contemporary XUAR context, destroying women's control over their reproductive functions has been used as a strategy to consolidate patriarchal order and facilitate the exploitation of female labor. By stripping women of their reproductive autonomy, the state can more effectively discipline their bodies for participation in the "accumulation of Uyghur labor power". Reproductive violence and forced labor often occur within the same network of secretive detention camps. Survivors have testified to being subjected to forced labor alongside invasive medical procedures, such as forced sterilizations and the administration of unidentified pills that suppress menstrual cycles.[308]

The state's so-called "poverty alleviation" scheme functions as a euphemism for the re-education system. Under this scheme, women are frequently transferred from detention centers directly to factories to work under state-sponsored labor transfer programs. The evidence suggests that the industry relies on a disposable, racialized, and gendered workforce.

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[305] Milne, E., Davies, P., Heydon, J., Peggs, K., & Wyatt, T. (Eds). 2023. *Gendering green criminology*. Bristol University Press.
[306] Ibid.
[307] Ibid.
[308] Ibid.

In XUAR, the disciplining of the female body, both through reproductive control and enforced "modernization" initiatives like outlawing head coverings, is a tool used to turn ethnic minority citizens into a productive yet docile workforce.[309]

**Interlinked Environmental and Social Harms**

The literature highlights that environmental and social harms in the textile sector reinforce one another. The textile industry, which has a heavy negative impact on the environment, often relies on unregulated labour conditions, where the impacts of industrial disasters and environmental harm fall most heavily on poor women. The neglect that enables such risks is evident in events like the 2013 Rana Plaza collapse in Bangladesh and the COVID-19 waves that hit garment workers massively in 2020-2021.[310] At the same time, women who make up around 80% of the labor force in the textile industry provide the bedrock of inexpensive female labour that sustains global supply chains, yet they face systematic economic marginalization.[311] Within the UK for example, the fast fashion industry relies on women of color who work in cities like Leicester for wages as low as £3 an hour – well below the national minimum – under coercive conditions that mirror modern slavery.[312]

The textile sector may often destabilize the livelihoods of low income men. In regions where garment factories pollute local ecosystems, poor men such as farmers and fishermen face extreme precarity as their primary sources of income are destroyed. This forces many to join a "surplus of casual laborers" waiting for day-labor jobs in cities, often without social or economic rights. When young men lose their productive paths on farms due to environmental degradation or debt, they become highly vulnerable to recruitment into criminal organizations or human smuggling networks that offer a false sense of status and pride.[313]

The chain of exploitation in sectors like cotton production imposes heavy psychological and social costs on men, who are often positioned as the responsible breadwinners within patriarchal structures. In the cotton sector of West Africa male farmers – who are the main workforce of the sector – often face spiraling debt due to high input costs for pesticides and fertilizers. This can lead to extreme social stigma and the loss of family assets (like cows).[314] Different gendered responses to environmental crisis are evident in high male suicide rates among farmers struggling with drought and crop failure, as men may lack the social skills or encouragement to communicate their distress or seek help.[315]

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[309] Milne, E., Davies, P., Heydon, J., Peggs, K., & Wyatt, T. (Eds). 2023. *Gendering green criminology*. Bristol University Press.
[310] Ibid.
[311] Bharti, S. 2025. Women in Textile Manufacturing: Workforce Participation and Economic Empowerment. *International Journal of Advanced Research in Science, Communication and Technology* 5 (9): 126–134. https://doi.org/10.48175/IJARSCT-28220
[312] Kelly, A. 2020. 'National shame': MP sounds alarm over UK fast fashion factories. *The Guardian* [online]. Available from: https://www.theguardian.com/global-development/2020/jan/23/national-shame-mp-sounds-alarm-over-uk-fast-fashion-factories
[313] Milne, E., Davies, P., Heydon, J., Peggs, K., & Wyatt, T. (Eds). 2023. *Gendering green criminology*. Bristol University Press.
[314] Luna, J. K. 2019. "The chain of exploitation: Intersectional inequalities, capital accumulation, and resistance in Burkina Faso's cotton sector". *The Journal of Peasant Studies* 46 (7): 1413–1434. https://doi.org/10.1080/03066150.2018.1499623
[315] Milne, E., Davies, P., Heydon, J., Peggs, K., & Wyatt, T. (Eds). 2023. *Gendering green criminology*. Bristol University Press.

Ultimately, the intersection of different social axes and the environment reveals that sustainability is impossible without social justice; achieving a globally equitable industry requires a radical shift away from the current model of consumption toward one that prioritizes community care and the dignity of workers.

### 3.3.7 Gardening and Handling Pesticides

Rather than being a recreational activity, gardening plays a crucial role in protecting the environment and supporting ecosystem health. Through careful cultivation of soil, plants, and garden ecosystems, individuals can contribute to cleaner air, healthier soil, and the preservation of water quality. At the same time, how gardeners handle pesticides and other chemicals directly affects not only the safety of their own gardens but also local biodiversity and human health. Understanding the ways in which different people approach gardening and pesticide use provides valuable insights into how everyday practices can promote environmental stewardship and sustain the natural benefits that gardens provide.

Plant diversity may strongly depend on the identity of the gardeners. The body of literature showed that women increase the biodiversity[316] [317] [318] [319] and enrich vegetable gardens with flower species[320], wild and semi-wild species[321].

However in regions like the Western Italian Alps, the findings of the research indicate that mixed-gender pairs (composed of men and women) demonstrate greater diversity in gardening management practices and a higher number of identified taxa compared to single-gender gardeners.[322]

When gardens are managed solely by men, more than half of the taxa fall into the category of horticultural species. Conversely, when gardens are managed by women, flowering species, wild, and semi-wild species dominate, comprising a significant portion of the total taxa.[323]

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[316] Philpott, S., Egerer, M., Bichier, P., Cohen, H. 2020. Gardener demographics, experience, and motivations drive differences in plant species richness and composition in urban gardens. *Ecology and society*, 25(4): 8. DOI:10.5751/ES-11666-250408

[317] Gbedomon, R., Fandohan, A., Salako, V., Idohou, A., Kakaï, R., & Assogbadjo, A. 2015. Factors affecting home gardens ownership, diversity and structure: a case study from Benin. *Journal of Ethnobiology and Ethnomedicine* 11, 56. https://doi.org/10.1186/s13002-015-0041-3.

[318] Vazzana, C., V. Moschini, G. Lazzerini, and P. Migliorini. 2010. "L'agricoltura Biologica Delle Donne E La Biodiversità in Toscana." In Atti Del VI Convegno dell'Associazione Donne&Scienza, 22–27. Torino: Associazione Donne & Scienza.

[319] Calvet-Mir, L., Calvet-Mir, M., Vaqué-Nuñez, L., Reyes-García, V. 2011. "Landraces in Situ Conservation: A Case Study in High-Mountain Home Gardens in Vall Fosca, Catalan Pyrenees, Iberian Peninsula." Economic Botany 65(2): 146–157. DOI:10.1007/s12231-011-9156-1

[320] Reyes-García, V., Vila, S., Aceituno-Mata, L., Calvet-Mir, L., Garnatje, T., Jesch, A., Lastra, J., Parada, M., Rigat, M., Vallès, J., Pardo-De-Santayana, M. 2010. Gendered Homegardens: A Study in Three Mountain Areas of the Iberian Peninsula. *Economic Botany*, 64, 235-247. https://doi.org/10.1007/s12231-010-9124-1.

[321] Vogl-Lukasser, B., Vogl, C. R., Gütler, M., & Heckler, S. 2010. Plant Species with Spontaneous Reproduction in Homegardens in Eastern Tyrol (Austria): Perception and management by women farmers. *Ethnobotany Research and Applications 8:* 001–015. Available from https://ethnobotanyjournal.org/index.php/era/article/view/306

[322] Mattalia, G., Calvo, A., & Migliorini, P. 2018. Alpine home gardens in the Western Italian Alps: the role of gender on the local agro-biodiversity and its management. Biodiversity 19(3-4): 179-187. https://doi.org/10.1080/14888386.2018.1504692

[323] Ibid.

Gender differences in garden care are also reflected in how women and men approach pesticide use in the household. A Slovak study[324] dealing with gender differences in household pesticide use, focusing specifically on purchasing, handling, application, and storage, found that women generally display more responsible attitudes toward pesticides than men, particularly in making more considered purchasing decisions. In other areas, such as application and storage, gender-based differences were observed as well, though they proved to be less pronounced.[325]

However, the study revealed an interesting correlation: individuals who use pesticides more frequently tend to behave less responsibly, regardless of their gender or place of residence. This suggests that responsible pesticide use is more closely linked to attitudes and frequency of use than to gender itself.[326]

**Key takeaways from this chapter:**

- While women in the Global South often bear the physical burden of water collection, in industrialized regions like Europe, women tend to focus on domestic water efficiency. However, they remain underrepresented in technical and decision-making roles, such as agricultural irrigation and hydrological planning, where the largest water savings could be achieved.
- Dietary choices are deeply tied to gender identity; for instance, meat consumption is culturally linked to masculinity, which can act as a barrier to men adopting plant-based diets. Although women are often the household "gatekeepers" of nutrition and waste reduction, this role frequently results in "time poverty" and an unrecognized burden of unpaid labor.
- While women's travel patterns are often more sustainable, such as relying more on public transport, walking, and "trip-chaining" for care-related tasks; they face significant disadvantages, including safety concerns, higher risks of harassment, and a lack of infrastructure support.
- Men's higher reliance on private cars is not only a matter of convenience but is culturally tied to ideals of independence, status, and authority. This "car culture" often fuels political resistance to green policies, which are perceived as threats to masculine-coded freedoms.
- Women spend 2.5 to 3 times more hours on unpaid domestic work than men, a gap that results in an "unpaid care penalty" of at least €242 billion annually in the EU. This includes the "third shift" of managing a household's environmental footprint, such as minimizing waste and mitigating chemical pollution.
- High-income nations often use "reuse" as a pretext to export nearly 1.7 million tonnes of used textiles annually to the Global South, where 50% of these items lack market value and end up in landfills or oceans.

[324] Peterková, V., & Ilko, I. 2024. Household pesticide use: Attitudes, behaviors, and health risks. *Journal of Agricultural, Environmental and Food Sciences,* 8(4), 846–854. https://doi.org/10.31015/jaefs.2024.4.13
[325] Ibid.
[326] Peterková, V., & Ilko, I. 2024. Household pesticide use: Attitudes, behaviors, and health risks. *Journal of Agricultural, Environmental and Food Sciences,* 8(4), 846–854. https://doi.org/10.31015/jaefs.2024.4.13

## 3.4 Health, Bodies and Environmental Inequalities

### 3.4.1 Invisible Pollutants: Chemicals, Plastics and Everyday Exposure

Plastics, once praised for their versatility, have turned into one of today's toughest environmental and health challenges. The EU is responsible for approximately 42.5 million tons of this plastic waste per year.[327]

Recycling is often offered as a solution (currently, only about 20% of this waste is recycled in the EU[328]). Despite plastic recycling economic advantages, mechanical recycling also poses environmental and health risks, particularly due to the release of microplastics.[329] Microplastics, which are plastic particles smaller than 5 mm, have become a pervasive environmental pollutant, increasingly detected in human tissues through ingestion, inhalation, and dermal absorption.

Although exposure is widespread, its health consequences are not uniform across populations. Evidence suggests that the impacts of microplastics vary by gender, age, and socioeconomic status, revealing significant environmental justice and public health concerns. Gender-specific health effects are particularly notable in the area of reproductive health. In women, microplastics have been found in ovarian follicular fluid and placental tissue, with studies indicating that exposure can impair ovarian function, fertility, and fetal development.[330] In men, microplastics and associated endocrine-disrupting chemicals have been detected in semen and testicular tissue, correlating with reduced sperm quality and hormonal imbalance.[331] These reproductive impacts point to the endocrine-disrupting potential of MPs, affecting both sexes but through distinct physiological pathways.

**Age** also plays a crucial role in vulnerability to microplastic exposure. Fetuses and infants represent particularly high-risk groups. Microplastics have been found in the placenta, breast milk, and even in infants' first stools, raising concerns about developmental disruptions during critical early life stages. A large-scale study on Marine Microplastics and Infant Health from 2024 involving three million births has linked in-utero exposure to microplastics with lower birth weight. Children may also face heightened susceptibility due to their developing organs and higher relative intake of food, water, and air.[332]

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[327] Joint Research Centre. 2025. Can the plastics sector become more sustainable? European Commission [online]. Available from: https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/can-plastics-sector-become-more-sustainable-2025-08-11_en?prefLang=cs

[328] Ibid.

[329] Nafiu, S.A., Azeez, M.O., AlAqad, K.M., Olarewaju, T.A., Yerima, E.A., Tanimu, A. 2025. "Waste plastic management: Recycling and the environmental health nexus". *Cleaner Materials* 15, 100291. https://doi.org/10.1016/j.clema.2024.100291

[330] Perkins, T. 2025. Antioxidants in fruits and flowers seem to counteract harmful effects of microplastics, study shows. The Guardian [online]. Available from: https://www.theguardian.com/environment/2025/feb/24/antioxidants-fruits-flowers-microplastics?utm

[331] Hu, C.J., Garcia, M., Nihart, A., Liu, R., Yin, L., Adolphi, N., Gallego, D., Kang, H., Campen, M., Yu, X. 2024. Microplastic presence in dog and human testis and its potential association with sperm count and weights of testis and epididymis. Toxicological Sciences 200(2): 235-240. https://doi.org/10.1093/toxsci/kfae060

[332] Du, X., Zhang, S., Zou, E. 2024. Marine Microplastics and Infant Health. arXivLabs. https://doi.org/10.48550/arXiv.2410.17391

**Socioeconomic and ethnic disparities** further complicate the picture. Communities with lower socioeconomic status, particularly those living near waste treatment facilities or relying heavily on seafood for nutrition, are often exposed to higher levels of microplastics. Cultural practices, such as frequent use of plastic packaging or heating food in plastic containers, may also influence exposure patterns,[333] [334] though research on ethnic differences remains limited.

The best solution would therefore be not to produce these single-use plastics (which are used, for example, to package food) at all. However, such efforts are very limited. On the other hand, there is a moderate effort here: a detailed survey conducted in the Czech Republic in 2020 showed that interest in the issue of food packaging increases with higher education and improving living standards in households.[335] In line with this growing awareness, innovative solutions are emerging. In Slovakia, researchers have developed a material that fully competes with many conventional plastics. Fully biodegradable and compostable, this material is made entirely from renewable-source polymers and is designed to break down into useful biomass at the end of its life cycle, rather than creating waste. Such materials offer a promising way to reduce the accumulation of persistent plastic and chemical residues in the environment. By replacing conventional plastics with biodegradable alternatives, both visible pollution and the often unseen chemical contaminants that everyday plastics release can be limited, while still maintaining the functionality and convenience expected by consumers.[336]

### 3.4.2 Indoor Air, Gendered Spaces and Everyday Pollution

Air pollution remains one of the largest environmental health risks in Europe, despite significant progress over the past two decades. Between 2005 and 2022, deaths in the EU linked to fine particulate matter (PM2.5) fell by 45%. EEA highlights that in 2022, exposure to PM2.5 above WHO's recommended level (5 µg/m³) caused about 239,000 premature deaths in the EU, including 3,700 in Slovakia, 6,900 in the Czech Republic, and 48,600 in Italy. This progress still falls short of the EU's ambition to cut pollution-related deaths by 55% by 2030.[337]

While air pollution is often perceived as an outdoor issue, outdoor pollutants easily infiltrate indoor spaces through ventilation, open windows, and building leaks, meaning that outdoor air quality directly affects the air we breathe inside our homes. At the same time, indoor environments have their own sources of pollution, particularly from the burning of solid fuels for domestic heating, which can significantly increase levels of harmful particles indoors.[338]

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[333] Stevens, S. et al. 2024. Plastic Food Packaging from Five Countries Contains Endocrine- and Metabolism-Disrupting Chemicals. Environmental Science & Technology 58(11). https://pubs.acs.org/doi/10.1021/acs.est.3c08250

[334] Lindsey, M. 2024. Cross-Cultural Differences in Food Preferences and Consumption Patterns. Journal of Food Sciences 5(1): 30-42. DOI:10.47941/jfs.1841

[335] Hanzlová, R. 2020. Food Wasting, Shopping and Consumption Behaviour of Czech Households – Food 2020. Public Opinion Research Centre of the Institute of Sociology of the Czech Academy of Sciences [online]. Available from: https://cvvm.soc.cas.cz/media/com_form2content/documents/c2/a5319/f9/OR201118.pdf

[336] The natural material of the future ready for today's market. 2021. Nanoilen [online]. Available from: https://www.panara.sk/en/?_gl=1%2Akqbl9s%2A_up%2AMQ..%2A_ga%2AMTk1Njg2MTE4Ny4xNzY1MTk3Njc1%2A_ga_JMF5R24WH9%2AczE3NjUxOTc2NzIkbzEkZzEkdDE3NjUxOTc4NzgkajYwJGwwJGgw

[337] EEA. 2025. Air Pollution. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/topics/in-depth/air-pollution

[338] Wenger, J. et al. 2020. Research 318: Source Apportionment of Particulate Matter in Urban and Rural Residential Areas of Ireland (SAPPHIRE). EPA Research [online]. Available from: https://www.epa.ie/publications/research/environment--health/research-318-source-apportionment-of-particulate-matter-in-urban-and-rural-residential-areas-of-ireland-sapphire.php

Europeans spend over 85–90% of their time indoors.[339] While urban outdoor air pollution is often highlighted due to visible smog and traffic emissions, indoor environments can harbor even higher concentrations of harmful pollutants leading to false perception that indoor air is inherently cleaner. In fact, indoor air can be 2 to 5 times more polluted than outdoor air.[340]

Indoor air quality also strongly depends on how buildings are constructed and ventilated. In northern European countries, homes and offices are typically well insulated, which helps to limit the infiltration of outdoor pollutants such as particulate matter but can also trap harmful substances emitted from indoor sources. In contrast, southern European countries tend to have buildings with lower insulation and greater natural ventilation, meaning that indoor air is more directly affected by outdoor concentrations of particulate matter and black carbon.[341]

Thus, while urban outdoor pollution remains a visible and widely recognized threat, the invisible dangers indoors can be equally or even more hazardous. As buildings become more energy efficient and airtight, the importance of ventilation and indoor air quality monitoring in both homes and workplaces grows. People respond to these challenges in various everyday ways from airing rooms to introducing indoor plants as natural air purifiers.

Indoor plants contribute not only to carbon capture: reducing indoor $CO_2$ by up to 1.7 kg per square meter of leaf area per year,[342] but also reflect gendered patterns of environmental engagement. Based on the data from Floral Marketing Fund (2021), 60% of purchasers of houseplants are women.[343]

However, exposure to indoor air pollution is not gender-neutral. Because women still perform a larger share of unpaid domestic labor and dominate occupations in education, care, and services, they typically spend more time indoors and in enclosed workplaces.[344] This increases their exposure to chemical and particulate pollutants released from cleaning agents, building materials, or consumer products.[345] Moreover, cultural practices associated with home aesthetics and self-care (such as the use of scented candles or air fresheners) often target women, reinforcing gendered patterns of exposure.

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[339] Simoni, M., Jaakkola, M.S., Carrozzi, L. 2003. Indoor air pollution and respiratory health in the elderly. European Respiratory Journal 2003 21(40): 15-20. https://doi.org/10.1183/09031936.03.00403603

[340] EPA. 2025. Indoor Air Quality: What are the trends in indoor air quality and their effects on human health? United States Environmental Protection Agency [online]. Available from: https://www.epa.gov/report-environment/indoor-air-quality

[341] Nezis, I., Biskos, G., Eleftheriadis, K., Fetfatzis, P., Popovicheva, O., Sitnikov, N., Kalantzi, O.-I. 2022. Linking indoor particulate matter and black carbon with sick building syndrome symptoms in a public office building. Atmospheric Pollution Research 13(1): 101292. https://doi.org/10.1016/j.apr.2021.101292

[342] Chang, Y.-S. et al. 2025. Indoor plant removal of atmospheric $CO_2$ — Effects on indoor air quality improvement and carbon sequestration. Process Safety and Environmental Protection 200: 107419. DOI:10.1016/j.psep.2025.107419

[343] Knuth, M., Khachatryan, H., Hall, Ch. 2021. Consumer Houseplant Purchasing Report 2021. Floral Marketing Fund [online]. Available from: https://floralmarketingfund.org/wp-content/uploads/2021/12/Consumer-Houseplant-Purchasing-Final-Report-2021-For-Public_compressed.pdf

[344] Schweizer, C., Edwards, R.D., Bayer-Oglesby, L. et al. 2007. Indoor time-microenvironment-activity patterns in seven regions of Europe. Journal of Exposure Science & Environmental Epidemiology 17(2): 170-181. DOI: 10.1038/sj.jes.7500490

[345] Svanes, Ø., Bertelsen, R.J., Lygre, S.H.L. et al. 2018. Cleaning at Home and at Work in Relation to Lung Function Decline and Airway Obstruction. American Journal of Respiratory and Critical Care Medicine 197(9): 1157-1163. DOI: 10.1164/rccm.201706-1311OC

### 3.4.2.1 When Gender Shapes the Air We Breathe

**Feminised exposure**

Scented candles illustrate how domestic aesthetics and care practices can become hidden sources of both pollution and gendered responsibility. Across many societies, candle use is associated with rituals, self-care, relaxation, and home atmosphere[346] – all contexts that are deeply gendered. Marketing reinforces this link by framing candles as symbols of femininity, calm, and emotional labour, particularly targeting women.

The popularity of scented candles, especially those made from paraffin wax, carries environmental and health implications. Paraffin is a by-product of petroleum refining, meaning that each candle connects household comfort to fossil-fuel extraction and carbon emissions. Even "eco-alternatives", such as soy or palm-based candles, often rely on monoculture plantations that drive deforestation. Burning candles also releases volatile organic compounds (VOCs) such as benzene and formaldehyde, and fine particulate matter, with TVOCs and PM2.5 concentrations way higher than 25 µg/m3, the WHO 24-h air quality guideline value.[347]

Health impacts intersect with gender and social inequalities. As a large European survey by ComRes showed, women are particularly likely to have experience of buying candles: three quarters of women respondents (74%) have bought candles in the past. Also, half of people in the European markets tested use candles at least once a week; women are more likely to do so than men (52% vs. 43%).[348] Women are therefore disproportionately exposed to indoor pollutants, particularly in domestic spaces where they spend more time.[349] In other words, this clearly links individual consumption with structural gender norms about who maintains comfort and care at home. Moreover, some chemicals released from burning candles, including phthalates, are known endocrine disruptors that can affect hormonal balance in both women and men. These substances can interfere with hormonal functions, potentially leading to reproductive health issues.[350] For example, studies have shown that exposure to certain pollutants during pregnancy is associated with lower birth weights and smaller head circumferences in newborns.[351] Children, whose respiratory systems are still developing, are also especially vulnerable to indoor pollutants, with prolonged exposure can lead to chronic respiratory conditions, such as asthma, and may impair cognitive development.[352] In this way,

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[346] Andersen, C., Omelekhina, Y., Rasmussen, B. B. et al. 2021. Emissions of soot, PAHs, ultrafine particles, NOx, and other health relevant compounds from stressed burning of candles in indoor air. *Indoor Air, 31*(6), 2033–2048. https://doi.org/10.1111/ina.12909

[347] Coggins, A.M., Wemken, N., Mishra, A.K. et. al. 2022. "Indoor air quality, thermal comfort and ventilation in deep energy retrofitted Irish dwellings". *Building and Environment* 219, 109236. https://doi.org/10.1016/j.buildenv.2022.109236.

[348] ComRes. 2015. Research into the European Candles Market. Association European Candle Makers [online]. Available from: https://candleseurope.com/wp-content/uploads/2021/03/aecm-2015-comres-executive-summary.pdf

[349] Eurostat. 2019. How do women and men use their time - statistics. Eurostat: Statistics Explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=How_do_women_and_men_use_their_time_-_statistics

[350] Steinemann, A. 2015. Volatile emissions from common consumer products. *Air Quality, Atmosphere & Health*, 8(3): 273–281. https://doi.org/10.1007/s11869-015-0327-6

[351] Jedrychowski, W., Perera, F., Jankowski, J., et al. 2015. Prenatal exposure to fine particulate matter and birth outcomes: a two pollutant approach. *International archives of occupational and environmental health* 90(3): 255-264. https://doi.org/10.1289/ehp.1408582

[352] Breysse, P.N., Diette, G.B., Matsui, E.C., Butz, A.M., Hansel, N.N., McCormack, M.C. 2010. "Indoor air pollution and asthma in children". *Proceedings of the American Thoracic Society* 7(2): 102-106. doi: 10.1513/pats.200908-083RM

social expectations tied to femininity and domestic care may inadvertently increase the ecological footprint of households, as women are encouraged to express care and self-worth through products that themselves contribute to environmental harm and health risks.

**Masculinised exposure**

While scented candles often represent a feminised form of indoor pollution, smoking reflects its more masculinised counterpart. In both cases, gender norms transform personal habits into environmental and health risks. Smoking remains one of the leading causes of preventable illness and death worldwide.[353] Men experience higher mortality from smoking-related diseases such as heart disease, chronic respiratory conditions, and cancers of the lungs, throat, and pancreas,[354] partly because they smoke more often and more heavily than women.[355] Beyond its impact on human health, tobacco cultivation contributes to deforestation and pesticide pollution, while cigarette butts (one of the most common types of trash in the oceans is cigarette butts)[356] release microplastics and toxins into soil and water.[357] Together, these two practices, one marketed as wellness, the other as strength, reveal how gendered social norms shape not only health behaviours but also the hidden ecological footprint of everyday life.

## 3.4.3 Romanticised Toxicity: Gender, Beauty, and Environmental Injustice

The widespread use of cosmetics is both a social and environmental issue, with complex gendered implications. Globally, women are the primary consumers of cosmetic products. Women tend to use a wider variety of personal care products more frequently than men, which is reflected in higher exposure to certain chemicals from these products, particularly among women in clerical, service, and sales occupations. And women are therefore more frequently exposed to harmful substances contained within them.[358] The beauty industry's promise of self-care and empowerment conceals a global chain of ecological and social harm.

This gendered consumption pattern is reflected in everyday routines: women are more than twice as likely as men to have a skincare routine (62% vs. 29%) and three times more likely to do one daily (32% vs. 11%).[359] European data show, indicating that consumers use more than seven different cosmetic or personal-care products daily, with women averaging around nine

[353] WHO. 2025. Tobacco. World Health Organization [online]. Available from: https://www.who.int/news-room/fact-sheets/detail/tobacco
[354] WHO. 2025. Effects of tobacco on health. World Health Organization [online]. Available from: https://www.who.int/europe/news-room/fact-sheets/item/effects-of-tobacco-on-health
[355] Eurostat. 2022. Tobacco consumption statistics. Eurostat: Statistics Explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Tobacco_consumption_statistics
[356] Ocean Conservancy. 2025. *International Coastal Cleanup '24–25 Report.* Ocean Conservancy [online]. Available from: https://oceanconservancy.org/wp-content/uploads/2025/09/ICCAnnualReport_Digital.pdf
[357] Soltani, M., Shahsavani, A., Hopke, P.K. 2025."Investigating the inflammatory effect of microplastics in cigarette butts on peripheral blood mononuclear cells". *Scientific Reports* 15, 458. https://doi.org/10.1038/s41598-024-84784-4
[358] Kim, S., Min, H. S., Lee, W. J., Choe, S.-A. 2023. "Occupational differences in personal care product use and urinary concentration of endocrine disrupting chemicals by gender". Journal of Exposure Science & Environmental Epidemiology 33: 312–318. https://doi.org/10.1038/s41370-022-00436-7
[359] Shriber, S. 2023. Key Skincare Trends: Men's Skincare, Top Products, and the Connection With Mental Well-Being. CIVIC Science [online]. Available from: https://civicscience.com/key-skincare-trends-mens-skincare-top-products-the-connection-with-mental-well-being/

and up to fifteen per week.[360] Many of these products, from perfumes and lotions to hair dyes, nail polish, and skin-lightening creams, contain endocrine-disrupting chemicals (EDCs) such as phthalates, parabens, triclosan, and benzophenones, as well as allergens and carcinogens.[361] [362] EDCs represent one of the most pervasive forms of invisible pollution. Research realised by Erase All Toxics shows that in the Netherlands, 60% of tested cosmetic and skincare products contained substances that could potentially disrupt the endocrine system.[363] And a study by Dodson et al. (2012) shows the mentioned chemical burden of women, when found that women of reproductive age apply between 12 and 16 products per day.[364]

Low-income and racialized women often experience disproportionate exposure due to the marketing of more hazardous products in these communities. Skin-lightening creams and hair straighteners, for instance, have been linked to higher levels of EDCs and are disproportionately marketed to women of colour (such as Black, Latina, and South Asian women). A study among women from different countries who immigrated to Italy showed that approximately 40% of respondents use skin-lightening products.[365] However, some of these contain hydroquinone and heavy metals (e.g., lead, chromium, nickel), and only a very small proportion of women were informed about the potential health risks.[366] In the context of low-income individuals, these risks are compounded by economic inequality: inexpensive cosmetics purchased from online retailers such as SHEIN or TEMU often contain substances classified by the EU as chemicals of "very high concern," banned since 2022 for their effects on fertility and fetal development.[367]

Furthermore, the feminisation of risk extends beyond consumption to production. The cosmetic and beauty industry workforce is predominantly female and includes a large number of immigrant and minority women. Workers in salons are exposed to high concentrations of volatile organic compounds (VOCs), formaldehyde, and other airborne toxins. Prolonged exposure in poorly ventilated spaces has been associated with respiratory issues, skin diseases, and reproductive harm.[368]

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[360] Cosmetics Europe. 2022. Socio-economic contribution of the European cosmetics industry. Cosmetics Europe, European Consumer Perception Study [online]. Available from: https://cosmeticseurope.eu/wp-content/uploads/2025/07/CE-Socio-Ec-Infographic-2025.pdf

[361] Zlatnik, M.G. 2016. "Endocrine-Disrupting Chemicals and Reproductive Health". *J Midwifery Womens Health* 61 (4): 442-455. doi: 10.1111/jmwh.12500

[362] Dodson, R. E., Nishioka, M., Standley, L. J., Perovich, L. J., Brody, J. G., Rudel, R. A. 2012. "Endocrine disruptors and asthma-associated chemicals in consumer products". *Environmental Health Perspectives*, 120(7), 935-943. doi: 10.1289/ehp.1104052

[363] EDC Free Europe. 2021. Report shows 60% of tested cosmetics on Dutch market contain hormone disruptors. EDC Free Europe [online]. Available from: https://www.edc-free-europe.org/articles/national-developments/report-shows-60-percent-of-tested-cosmetics-on-dutch-market-may-contain-hormone-disruptors

[364] Dodson, R. E., Nishioka, M., Standley, L. J., Perovich, L. J., Brody, J. G., Rudel, R. A. 2012. Endocrine disruptors and asthma-associated chemicals in consumer products. *Environmental Health Perspectives*, 120(7), 935-943. doi: 10.1289/ehp.1104052

[365] Cristaudo A, D'Ilio S, Gallinella, B., et al. 2013. Use of potentially harmful skin-lightening products among immigrant women in Rome, Italy: a pilot study. Dermatology 226(3): 200-206. DOI: 10.1159/000348706

[366] EDQM. 2024. EDQM reports presence of banned substances in skin whitening products. European Directorate for the Quality of Medicines & HealthCare [online]. Available from: https://www.edqm.eu/en/-/edqm-reports-presence-of-banned-substances-in-skin-whitening-products

[367] O'Carroll, L. 2025. EU commissioner shocked by dangers of some goods sold by Shein and Temu. The Guardian [online]. Available from: https://www.theguardian.com/business/2025/jul/20/eu-commissioner-shocked-dangerous-goods-sold-shein-temu

[368] Quiros-Alcala, L., Pollack, A.Z., Tchangalova, N., DeSantiago, M., Kavi, L. 2019. Occupational Exposures Among Hair and Nail Salon Workers: a Scoping Review. Current Environmental Health Reports 6(4): 269-285. DOI: 10.1007/s40572-019-00247-3

These inequalities are not only social but also environmental. Hazardous chemicals contained in cosmetics and hair products do not remain confined to individual users – they are washed down drains, enter wastewater systems, and accumulate in soils and waterways. In this way, gendered and racialised marketing practices contribute to a wider chain of environmental pollution, where marginalized communities face both direct bodily exposure and the long-term degradation of their living environments.

**Beauty, Pressure, and the Politics of Consumption**

Social conditioning from early childhood leads girls to equate appearance with worth, which sustains a vast global beauty and personal care industry that thrives by monetising self-doubt. This beauty norm and the social demand for women to intensively pursue beauty, serves as a method for the social policing of women and the maintenance of a gender hierarchy.[369]

This connection creates a beauty tax that places a higher demand for extra investment on women's financial resources compared to men, especially as they climb the professional ladder. This cultural connection sustains a $677 billion industry (globally) that converts aspiration and insecurity into profit. Furthermore, the phenomenon of "lookism" ensures that women who conform to these standards are more likely to be hired, promoted, and socially accepted, effectively turning beauty into a currency of privilege. Digital platforms amplify these pressures, as algorithms that favor conventional attractiveness can worsen body image concerns and contribute to higher rates of anxiety, depression, and body dissatisfaction. While beauty can be framed as a source of confidence, its power has historically been misused as a tool of control. This industry converts aspiration and insecurity into profit while fuelling inequality and imposing systemic penalties for nonconformity.[370]

These beauty routines often rely on environmentally harmful practices, such as intensive cultivation that harms natural habitats through deforestation and the use of microbeads that pose a serious threat to marine life. While marketed as a source of confidence, the industry's lifecycle involves unethical practices like undisclosed child labor in mica mining and 120 billion units of trash from packaging each year that ultimately end up in landfills.[371]

Cosmetic ingredients enter ecosystems through domestic wastewater. Microbeads, UV filters, and synthetic musks have been detected in rivers, lakes, and marine organisms, affecting aquatic life and bioaccumulating in food chains. These pollutants contribute to broader environmental degradation and disproportionately affect communities near waste treatment plants or manufacturing hubs, many of which are located in low-income or marginalised regions.[372]

Another major issue in this area is animal testing – it is estimated that around 500,000 animals suffer and die globally each year for cosmetic purposes.[373]

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[369] Devhooti, P., Susanthika, S. 2025. Price of perfection: How beauty standards shape society, economy. Policy Circle. [online] Available from: https://www.policycircle.org/opinion/beauty-standards-gender/
[370] Ibid.
[371] Ibid.
[372] Issac, M., Kandasubramanian, B. 2021. "Effect of microplastics in water and aquatic systems". *Environmental science and pollution research international* 28 (16): 19544-19562. https://pmc.ncbi.nlm.nih.gov/articles/PMC7924819/pdf/11356_2021_Article_13184.pdf
[373] Humane World for Animals. 2025. Animals in Cosmetics Testing. Humane World for Animals [online]. Available from: https://hsi.org.au/animal-welfare/animals-in-cosmetics-testing/

Beyond chemical pollution, the cosmetics industry has a striking ecological footprint. Around 70% of cosmetic products contain palm oil derivatives linked to deforestation in Southeast Asia, while the sector generates over 120 billion packaging units each year, 95% of which end up discarded. Combined with emissions from resource extraction and energy-intensive consumer use, beauty has become an important driver of global warming.[374] Despite companies' such as L'Oréal, Unilever, and Estée Lauder sustainability pledges, few have verified Net Zero commitments, and most continue to depend on deforestation-linked raw materials such as palm oil, wood pulp, and mica.[375] According to the Carbon Trust, the objective of reaching net zero by 2050 or earlier must be adopted across the industry to reach the Paris Agreement's goal of limiting global warming to 1.5°C.[376]

The beauty industry exemplifies a system that transforms gendered ideals into profit through constant product turnover, targeted marketing, and the illusion of choice. The relentless expansion of product lines and seasonal launches, often framed as "innovation" or "female empowerment",[377] fuels overproduction and waste while obscuring the structural causes of environmental degradation. Corporate greenwashing, where brands advertise environmental responsibility but through selective sustainability claims, for example without addressing overproduction or petrochemical dependency, can obscure corporate accountability and create "green confusion," limiting consumers' ability to make informed choices. Ultimately, these supply chains reveal how consumer culture and environmental degradation are deeply intertwined through corporate production models.[378] Achieving real transformation will therefore require not only carbon neutrality but also a fundamental rethinking of the economic and gendered logics that sustain overproduction and resource exploitation in the name of beauty.

**Key takeaways from this chapter:**

- Plastics, microplastics, and indoor pollutants pose serious health risks, with women, children, and disadvantaged communities disproportionately affected. Microplastics impact reproductive health, while indoor exposures from cleaning, candles, and heating reflect gendered patterns of daily life.
- Cosmetics and beauty products expose mainly women to endocrine disruptors, toxins, and environmental harm, while production adds pollution, deforestation, and waste. Low-income and racialized women face higher risks due to targeted marketing and hazardous working conditions.

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[374] CleanHub. 2025. The Environmental Impact of the Beauty Industry. CleanHub [online]. Available from: https://www.cleanhub.com/blog/beauty-industry-environmental-impact
[375] Foster, N., Retallack, S. 2023. Greenhouse gloss: Is the beauty industry's commitment to tackling climate change more than skin deep? Carbon Trust & Net Zero Intelligence Unit [online]. Available from: https://ctprodstorageaccountp.blob.core.windows.net/prod-drupal-files/documents/resource/public/Greenhouse-Gloss-beauty-NZIU-report.pdf
[376] Ibid.
[377] Goldman, R., Heath, D., Smith, S. 1991. "Commodity Feminism". Critical Studies in Mass Communication 8: 333-351. Available from: https://www.researchgate.net/profile/Deborah-Heath-3/publication/233338520_Commodity_Feminism/links/56f62f5608ae81582bf21c01/Commodity-Feminism.pdf
[378] Persakis, A., Nikolopoulos, T., Negkakis, I. & Pavlopoulos, A. 2025. "Greenwashing in marketing: a systematic literature review and bibliometric analysis". International Review on Public and Nonprofit Marketing 22: 957-992. https://doi.org/10.1007/s12208-025-00452-x

# Transferable Insights: Smart approaches with potential for EU implementation

**State:** Japan

**Name of the measure:** Cool Biz and Warm Biz: Rethinking Thermal Comfort for All

**Description:** Japan's Cool Biz and Warm Biz campaigns are notable examples of government-led initiatives that reduce office-related emissions by adjusting workplace norms. The Cool Biz campaign launched in 2005 by Japan's Ministry of the Environment, recommended setting air conditioning to 28 °C during summer months. To ensure employee comfort, the government also introduced a more relaxed summer dress code, allowing workers – particularly men – to forgo ties and jackets. In the first year alone, the campaign helped reduce carbon dioxide emissions by approximately 460,000 tons. By 2010, annual savings had reached 1.69 million tons of $CO_2$, with some estimates suggesting a full potential of up to 2.2 million tons of $CO_2$ per year.

The follow-up Warm Biz campaign encourages workers and employers to limit indoor heating during the winter and instead wear warmer clothing. This measure also responds to the fact that women generally have higher thermal comfort needs, while standard office temperature settings are typically calibrated for the male metabolic rate. Together, these campaigns promote a fairer approach to thermal comfort between men and women. In summer, this means shifting cultural expectations: asking men to dress lighter rather than increasing energy use to cool offices for women's comfort. In winter, women are encouraged to layer up instead of relying on excessive heating. The campaigns highlight how energy savings and gender-sensitive climate policy can go hand in hand.

The South Korean Ministry of Environment and the British Trades Union Congress have promoted their own Cool Biz campaigns since summer 2006 as a notable example of a climate- and gender-sensitive approach to office energy use. The concept also inspired the United Nations to launch the "Cool UN" initiative in 2008.

**Link:** https://en.wikipedia.org/wiki/Cool_Biz_campaign; https://qz.com/465327/ditch-the-tie-and-reduce-the-ac-japans-cool-biz-gets-summer-hell-just-about-right

**Country:** France

**Name of the measure:** Ban on Advertising and Promotion of Ultra-Fast Fashion

**Description:** France has taken a decisive legislative step to curb the environmental and social costs of ultra-fast fashion. The French Parliament has approved a bill targeting low-cost, high-volume fashion giants such as SHEIN and Temu. The bill aims to regulate ultra-fast fashion companies. Key provisions include banning paid ads and influencer promotions for ultra-fast fashion; for example, influencers and platforms will face sanctions for promoting these brands. Key provisions include also introducing eco-taxes starting at €5/item in 2025, rising to €10 by 2030 (capped at 50% of item price) and requiring transparency on sustainability and mandatory sustainability disclosures.

**Link:** https://www.senat.fr/lessentiel/ppl23-431.pdf?utm

**Country:** India

**Name of the measure:** Rural communities solve India's water crisis

**Description:** The S M Sehgal Foundation community-driven water security across rural India through its Jalagam initiative and integrated water management approach. This includes restoring traditional water systems, such as check dams, ponds, and johads, and implementing modern techniques like rooftop rainwater harvesting, groundwater recharge wells, and biosand filters. These efforts have already delivered substantial results: the construction of 75 check dams, revival of 66 ponds harvesting nearly 792 million liters annually, and widespread adoption of safe drinking water systems in schools and homes, benefiting over 3 million people in more than 1,000 villages.

Beyond infrastructure, a crucial pillar of the foundation's strategy is capacity building and inclusive governance. Jalagam workshops engage government officials, NGOs, and local leaders to foster water stewardship and climate resilience. Special emphasis is placed on empowering women, who traditionally manage household water, through leadership training and active roles in water committees, leading to improved sustainability and community outcomes. According to a UNICEF report, projects with strong women's leadership saw 60% better sustainability in water infrastructure.

**Link:** https://www.smsfoundation.org/building-water-security/

**Country:** Australia, Melbourne

**Name of the measure:** Water-Sensitive Urban Design

**Description:** Water Sensitive Urban Design (WSUD) is an approach used in Melbourne to manage water in cities in a more natural and sustainable way. It helps the city deal with stormwater, reduce flooding, improve water quality, and create greener, cooler, and more liveable urban spaces.

Instead of letting rainwater wash pollutants into rivers and drains, WSUD systems collect and clean it using features like raingardens, wetlands, swales, green roofs, and permeable pavements. These systems slow down the water, allow it to soak into the ground, and sometimes reuse it for irrigation or toilets. This reduces pollution, saves water, and cools the city.

**Link:** https://www.melbourne.vic.gov.au/water-sensitive-urban-design

**Country:** The United States

**Name of the measure:** Towards Reproductive Justice in Agriculture

**Description:** Beyond Pesticides is a U.S.-based organization that advocates for ending the use of toxic pesticides and promoting a transition to environmentally friendly agriculture. In 2024, it issued a call to the U.S. Congress demanding a legislative ban on pesticides with serious impacts on reproductive health (such as chlorpyrifos) and a prohibition on their application by individuals under the age of 18. The appeal also includes a requirement for mandatory multilingual labeling of pesticides to ensure protection for workers who do not speak English.

The campaign combines scientific evidence, advocacy, and a strong appeal to social and gender justice. It particularly highlights that women working in agriculture are often exposed to pesticides both directly (during fieldwork) and indirectly (for example when washing contaminated clothing) making them one of the most vulnerable groups. The initiative represents an example of a systemic approach that links ecological sustainability with the protection of health, labor rights, and equality.

**Link:** https://secure.everyaction.com/GVa97kPSf0u4tjnBxUKnCA2##anchor

**Country:** Kenya

**Name of the measure:** EcoPost - company that turning plastic waste into building materials

**Description:** EcoPost, a company established by Kenian woman entrepreneur Lorna Rutto in 2008, collects and recycles waste plastic to manufacture it into eco-friendly plastic lumber, creating sustainable jobs for people in marginalized communities while conserving the environment through reduction of deforestation.

EcoPost also empowers women and informal waste collectors by providing them with business tools, including shredders and mobile payment systems, helping them earn stable incomes and join the circular economy. Over 12,000 people have benefited indirectly through this model, and more than 100 direct jobs have been created. Looking ahead, the company aims to train 50,000 more people, save 100 million trees, and expand globally.

**Link:** https://www.cartierwomensinitiative.com/fellow/lorna-rutto

**Country:** India, Mumbai

**Name of the measure:** Plastic weaving in Dharavi

**Description:** Dharavi, Asia's largest slum located in Mumbai's heart, defies its impoverished image by operating as a thriving circular economy. Home to around one million people in a mere 2.1 km², the community supports approximately 5,000 businesses and 15,000 single-room factories, many dedicated to recycling and upcycling. Processing an estimated 80% of Mumbai's dry waste and roughly 60% of its plastic, Dharavi generates around US $1 billion annually. Workers, including "rag pickers" and artisans, sort plastic, metal, e-waste, and more, often crushing, cleaning, and selling materials to industry. They are supported by skill-sharing, machinery built from scrap, and community-led initiatives, turning discarded materials into raw resources for industries across India

Despite its informal, largely unregulated nature, Dharavi's model highlights how necessity-driven ingenuity can foster environmentally sustainable practices and resilient local economies. The recycling operations not only prevent landfill overflow but also create livelihoods: plastic weaving cooperatives alone employ thousands and enable meaningful income for women. While challenges remain, such as hazardous working conditions and redevelopment pressures, Dharavi stands as a compelling example of a low-resource, high-impact sustainability ecosystem.

**Link:**
https://www.globalcitizen.org/en/content/mumbais-biggest-slum-dharavi-bustling-micro-econom/

# 4. Transcending the Individual: Social-Environmental Entanglements

## 4.1 Gender aspects of the carbon footprint

Examining carbon footprints – the measure of greenhouse gases emitted by an individual's actions – through a gender lens reveals that our consumption patterns are deeply shaped by societal roles, norms, and identities. European research consistently shows that women, on average, have lower carbon footprints than men. This gap is not trivial; its magnitude is comparable to the difference in emissions between individuals with below-median and above-median incomes.[379] This difference is primarily driven by consumption in two key areas: food and transport. A detailed study in France, for example, found women's annual carbon footprint from these sectors was 26% lower than men's.[380]

This gender gap is not caused by a single factor but by a complex mix of socioeconomic positioning, biological needs, and, most significantly, deeply ingrained social norms. While differences in income, employment, and daily caloric needs play a role, a substantial portion of the gap remains even after accounting for these variables. This "residual gap" points directly to the influence of gender identity on consumption, particularly concerning two carbon-intensive and stereotypically gendered products: red meat and cars.[381]

**Food Consumption: The Carbon Cost of Diet**

Dietary choices are a major component of an individual's carbon footprint, and this is an area of significant gender differentiation. A key finding across European studies[382] [383] is that men consume substantially more meat, especially red meat, which is one of the most carbon-intensive food products available. This preference is often tied to cultural notions of masculinity that associate meat with strength and virility.[384] In contrast, women generally consume more fruits, vegetables, and plant-based proteins, which have a much lower environmental impact.[385]

Interestingly, household dynamics can influence these patterns. The gender gap in food-related footprints tends to be smaller within couples compared to single individuals. This often results from women in partnerships adopting more carbon-intensive diets to align with their male partners, rather than the other way around.[386]

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[379] Berland, A., Leroutier, M. 2025. The gender gap in carbon footprints: determinants and implications. Grantham Research Institute on Climate Change and the Environment [online]. Available from: https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2025/05/working-paper-424-Berland_Leroutier.pdf
[380] Ibid.
[381] Ibid.
[382] Feraco, A., Armani, A., Gorini, S., Camajani, E., Quattrini, C., Filardi, T., Karav, S., Strollo, R., Caprio, M., & Lombardo, M. (2024). Gender Differences in Dietary Patterns and Eating Behaviours in Individuals with Obesity. *Nutrients*, *16*(23), 4226. https://doi.org/10.3390/nu16234226
[383] Rolls, B., Fedoroff, I., Guthrie, J. 1991. Gender Differences in Eating Behavior and Body Weight Regulation. *Health Psychology* 10(2): 133-142. DOI:10.1037/0278-6133.10.2.133
[384] The Gender.org. 2025. Gender and Sustainable Diets: Do Women and Men Consume Differently? The Gender.org [online]. Available from: https://thegender.org/gender-and-sustainable-diets/
[385] Ibid.
[386] Berland, A., Leroutier, M. 2025. The gender gap in carbon footprints: determinants and implications. Grantham Research Institute on Climate Change and the Environment [online]. Available from: https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2025/05/working-paper-424-Berland_Leroutier.pdf

A Finnish study[387] emphasize that while a global transformation of the food system is essential, it must be interpreted and adapted to local conditions in order to be realistic and effective. According to the findings, the current average Finnish diet generates about 6.0 kg of $CO_2$-equivalents per person per day. When compared with alternative dietary patterns, the following reductions were observed:

- "Meat to half" – 5.2 kg $CO_2$ eq/person/day
- "Meat to third" – 4.8 kg $CO_2$ eq/person/day
- "Diet rich in fish and milk" – 4.2 kg $CO_2$ eq/person/day
- "Vegan diet" – 3.7 kg $CO_2$ eq/person/day.

Among the scenarios studied, the diet rich in fish and milk achieved the best nutritional value while maintaining a relatively low climate impact. Moreover, soil carbon balance improvement, such as reduced tillage, maintaining soil organic matter, and sustainable grazing practices, could achieve an additional 3–13% reduction in emissions. Altogether, the combination of dietary shifts and soil-related actions could cut the climate impact of food consumption by 13–41% highlighting the crucial role of soil carbon–related processes in assessing and mitigating dietary climate impacts.[388]

At the same time, from an ecofeminist perspective, it is important to recognise that the sustainability of diets cannot be assessed solely through nutritional value and greenhouse gas emissions. Diets rich in animal-derived foods, even when climate-efficient, raise additional ethical and social questions related to human–animal relations, care, and power structures within food systems. The conditions under which fish and dairy are produced including animal welfare, labour conditions, and the degree of industrialisation significantly influence their broader sustainability. Evaluations of food systems therefore should consider not only what we eat, but also how our food is produced, its relationship to soil carbon dynamics and the social and ethical dimensions embedded in production systems.[389]

**Transport and Mobility: Gendered Travel Patterns**

Transportation is another sector where gendered behaviors have a major impact on emissions. Men generally have higher rates of car ownership and tend to drive longer distances, contributing to a larger transport-related carbon footprint. To understand the specific role of gender, the French study adjusted its analysis to account for factors like income and the total distance people traveled. Even after these adjustments, a gap in transport emissions between men and women remained. The study found that this "residual" gap[390] was almost entirely explained by differences in how men and women use cars.[391]

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[387] Saarinen, M., Heikkinen, J., Ketoja, E., Kyttä, V., Hartikainen, H., Silvennoinen, K., Valsta, L., Lång, K. 2023. "Soil carbon plays a role in the climate impact of diet and its mitigation: the Finnish case". Frontiers in Sustainable Food system 7, 904570. https://doi.org/10.3389/fsufs.2023.904570

[388] Ibid.

[389] Adams, C. 1991. "Ecofeminism and the Eating of Animals". Hypatia 6 (1): 125-145. Special Issue: Ecological Feminism. DOI: https://doi.org/10.1111/j.1527-2001.1991.tb00213.x

[390] The residual gender gap is the part of the difference in carbon footprints between men and women that remains even after controlling for socio-economic factors. It reflects differences in preferences and behavior rather than structural conditions. The residual gender gap is mainly driven by red meat consumption and car use, two high-emission activities strongly linked to gender norms and identities, not to income or necessity.

[391] Berland, A., Leroutier, M. 2025. The gender gap in carbon footprints: determinants and implications. LSE [online]. Available from: https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2025/05/working-paper-424-Berland_Leroutier.pdf

Conversely, women are more likely to use public transport, walk, or cycle[392]. These choices are influenced by factors like lower access to cars, economic considerations, and more complex travel patterns related to caregiving, known as "trip-chaining" (making multiple short stops for errands like school runs and shopping). However, women's use of public transport is also heavily influenced by safety concerns, which can deter them from choosing these more sustainable options, especially after dark.[393] Notably, research by Berland and Leroutier (2025) has found no significant gender gap in emissions from air travel, a high-carbon activity that is perceived as more gender-neutral than car use, reinforcing the argument that specific gender norms are powerful drivers in the transport sector.[394]

**Household Energy and the "Double Dividend"**

In the home, women are often the primary managers of daily energy use (they perform the majority of unpaid domestic labor, engage in energy-intensive tasks such as cooking, cleaning, and laundry), positioning them as key actors in energy conservation.[395] However, they are also more vulnerable to energy poverty: the lack of access to affordable and clean energy. This is often due to lower average incomes and a higher likelihood of living in less energy-efficient housing.[396]

This evidence points to a "double dividend" of gender equality: empowering women socially and economically can also advance climate action. For example, greater female labor force participation is linked to reduced household energy consumption and more investment in energy efficiency.[397] Similarly, studies suggest that greater gender diversity in corporate management correlates with lower $CO_2$ emissions.[398] Investing in gender equality is therefore not only a matter of social justice but a strategic component of a sustainable transition.

**A Comparative Look at Czechia, Slovakia, and Italy**

While direct, gender-disaggregated carbon footprint data for the project's partner countries are scarce, related indicators reveal telling patterns.

- In the **Czech Republic**, women show a stronger preference for sustainable transport than both Czech men and the EU average. In 2022, 51% of women reported using public transport as a main mode of travel, compared to 42% of men.

[392] Sansonetti, S., Davern, E. 2021. Women and transport. European Parliament [online]. Available from: https://www.europarl.europa.eu/RegData/etudes/STUD/2021/701004/IPOL_STU%282021%29701004_EN.pdf
[393] Prättälä, N., Roginska, M., Niethammer, C. 2022. EIB Climate Survey: The case for making transport solutions work for women. European Investment Bank [online]. Available from: https://www.eib.org/en/stories/women-transport-climate
[394] Berland, A., Leroutier, M. 2025. The gender gap in carbon footprints: determinants and implications. LSE [online]. Available from: https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2025/05/working-paper-424-Berland_Leroutier.pdf
[395] Feenstra, M. 2025. Reframing Energy Poverty through a Gender Lens: A Call for Inclusive Policy Solutions. Florence School of Regulation [online]. Available from: https://fsr.eui.eu/reframing-energy-poverty-through-a-gender-lens-a-call-for-inclusive-policy-solutions/
[396] Ibid.
[397] Nuță, F. M., Mărcuță, A. G., Dimen, L., Mărcuță, L., Gaban, L., Hajiyeva, N., & Nuta, A. C. 2025. "The Role of Poverty and Gender in Shaping Households' Energy Consumption Patterns in Selected European Countries". *Energies*, *18* (5), 1266. https://doi.org/10.3390/en18051266
[398] Altunbas, Y., Gambacorta, L., Reghezza, A., Velliscig, G. 2022. Does gender diversity in the workplace mitigate climate change? European Central Bank [online]. Available from: https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2650~3b693e6009.en.pdf

- In **Slovakia**, women are more likely to choose eco-friendly options for childcare and to avoid single-use plastics. The country presents a mixed picture in terms of representation: women are well-represented in senior administrative roles in environmental ministries (58%, well above the EU average) but hold only 17% of seats on parliamentary environmental committees.[399]
- In **Italy**, gendered dietary patterns are clear, with studies confirming that men consume more meat while women eat more fruits and vegetables.[400] These dietary differences, combined with Italy's significant gender gap in employment and influential traditional gender roles, strongly suggest a corresponding gap in carbon footprints.[401]

A critical insight, particularly from Czechia and Slovakia, is the "policy-practice-representation" disconnect. In both nations, women tend to engage in more sustainable daily practices, yet they have significantly less formal power to shape the systemic environmental policies and investments that could scale up these actions. This disconnect represents a missed opportunity for accelerating a just and effective climate transition.

**Key takeaways from this chapter:**

- European research consistently shows that women, on average, have lower carbon footprints than men, with the gap being primarily driven by consumption patterns in food and transport.
- While women and gender-diverse boards are statistically more likely to engage in sustainable practices and corporate carbon reduction, women remain structurally underrepresented in the formal political and leadership roles required to shape systemic environmental policy.

## 4.2 Gender aspects of digital eco-innovation

Green ICT, or digital eco-innovation, refers to the innovative use of digital technologies that reduce the consumption of natural resources (materials, energy, water, land) and the release of harmful substances, including greenhouse gases, across the entire life cycle of products, services, or systems. This concept supports the shift toward a circular economy and climate neutrality.[402]

Gender equality is a key dimension in the transition to Green ICT. As of 2023, women made up only 19.4% of ICT specialists in the EU, with the highest shares in Bulgaria (29.1%), Estonia

[399] European Institute for Gender Equality (EIGE). 2023. *Gender equality index 2023 – Slovakia*. Publications Office of the European Union [online]. Available from: https://data.europa.eu/doi/10.2839/806958
[400] Perillo, A. et al. 2024. *Dietary habits of the Italian population across the last 30 years: main features and room for improvements*. Available from: https://www.burden-eu.net/docs/ibodconf2/bodcon2024-poster-perillo.pdf
[401] Prentice, E. 2025. Gender Roles in Italy: What Do You Think? Live in Italy Magazine [online]. Available from: https://liveinitalymag.com/gender-roles-in-italy-what-do-you-think/
[402] Bahn-Walkowiak, B. et al. 2020. Eco-Innovation and Digitalisation: Case studies, environmental and policy lessons from EU Member States for the EU Green Deal and the Circular Economy. Eco-Innovation Observatory [online]. Available from: https://epub.wupperinst.org/files/7753/7753_Eco-Innovation_Digitalisation.pdf

(26.8%), and Romania (26.0%), and the lowest in Italy and Hungary (both 15.7%).[403] While the number of women ICT professionals in the EU raised, from 16.2% in 2014 to 19.5% in 2024, the gender ratio remains imbalanced at approximately 4.15 : 1.[404]

This persistent underrepresentation limits both equity and innovation in the green digital economy. When women are excluded from the design and research of green digital solutions, outcomes tend to be less effective, less inclusive, and may even reinforce existing inequalities. Study Mansour et al. (2024) show that companies with female CEOs introduced more green eco-innovations.[405] A study by the European Corporate Governance Institute (2019) finds that there is a positive impact of board gender diversity on renewable energy consumption, and results also indicate that firms that use renewable energy and have gender diverse boards enjoy better financial performance.[406] A study by Rahi (2025) revealed that women on boards positively affect corporate sustainability performance in the European context, with an approximately 30% participation of women on boards ensuring synergetic impact.[407] Evidence from corporate and research sectors shows that gender-diverse teams are significantly more likely to produce green innovations and invest in renewable solutions, yet women continue to face barriers in accessing digital and green upskilling opportunities. Women also represent just 34% of STEM graduates in the EU, reflecting structural gaps in education and career pipelines[408].

A gender-responsive green digital transition requires targeted actions: promoting STEM education for girls, supporting female-led green tech entrepreneurship, and applying inclusive criteria in public digital procurement (for more information see Chapter Who Shapes Green Knowledge? Gender and Inequality in Research and Innovation). Without such measures, existing inequalities risk being amplified rather than reduced.

### 4.2.1 Artificial Intelligence in the Context of Climate, Social and Gender Justice

The development, training, and deployment of artificial intelligence (AI) systems are reshaping global economies and societies, while simultaneously generating interconnected environmental, social, and gendered impacts across their entire lifecycle. While AI is often presented as a tool for efficiency, innovation, and information accessibility, its environmental and social costs are unevenly distributed and frequently overlooked in mainstream discourse.[409]

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[403] More people employed in ICT in the EU in 2023. 2024. Eurostat [online]. Available from: https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20240524-2
[404] Eurostat. 2025. ICT specialists in employment. Eurostat: Statistics Explained [online]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=ICT_specialists_in_employment
[405] Mansour, M., Zobi, M. Altawalbeh, M. & Alim, S. A. 2024. "Female leadership and environmental innovation: do gender boards make a difference?". *Discover Sustainability* 5 (1). 10.1007/s43621-024-00545-3
[406] Atif, M., Hossain, M., Alam, M.S., Goergen, M. 2019. Does Board Gender Diversity Affect Renewable Energy Consumption? European Corporate Governance Institute [online]. Available from: https://www.ecgi.global/sites/default/files/working_papers/documents/finalatifhossainalamgoergen.pdf
[407] Rahi, A. 2025. Unpacking women's power on corporate boards: gender reward in board composition. International Journal of Disclosure and Governance 22: 64–80. https://doi.org/10.1057/s41310-024-00228-5
[408] European Commission 2024. She Figures 2024: Statistics on the State of Gender Equality in Research and Innovation. European Commission [online]. Available from: https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/she-figures_en
[409] Ren, S., Wirman, A. 2024. The Uneven Distribution of AI's Environmental Impacts. Harvard Business Review [online]. Available from: https://hbr.org/2024/07/the-uneven-distribution-of-ais-environmental-impacts

### Environmental Costs of AI Systems

AI systems rely on energy and water intensive infrastructures as well as extractive supply chains for hardware manufacturing that contribute to climate change and environmental harm. Subsequent water depletion, ecosystem degradation caused by mineral extraction, and the export of toxic electronic waste to low-income regions disproportionately burden communities in the Global South.[410]

Training large language models, such as ChatGPT, is associated with exceptionally high energy consumption. Training a single large natural language processing model can generate the amount of tons of $CO_2$ equivalent to emissions from five typical cars during their whole lifetime.[411] Even in cases where data centers are powered by renewable sources, the trend of growing energy demand remains a concern. The International Energy Agency estimates that global electricity consumption could increase by up to 60% by 2026.[412]

A new study from Alex de Vries-Gao (2026) estimates that the water demand of AI systems in 2025 may have reached approximately from 312.5 to 764.6 billion liters, a level that could be comparable to the current global annual consumption of bottled water. In the same period, the associated carbon footprint of AI systems is estimated to range between 32.6 and 79.7 million tons of $CO_2$ emissions, placing it within the scale of emissions produced annually by large metropolitan areas such as New York City. These figures highlight the rapidly growing environmental impacts of data centers and reinforce the increasing need for transparency in the technology sector. Addressing current gaps in environmental reporting may require policy interventions that mandate the disclosure of more comprehensive data center performance metrics. However, due to limitations and inconsistencies in existing disclosures, these estimates remain subject to significant uncertainty.[413]

### Social and Gender Dimensions of AI Development and Deployment

The environmental footprint of Artificial Intelligence (AI) and digital tools is not limited to energy consumption; it encompasses a comprehensive value chain that starts with the extraction and processing of raw materials and concludes with the disposal of hazardous electronic waste.[414] The mining of minerals like lithium, cobalt, and Rare Earth Elements (REEs), which form the indispensable core for hardware, takes place primarily in the Global South, particularly in resource-rich regions of Latin America and Africa.[415] In these regions, extraction often occurs under opaque and hazardous working conditions, characterized by poor wages, labor

[410] Valdivia, A. 2025. "Data Ecofeminism". *Computers and Society*. https://doi.org/10.48550/arXiv.2502.11086
[411] Hao, K. 2019. Training a single AI model can emit as much carbon as five cars in their lifetimes. MIT Technology Review [online]. Available from: https://www.technologyreview.com/2019/06/06/239031/training-a-single-ai-model-can-emit-as-much-carbon-as-five-cars-in-their-lifetimes/
[412] International Energy Agency. 2024. Electricity 2024: Analysis and forecast to 2026. IEA [online]. Available from: https://iea.blob.core.windows.net/assets/18f3ed24-4b26-4c83-a3d2-8a1be51c8cc8/Electricity2024-Analysisandforecastto2026.pdf
[413] de Vries-Gao, A. 2026. “The carbon and water footprints of data centers and what this could mean for artificial intelligence.” *Patterns* 7(1), 101430. [online]. Available from https://doi.org/10.1016/j.patter.2025.101430
[414] Berthet, E., J. Lavalley, U. Soytas, et al. 2024. "Assessing the social and environmental impacts of critical mineral supply chains for the energy transition in Europe." *Global Environmental Change* 86: 102841. https://doi.org/10.1016/j.gloenvcha.2024.102841
[415] Mangani, P., Khan, G.D., Naseer, A. 2025. “Sustainable Governance, conflict and environmental justice in critical mineral extraction in Latin America and Africa.” *Peace and Sustainability* 1 (3). https://doi.org/10.1016/j.nerpsj.2025.100017

exploitation, and chronic exposure to toxic chemicals and heavy metals.[416] On-ground workforces and nearby residents suffer from chronic health problems due to heavy metal exposure, respiratory issues from rock dust, and psychological distress following mining disasters.[417] This material dependency is often rendered invisible in mainstream discussions on AI, which tend to focus narrowly on energy consumption while overlooking the embedded environmental and social costs of hardware production. Read more about the cost of mining in Chapter Electronic Waste: the Fastest Growing Stream.

The social impacts of mining for digital and AI-related materials have a pronounced gender dimension, shaped by structural inequalities in labor, health, and security. Gendered divisions of labor within extractive industries reinforce existing social hierarchies, often leading to dispossession processes that disproportionately affect women and are closely linked to cycles of poverty, marginalization, and violence.

In many mining regions, women face a dual burden of unpaid caregiving responsibilities while simultaneously participating in informal and hazardous segments of the supply chain, such as manual ore sorting. These roles are typically low-paid, unregulated, and excluded from formal labor protections, resulting in their overrepresentation in the most precarious forms of work.[418]

Occupational health risks further exacerbate these inequalities. In regions such as Katanga in the Democratic Republic of the Congo (DRC), women often work in unsafe and labor-intensive environments without adequate ventilation or protective equipment, increasing their exposure to musculoskeletal injuries, toxic substances, and long-term respiratory conditions.[419]

Gendered vulnerabilities are also intensified by the presence of armed actors and weak governance structures. Studies document a higher likelihood of sexual and gender-based violence (SGBV) among women living near artisanal and small-scale mining (ASM) sites. In conflict-affected regions, sexual violence has in some cases been used systematically as a means of controlling populations and securing access to mineral-rich territories.[420]

Building on these extractive dynamics, the human cost of sourcing digital materials is further shaped by structural global inequalities. This dynamic reflects what is often described as a "decarbonization divide," where developed nations benefit from technological advancement while the Global South bears the social and environmental burdens. The mining industry, particularly the artisanal and small-scale mining (ASM) of cobalt in the Democratic Republic of the Congo (DRC), is associated with forced labor and child exploitation. Field research describes extreme working conditions in which children operate in dangerous pits for minimal compensation.[421]

In resource-rich regions, competition over valuable minerals has fueled armed conflicts and violent confrontations between local communities, state forces, and private actors. In some

[416] Berthet, E., Lavalley, J., Soytas, U. et al. 2024. "Assessing the social and environmental impacts of critical mineral supply chains for the energy transition in Europe." *Global Environmental Change* 86: 102841. https://doi.org/10.1016/j.gloenvcha.2024.102841
[417] Mangani, P., Khan, G. D., Naseer, A. 2025. “Sustainable governance, conflict and environmental justice in critical mineral extraction in Latin America and Africa”. *Peace and Sustainability* 1(3). https://doi.org/10.1016/j.nerpsj.2025.100017.
[418] Ibid.
[419] Ibid.
[420] Ibid.
[421] Ibid.

cases, mining corporations have been allowed to subcontract police or military units for protection, contributing to impunity in cases of violence against civilians. Over half of critical mineral deposits are located on or near Indigenous lands, where communities face displacement, destruction of cultural heritage, and violations of the principle of Free, Prior, and Informed Consent (FPIC).[422]

The development of digital tools and Artificial Intelligence (AI) is inherently dependent on the extraction of critical minerals. These materials, including lithium, cobalt, gallium, graphite, and Rare Earth Elements (REEs), form the foundation of high-value sectors such as telecommunications, defense, and emerging digital infrastructures. This creates a "sustainability paradox": while these materials enable technological progress and low-carbon transitions, their extraction often leads to environmental degradation, water contamination, and human rights violations.[423]

**Relevance to the EU Context**

These global dynamics are directly reflected in regional policy contexts, particularly in the European Union, which is both a major consumer of digital technologies and a key driver of the green transition. The sustainability paradox is particularly acute for the European Union due to its ambitious climate policies and strong dependence on imported raw materials.

The European Climate Law mandates climate neutrality by 2050, with an interim target of a 55% reduction in greenhouse gas emissions by 2030. Achieving these goals requires a large-scale deployment of mineral-intensive technologies such as electric vehicles, wind turbines, and battery storage. In the EU context, this translates into a continued "decarbonization divide," where the benefits of green and digital transitions are concentrated within Europe, while their social and environmental costs are externalized to resource-rich regions in the Global South (for example achieving the EU's climate goals could expose 15,000 to 89,000 African miners to increase modern slavery vulnerabilities by 2040). EU demand for critical minerals contributes to environmental pressures in global extraction hotspots. By 2040, the majority of emissions associated with mineral extraction for EU consumption are expected to occur outside Europe, alongside increasing stress on water resources in countries such as Chile and Kazakhstan.[424]

Through initiatives such as the Critical Raw Materials Act (CRMA), the EU aims to increase domestic extraction. However, this often encounters resistance from local communities, commonly framed as "Not-in-My-Backyard" (NIMBY) dynamics. Local communities often resist new domestic mining projects due to perceived environmental threats, prioritizing local protection over global climate goals. Securing a "social license to operate" requires European leaders to adopt more inclusive decision-making and clearly articulate local benefits to build trust.[425]

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[422] Mangani, P., Khan, G. D., Naseer, A. 2025. "Sustainable governance, conflict and environmental justice in critical mineral extraction in Latin America and Africa". *Peace and Sustainability* 1(3). https://doi.org/10.1016/j.nerpsj.2025.100017.
[423] Ibid.
[424] Ibid.
[425] Berthet, E., Lavalley, J., Anquetil-Deck, C. et al. 2024. "Assessing the social and environmental impacts of critical mineral supply chains for the energy transition in Europe". *Global Environmental Change* 86: 102841. https://doi.org/10.1016/j.gloenvcha.2024.102841

While the Corporate Sustainability Due Diligence Directive (CSDDD) aims to improve supply chain transparency, its limited scope, particularly the exclusion of many small and medium-sized enterprises (SMEs), creates gaps in monitoring socio-environmental risks.[426]

**AI Systems and Embedded Biases**

While the material foundations of AI reveal significant environmental and social inequalities, these disparities are further reproduced within AI systems themselves through biased data and unequal development structures.

AI development continues to lack gender and ethnic diversity, both in terms of development teams and the datasets used to train models. This lack of gender, ethnic, and socio-economic representation contributes to the reproduction of structural inequalities within algorithmic systems. Gender bias in AI has been widely documented, ranging from the underrepresentation of feminine linguistic forms to the reinforcement of stereotypical roles in outputs generated by machine learning systems.[427] These biases are not merely technical flaws but reflect broader societal inequalities that become encoded into digital infrastructures.

Algorithmic decision-making systems used in areas such as hiring, credit scoring, healthcare, and law enforcement have been shown to replicate and, in some cases, amplify existing patterns of discrimination. For example Berkeley Haas Centre analysed 133 AI systems and found that 44% showed gender bias, and 25% showed both gender and racial bias.[428] Moreover, a study by the Technical University of Applied Sciences Würzburg–Schweinfurt revealed that large language models systematically advised women to request lower salaries than identically qualified men in salary negotiation scenarios, with disparities reaching up to $120,000 annually.[429] This creates risks of exclusion, misrepresentation, and unequal access to opportunities, particularly for women and marginalized communities. Importantly, these biases intersect with the material inequalities outlined earlier. Communities that are most affected by extractive practices in the Global South are often also underrepresented in the datasets that shape AI systems, leading to a double exclusion, from both the benefits of technological development and fair representation within it.

While some corporations and research institutions have begun implementing fairness frameworks and inclusive design principles, these efforts remain fragmented. Structural inequalities persist across the entire AI lifecycle, from resource extraction and labor conditions to data production and algorithmic governance.

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[426] Mangani, P., Khan, G. D., Naseer, A. 2025. “Sustainable governance, conflict and environmental justice in critical mineral extraction in Latin America and Africa”. *Peace and Sustainability* 1(3). https://doi.org/10.1016/j.nerpsj.2025.100017.

[427] Buolamwini, J., Gebru, T. 2018. “Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification”. *Proceedings of Machine Learning Research* 81: 1-15. Available from: https://proceedings.mlr.press/v81/buolamwini18a/buolamwini18a.pdf

[428] UN Women. 2024. Artificial Intelligence and Gender Equality. UN Women Asia and the Pacific [online]. Available from: https://asiapacific.unwomen.org/en/stories/feature-story/2024/05/artificial-intelligence-and-gender-equality

[429] Dalton, D. 2025. “Why ChatGPT Advises Women to Ask for Lower Salaries Than Men”. 3Plus International [online]. Available from: https://3plusinternational.com/why-chatgpt-advises-women-to-ask-for-lower-salaries-than-men/

**Key takeaways from this chapter:**

- Women are significantly underrepresented in the digital green economy.
- While AI is marketed as a tool for efficiency, its development relies on resource-intensive infrastructures and extractive supply chains in the Global South that disproportionately burden marginalized communities with environmental degradation and hazardous labor.
- AI systems frequently replicate and amplify structural inequalities through biased training data, often resulting in discriminatory outputs related to gender and race.

## 4.3 Electricity Decarbonization and Gender

The EU electricity sector is projected to play a key role in achieving climate mitigation goals by 2030. After a temporary rise in fossil fuel use during 2021–2022, linked to the post-COVID recovery and the war in Ukraine, the greenhouse gas emission intensity of EU power generation resumed its long-term downward trend. In 2023, one kilowatt hour of electricity was produced with 19% less $CO_2$ than in 2022 and 35% less than in 2013. Compared to 1990, this represents a 58% decline.[430]

This trajectory reflects the success of EU energy and climate policies, but also underscores the urgency to accelerate decarbonization if the EU is to achieve a 55% net reduction in GHG emissions by 2030 and full carbon neutrality by 2050.[431]

From a gender perspective, structural inequalities persist in the energy sector. Women remain underrepresented in technical and leadership roles in energy innovation, which shapes priorities and outcomes of the transition. At the same time, the uneven social impacts of renewable energy installations, such as land use changes or local welfare effects, highlight the importance of inclusive decision-making. Ensuring that both women's and men's voices are equally heard in planning and implementing clean energy solutions is essential for a just energy transition.[432]

These tensions are particularly visible in European contexts, where ambitious climate agendas still collide with persistent gender inequalities. In Czechia's Ústecký and Moravskoslezský regions, €40 billion in EU decarbonization funds focus on heavy industry restructuring but neglect gender-responsive retraining programs for women in similar service sectors.[433] As a result, a "green jobs gap" is growing – 68% of renewable energy sector jobs in Central Europe

[430] EEA. 2025. Greenhouse gas emission intensity of electricity generation in Europe. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/indicators/greenhouse-gas-emission-intensity-of-1
[431] Ibid.
[432] Grünewald, P., Diakonova, M. 2020. Societal differences, activities, and performance: Examining the role of gender in electricity demand in the United Kingdom. Energy Research & Social Science 69, 101719. https://doi.org/10.1016/j.erss.2020.101719
[433] Březovská, R. 2024. An Invisible String: Gender (In)Equality & (Un)Just Transition in Czechia. In: Synergies between gender equality and climate action. Comment Paper – Czechia. European Commission [online]. Available from: https://commission.europa.eu/document/download/2418e282-d00b-4d73-9446-9440a8d571b8_en?filename=mlp_cz_comments%20paper_february_2024_en.pdf

are currently held by men, perpetuating occupational segregation.[434] [435] Further examples come from Czechia's national policies. The country's 2024 update of its National Energy and Climate Plan (NECP) failed to incorporate gender analysis despite EU requirements, resulting in climate adaptation measures that ignore women's heightened vulnerability to heatwaves.[436]

**Key takeaways from this chapter:**

- Despite the European Union's significant success in reducing the carbon intensity of power generation by 58% since 1990, the transition remains socially imbalanced as women continue to be excluded from technical leadership and green job opportunities due to gender-blind national policies.

## 4.4 Energy Consumption, Sustainability and Social Equity in the Energy Transition

Energy consumption remains the dominant contributor to climate change, accounting for around 60 percent of total global greenhouse gas emissions. Fossil fuels have been major sources of electricity production generating large amounts of greenhouse gases which cause climate change and have damaging impacts on people's well-being and the environment. Currently, about 733 million people don't have access to electricity. As the global electricity use rapidly rises, attention is given to supporting reliable, clean and affordable energy. Regarding sustainability, Sustainable Development Goal 7 aims to ensure universal access to electricity by 2030 through investing in clean energy sources such as solar, wind and thermal. Expanding infrastructure and upgrading technology to provide clean energy can both encourage growth and help the environment.[437]

Renewable energy sources (RES) can cause adverse impacts on the environment and local populations. It affects the landscape, the occupation of land, the opportunity cost of the area occupied, the fragmentation of the countryside, and changes in land coverage. Specific impacts cover the noise effect for wind power or the glare effect of photovoltaic panels. Regarding social sustainability, welfare of local residents is often significantly different from the welfare effects on the general population. Installation of RES facilities close to communities raises issues

[434] European Environmental Bureau and WECF. 2021. Why the European Green Deal Needs Ecofeminism: Report. European Environmental Bureau [online]. Available from: https://eeb.org/wp-content/uploads/2021/07/Report-16-1.pdf
[435] Ilyas, F. 2021. "European Green Deal's Gender Blind Spots Set to Widen Inequalities and Weaken Environmental Protection: Report." WECF International [online]. Available from: https://www.wecf.org/european-green-deals-gender-blind-spots/
[436] Ministerstvo průmyslu a obchodu. 2024. *Vnitrostátní plán České republiky v oblasti energetiky a klimatu* [online]. Available from: https://mpo.gov.cz/assets/cz/energetika/strategicke-a-koncepcni-dokumenty/2025/10/Vnitrostatni-plan-Ceske-republiky-v-oblasti-energetiky-a-klimatu.pdf
[437] UN. 2025. Sustainable Development Goals: 7 Affordable and Clean Energy. United Nations [online]. Available from: https://www.un.org/sustainabledevelopment/energy/

concerning social equity as it significantly affects the welfare of residents and even the natural heritage.[438]

Increasing energy innovation funding significantly improves social equity directly as well as indirectly via accelerating energy justice in advanced economies. Proper allocation and utilization of public energy innovation budgets are necessary to promote clean energy technologies, advance the just energy transition, and improve social equity, inclusion, and community engagement.[439]

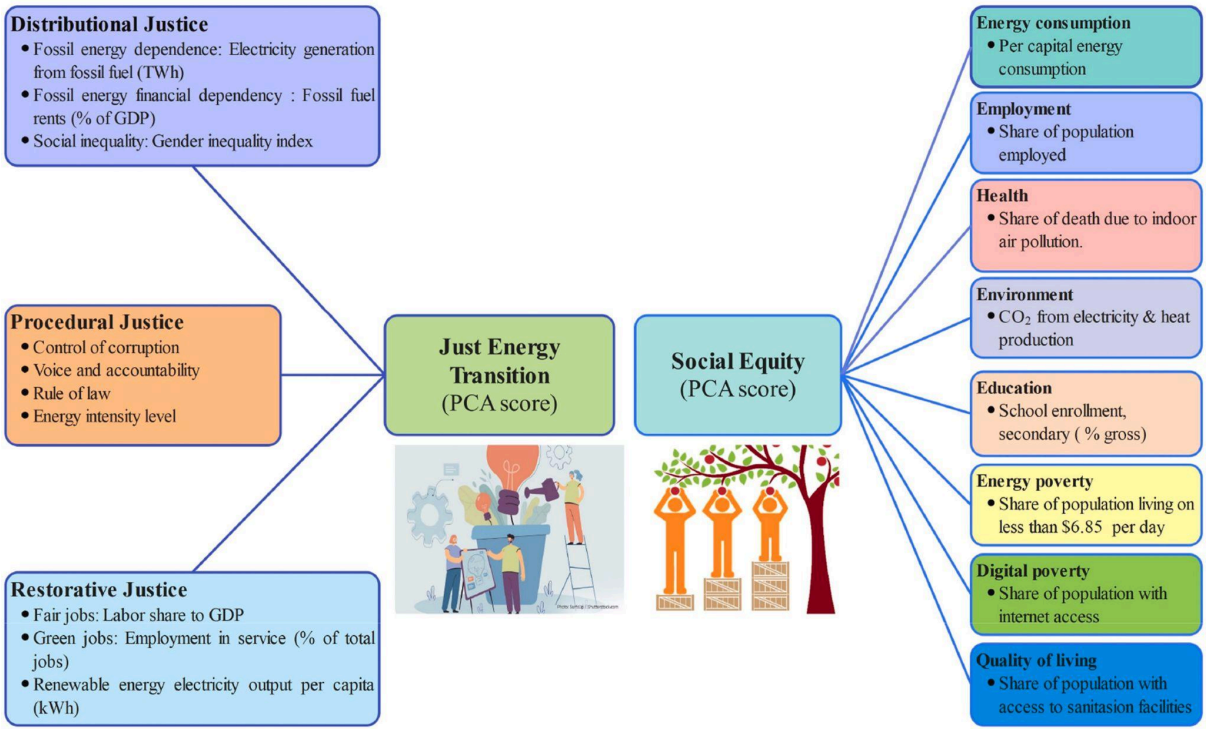



*Figure no. 6: Evaluation method of just energy transition and social equity according to Hosan et al.*[440]

According to the study Gender and Energy (2016), women and men differ in their attitudes toward nuclear energy. Women are less supportive of nuclear energy than men. For example, women perceive fewer benefits from nuclear energy, are less supportive of investments in nuclear energy, and are less supportive of the construction of new nuclear power plants, as well as the expansion of existing ones. Women also support regulations on nuclear energy more than men do and have greater concerns about the handling, transport, and disposal of nuclear waste. The most common explanation for the differences in attitudes toward nuclear energy

[438] Botelho, A., Pinto, L., Lourenço-Gomes, L., Valente, M., Sousa, S. 2016. "Social sustainability of renewable energy sources in electricity production: An application of the contingent valuation method". Sustainable Cities and Society 26: 429-437. https://doi.org/10.1016/j.scs.2016.05.011
[439] Hosan, S. et al. 2024. "Energy innovation funding and social equity: Mediating role of just energy transition". Renewable and Sustainable Energy Reviews 197, 114405. https://doi.org/10.1016/j.rser.2024.114405
[440] Ibid.

between men and women is that women are more concerned about any risks. Therefore, they are also more concerned about the risks of nuclear energy. This is primarily due to the different socialization of women and men. The same conclusions were confirmed in the context of the Czech Republic alone.[441]

**Key takeaways from this chapter:**

- While global strategies like Sustainable Development Goal 7 aim for universal access to clean energy, the transition remains socially complex because the local environmental impacts of renewable infrastructure - such as noise and landscape changes - often create inequities that disproportionately affect the welfare of nearby residents, particularly women, who tend to be more concerned about the long-term risks associated with energy waste and new power technologies.

## Transferable Insights: Smart approaches with potential for EU implementation

**Country:** Barcelona, Spain

**Name of the measure:** The Climate Shelters project

**Description:** The project adapts school environments to climate resilient places in selected parts of Barcelona to mitigate the urban heat island effect. Playgrounds are transformed into climate shelters, open to the public during heatwave periods. The climate adaptation include three strategies:

- blue - introducing water elements that help cool the environment and offer recreational opportunities,
- green - enhancing vegetation and natural shade to reduce heat, improve outdoor comfort, and support biodiversity,
- grey - upgrading existing infrastructure with heat-resilient solutions such as insulation and shade structures to improve thermal comfort and reduce heat exposure.

**Link:** https://www.uia-initiative.eu/en/uia-cities/barcelona-call3

[441] Marková Volejníčková, R., Pospíšilová, M., Křížková, A. 2016. Gender and energetika. Sociologický ústav AV ČR, v.v.i., a Heinrich-Böll-Stiftung [online]. Available from: https://cz.boell.org/sites/default/files/gender_energetika_online.pdf

**Country:** Italy, Milan

**Name of the measure:** Innovation Pub – University of Milano-Bicocca

**Description:** Innovation Pub is a monthly series of thematic meetings organized by the University of Milano-Bicocca, held on the last Tuesday of each month. These informal events foster dialogue between researchers, students, and the local community on topics such as science, democracy, social impact, and innovation. The goal is to promote the university's "third mission," which focuses on knowledge transfer to society.

A notable example is the January 28, 2025 event titled "Ecology and AI: Inspirations from Nature for Innovation," which explored how artificial intelligence can be used to mitigate environmental impact, with a focus on ethics and sustainability. The event featured experts like Gianna Martinengo, president of Women&Tech® ETS, and Veronica Nava, researcher at the Department of Environmental and Earth Sciences at Bicocca University. These initiatives highlight the university's commitment to gender inclusion and environmental sustainability through research and public dialogue.

**Link:** https://www.unimib.it/societa/innovation-pub

**Country:** Czech Republic

**Name of the measure:** Rethink Architecture

**Description:** The Rethink Architecture organization aims to inspire, educate, and connect architects and investors to create sustainable buildings and neighborhoods. They present the principles and benefits of sustainable architecture in all three pillars of sustainability: environmental, economic, and social. It also targets the general public, but more specifically women (who are more likely to initiate renovations), younger people, and interior designers.

**Link:** https://www.rethinkarchitecture.cz/

**Country:** Austria, Vienna

**Name of the measure:** Housing project Frauen-Werk-Stadt I (Women-Work-City)

**Description**: Frauen-Werk-Stadt is the first gender-sensitive housing project designed by women in Vienna, Austria. Women Transforming Cities aims to radically shift social, economic, and political power to equity-deserving groups to reshape who cities are built by and for so that communities' needs are met and everyone can belong, participate, and thrive.

Between 1995-1997, this initiative created 357 homes that were designed exclusively by women and centred around womens' everyday life and experiences with the goal to make housework and care work easier, encourage a sense of community and create comfortable and safe living environments. That includes the integration of amenities and services into the facility, such as a kindergarten, communication center, doctor's office, pharmacy, police station and retail shops; including apartments for the disabled and the elderly; and prioritizing pedestrian needs (such as making the central space car-free), etc.

**Link**: https://www.womentransformingcities.org/, https://womenfriendlycitieschallenge.org/wise-practices/gender-sensitive-housing-in-vienna-frauen-werk-stadt-women-work-city/

**Country:** Spain

**Name of the measure:** 50:50 Sustainable Projects

**Description**: The "50:50 Sustainable Projects" initiative led by ACCIONA, a Spanish multinational company focused mainly on infrastructure development and renewable energy management, aimed to strengthen the role and participation of women in projects and production centres around the world, especially within the energy industry. The programme focused on reskilling and upskilling women, supporting and promoting female talent within the company, improving women's employability in key economic sectors, and addressing gender stereotypes. Among its significant achievements were ensuring balanced participation within a network code team and increasing the presence of women in important positions related to wind energy production. By creating new opportunities and actively encouraging female involvement, the initiative contributed to a more diverse and inclusive workforce in the renewable energy sector. The initiative was completed in 2025.

**Link**: https://www.acciona.com/updates/articles/acciona-recognized-commitment-gender-equality-construction

# 5. Global framework: gender, inequalities and climate

## 5.1 Economic Losses & Unequal Recovery: Who Pays the Price

Climate extremes are not only environmental but also economic shocks. They destroy assets, reduce productivity and strain public budgets for health, social protection and infrastructure. Without a gender perspective, recovery policies risk reproducing existing inequalities. The EU Adaptation Strategy (2021) seeks to reduce these losses and strengthen fiscal and social resilience across Member States.[442] This strategy addresses existing inequalities between regions and different population groups in one section.

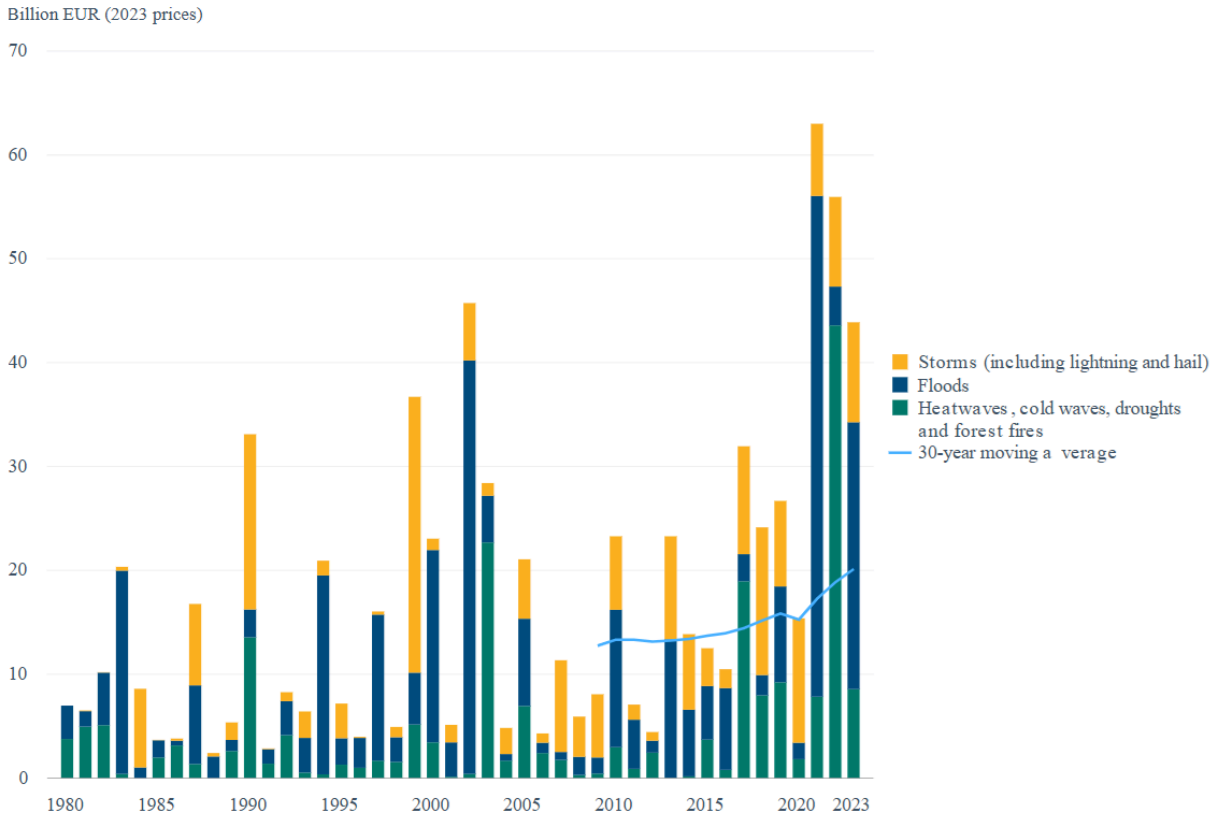



*Figure no. 7: Annual economic losses caused by extreme events in the EU.*[443]

Hydrological hazards (floods) account for 47% and meteorological hazards (storms, including lightning and hail) for around 27% of the total. For climatological hazards, heat waves cause nearly 18% of the total losses (but are responsible for 95% of the fatalities). In comparison, the remaining 8% are caused by droughts, forest fires and cold waves.[444]

[442] EEA. 2025. Economic losses from weather- and climate-related extremes in Europe. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/indicators/economic-losses-from-climate-related
[443] Ibid.
[444] Ibid.

Relatively few events are responsible for most of the economic losses: 5% of climate-related events with the biggest losses are responsible for 59% of losses, and 1% of the events cause 37% of losses. However, 66% of events with the smallest losses recorded total only 5% of the losses.[445] Weather- and climate-related extremes caused economic losses of assets of 822 billion € during 1980–2024 in the European Union of which over 208 billion € (25%) took place between 2021 and 2024.[446]

These numbers reveal the financial scale of climate impacts, but not their human side. Losses and recovery are never evenly shared – women and vulnerable groups often carry the heaviest burden, both economically and socially.

**Key takeaways from this chapter:**

- Climate-related extreme events, such as floods and storms, have caused more than €822 billion in economic losses across the EU since 1980, with a significant 25% of those losses occurring just between 2021 and 2024.
- Climate shocks trigger a surge in unpaid care work due to school closures and health impacts, which intensifies "time poverty" for women and slows their ability to re-enter the labor market following a disaster.

## 5.2 Gendered Spaces: Urban Planning and Environmental Justice

The association between gender and environmental care has deep historical roots. During the Progressive Era in some parts of Europe, women led civic movements to clean up cities, improve sanitation, and expand access to green public spaces. Their activism combined environmental concern with social care, reflecting a broader belief that women were responsible for the moral and physical health of urban life.[447]

Men who took part in these efforts were sometimes mocked as unmanly, reinforcing a symbolic divide between masculinity and environmental responsibility. This association between environmentalism and femininity has persisted over time, shaping not only who is expected to "care" for urban environments but also who holds professional authority in designing and governing them.[448]

[445] EEA. 2025. Economic losses from weather- and climate-related extremes in Europe. European Environment Agency [online]. Available from: https://www.eea.europa.eu/en/analysis/indicators/economic-losses-from-climate-related
[446] Ibid.
[447] Ellen Swallow Richards and the women's reform movement. Environmental History: Timeline and historical insights [online]. Available from: https://environmentalhistory.org/people/richards/
[448] Swim, J. K., Gillis, A., and Hamaty, K. J. 2020. "Gender Bending and Gender Conformity: The Social Consequences of Engaging in Feminine and Masculine Pro-Environmental Behaviors". *Sex Roles* 82(5): 363–85. 10.1007/s11199-019-01061-9

Urban planning plays a crucial role in shaping the sustainability, inclusivity, and resilience of cities. As global urban populations grow and environmental pressures intensify, it is essential to address how social and ecological dimensions are integrated into the design and governance of urban spaces. One often-overlooked aspect of urban planning is the mentioned intersection of **gender and environmental concerns**. Gender shapes how individuals experience urban environments, access resources, and respond to ecological risks.

Urban spaces are not neutral: they reflect and reinforce social norms, including those related to gender. Men and women often use city facilities differently due to gender roles, safety concerns, and unequal access to mobility and infrastructure.[449] Women, for instance, are more likely to use public transportation, walk or travel with dependents, make multiple short trips throughout the day[450], and rely on public transport and pedestrian routes rather than private vehicles.[451] [452] These patterns reflect both socio-economic roles and caregiving responsibilities. Many urban plans prioritize car-centric infrastructure while overlooking elements such as pedestrian safety, adequate lighting, and universal accessibility, which are features crucial for women, caregivers, and other marginalized users.[453] This type of approach is often rooted in centralized, top-down planning models that emphasize efficiency and commuting over everyday mobility for walkers or caregivers, thereby reflecting male-dominated assumptions about how cities are used.

Also from an environmental perspective, walkable, transit-oriented cities reduce emissions and promote public health. Incorporating women's experiences is heading towards creating more inclusive public spaces while simultaneously advancing environmental goals.[454]

Climate change and environmental risks are unevenly experienced within urban contexts. Women, particularly those in low-income or informal settlements, are more likely to be exposed to heatwaves, flooding, or air pollution due to their residential locations and economic limitations.[455]

Planning that is both gender and environmentally responsible acknowledges complexity and works toward intersectional urban justice. It means that both recognize that urban issues intersect with other forms of inequality (e.g., class, race, age, disability).[456]

Another key element of gender-responsive planning is its emphasis on justice and accessibility. The aim is to systematically remove barriers that disadvantage women in their everyday mobility through the city, whether in accessing public transport, safe public spaces, or employment

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[449] Schimmel, E. 2021. Guidelines: Towards a gender-sensitive urban development. Connective Cities [online]. Available from: https://www.connective-cities.net/wp-content/pdf-files/CC_19_01_22_Guidelines_Gender_sensitive_urban_development_Lina.pdf

[450] McGuckin, N., Murakami, E. Examining Trip-Chaining Behavior: A Comparison of Travel by Men and Women. [online]. Available from: https://nhts.ornl.gov/1995/doc/chain2.pdf

[451] Hanson, S. 2010. "Gender and mobility: new approaches for informing sustainability". *Gender, Place & Culture* 17 (1): 5-23. https://doi.org/10.1080/09663690903498225

[452] Levy, C. 2013. "Travel choice reframed: “deep distribution” and gender in urban transport". Environment & Urbanization 25 (1). https://doi.org/10.1177/0956247813477810

[453] Whitzman, C. 2013. Women's safety and everyday mobility. In: Legacy, C., Whitzman, C. et al. Building Inclusive Cities: Women's Safety and the Right to the City. Routledge. ISBN: 978-0-415-62815-0. Available from: https://www.researchgate.net/publication/263390118_Building_Inclusive_Cities_Women's_Safety_and_the_Right_to_the_City

[454] Greed, C. 1994. *Women and Planning: Creating Gendered Realities.* London: Routledge. ISBN 9780415079815

[455] Jarvis, H., Cloke, J., Kantor, P. 2009. Cities and Gender. London: Routledge. ISBN 9780203878064

[456] European Commision. 2020. 100 Climate-Neutral Cities by 2030 - by and for ... all cities. Gender Action [online]. Available from: https://h2020.genderaction.eu/wp-content/uploads/2020/09/HE_Mission_Citiesgender.pdf

opportunities. Research shows that 20.2% of women in the EU have experienced physical violence or threats and/or sexual violence by someone other than an intimate partner since the age of 15. Such incidents also occur in public spaces, for example, on public transport, in streets, parks, shops, or during leisure activities.[457] Urban safety is therefore not just a matter of lighting or surveillance, but part of a broader effort to ensure equal rights to movement, presence, and dignity in public space.

In the context of employment, urban areas concentrate the majority of employment opportunities, which often compels women to migrate from rural to urban settings. Access to cities must then take this into account by designing better public transportation (as women tend to use more public transports than cars, see chapter Mobility and Transport).[458] Similarly, the environmental approach emphasizes that environmental benefits (such as greenery, clean air, and climate-resilient infrastructure) should be distributed fairly among all city residents, regardless of their social status.

The proportion of women involved in urban planning also plays a role. But some progress has been made in increasing the share of women in architecture. The balance between men and women in the profession is approaching parity. The proportion of women has increased from 36% in 2014 to 45% in 2024 (European average). For Slovakia, it is 81% of men compared to 19% of women, which is one of the lowest proportions of female architects in the EU. On the other hand, in Italy, there are even 54% of female architects and 46% of male architects.[459] But women in architecture are still almost invisible. Research suggests that this is due to the challenges women encounter when re-entering the profession after maternity leave, such as being denied their previous levels of responsibility or having reasonable work hours to accommodate their needs as a parent.[460] Also, in the European Union, 28.6% of regional assembly members, 36% of municipal council members and only 15% of mayors, are women. Sustainable cities may be attained faster with a more diverse representation in power structures.[461] This is alarming precisely in relation to the fact that women tend to have more environmentally friendly consumption patterns in terms of nutrition and transportation and are more willing to change their behaviour due to environmental pressures than men.[462]

### 5.2.1 Threat of cities: the urban heat island phenomenon

Heatwaves and their impacts are among the most serious consequences of climate change. The frequency and intensity of record-breaking temperatures are expected to continue rising. Over the past 40 years, extreme weather and climate-related events have resulted in approximately half a trillion euros in damages and caused between 85,000 and 145,000

[457] FRA, EIGE, Eurostat. 2024. EU gender-based violence survey – Key results: Experiences of women in the 27 EU Member States. Publications Office of the European Union [online]. Available from: https://fra.europa.eu/sites/default/files/fra_uploads/eu-gender_based_violence_survey_key_results.pdf
[458] European Commision. 2020. 100 Climate-Neutral Cities by 2030 - by and for ... all cities. Gender Action [online]. Available from: https://h2020.genderaction.eu/wp-content/uploads/2020/09/HE_Mission_Citiesgender.pdf
[459] The Architects' Council of Europe. 2024. The Architectural Profession in Europe: 2024 Sector Study. Ace [online]. Available from: https://ace-cae.eu/wp-content/uploads/2025/03/2024-ACE-Sector-Study-EN-01042025.pdf?utm
[460] Nayak, A. 2025. Women architects who are balancing motherhood and planning. Rethinking The Future [online]. Available from: https://www.re-thinkingthefuture.com/know-your-architects/a2627-women-architects-who-are-balancing-motherhood-and-planning/
[461] European Commision. 2020. 100 Climate-Neutral Cities by 2030 - by and for ... all cities. Gender Action [online]. Available from: https://h2020.genderaction.eu/wp-content/uploads/2020/09/HE_Mission_Citiesgender.pdf
[462] Ibid.

fatalities across Europe. Notably, more than 85% of these deaths were due to heatwaves occurring between 1981 and 2020. In recent summers, numerous densely populated regions have experienced unprecedented heat. Over 1.7 billion urban residents are potentially exposed to extreme heat.[463]

Heatwaves are characterised as prolonged periods of excessively high temperatures, which can lead to the development of microclimatic effects such as the Urban Heat Island (UHI). The impacts of rising temperatures are especially pronounced in urban areas, where health risks and other severe consequences are more likely. Urban warming continues to intensify, with city temperatures often surpassing those in nearby suburban and rural areas, leading to urban overheating. This urban temperature rise is primarily due to the abundance of heat-absorbing sealed surfaces, dense populations, and heat-emitting infrastructure. Combined with limited air circulation and a scarcity of green spaces and water bodies, these factors contribute significantly to reduced natural cooling in cities.[464]

The UHI effect significantly affects human health. Elevated urban temperatures, especially when combined with air pollution, exacerbate respiratory problems by increasing ground-level ozone and smog, which can irritate airways, trigger asthma attacks, and worsen chronic conditions such as chronic obstructive pulmonary disease. Heat stress places additional strain on the cardiovascular system, increasing the risk of heart attacks, strokes, and other heat-related events. Dehydration in hot conditions can further disrupt electrolyte balance and blood pressure, contributing to increased morbidity and mortality during extreme heat. Beyond physical health, prolonged exposure to high temperatures can negatively affect mental well-being, leading to sleep disturbances, irritability, cognitive difficulties, and heightened stress. For individuals with pre-existing mental health conditions, these effects can be more pronounced, diminishing overall quality of life and community cohesion. These health impacts disproportionately affect vulnerable populations, highlighting the urgent need for equitable, multi-faceted strategies to reduce urban temperatures and protect public health.[465] Groups of people most at risk from the UHI effect are those with increased exposure to high temperatures and limited resources to adapt. This includes older adults, children, low-income communities, and those with pre-existing health conditions. The risks are often compounded by social and economic inequities, with lower-income neighborhoods and marginalised communities experiencing less green cover and higher temperatures. Socially isolated individuals, such as the elderly, are also at risk.[466]

Green infrastructure improves urban environmental quality by mitigating the UHI effect, absorbing airborne pollutants, and reducing $CO_2$ emissions. For instance, a study by Pérez et al. (2021) demonstrated that integrating a small-scale green facade using Boston Ivy (Parthenocissus tricuspidata) over just 0.2 m² of vegetated surface in a Mediterranean climate can lower building surface temperatures by up to 13°C.[467] At the same time, an American study

[463] Iodice, S., Arbau, L.C., Maistrali, A., Marando, F., Melchiorri M., Proietti, P., Sulis, P., Tainguy, O., Vandecasteele, I. 2024. *EU cities and heat extremes*. JRC137891. European Commission [online]. Available from: https://publications.jrc.ec.europa.eu/repository/handle/JRC137891
[464] Ibid.
[465] The impact of urban heat islands on health. Pirta [online]. Available from: https://www.pirta.com/education/the-impact-of-urban-heat-islands-on-health
[466] How does Urban Heat Impact Vulnerable People? CityGreen [online]. Available from: https://citygreen.com/how-does-urban-heat-impact-vulnerable-people/
[467] Pérez, G. et al. 2021. "3D characterization of a Boston Ivy double-skin green building facade using a LiDAR system". Building and Environment 206, 108320. https://www.sciencedirect.com/science/article/pii/S0360132321007186

by Bhatnagar et al. (2023) showed that trees lining streets reduce the risk of heart attack and lower rates of diabetes and stroke.[468]

**Key takeaways from this chapter:**

- Urban environments are not neutral; they reflect and reinforce social norms and male-dominated assumptions that often prioritize car-centric infrastructure over the needs of pedestrians and caregivers.
- Effective urban planning must be intersectional and gender-responsive to ensure that environmental benefits, such as green spaces and climate-resilient infrastructure, are accessible and safe for all residents regardless of their social status.

## 5.3 Climate (In)Justice: Exposure, Capacity, Recovery

Building on definitions written in chapter Conceptual Framework: Environment, Gender and Power, this desk report examines how unequal exposure, sensitivity and adaptive capacity produce gendered climate injustices.

As shown in the previous chapter, the frequency and intensity of climate-related extreme events in the EU have been steadily rising, generating growing economic and social pressures. These pressures do not affect everyone equally. The same systemic inequalities that shape access to income, care, housing, and health, particularly for women and other vulnerable groups, also determine who is most exposed and who recovers the slowest when disasters strike.

Although many of the most acute examples of climate injustice are observed outside Europe, the underlying mechanisms are universal rather than geographic. Limited mobility, unequal access to resources, or gender-blind disaster management can deepen vulnerability within EU societies just as they do elsewhere. At the same time, global climate crises increasingly drive migration and displacement, creating indirect pressures that already affect Europe and will intensify in the coming decades.

Understanding these interconnections is crucial for designing gender-responsive adaptation and recovery policies that strengthen resilience both within the EU and in its global partnerships.

**Disproportionate Impacts on Women**

Vulnerability to climate change is a function of three overlapping factors: **exposure to the climate change, sensitivity to the climate change**, and **lack of adaptive capacity**.[469] Women

[468] Bhatnagar, A. et al. 2023. "The Green Heart Project: Objectives, Design, and Methods". American journal of Epidemiology 16, kwae458. https://doi.org/10.1093/aje/kwae458

[469] Zebisch, M., Schneiderbauer, S., Fritzsche, K. et al. 2021. “The vulnerability sourcebook and climate impact chains – a standardised framework for a climate vulnerability and risk assessment”. *International Journal of Climate Change Strategies and Management* 13 (1): 35-59. https://doi.org/10.1108/IJCCSM-07-2019-0042

often score higher on all three dimensions due to social and economic disadvantages.[470] Similarly, the United Nations Framework Convention on Climate Change (UNFCCC) notes that extreme weather events disproportionately affect women and girls by forcing longer trips for basic needs such as water and fuel, increasing their isolation and risk of gender-based violence.[471]

In crisis zones, fear of gender-based violence can limit women's movement and ability to prepare for disasters. Disasters often trigger spikes in abuse and trafficking. Post-disaster environments become fertile ground for gender-based violence and trafficking, especially where law and order collapse.[472]

Women suffer disproportionately high death rates in many disasters. UNESCO highlights that women and children are approximately 14 times more likely than men to die in extreme events.[473] For instance, reports from Oxfam International (2005) indicated that in several of the hardest-hit areas by tsunami, women accounted for a massive, disproportionate percentage of the deaths, sometimes as high as 70% to 80%.[474] This disparity is partly due to women's (culturally determined) low economic and physical status, such as less swimming skill and more time spent indoors, being undervalued in preparedness plans.[475] Also, in some cultures, for example, women's ability to swim is hindered by traditional dress. Gender inequalities in health and nutrition also mean women face higher morbidity; disrupting access to water and healthcare services particularly affect pregnant and nursing mothers.[476]

Economic losses from climate change fall heavily on women. Global data show that women are overrepresented in low-paid, informal jobs,[477] such as subsistence farming and day labor, which are often wiped out by floods or droughts. After disasters, women frequently lose their only income sources while also bearing the brunt of increased caregiving due to destroyed schools and services.[478]

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[470] UN Women. 2025. How gender inequality and climate change are interconnected. UN Women [online]. Available from: https://www.unwomen.org/en/articles/explainer/how-gender-inequality-and-climate-change-are-interconnected

[471] UNFCCC Climate Change. 2022. New Report: Why Climate Change Impacts Women Differently Than Men. *UN Climate Change News* [online]. Available from: https://unfccc.int/news/new-report-why-climate-change-impacts-women-differently-than-men

[472] For example, after the 2015 Nepal earthquake, thousands of young women were targeted by traffickers pretending to offer aid, leading to abductions into brothels.
Burke, J. 2015. Nepal quake survivors face threat from human traffickers supplying sex trade. *The Guardian* [online]. Available from: https://www.theguardian.com/world/2015/may/05/nepal-quake-survivors-face-threat-from-human-traffickers-supplying-sex-trade

[473] Okai, A. 2022. Women are hit hardest in disasters, so why are responses too often gender-blind? United Nations Development Programme Blog [online]. Available from: https://www.undp.org/blog/women-are-hit-hardest-disasters-so-why-are-responses-too-often-gender-blind

[474] Oxfam International. 2005. The tsunami's impact on women. Oxfam International [online]. Available from: https://oxfamilibrary.openrepository.com/server/api/core/bitstreams/a945258a-77e5-4590-bac3-29d88454e4f5/content

[475] Davis, A. 2023. In Climate Diplomacy, Being Gender-Blind Leaves Women Behind. Environmental and Energy Study Institute (EESI) [online]. Available from: https://www.eesi.org/articles/view/in-climate-diplomacy-being-gender-blind-leaves-women-behind

[476] UN Women. 2025. How gender inequality and climate change are interconnected. UN WOmen [online]. Available from: https://www.unwomen.org/en/articles/explainer/how-gender-inequality-and-climate-change-are-interconnected

[477] Our World in Data. 2025. Share of workers in informal employment: men vs. women, 2024. Our World in Data [online]. Available from: https://ourworldindata.org/grapher/male-vs-female-informal-employment-as-share-of-total-employment

[478] UN. 2022. Why women are key to climate action. United Nations [online]. Available from: https://www.un.org/en/climatechange/science/climate-issues/women

Moreover, climate change is projected to push up to "158 million more women and girls into poverty by 2050, 16 million more than men and boys, under a worst-case climate scenario."[479] This projection underscores the urgent need for gender-responsive climate policies.

Recovery and compensation schemes should reach informal and part-time workers, who are often women. Economic resilience policies (such as green job programmes and re-skilling) must actively target women to avoid widening post-disaster income gaps.

**Structural Inequalities and Policy Gaps**

Gender inequalities in early warning and response systems are not incidental but stem from structural factors, including the persistent lack of attention to gender issues and the limited participation of women, which can result in responses that do not adequately reflect women's needs.[480] Furthermore, women have less access than men to resources such as "land, credit, agricultural inputs, decision-making structures, technology, training, and extension services that would enhance their capacity to adapt to climate change."[481]

It should therefore be highlighted that, within the EU, early warning and evacuation systems should take into account the limited mobility and caring responsibilities of people (e.g. women with children, elderly, people with disabilities etc.). Early-warning systems, risk communication and community preparedness must consider gendered realities: who receives information, who can act on it, and who has access to safe spaces. Public health planning during heatwaves or floods should integrate the specific needs of pregnant and nursing women.

There is the need for "transformative adaptation" policies that not only manage risk but also address the underlying structural drivers of inequality.[482] This includes supporting gender-equitable legal frameworks, removing discriminatory practices, and expanding inclusive access to finance and education. Finally, meaningful inclusive participation of most vulnerable and marginalised groups in climate adaptation can improve the effectiveness, legitimacy, and equity of outcomes.[483] Women's leadership and local knowledge must be included not only in consultation processes but in actual decision-making and policy implementation.

Addressing these disparities requires integrating gender perspectives into all stages of climate policy and disaster risk reduction. This includes collecting gender-disaggregated data, involving women in decision-making processes, and ensuring that climate finance reaches grassroots

[479] UN Women. 2025. How gender inequality and climate change are interconnected. UN WOmen [online]. Available from: https://www.unwomen.org/en/articles/explainer/how-gender-inequality-and-climate-change-are-interconnected
[480] Seck, P.A. et al. 2024. Progress On The Sustainable Development Goals: The Gender Snapshot 2024. Online. Available from: https://www.unwomen.org/sites/default/files/Headquarters/Attachments/Sections/Library/Publications/2012/10/WPSsourcebook-04E-GenderResponsiveEarlyWarning-en.pd
[481] Osman-Elasha, B. 2009. Women...In The Shadow of Climate Change. United Nations [online]. Available from: https://www.un.org/en/chronicle/article/womenin-shadow-climate-change
[482] Underfinanced. Underprepared.: Inadequate investment and planning on climate adaptation leaves world exposed. 2023. United Nations Environment Programme [online]. Available from: https://unfccc.int/sites/default/files/resource/Finance_Gap_Update.pdf
[483] Mikaelsson, M.A., Lager, F. 2024. Justice and equity in climate change adaptation: overview of an emerging agenda. Climate Strategies [online]. Available from: https://climatestrategies.org/wp-content/uploads/2024/08/Just-Resilience-Scoping-Paper-2024-Justice-and-equity-in-climate-change-adaptation.pdf

women's organizations. Only through such comprehensive approaches can environmental justice be achieved for women and other vulnerable groups.[484]

Integrating gender impact assessments into climate finance and EU adaptation funds will improve both equity and effectiveness. In the European context, understanding how global climate injustices are structured along lines of gender, class and ethnicity helps to anticipate similar risks within the EU, and to design adaptation, social protection and migration policies that reduce, rather than reproduce, inequality.

### 5.3.1 Climate Mobility & Gendered Risks

Climate change is increasingly recognized as a powerful driver of human mobility. Rising sea levels, droughts, floods, and extreme weather events are displacing millions of people each year, with projections indicating that up to 216 million people could become internal climate migrants by 2050 under high-emission scenarios.[485] These climate-induced displacements are not evenly distributed; they disproportionately affect communities already burdened by poverty, marginalization, and limited adaptive capacity.

Climate-related migration can take multiple forms: temporary or permanent, internal or cross-border, voluntary or forced. Most migration triggered by environmental degradation remains internal, with people moving from rural to urban areas in search of safety, income, and services.[486] In many cases, however, migration is not an option but a last resort, and not all people can afford to move. This results in the emergence of so-called **"trapped populations"** or individuals who are exposed to risk but lack the means to escape. Beyond distress-driven migration, climate change also produces involuntary immobility, which must be treated as an equally important concern in development planning. Although immobility has multiple, interconnected causes, it disproportionately affects the most vulnerable, who are unable to escape worsening hazards, poverty, food insecurity, or climate-related conflict. Research, such as Šedová et al. (2021), shows that women and people in low-income countries face a particularly high risk of becoming trapped, especially in contexts of extreme poverty where the costs of migration are prohibitive and environmental stresses such as water scarcity prevent movement rather than encourage it.[487]

The impacts of climate-induced migration are deeply gendered. Women often face greater risks during displacement due to societal gender roles, lower socioeconomic status, and exposure to gender-based violence. During displacement and humanitarian crises, women and girls experience a sharp increase in vulnerability to violence, exploitation, and human trafficking, especially in settings marked by weak governance. While an estimated 35% of women

[484] Underfinanced. Underprepared.: Inadequate investment and planning on climate adaptation leaves world exposed. 2023. United Nations Environment Programme [online]. Available from: https://unfccc.int/sites/default/files/resource/Finance_Gap_Update.pdf
[485] Clement, V., Rigaud, K.K., de Sherbinin, A. et al. 2021. *Groundswell Part 2: Acting on Internal Climate Migration.* World Bank [online]. Available from: https://openknowledge.worldbank.org/entities/publication/2c9150df-52c3-58ed-9075-d78ea56c3267
[486] Ibid.
[487] Šedová, B., Čizmaziová, L., Cook, A. 2021. CEPA DP No. 29: A meta-analysis of climate migration literature. Center for Economic Policy Analysis (CEPA) [online]. Available from: https://publishup.uni-potsdam.de/opus4-ubp/frontdoor/deliver/index/docId/49982/file/cepa29.pdf

worldwide are affected by gender-based violence, this figure rises to as much as 70% in humanitarian contexts.[488]

Importantly, women should not be viewed solely as passive victims. As highlighted in the literature, women's empowerment and their inclusion in disaster and displacement planning are central to building resilience. Women contribute critical knowledge about risks affecting themselves and girls that may be overlooked by male planners. When their perspectives are excluded from migration and resettlement policies, these policies risk overlooking both women's specific needs and their capacity to actively contribute to resilience and recovery.[489]

**Policy and Governance Challenges**

Despite the growing recognition of climate change as a migration driver, international legal frameworks lag behind. The 1951 Refugee Convention does not recognize climate as a valid ground for refugee status. As a result, most climate migrants lack legal protection, making them vulnerable to exploitation and denial of basic rights.[490] Effective governance requires a human rights-based, gender-sensitive approach to climate mobility. This includes ensuring access to legal status, safe migration pathways, and gender-responsive resettlement planning.

For Europe, this means that climate mobility must be addressed both as a global justice issue and a domestic adaptation challenge. Understanding the gendered and socioeconomic dimensions of migration helps the EU design responses that are humane, sustainable, and consistent with its human-rights obligations.

**Key takeaways from this chapter:**

- Women and children face a disproportionate risk in the climate crisis – being approximately 14 times more likely to die during extreme weather events – because structural social and economic inequalities create a "vulnerability trap" that limits their ability to access resources, adapt to environmental shocks, or safely migrate away from disaster zones.

[488] UN Women. 2025. Facts and figures: Ending violence against women. UN Women [online]. Available from: https://www.unwomen.org/en/articles/facts-and-figures/facts-and-figures-ending-violence-against-women#83918
[489] Center for Disaster Philanthropy. Women and Girls in Disasters. CDP [online]. Available from: https://disasterphilanthropy.org/cdp-resource/women-and-girls-in-disasters/
[490] Clement, V., Rigaud, K.K., de Sherbinin, A. et al. 2021. *Groundswell Part 2: Acting on Internal Climate Migration.* World Bank [online]. Available from: https://openknowledge.worldbank.org/entities/publication/2c9150df-52c3-58ed-9075-d78ea56c3267

## 5.4 Who Owns Land, Water, Energy? Gendered Access to Resources

Access to natural resources (land, water, forests, and energy) is essential for livelihoods, food security, and climate resilience. These resources shape public health, nutrition, income security, and environmental protection. Their equitable distribution determines who can withstand environmental shocks and adapt to climate change.

European consumption and production directly affect people's – and particularly women's – access to natural resources in other parts of the world. The extraction of lithium, cobalt and nickel for European batteries impacts the lives of women working in mines in the Democratic Republic of the Congo and across South America (see chapter Electronic waste: The Fastest Growing Stream). Similarly, the production of coffee, cocoa, cotton (see chapter Textile Industry) or palm oil is linked to land, water and labour burdens borne by women in the Global South. European environmental and trade policies therefore have not only moral but also material consequences for gender inequalities elsewhere.

These global inequalities also shape Europe's own green transition. The EU sources raw materials and energy from regions where environmental and social conditions are most unsustainable. If the shift to "green technologies" transfers environmental costs to other countries, it risks reproducing a new form of green colonialism[491]. Understanding gendered access to resources is thus an essential part of a fair and sustainable transition, not merely an act of solidarity.

Worsening access to natural resources also has direct implications for migration and stability (see chapter Climate Mobility & Gendered risks). When land, water and fuel become privatized or depleted, women and their families lose their livelihoods. This drives both internal and cross-border migration, which the EU later faces at its borders. Recognising the root causes of these inequalities means addressing crises before they emerge, not only reacting through humanitarian responses.

Gender justice is also a prerequisite for climate justice. The EU has committed to making its climate and development policies gender-responsive, as outlined in the Gender Action Plan III[492] (see chapter Ecocide: Law, Power and Gendered Harm). Yet without understanding how gender shapes access to natural resources globally, this commitment cannot be fulfilled in practice.

Humanity is currently using the equivalent of 1.75 Earths to meet consumption demands, which underscores the urgency of managing resource use equitably and sustainably.[493] Yet resource scarcity and ecological overshoot disproportionately affect groups already facing structural barriers.[494]

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[491] Green colonialism is the practice where wealthier nations, corporations, or dominant groups exploit peripheral regions, developing countries, or marginalized communities for land, water, and raw materials under the moral guise of fighting climate change and advancing the global green transition.
For more information see e.g.: Earth.org. 2021. Explainer: What Is Green Colonialism? EARTH.ORG [online]. Available from: https://earth.org/green-colonialism/

[492] The Diplomatic Service of the European Union. 2020. Gender Action Plan III: towards a gender-equal world. European Union External Action [online]. Available from: https://www.eeas.europa.eu/eeas/gender-action-plan-iii-towards-gender-equal-world_en

[493] Earth Overshoot Day. 2025. [online]. Available from: https://overshoot.footprintnetwork.org/

[494] Ibid.

### Legal and Institutional Barriers

Globally, women make up nearly half of the agricultural workforce, yet they own less than 15% of agricultural land.[495] In many countries, statutory and customary laws restrict women's rights to inherit, own, or transfer land. Even where gender-equitable laws exist on paper, social norms, lack of documentation, and institutional discrimination often prevent women from exercising these rights.[496]

The World Bank highlights that women are also less likely to have access to critical agricultural inputs, such as credit, extension services, and climate-smart technologies, factors that significantly affect productivity and adaptive capacity. These disparities in resource access reinforce cycles of poverty and reduce women's resilience to climate shocks.[497]

### Water and Energy Inequalities

In many emerging markets and developing economies, women and girls shoulder much of the burden for household tasks such as the provision of water and fuelwood. According to the International Energy Agency (2023), approximately 2.2 billion people lack access to clean cooking fuels, and about 2.3 billion rely on traditional fuels like biomass, coal, or kerosene for cooking. These are time-consuming tasks that constitute a burden mainly carried by women. As extreme weather events such as droughts and heatwaves become more frequent, they add to the pressure on vulnerable populations and increase the intensity of this work, compounding the impact on women's health and time.[498]

Access to modern energy and clean cooking, such as solar home systems or clean cookstoves, can significantly improve life for women by improving health, increasing productivity, and fostering gender equality. These technologies free up the substantial amount of time that women currently spend on the daily burden of collecting fuelwood. However, high upfront costs remain a major barrier to the adoption of these solutions, as many low-income households struggle with limited disposable income and constrained access to financing. To ensure an inclusive energy transition, it is necessary to provide targeted support and investment in training programmes that help women build successful energy careers and participate in decision-making.[499]

As a result, even the move toward cleaner and greener energy can keep old inequalities in place instead of fixing them. According to SEforALL (2020), only about 2-11% of development finance for the energy sector in 2018 included a gender equality objective.[500]

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[495] FAO. 2022. These numbers prove that rural women are crucial for a better future. But they're not getting what they need to succeed. Food and Agriculture Organization of the United Nations [online]. Available from: https://www.fao.org/family-farming/detail/en/c/1736642/

[496] UN Women. 2026. No country in the world has reached full legal equality for women and girls. UN Women [online]. Available from: https://www.unwomen.org/en/news-stories/press-release/2026/03/no-country-in-the-world-has-reached-full-legal-equality-for-women-and-girls

[497] World Bank Group, FAO, IFAD. 2015. Gender in Climate-Smart Agriculture. World Bank [online]. Available from: https://documents1.worldbank.org/curated/en/654451468190785156/pdf/99505-REVISED-Box393228B-PUBLIC-Gender-and-Climate-Smart-AG-WEB-3.pdf

[498] IEA. 2023. *World Energy Outlook 2023.* The International Energy Agency [online]. Available from: https://www.energy.gov/sites/default/files/2024-02/004.%20IEA%2C%20World%20Energy%20Outlook%202023.pdf

[499] Ibid.

[500] Girardeau, H., Woods, E., Campaign, S., Richmond, M. 2020. Greater finance needed for gender-focused energy access initiatives. Sustainable Energy for All [online]. Available from: https://www.seforall.org/news/greater-finance-needed-for-gender-focused-energy-access-initiatives

**Climate Change and Land Degradation**

Climate change and environmental degradation further compound gendered disparities in natural resource access. For example, desertification and soil erosion reduce the productivity of smallholder farms, which are disproportionately managed by women without access to irrigation or adaptation finance. In some regions, women are pushed onto increasingly marginal land due to land grabs, commercial agriculture expansion, or climate-related displacement.[501]

These processes not only undermine food security but can also contribute to social tensions and gender-based violence. When resources become scarce, women may be forced to travel further, negotiate access with male landowners or community leaders, or trade sex for access to food, fuel, or water, conditions documented in humanitarian and climate-vulnerable settings.[502]

**Key takeaways from this chapter:**

- Although women constitute nearly half of the global agricultural workforce, they own less than 15% of agricultural land and continue to face legal and social barriers to inheritance, credit, and climate-smart technology.
- The Global North's demand for minerals like lithium and cobalt to fuel its green transition often externalizes environmental and social costs to the Global South, creating a "decarbonization divide" that threatens the resource access and livelihoods of local women
- As climate change depletes natural resources, women face increased "time poverty" from traveling further for water and fuel, while scarcity often leads to land grabs and extreme risks such as "sex for resources" in highly vulnerable settings.

## 5.5 Greenwashing & Gender: Power, Care, and the Market

Greenwashing is more than misleading marketing. It sustains unequal and unsustainable systems by diverting public attention from the real environmental and social costs of production. In the context of gender and climate justice, it matters because it hides labour exploitation, reinforces stereotypes in consumption, and slows the transition toward genuinely sustainable economies.

As the EU moves forward with the Green Deal and Circular Economy Action Plan, distinguishing genuine sustainability from performative "green" branding becomes crucial, not only to ensure real environmental progress, but also to prevent new forms of inequality.

[501] UNCCD. Key facts and figures on women's rights. The United Nations Convention to Combat Desertification (UNCCD) [online]. Available from: https://www.unccd.int/sites/default/files/2023-06/DDD%20factsheet.pdf
[502] UN Women. 2025. How gender inequality and climate change are interconnected. UN WOmen [online]. Available from: https://www.unwomen.org/en/articles/explainer/how-gender-inequality-and-climate-change-are-interconnected

Greenwashing can be defined as, “the intersection of two firm behaviours: poor environmental performance and positive communication about environmental performance”.[503] The word was created by combining the term "green" in the sense of green, ecological, and "brainwashing" in the meaning “to make someone believe something by repeatedly telling them that it is true and preventing other information from reaching them”[504].

The word “green” corresponds with nature, gentle treatment and naturalness. However, in the pursuit of economic growth, many brands began to misuse this language to cover up the negative impacts of their activities and fed the public with information that only partially reflected reality, while pointing out the tiny bright sides of their products and neglecting major burdens. Such a practice misleads the public by pretending to be environmentally friendly, while actually approaching unsustainably or harmful to the environment.[505]

Greenwashing principally covers the environmental side of products, activities or even whole organisations.[506] However, its impacts also extend to the social sphere, such as labor rights, diversity, equity, and community wellbeing.[507]

Greenwashing does not affect everyone equally. Because women are often the main consumers of everyday products such as clothing, cosmetics, and cleaning supplies, they are more often exposed to misleading “green” marketing. Labels like *natural, organic,* or *eco-friendly* are frequently used without any real verification. This not only confuses consumers but also reinforces the idea that women are personally responsible for solving environmental problems through their shopping choices – taking on the “emotional labour” of trying to buy ethically in systems that are themselves unsustainable.[508]

At the same time, the same brands that target women with “sustainable” messages (such as *Shein*)[509] often rely on the exploitation of women workers in the Global South – in garment factories, textile production, or agriculture – where working conditions are unsafe, underpaid, and unprotected (see chapter Textile Industry). In this way, greenwashing hides both environmental harm and social injustice: it sells the image of sustainability while the real costs are paid by women far away.

The same logic extends beyond the fashion and beauty sectors. Other industries, such as fishing or food production, also use vague environmental claims to mask ecological destruction and labour abuse. In the global fishing industry, for example, “sustainable” labels often conceal overfishing, the destruction of marine habitats, and exploitative or even forced labour, particularly of men working in unsafe conditions on industrial vessels.[510] Greenwashed

[503] de Freitas Netto, S. et al. 2020. Concepts and forms of greenwashing: a systematic review. Environmental Science Europe 32 (19): 1-12. https://doi.org/10.1186/s12302-020-0300-3
[504] brainwash. Cambridge Dictionary [online]. Available from: https://dictionary.cambridge.org/dictionary/english/brainwash
[505] Pryor, E. 2024. What is greenwashing? Greenpeace [online]. Available from: https://www.greenpeace.org/aotearoa/story/what-is-greenwashing/
[506] Ibid.
[507] Ortigueira, J., Lopes, T.F. 2025. "Bridging gaps in biorefineries: The unexplored role of social dimension in life cycle assessment research". Sustainable Futures 9, 100818. https://doi.org/10.1016/j.sftr.2025.100818
[508] de Freitas Netto, S. et al. 2020. Concepts and forms of greenwashing: a systematic review. Environmental Science Europe 32 (19): 1-12. https://doi.org/10.1186/s12302-020-0300-3
[509] CleanHub. 2025. Greenwashing Examples: The Nine Biggest Fines Handed Out So Far. CleanHub [online]. Available from: https://www.cleanhub.com/blog/greenwashing-examples
[510] Seaspiracy. Facts. Seaspiracy [online]. Available from: https://www.seaspiracy.org/facts

narratives thus conceal the true social and environmental costs of production and create the illusion that responsible consumption alone can fix systemic problems.

To strengthen transparency and prevent greenwashing, many companies are now required to publish reports in compliance with European Sustainability Reporting Standards (ESRS). These reports reflect how businesses address sustainability across the full range of issues from climate change and biodiversity to human rights and labour practices. When applied properly, ESRS can help investors and the public understand the real social and environmental impact of corporate actions. However, unless these frameworks integrate gender and intersectional perspectives, even ESRS risks becoming another form of green branding that measures "what looks good" rather than what truly advances sustainability and equality.[511]

**Key takeaways from this chapter:**

- Greenwashing is defined as the intersection of two specific firm behaviors: poor environmental performance combined with positive communication about environmental performance. The term combines "green" (natural/ecological) with "brainwashing," referring to the practice of repeatedly telling the public something is true until they believe it, often to hide negative impacts or unsustainable practices.
- Because women are the primary consumers of everyday items like clothing and cosmetics, they are disproportionately exposed to unverified labels such as "natural" or "organic," which reinforces the idea that women are personally responsible for solving the environmental crisis through their shopping choices.
- Greenwashing creates an illusion that individual consumption can fix systemic issues while simultaneously masking the exploitation of female workers in the Global South, highlighting the need for corporate reporting frameworks to include intersectional perspectives to ensure genuine accountability.

## 5.6 Ecocide: Law, Power and Gendered Harm

Ecocide refers to the extensive destruction, damage, or loss of ecosystems within a given territory to such an extent that the peaceful enjoyment of the inhabitants is severely diminished. It describes large-scale environmental harm caused by human activities, often linked to industrial, military, or extractive practices.

The concept of ecocide as a crime has been discussed since the 1970s, starting with Richard A. Falk's early draft International Convention on the Crime of Ecocide. Ecocide is increasingly being recognized as a potential international crime, alongside genocide and crimes against

[511] European Commission. 2023. The Commission adopts the European Sustainability Reporting Standards [online]. Available from: https://finance.ec.europa.eu/news/commission-adopts-european-sustainability-reporting-standards-2023-07-31_en?prefLang=sk

humanity, due to its devastating impact on both the planet and human well-being. In June 2021, the Independent Expert Panel convened by the Stop Ecocide Foundation launched a consensus definition of ecocide as unlawful or wanton acts committed with knowledge that there is a substantial likelihood of severe and either widespread or long-term damage to the environment caused by those acts.[512]

**Gendered Impacts of Ecocide**

The impacts of ecocide are not gender-neutral. Women, especially those in vulnerable communities, often bear a disproportionate share of the consequences. Because many rely directly on natural resources such as water, food, and fuel for their livelihoods, ecosystem destruction deeply affects their daily lives. Ecocide exacerbates existing inequalities, increasing women's exposure to health risks, displacement, and economic instability.[513]

Young women have been active leaders and advocates in the environmental justice movement globally, pushing for systemic changes to protect both people and the planet. In Scotland, the proposed *Ecocide (Prevention) (Scotland) Bill*[514] has gained support from the Young Women's Movement, emphasizing the need for legal frameworks that hold corporations accountable for environmental destruction and safeguard communities historically exposed to pollution and environmental harm.[515] They view the proposed ecocide legislation as an opportunity to send a clear message that environmental protection and social justice are priorities, and that the rights and well-being of future generations must be safeguarded.[516]

**Legal Recognition and Challenges**

Despite increasing recognition and support for criminalizing ecocide alongside genocide and crimes against humanity, significant legal and political challenges remain. These include difficulties in clearly defining the scope and thresholds for ecocide, balancing foreseeability and flexibility, and determining appropriate levels of intent that include reckless acts and omissions.

Moreover, political resistance and operational barriers hinder the adoption and enforcement of ecocide laws internationally. Scholars argue that effective ecocide legislation must go beyond a cost-benefit analysis of environmental damage and ensure robust accountability for perpetrators. Given these complexities, ecocide should be viewed as one important tool within a broader toolkit of legal and political measures aimed at preventing and repairing environmental destruction. Interim measures, such as non-binding declarations supporting ecocide, are also advocated to maintain momentum toward formal recognition.[517]

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[512] STOP Ecocide International. June 2021: historic moment as Independent Expert Panel launches definition of ecocide. STOP ECOCIDE International [online]. Available from: https://www.stopecocide.earth/legal-definition
[513] UN Women. 2023. Feminist climate justice: A framework for action. UN WOMEN [online]. Available from: https://www.unwomen.org/sites/default/files/2023-12/Feminist-climate-justice-A-framework-for-action-en.pdf
[514] Lennon, M. 2023. Proposed Ecocide (Prevention) (Scotland) Bill. The Scottish Parliament [online]. Available from: https://www.parliament.scot/bills-and-laws/proposals-for-bills/proposed-ecocide-prevention-scotland-bill
[515] The Young Women's Movement. 2024. Proposed Ecocide (Prevention) (Scotland) Bill: Consultation Response from The Young Women's Movement. The Young Women's Movement [online]. Available from: https://youngwomenscot.org/policy-consultations/proposed-ecocide-prevention-scotland-billconsultation-response/
[516] Ibid.
[517] Killean, R. 2024. Ecocide Law and Policy. In: The Palgrave Handbook of Environmental Policy and Law. Palgrave Studies in Sustainable Futures. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-031-30231-23-1

**Recommendations**

To effectively prevent and address ecocide, international law should formally recognize it as a crime with clear definitions and enforcement mechanisms. Policies must integrate gender-responsive approaches that acknowledge and mitigate the distinct impacts on women and marginalized groups.

Building on frameworks such as the EU Gender Action Plan III (2021-2025)[518], key recommendations include:

- Collecting gender-sensitive, intersectional data to inform targeted and effective environmental policies.
- Ensuring inclusive participation of women, especially from marginalized communities, in environmental decision-making through formal mechanisms and capacity-building.
- Mainstreaming gender considerations in environmental policy development, including gender impact assessments and continuous monitoring.
- Promoting multi-sectoral collaboration to address the interconnected social, economic, and environmental dimensions of ecocide.
- Allocating resources and supporting grassroots initiatives led by women and marginalized groups to empower local leadership and advocacy.

Implementing these practical steps will contribute to more equitable, accountable, and effective environmental governance, advancing both ecological protection and social justice.

**Key takeaways from this chapter:**

- Ecocide is defined as the extensive destruction or loss of ecosystems that severely diminishes the well-being of inhabitants. This harm is not gender-neutral; women, especially in vulnerable communities, bear a disproportionate share of the consequences because they rely directly on natural resources for their livelihoods, leading to increased health risks and economic instability.
- While ecocide is increasingly viewed as a potential international crime alongside genocide, establishing legal definitions and overcoming political resistance remain major challenges. Effective legislation must move beyond simple cost-benefit analyses to include gender-responsive approaches, such as collecting intersectional data and ensuring that women and marginalized groups are formally included in environmental decision-making.

[518] European Centre for Development Policy Management (ECDPM). 2021. The EU's gender action plan: principles and practice. ECDPM [online]. Available from: https://ecdpm.org/work/the-eus-gender-action-plan-principles-and-practice

# Transferable Insights: Smart approaches with potential for EU implementation

**Country / Town:** Slovakia, Bratislava

**Name of the measure:** INCIEN - Inštitút cirkulárnej ekonomiky (Institute for Circular Economy)

**Description:** INCIEN is a women-led organization that is among the leading organizations in the field of environmental protection and the use of waste as a resource. Through educational activities, they promote the development of circular economy principles. The organization offers workshops and training sessions for the public, municipalities, and businesses. It has produced a range of studies on sustainability, green transitions, and the carbon cycle, including a methodology for circular public procurement. It is also actively engaged in shaping environmental policies at the European level.

**Link:** https://www.incien.sk/o-nas/

**Country:** Kenya

**Name of the measure:** The Green Belt Movement

**Description**: Founded in 1977 by Professor Wangari Maathai, the Green Belt Movement (GBM) has planted over 51 million trees in Kenya. GBM works at the grassroots, national, and international levels to promote environmental conservation; to build climate resilience and empower communities, especially women and girls; to foster democratic space and sustainable livelihoods. GBM was founded to respond to the needs of rural Kenyan women who reported that their streams were drying up, their food supply was less secure, and they had to walk further and further to get firewood for fuel and fencing. GBM encouraged the women to work together to grow seedlings and plant trees to bind the soil, store rainwater, provide food and firewood, and receive a small monetary token for their work.

**Link**: https://www.greenbeltmovement.org/

# 6. From Policy to Power: Gender Equality in Agricultural and Climate Governance

Agriculture lies at the intersection of climate, economy, and social justice: it is both a source of greenhouse gas emissions and one of the sectors most affected by climate change. Within the European Union, the Common Agricultural Policy (CAP) serves as the key instrument shaping a shared agricultural framework. How individual Member States implement this framework determines whether gender equality is strengthened or, conversely, undermined in practice.

The European Union has made notable commitments to advancing gender equality, particularly through its Gender Equality Strategy 2020–2025.[519] However, these commitments are not yet fully reflected in environmental and climate policy. Gender perspectives across environmental domains remain fragmented, superficial, and often inconsistent. This disconnect between rhetoric and reality is especially visible in high-level policy instruments, such as the EU Green Deal, the Recovery and Resilience Facility, and national climate adaptation strategies. As noted by the United Nations Development Programme (2025),[520] effective gender mainstreaming requires more than formal compliance – it must be embedded in the very logic and functioning of environmental governance.

Integrating gender equality into agricultural governance is therefore not only a matter of fairness but also of climate justice. Women's exclusion from land ownership and decision-making limits the sector's adaptive capacity and weakens the social legitimacy of the green transition.

This chapter examines how the CAP 2023–2027 commitments are being translated into national realities in Italy, Slovakia, and the Czech Republic; and where procedural "gender mainstreaming" collides with power structures that ultimately shape real change.

## 6.1 Gender Mainstreaming in EU Agricultural Policy: The Cases of Italy, Slovakia, and Czechia

> *"Bringing yields on the land farmed by women up to the levels achieved by men would increase agricultural output in developing countries between 2.5 and 4 percent. Increasing production by this amount could reduce the number of undernourished people in the world in the order of 12–17 percent. According to FAO's latest estimates, 925 million people are currently undernourished. Closing the gender gap in agricultural yields could bring that number down by as much as 100–150 million people."*[521]

[519] The European Commission. 2020. The Gender Equality Strategy 2020-2025. European Commission [online]. Available from: https://ec.europa.eu/newsroom/just/items/682425/en

[520] Baumgartner, L. (Ed.) 2025. *Gender equality in climate action: Taking stock of progress and lessons learned from the NDC Support Programme (2017–2025)*. United Nations Development Programme [online]. Available from: https://www.undp.org/sites/g/files/zskgke326/files/2025-04/undp_ndc_lessons_learned_gender_equality_in_climate_action.pdf

[521] FAO. 2011. *The State of Food and Agriculture 2010–2011: Women in agriculture: Closing the gender gap for development*. Food and Agriculture Organization of the United Nations [online]. Available from: https://www.fao.org/3/i2050e/i2050e.pdf

While this estimate comes from global data, the underlying message applies everywhere: gender equality in agriculture is not only a social justice issue but also an economic and food security imperative.

In the European Union, the context is different. Most legal frameworks guaranteeing equality already exist, yet persistent institutional and cultural barriers continue to limit women's full participation in agriculture. Here, the focus lies on institutional reforms, targeted interventions, and cultural change that enable women to enter the sector on equal footing, develop their businesses, and participate in decision-making structures.

The Common Agricultural Policy (CAP) 2023–2027 is the main EU framework through which these goals are meant to be implemented. Under the new Common Agricultural Policy (CAP) for 2023–2027, the European Union has committed to promoting gender equality as one of the horizontal priorities that Member States are required to take into account when designing and implementing their CAP Strategic Plans.[522] Although gender equality is not a standalone objective with legally binding measures, Member States must demonstrate in their planning documents that they have addressed this dimension, for instance through needs assessments, gender-disaggregated data monitoring, or targeted interventions. At the same time, the European Commission actively encourages Member States to include tools that support the empowerment of women in rural areas, particularly regarding access to land, finance, education, and participation in decision-making. This framework thus creates space not only for advancing gender equality but also for aligning gender objectives with climate goals in the context of sustainable agriculture.[523]

### 6.1.1 Gender Equality in the Czech CAP Strategic Plan

The Czech Republic's Strategic Plan for the Common Agricultural Policy (CAP) 2023–2027 contains only one explicit reference to gender equality, limited to an intervention on generational renewal in agriculture. This measure established a sub-programme to support young female farmers, aiming to encourage women's entry into the sector.

This reference formally responds to the European Commission's expectations regarding gender equality; however, no broader integration of equality as a horizontal priority, a gap explicitly criticised by the European Commission.[524] [525] The plan lacks a comprehensive analysis of gender disparities, cross-cutting measures, or a monitoring framework with gender-disaggregated indicators. According to an informational brochure issued by the Ministry of Agriculture on project-based interventions (March 2025 edition), the implementation of this gender dimension was limited to splitting the intervention's budget into two parts – one for men and one for women – without any additional supporting mechanisms or qualitative targets. Overall, the Czech plan demonstrates very limited implementation of the EU's gender-related

[522] European Commission. (n.d.). *CAP Strategic Plans – by country*. European Commision [online]. Available from https://agriculture.ec.europa.eu/cap-my-country/cap-strategic-plans_cs
[523] Women in the CAP. 2022. EU CAP NETWORK [online]. Available from: https://eu-cap-network.ec.europa.eu/news/women-new-cap_en
[524] "*The Commission is concerned about the low level of commitment in the Plan to promoting gender equality and improving the participation of women in farming, in line with the specific objective under Article 6(1)(h) of the SPR. The Commission encourages Czechia to consider addressing this objective by justified and proportionate measures.*" Czechia – CAP Strategic Plan. European Commission [online]. Available from: https://agriculture.ec.europa.eu/cap-my-country/cap-strategic-plans/czechia_cs#observation_letters
[525] Czechia – CAP Strategic Plan. European Commission [online]. Available from: https://agriculture.ec.europa.eu/cap-my-country/cap-strategic-plans/czechia_cs#observation_letters

requirements and remains at the level of formal compliance, with little structural reflection on women's position in agriculture.

This limited interpretation of gender equality became visible once the measure was put into practice. In 2023, the Ministry of Agriculture implemented the call for young beginning farmers. According to the Ministry, the division (with equal financial allocations for men and women 340 million CZK each) was intended to support one of the Plan's core objectives: promoting gender equality and increasing women's participation in agriculture.[526] Due to the lower number of female applicants, the level of competition in the women's subsidy track was significantly lower, which meant that male applicants needed more points to receive funding, a discrepancy that sparked public debate over fairness and policy design. This division of the budget was perceived by parts of the public as unfair towards male applicants. The proposed remedy appears to be that, during the selection process, subsidies will be allocated in a way that results in a roughly equal number of successful male and female applicants. This means that if there are more male applicants than female ones in a given call, a proportionally larger amount of funding will go to men in order to ensure that both groups reach approximately the same threshold score – thus avoiding a situation where higher competition among men would result in a lower success rate compared to women.[527]

This debate over "fairness" revealed more than a technical problem; it exposed the absence of a deeper structural understanding of gender in agricultural policy. The fact that the only explicit intervention was introduced within generational renewal and reduced to a mechanical budget split between men and women, indicates a lack of genuine gender analysis and an unwillingness to embed equality as a horizontal principle throughout the policy. The subsequent public criticism of the measure as "discriminatory towards men" and the proposed technical correction – ensuring that men and women reach approximately the same score during project selection – further confirms that gender equality is treated as an administrative problem to manage, rather than an opportunity to transform the system. This approach not only undermines the legitimacy of gender-focused measures but also obscures the structural barriers women in agriculture continue to face. Rather than promoting systemic change, the Czech approach largely reproduces the status quo, falling short of the European Union's vision for climate-just and socially inclusive agriculture.

### 6.1.2 Gender Equality in the Slovak CAP Strategic Plan

The Slovak Strategic Plan for the Common Agricultural Policy (CAP) 2023–2027[528] declares gender equality as a horizontal principle and repeatedly emphasizes that measures supporting women will be developed synergistically in cooperation with other national strategies, particularly within the framework of the "Programme Slovakia." These activities include, for example, flexible working arrangements for parents, support for women's education in technical

[526] Ministerstvo zemědělství České republiky. 2026. Strategický plán společné zemědělské politiky na období 2023–2027: Projektové intervence. MZE [online]. Available from: /https://mze.gov.cz/public/portal/mze/-a68950---Rsb1ExFB/informacni-brozura-projektove-intervence-aktualni-k-3-2025?_linka=a642572

[527] Salát, P. 2024. Zemědělské dotace pro mladé příliš zvýhodňují ženy. Resort rozděluje přes 700 milionů. iRozhlas.cz [online]. Available from: https://www.irozhlas.cz/ekonomika/zemedelske-dotace-pro-mlade-prilis-zvyhodnuji-zeny-resort-rozdeluje-pres-700_2408271542_pj

[528] Ministerstvo pôdohospodárstva a rozvoja vidieka SR. 2023. Strategický plán SPP. MPSR [online]. Available from: https://www.mpsr.sk/download.php?fID=26933

fields, and improved access to care services. However, most of these measures do not stem directly from agricultural policy but rather from broader programmatic frameworks and have only an indirect impact on the status of women in agriculture. Within the CAP's own project-based interventions, support for women is formulated in very general terms, and doesn't include calls and interventions to include clearly defined measures and objectives specifically aimed at supporting women in agriculture.[529]

While the Slovak strategy aligns more closely with the European Commission's expectations in terms of rhetorical and policy framing, this recognition is not necessarily reflected in the design of funding calls or project-level implementation. Compared to the Czech plan, it offers a more comprehensive acknowledgment of gender equality, yet its practical translation into targeted agricultural measures remains very limited.

### 6.1.3 Gender Equality in Italy's CAP Strategic Plan

Italy's CAP Strategic Plan for 2023–2027 frequently references equal opportunities between women and men, particularly in the context of supporting young people and rural development. The plan includes financial support for the creation of new businesses, targeting women and the long-term unemployed – such as through interest-free loans or non-repayable grants. However, women's needs are often grouped together with those of young people, which may make it more difficult to address the specific barriers women face in agriculture – similarly to what is seen in the Czech strategic plan. Moreover, support is generally directed toward enterprises rather than individual workers. Important issues such as pay gaps or working conditions for women are not addressed. Regional exceptions, such as Tuscany or Umbria, where gender equality is discussed in more concrete terms, remain isolated cases.[530] [531]

Overall, in all three countries observed (Italy, Slovakia, and the Czech Republic), gender equality is mentioned, but practical measures remain limited and often formalistic. The Slovak plan is the most interconnected with other national policies, the Italian plan gives the most attention to gender in its language, while the Czech plan shows the weakest content.

## 6.1.4 Structural barriers and lived realities

Evidence from both the Global South and high-income countries as mentioned in the previous chapters shows that gender equality in agriculture cannot be achieved through input subsidies or technical assistance alone.

In countries such as Zambia[532] and Malawi[533] input support programmes increased access to seeds and fertilisers but failed to close productivity gaps between women and men. The reason

[529] Ministerstvo pôdohospodárstva a rozvoja vidieka SR. 2023. Strategický plán SPP. MPSR [online]. Available from: https://www.mpsr.sk/download.php?fID=26933
[530] Streimikis, J., Kyriakopoulos, G. 2024. Gender dimension in EU agricultural policy. *Polish Journal of Management Studies, 29*(1), 335–355. https://doi.org/10.17512/pjms.2024.29.1.20
[531] Ministero dell'Agricoltura, della Sovranità Alimentare e delle Foreste. 2025. *Piano Strategico della PAC 2023–2027 – Versione 4.1*. [online]. Available from: https://www.reterurale.it/downloads/sfc2021-2023IT06AFSP001_4.1_202501291155_16130673482812078073.pdf
[532] Ngoma, H., Machina, H., & Kuteya, A. N. 2019. "Can agricultural subsidies reduce gendered productivity gaps? Panel data evidence from Zambia". *Development Policy Review* 39(2): 303-323. https://doi.org/10.1111/dpr.12483
[533] Karamba, W., Winters, P. 2015. "Gender and agricultural productivity: implications of the Farm Input Subsidy Program in Malawi". Agricultural Economics 46 (3). https://doi.org/10.1111/agec.12169

lies deeper: inequalities in land ownership, access to credit and education, and exclusion from decision-making limit women's capacity to benefit from such schemes.[534] Without tackling these structural barriers, well-intentioned programmes risk reinforcing existing power relations instead of transforming them.

The same structural inequities are visible in the working conditions of women in agriculture, not only across the Global South, but also high-income countries are not exempt: many seasonal or migrant women in European agriculture (such as those working in strawberry production) are exposed to toxic substances such as pesticides and, in some documented cases, to exploitation and sexual abuse.[535] Pesticide exposure has been linked to serious reproductive and transgenerational health effects in both women and men, yet women's specific vulnerabilities remain largely invisible in agricultural and occupational health policy.[536]

These examples illustrate that gender gaps in productivity, health, and safety all stem from the same systemic causes. To address them, agricultural policy must move beyond formal equality of access and confront the social and economic structures that shape who owns land, who receives training, and who bears the risks of production. Only by linking gender justice with occupational safety and environmental protection can agriculture become both equitable and climate-resilient.

**Key takeaways from this chapter:**

- Although the EU requires gender equality to be included in the CAP 2023–2027 agricultural plans, national responses are mostly superficial. The Czech Republic used a mechanical budget split that caused public backlash, Slovakia kept its goals too general, and Italy grouped women broadly with youth enterprises rather than supporting individual workers.
- Traditional agricultural subsidies fail to close gender gaps because they ignore deep-seated structural issues. Women in Europe continue to face major inequalities in actual land ownership, limited access to credit, and severe underrepresentation in leadership and decision-making bodies.
- High-income European countries still suffer from severe agricultural labor exploitation. Many seasonal and migrant people face dangerous working conditions, including direct exposure to toxic pesticides that damage women's reproductive health, and documented cases of sexual abuse that remain invisible in policy.

[534] Ngoma, H., Machina, H., & Kuteya, A. N. 2019. "Can agricultural subsidies reduce gendered productivity gaps? Panel data evidence from Zambia". *Development Policy Review* 39(2): 303-323. https://doi.org/10.1111/dpr.12483
[535] Augere-Granier, M.-L. 2021. Migrant seasonal workers in the European agricultural sector. European Parliament [online]. Available from: https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/689347/EPRS_BRI(2021)689347_EN.pdf
[536] United Nations General Assembly. 2024. Implications for Human Rights of the Environmentally Sound Management and Disposal of Hazardous Substances and Wastes. Report No. A/79/163. United Nations [online]. Available from: https://docs.un.org/en/A/79/163

## 6.2 The Impact of Women's Representation on Environmental Policy

The level of women's representation in political bodies is not merely a question of democratic fairness. Research on Gender Equity in Climate Leadership (2023) increasingly indicates that higher levels of female political representation often correlate with stronger national environmental commitments.[537]

Cross-national studies[538] [539] [540] provide compelling evidence for this link. Countries with more women in parliament tend to show a higher likelihood of ratifying international environmental treaties[541] and adopting more strong climate change policies.[542] Furthermore, increased female legislative presence has been associated with measurable environmental improvements, such as lower national $CO_2$ emissions[543] and reduced levels of air pollution.[544]

Specific policy instruments also appear affected; research indicates that female parliamentarians are significantly associated with efforts to reduce government subsidies for fossil fuels, promote environmental taxes, and increase government spending on environmental protection, particularly when women achieve a 'critical mass' of representation (often considered around 30%).[545] When applying this 'critical mass' lens to the countries examined in this report, a diverse picture emerges. Italy stands out as the only country consistently reaching or surpassing this 30% threshold in its environmental parliamentary committees. The Czech Republic shows inconsistent progress, meeting the mark only in specific bodies, while Slovakia remains significantly below this tipping point. Detailed national data follow.

A study at the European Parliament level from 2024 suggests that female MEPs are more likely to support environmental laws than their male colleagues, and this difference persists even after considering the influence of their political party or ideology.[546] These findings collectively underscore the importance of women's participation, suggesting that their inclusion in decision-making roles can contribute significantly to advancing environmental protection and climate action agendas.

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[537] Wray, B., Veidis, E.M., Flores, E.C., Phillips, A.A., Alani, O., Barry, M. 2023. "A Call to Action for Gender Equity in Climate Leadership. American Journal of Tropical Medicine and Hygiene 108 (6): 1088-1092. doi:10.4269/ajtmh.22-0674

[538] Ibid.

[539] Lesi, S. 2023. Gender and climate action. European Investment Bank Group [online]. Available from: https://www.eib.org/en/stories/female-leaders-climate

[540] Njanganga, H., Tadadjeu, S., Kamguiac, B. 2025. "From policy to progress: do female parliamentarians influence energy justice?" *Climate Policy* 25 (6). https://doi.org/10.1080/14693062.2024.2424231

[541] Lesi, S. 2023. Gender and climate action. European Investment Bank Group [online]. Available from: https://www.eib.org/en/stories/female-leaders-climate

[542] Wray, B., Veidis, E.M., Flores, E.C., Phillips, A.A., Alani, O., Barry, M. 2023. "A Call to Action for Gender Equity in Climate Leadership. American Journal of Tropical Medicine and Hygiene 108 (6): 1088-1092. doi:10.4269/ajtmh.22-0674

[543] Njanganga, H., Tadadjeu, S., Kamguiac, B. 2025. "From policy to progress: do female parliamentarians influence energy justice?" *Climate Policy* 25 (6). https://doi.org/10.1080/14693062.2024.2424231

[544] Koengkan, M., Fuinhas, J. A., Auza, A., Castilho, D., & Kaymaz, V. 2024. "Environmental Governance and Gender Inclusivity: Analyzing the Interplay of PM2.5 and Women's Representation in Political Leadership in the European Union". *Sustainability* 16 (6), 2492. https://doi.org/10.3390/su16062492

[545] Kandemir, A. S., Lone, R. R., & Simsek, R. 2024. "Women in Parliaments and Environmentally Friendly Fiscal Policies: A Global Analysis". Sustainability 16 (17), 7669. https://doi.org/10.3390/su16177669

[546] Inglesi-Lotz, R., Oosthuizen, A.M., Jumaniyazova, S., Kuziboev, B. 2024. "Exploring the Impact of Women Governance on CO2 Emissions in the European Union and Central Asia". *International Journal of Energy Economics and Policy* 14 (3): 639-646. DOI:10.32479/ijeep.15933

These global patterns also hold relevance for the EU context. However, while the link between women's representation and environmental ambition is well established in research, national data still reveal large gaps in political and institutional participation – including in the three countries studied in this report.

### 6.2.1 Current proportion of women in environmental policies in countries of project consortium

This subchapter provides an overview of the current gender composition of key environmental committees, ministries, and advisory bodies in the states of the project's consortium, which means the Czech Republic, Slovakia and Italy. Within the national civil services in the EU, particularly in ministries implementing environmental and climate policy (such as the Ministry of the Environment and Energy Security), the share of women in top-tier management positions was in 2020 31.7%, while 42.5% held second-tier senior roles.[547] Although these figures indicate progress, they still reflect a structural gender gap at the highest levels of decision-making.

#### 6.2.1.1. Czech Republic

In the Czech Republic, the representation of women in political decision-making bodies responsible for environmental policy remains limited, reflecting broader gender disparities in political leadership across the country.

The Parliamentary Committee for the Environment consists of 20 members. Among its members, 6 are women (30%), including the chairperson. The vice-chair positions are held by 2 women out of a total of 5 members.[548] Despite having female leadership, the overall representation of women on the committee remains below parity, highlighting a need for greater gender balance.

The Senate Committee for Regional Development, Public Administration, and Environment comprises 10 members, of whom 3 are women (30%). While the chairperson is a man, two of four vice-chairs are women, it is some progress, but overall imbalance persists.

In the Permanent Senate Commission on Water and Drought, which addresses water and drought issues, women are significantly underrepresented. Out of 11 members, only 2 are women (18%), and the chairperson is also a man. This imbalance highlights broader gender disparities within the Senate and raises concerns about whether gender-specific impacts of water-related challenges (such as those globally disproportionately affecting women in rural areas) are being adequately addressed.[549]

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[547] EIGE. 2021. Decision-making in environment and climate change: women woefully under-represented in the EU Member States. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-statistics/dgs/data-talks/decision-making-environment-and-climate-change-women-woefully-under-represented-eu-member-states?lang=hr&utm

[548] Výbor pro životní prostředí. Poslanecká sněmovna Parlamentu České republiky [online]. Available from: https://www.psp.cz/sqw/hp.sqw?k=4601. Representation counted as of day of March 14, 2025.

[549] Stálá komise Senátu VODA - SUCHO. Senát Parlamentu České republiky [online]. Available from: https://www.senat.cz/organy/index.php?ke_dni=9.3.2025&O=6&lng=cz&par_2=544. Representation counted as of day of March 14, 2025.

The Government Council for Sustainable Development serves as an advisory and coordination body for sustainable development strategies in the Czech Republic. The council consists of 42 members, of whom 11 are women (26%), the chairperson is the Minister of the Environment.[550] While women remain underrepresented within this council, at least one member from civil society organizations specifically represents the interests of women. This inclusion provides an opportunity to integrate gender-sensitive perspectives into long-term sustainability strategies. However, the overall composition still limits broader representation of gender-specific concerns.

The Ministry of the Environment is headed by a male minister, Igor Červený, with all three deputy minister positions also occupied by men.[551] Historically, of the 20 ministers who have overseen this ministry since the establishment of the independent Czech Republic, only 2 have been women.[552] Other relevant ministries related to this topic, such as the Ministry of Transport and the Minister of Agriculture, are similarly headed by male ministers. This stark gender disparity at the highest levels of environmental governance underscores persistent male dominance in decision-making roles.

EIGE data from 2023 reveals that the representation of women among the highest-ranking officials in the ministries of environment, transport, and energy (key areas relevant to this topic) in the Czech Republic was 27%, significantly lower than the EU average of 45%.[553] The Czech Republic ranks third-lowest in representation, with Ireland and Denmark having the lowest figures.[554] Recent data show mixed progress in women's political representation in Czechia, depending on the level of decision-making.[555] Following the 2025 elections, women's representation in the national parliament reached approximately 33%, aligning with the European Union average of around 33.4% (2024). This places Czechia among countries making gradual progress towards gender parity in legislative bodies.[556] However, this improvement is not reflected at the executive level. In contrast to parliamentary representation, women remain significantly underrepresented in national governments. Across the EU, women held 35.1% of ministerial positions in 2024, marking an increase of 7.4 percentage points compared to 2014 (27.7%).[557] Additionally, women hold only 23.4% of the positions in parliamentary committees focused on environment and climate change in the Czech Republic, compared to 30% in the European Union. This disparity underscores a significant gender imbalance in these crucial committees.[558]

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[550] Rada vlády pro udržitelný rozvoj. ČR 2030 [online]. Available from: https://www.cr2030.cz/system/files/2025-02/%C4%8Dlenov%C3%A9%20RVUR%20ke%20dni%2019.2.2025.pdf. Representation counted as of day of March 14, 2025.
[551] Ministerstvo životního prostředí [online]. Available from: https://www.mzp.cz/cz/organizacni_struktura. Representation counted as of day of August 26, 2026.
[552] Seznam ministrů životního prostředí České republiky. 2026. Wikipedie [online]. Available from: https://cs.wikipedia.org/wiki/Seznam_ministrů_životního_prostředí_České_republiky
[553] EIGE. 2023. Gender Equality Index 2023: Towards a green transition in transport and energy. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/sites/default/files/documents/Gender%20Equality%20Index%202023.pdf
[554] Ibid.
[555] Vaughan H. 2025. Czech elections 2025: a record number of women elected to parliament. Czech Radio. Radio Prague International. [online]. Available from: https://english.radio.cz/czech-elections-2025-a-record-number-women-elected-parliament-8865060
[556] Eurostat. 2025. 33.4% of parliamentarians across EU are women. Eurostat [online]. Available from: https://ec.europa.eu/eurostat/web/products-eurostat-news/w/edn-20250307-1
[557] Eurostat. 2025. 33.4% of parliamentarians across EU are women. Eurostat [online]. Available from: https://ec.europa.eu/eurostat/web/products-eurostat-news/w/edn-20250307-1
[558] EIGE. 2025. Parliamentary committees dealing with environment and climate change. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-statistics/dgs/indicator/wmidm_env_nat__wmid_env_natparlcom/datatable?orderby=2025&orderdir=dsc

### 6.2.1.2. Slovakia

The Committee of the National Council of the Slovak Republic for Agriculture and the Environment is responsible for areas including agriculture, forestry, water management, geodesy, cartography, land registry, rural development, environmental protection, and nature conservation. The committee consists of 11 members, of whom 2 are women. The chairperson is a man, while the vice-chairperson is a woman. This composition reflects a significant gender imbalance, with women making up only 18% of its members. This underrepresentation may influence policy discussions and decisions related to agriculture and environmental issues.[559]

Assessing gender representation in government advisory bodies in Slovakia is challenging due to the lack of publicly available membership lists. Three relevant advisory bodies have operated in the Slovak Republic: the Government Council for the 2030 Agenda for Sustainable Development, which, according to an outdated membership list[560], includes only 6 women (17%) among its 35 members; the Government Council for the European Green Deal[561], with the last meeting occurring in 2022, and whose gender representation remains undetermined; and the Government Council for the Recovery and Resilience Plan of the Slovak Republic[562], for which no membership list has been publicly disclosed. In January 2025, the Slovak government established the Government Council of the Slovak Republic for Sustainable Development and its Financing, replacing these three advisory bodies. Publicly available information indicates that the new council comprises 43 voting members representing government institutions, regional authorities, academia, civil society, and social partners. However, a complete membership list and data on gender representation have not yet been publicly disclosed.[563] The most relevant ministries, specifically, the Ministry of Environment, the Ministry of Transport, the Ministry of Agriculture and Rural Development, and the Ministry of Investments, Regional Development, and Informatization – are currently led exclusively by men.[564]

EIGE data show that Slovakia belongs among the leading EU countries in terms of women's representation in senior civil service positions within environment-, transport- and energy-related ministries. In 2023, women represented roughly 53% of these positions in Slovakia, compared to the EU average of 45%.[565]

However, women hold only 12.5% of positions in parliamentary committees focused on environment and climate change in Slovakia, significantly lower than the EU average of 30%.

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[559] Výbor NR SR pre pôdohospodárstvo a životné prostredie. Národná rada Slovenskej Republiky [online]. Available from: https://www.nrsr.sk/web/Default.aspx?sid=vybory/vybor&ID=178. Representation counted as of day of March 21, 2025.
[560] Rada vlády SR pre Agendu 2030 pre udržateľný rozvoj. 2020. Ministerstvo investícii, regionálneho rozvoja a informatizácie Slovenskej Republiky [online]. Available from: https://mirri.gov.sk/wp-content/uploads/2023/09/Clenovia-Rady-vlady-pre-Agendu-2030_-04_20201.pdf
[561] Rada vlády pre Európsku zelenú dohodu. 2019. Ministerstvo životného prostredia Slovenskej Republiky [online]. Available from: https://www.minzp.sk/ezd/rada/
[562] Plán obnovy a odolnosti Slovenskej republiky. Ministerstvo životného prostredia [online]. Available from: https://www.minzp.sk/poo/
[563] ESDN. 2026. Single country profile: Slovakia. European Sustainable Development Network [online]. Available from: https://www.esdn.eu/country-profiles/detail/slovakia
[564] Členovia vlády. Úrad Vlády Slovenskej Republiky [online]. Available from: https://www.vlada.gov.sk/vlada-sr/clenovia-vlady/. Representation counted as of day of March 21, 2025.
[565] EIGE. 2025. Impact driver: Marking milestones and opportunities for gender equality in the EU. Publications Office of the European Union, Luxembourg [online]. Available from: https://www.astrid-online.it/static/upload/886a/886a23fb113601959af9e3b6519c732a.pdf

This places Slovakia as having the fourth lowest representation in these committees within the EU, with poorer results from countries such as Romania, Hungary, and Cyprus.[566]

The situation is more balanced within the Slovak ministries responsible for environmental and climate-related policies, namely the Ministry of Environment, the Ministry of Transport, and the Ministry of Economy. Since 2023, women have consistently represented around 22% of members of the government or political executive in these ministries. However, women remain underrepresented in junior ministerial positions (ministers without a seat in the cabinet), where they account for only 16.7%. By contrast, women represent 33.3% of senior ministers with cabinet membership, which is above the EU average. This suggests that although women remain underrepresented overall, Slovakia performs comparatively better at the highest ministerial level than in parliamentary decision-making structures related to climate and environmental governance.[567]

At the international level, Slovakia showed a more positive example of women's representation in environmental decision-making. At the COP28 climate conference in 2023, Slovakia was one of only five EU Member States that appointed a woman as the head of delegation, together with Estonia, Italy, Hungary, and Slovenia. This is an important contrast to the situation at the national level, where women remain significantly underrepresented in political and leadership positions related to environmental governance. The fact that Slovakia was represented by a woman at one of the most important global climate negotiations can therefore be seen as a meaningful step towards stronger gender representation in environmental diplomacy and policymaking.[568]

At the same time, international reports point out that even though more women are participating in climate negotiations, inequalities still remain. Women tend to speak less during negotiations and are less often involved in discussions on finance and technology, while they are more frequently associated with topics such as gender equality, education, and empowerment. Slovakia's participation at COP28 therefore reflects both positive progress in women's visibility and the broader challenges women continue to face in environmental decision-making processes.[569]

#### 6.2.1.3 Italy

In Italy, women remain significantly underrepresented in key decision-making bodies responsible for environmental and climate policy. According to the European Institute for Gender Equality (EIGE), the share of women in parliamentary committees dealing with environment and

[566] EIGE. 2025. Gender Statistics Database: Parliamentary committees dealing with environment and climate change. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-statistics/dgs/indicator/wmidm_env_nat__wmid_env_natparlcom
[567] EIGE. 2025. Gender Statistics Database: National ministries dealing with environment and climate change: ministers by seniority [online]. Available from: https://eige.europa.eu/gender-statistics/dgs/indicator/wmidm_env_nat__wmid_env_natmin_envmin/datatable
[568] EIGE. 2025. Impact driver: Marking milestones and opportunities for gender equality in the EU. Publications Office of the European Union, Luxembourg [online]. Available from: https://www.astrid-online.it/static/upload/886a/886a23fb113601959af9e3b6519c732a.pdf
[569] Ibid.

climate change declined from 37.6% in 2022 to 32.9% in 2025, although it still remains slightly above the European Union average of around 30%.[570]

In contrast, women are considerably less represented at the executive level in Italy. Women currently hold around 30% of ministerial (senior and junior) positions, marking a slight decline compared to 2023. At the same time, their representation in the national parliament has reached approximately 34%, indicating modest progress at the legislative level. At the subnational level, women account for 27% of members in regional assemblies, suggesting that gender imbalances persist across different tiers of governance despite incremental improvements.[571] At the local level, recent research covering Italian municipalities between 2010 and 2019 found that a higher proportion of women in municipal councils is causally associated with increased household recycling rates. However, the study also notes that the effect tends to fade over time without deeper institutional or cultural support.[572]

The European Institute for Gender Equality (EIGE) provides more systematic data on gender representation in economic decision-making. According to the latest available data (2025), women account for 44% of board members in the largest quoted companies in Italy, substantially exceeding the European Union average of 34%. While this positions Italy among the better-performing countries in terms of gender balance in corporate governance, this progress is largely driven by regulatory measures, such as gender quotas, and does not necessarily reflect broader equality in leadership positions, particularly within public environmental institutions.[573]

However, this relatively strong performance should be interpreted with caution. The higher share of women on corporate boards is largely driven by regulatory measures, such as gender quotas, rather than reflecting broader structural equality in economic decision-making. As a result, this progress may not fully translate into equal representation in executive leadership roles or across the wider labour market.

Overall, while Italy demonstrates relatively balanced gender representation in environmental parliamentary committees, disparities persist within ministerial leadership, senior administration, and public environmental agencies. These gaps undermine the integration of gender-sensitive perspectives in national climate and sustainability agendas.

#### 6.2.1.4 Drawing a comparison

Taken together, the cases of the Czech Republic, Slovakia and Italy reflect how gender gaps in environmental governance persist even in high-income democracies. These country-level findings also mirror broader global trends. Across most world regions, the share of women in environmental protection ministries remains well below parity, averaging only 33%, one of the

[570] EIGE. 2025. Gender Statistics Database: Parliamentary committees dealing with environment and climate change. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-statistics/dgs/indicator/wmidm_env_nat__wmid_env_natparlcom/datatable
[571] EIGE. 2025. Gender Equality Index 2025: Italy. [online]. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/modules/custom/eige_gei/app/content/downloads/factsheets/IT_2025_factsheet.pdf
[572] Lodi, C., Sacchi, A., Vidoli, F. 2024. “Gender politics, environmental behaviours, and local territories: Evidence from Italian municipalities”. General Economics. https://doi.org/10.48550/arXiv.2410.06091
[573] EIGE. 2025. Gender Equality Index: Power in Italy in 2025 edition. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-equality-index/2025/domain/power/IT

lowest rates across all policy sectors.[574] Only Europe and North America approach gender balance (47%), while Central and Southern Asia remains the least inclusive region, with women making up less than 10% of ministry staff.[575]

| time ▸ geo ▾ | 2025 | 2024 | 2023 | 2022 |
|---|---|---|---|---|
| EU27_2020 | 30 | 30 | 30.5 | 30.4 |
| CZ | 23.4 | 22.7 | 22.7 | 20 |
| IT | 32.9 | 34.2 | 32.9 | 37.6 |
| SK | 12.5 | 12.5 | 10 | 16.7 |

*Figure no. 8: Representation of Women in Parliamentary Committees Dealing with Environment and Climate Change (%), by Year and Country.*[576]

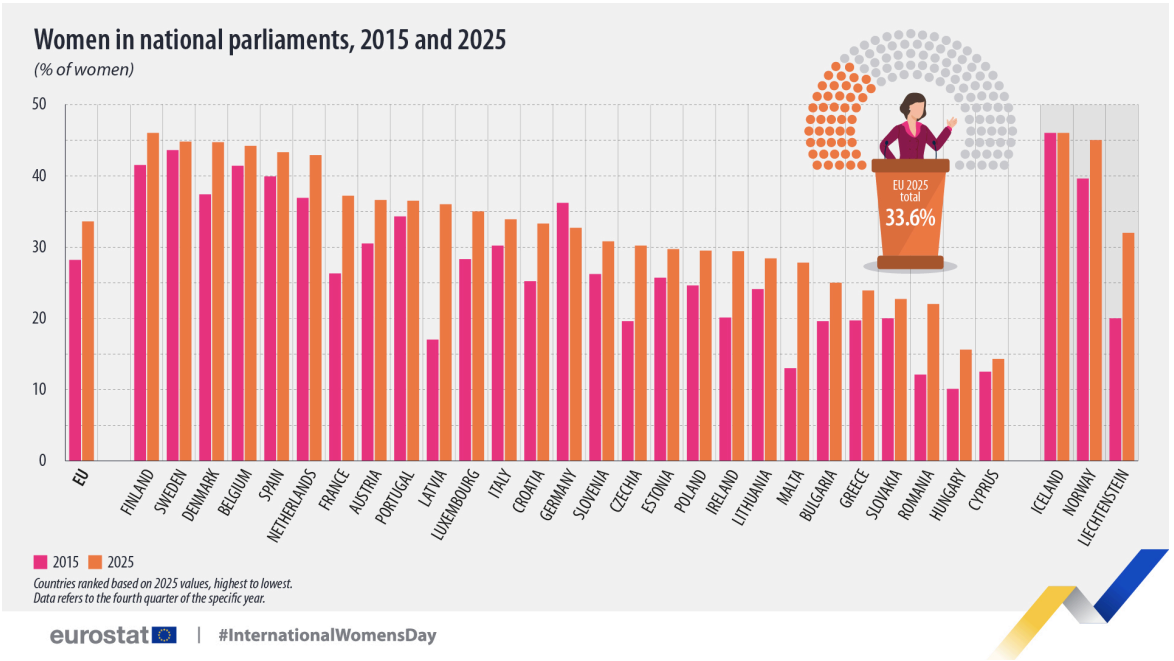



*Figure no. 9: Women in national parliaments, 2015 and 2025 (% share).*[577]

[574] UNDP. Gender equality in public administration: Where are the women in environmental and climate change ministries?: Policy Brief. United Nations Development Programme [online]. Available from: https://www.girl.pitt.edu/sites/default/files/undp-gepa-where-are-the-women-in-environmental-and-climate-change-ministries_0.pdf

[575] Ibid.

[576] EIGE. 2025. Gender Statistics Database: Parliamentary committees dealing with environment and climate change. European Institute for Gender Equality [online]. Available from: https://eige.europa.eu/gender-statistics/dgs/indicator/wmidm_env_nat__wmid_env_natparlcom/datatable?sex=W&UNIT=PC&POSITION=MEMB_COM&col=time&row=geo&rowf=EEA%7CBE%7CBG%7CDK%7CDE%7CEE%7CIE%7CEL%7CES%7CFR%7CHR%7CCY%7CLV%7CLT%7CLU%7CHU%7CMT%7CNL%7CAT%7CPL%7CPT%7CRO%7CSI%7CFI%7CSE%7CIS%7CNO%7CUK

[577] Eurostat. 2026. One-third of parliamentarians across the EU are women. Eurostat [online]. Available from: https://ec.europa.eu/eurostat/web/products-eurostat-news/w/edn-20260305-1

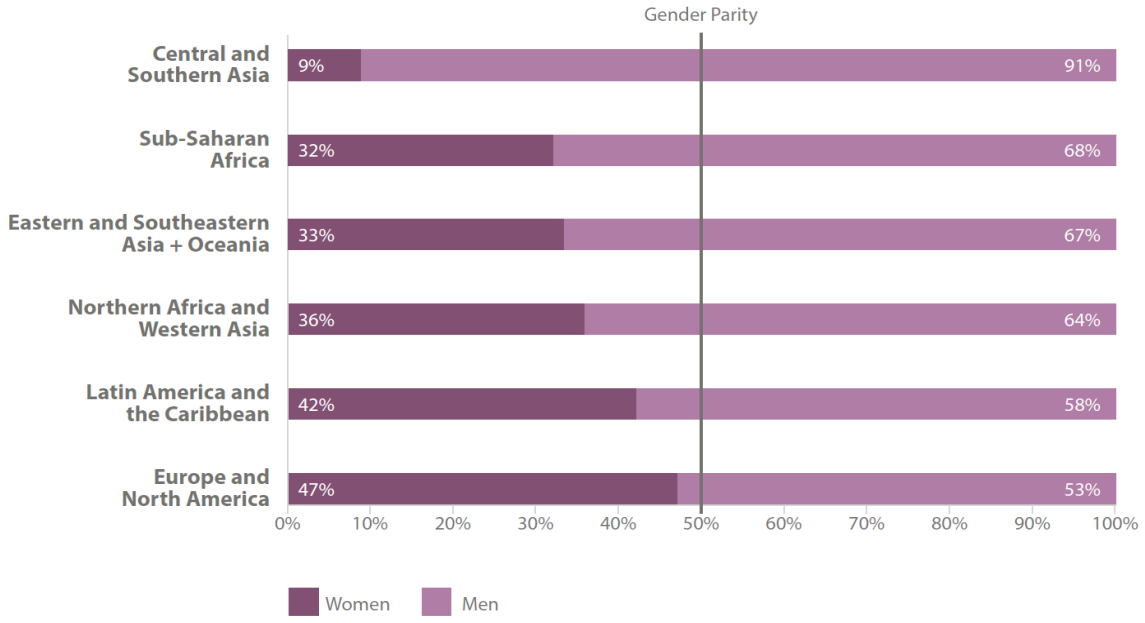



*Figure no. 10: Percentages of women and men employees in environmental protection ministries by region.*[578]

Beyond the binary lens of "women's representation", most environmental policies still fail to account for **intersectionality.** Non-binary individuals, people with diverse ethnic backgrounds, migrants, and persons with disabilities are often excluded from both policy discussions and decision-making. Although the European Commission has adopted intersectional principles in its strategies – particularly **Gender Equality Strategy 2020–2025**[579] and the **Strategy for the Rights of Persons with Disabilities 2021–2030**[580], real-world implementation remains inconsistent and underdeveloped across Member States.

Moreover, the lack of intersectional data and analytical frameworks further hinders progress. Most environmental impact assessments and policy evaluations still do not disaggregate data beyond binary gender lines, if at all, making it nearly impossible to monitor how different groups are affected or whether targeted policies are working.

Ultimately, without a stronger commitment to intersectionality, grounded in both funding and implementation, environmental policy risks reproducing or even exacerbating social inequalities, rather than promoting inclusive and just transitions.

[578] UNDP. Gender equality in public administration: Where are the women in environmental and climate change ministries?: Policy Brief. UNDP [online]. Available from: https://www.girl.pitt.edu/sites/default/files/undp-gepa-where-are-the-women-in-environmental-and-climate-change-ministries_0.pdf
[579] European Commission. 2020. A Union of Equality: Gender Equality Strategy 2020–2025. European Commission [online]. Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0152
[580] European Union. 2021.Union of equality: Strategy for the rights of persons with disabilities 2021-2030. European Union [online]. Available from: https://op.europa.eu/en/publication-detail/-/publication/3e1e2228-7c97-11eb-9ac9-01aa75ed71a1/language-en

**Key takeaways from this chapter:**

- Higher representation of women in politics is strongly linked to stronger environmental and climate policies, including lower $CO_2$ emissions, greater support for environmental laws, and more investment in environmental protection. Research suggests that women in political decision-making are more likely to support sustainable policies, especially when women reach a “critical mass” of around 30% representation in committees and institutions.
- Among the countries studied, Italy performs best in women’s representation in environmental committees, while the Czech Republic shows mixed progress and Slovakia remains significantly below gender balance in many environmental decision-making bodies.
- Despite some improvements, women are still underrepresented in senior environmental leadership positions across ministries, governments, and parliamentary committees, especially in the Czech Republic and Slovakia.
- Without stronger intersectional approaches and better data collection, environmental policies risk reinforcing existing social inequalities instead of creating fair and inclusive climate solutions.

## 6.3. Lobbying and movement against the Green Deal

The political backlash against climate policies, often termed "green backlash," is a significant obstacle to the green transition. This resistance is not a simple, spontaneous public reaction. To understand this phenomenon, this section analyzes it as a complex process manufactured and amplified by three distinct, but interconnected, groups of actors: (1) established corporate lobbies, (2) populist political entrepreneurs, and (3) segments of the public mobilizing around legitimate, but gender-specific, grievances.

**1. The "Astroturf"[581] Backlash: Corporate & Industrial Lobbying**

The most powerful opposition comes from established, and overwhelmingly male-dominated, corporate lobbies (fossil fuel, automotive, and industrial agriculture) seeking to protect their profits from the transition. This top-down lobbying creates the political and economic context for the backlash.

Their primary tactic is to frame the transition as an economic catastrophe for the "common man". This is particularly effective in nations with a heavy industrial base. The total automotive sector is a cornerstone of the economy in all three focus countries, accounting for 6.7% of total employment in Slovakia, 6.1% in Czechia, and 2.6% in Italy.[582] The fears this lobby exploits are not abstract: as Eurofound data highlights, large-scale restructuring in 2024 alone saw

[581] "Astroturfing" refers to movements that appear to be grassroots public protests but are in fact created and funded by corporate or political interests.
[582] Leončikas, T. et al. 2025. Employment in the EU’s automotive sector. 2025. European Foundation for the Improvement of Living and Working Conditions [online]. Available from: https://www.eurofound.europa.eu/en/publications/all/employment-eus-automotive-sector.

announcements for job losses of 2,630 in Czechia, 1,670 in Italy, and 207 in Slovakia.[583] This lobby's efforts are made easier by the gender-blindness of initial transition policies. The EU's Just Transition Mechanism, for example, has been heavily criticized for funneling funds primarily into retraining for these same male-dominated sectors (like coal and auto), while overlooking the corresponding need for investment in low-carbon, female-dominated sectors like care and education.[584]

**2. The "Megaphone": Political Exploitation and "Carbon-Masculinity"**

Populist political actors act as the "megaphone" for these industrial grievances, translating complex economic anxieties into a simple, powerful cultural war. They merge the economic fear (losing a job) with a cultural-identity fear (losing a way of life). This has become a defining political narrative, with populist movements and media framing the conflict as one of "bears, cars and angry farmers" against a detached Brussels elite.[585]

This is where gender becomes a political tool. This dynamic, sometimes termed "petro-masculinity" or "carbon-masculinity," links high-carbon activities directly to a threatened masculine identity.[586]

In Italy, Matteo Salvini's League has long framed climate measures as an attack on Italian industry and lifestyle. In Czechia, the populist right political party Motorists for Themselves (orig. Motoristi sobě) recently succeeded in the general elections and obtained 13 seats in the lower chamber of the parliament. It ran on issues of car ownership, opposition to combustion engine phase-out across the European Union, and anti-environmentalism.[587] [588]

These parties weaponize symbols of masculinity. The car, in particular, becomes a symbol of freedom. The fact that 68% in Czechia oppose petrol taxes, and that men are far more likely than women to strongly oppose them, is not just an economic calculation; it's the defense of a cultural identity.

This top-down lobbying and political messaging would fail if it did not tap into real, "bottom-up" public anxieties. These anxieties, however, are not uniform; they are deeply gendered and create a "pincer effect" that traps different groups. The primary anxiety is the economic threat to carbon-heavy, male-dominated industries. This is evidenced by the auto-sector job losses[589] and

[583] Leončikas, T. et al. 2025. Employment in the EU's automotive sector. 2025. European Foundation for the Improvement of Living and Working Conditions [online]. Available from: https://www.eurofound.europa.eu/en/publications/all/employment-eus-automotive-sector.
[584] European Environmental Bureau (EEB) & Women Engage for a Common Future (WECF). 2021. Why the European Green Deal Needs Ecofeminism: Moving from gender-blind to gender-transformative environmental policies. Report. Heinrich Böll Stiftung [online]. Available from: https://eu.boell.org/en/why-european-green-deal-needs-ecofeminism
[585] Mathiesen, K. et al. 2024. Bears, cars and angry farmers fuel green backlash. A 28-country guide to how climate policies are splitting Europe. Politico [online]. Available from: https://www.politico.eu/article/bears-cars-angry-farmers-fuel-green-deal-backlash-eu-agenda-european-commission-ursula-von-der-leyen/
[586] Daggett, C. 2018. "Petro-Masculinity: Fossil Fuels and Authoritarian Desire". *Millennium: Journal of International Studies*, 47(1): 25–44. Available from: https://www.pustaka-sarawak.com/eknowbase/attachments/1623207787.pdf
[587] Motorists for Themselves. 2025. Wikipedia [online]. Available from: https://en.wikipedia.org/wiki/Motorists_for_Themselves.
[588] Dahl, J. 2025. EU's green car push helps fuel political populists. Politico [online]. Available from: https://www.politico.eu/article/eu-green-car-push-helps-fuel-political-populists/
[589] Leončikas, T. et al. 2025. Employment in the EU's automotive sector. 2025. European Foundation for the Improvement of Living and Working Conditions [online]. Available from: https://www.eurofound.europa.eu/en/publications/all/employment-eus-automotive-sector.

the rise of parties like "Motorists for Themselves," which explicitly campaigns on this 'loss of production' and finds stronger support among men.[590] This fear is thus coded as masculine, tied to the traditional "provider" identity.

In summary, the "green backlash" is a potent force manufactured by industrial lobbies and amplified by populist politicians. It works by exploiting the legitimate, and distinctly gendered, economic fears of job loss in carbon-heavy industries, merging them into a single, powerful anti-elite cultural movement.

**Key takeaways from this chapter:**

- The political opposition to climate policies is a top-down backlash driven by male-dominated corporate lobbies in fossil fuel, auto, and industrial agriculture sectors to protect their profits.
- Populist politicians act as a megaphone by turning economic anxieties into a cultural war that links high-carbon activities directly to a threatened masculine identity. For instance, political movements, such as Motorists for Themselves in Czechia, use masculine aesthetics and frame car ownership and combustion engines as symbols of personal liberty against external regulation.
- Transition funds completely overlook the need for strategic investments in female-dominated, low-carbon sectors like care and education.

[590] The coalition "Přísaha a Motoristé" received 10.26% of the vote, earning 2 seats.
CSU. 2024. Czechia has chosen new Members of the European Parliament. Czech Statistical Office [online]. Available from: https://csu.gov.cz/produkty/czechia-has-chosen-new-members-of-the-european-parliament

# Transferable Insights: Smart approaches with potential for EU implementation

**Country:** Czech Republic

**Name of the measure:** The Czech Climate Lawsuit

**Description**: A landmark example of citizen-led climate action, this strategic lawsuit was filed in April 2021 by the association Klimatická žaloba ČR, along with individual plaintiffs, against the Czech government. The plaintiffs argued that the government's failure to take sufficient action to mitigate climate change violated their fundamental rights to life, health, and a favorable environment as guaranteed by the Czech constitution and international agreements.

The lawsuit is a powerful example of an intersectional approach to climate justice. The plaintiffs included a diverse group of citizens: a farmer impacted by drought, a parent concerned for their child's future, and, crucially, a group of senior women (Klimaseniorky). Their involvement highlights the disproportionate impact of climate change, particularly extreme heat, on the health and well-being of the elderly, providing a strong gender and age dimension to the case. In June 2022, the Municipal Court in Prague delivered a historic ruling, finding the government's climate targets insufficient and ordering them to be strengthened. Although this verdict was later overturned by the Supreme Administrative Court, the lawsuit represents a significant "good practice" by successfully raising the profile of climate litigation and mobilizing civil society. The case continues, as the plaintiffs filed a complaint with the Constitutional Court in February 2025, where they are currently awaiting a decision.

**Link:** https://www.klimazaloba.cz/

**Country:** Slovakia

**Name of the measure:** Znepokojené matky (Concerned mothers)

**Description:** Znepokojené matky is a women's initiative that focuses on a society that responsibly approaches modern threats while emphasizing the rights of mothers and future generations. It implements policies that effectively address the threats of Earth's ecological collapse - the climate crisis and the crisis of global biodiversity loss.

By using a combination of unconventional protests, creative symbolic actions, psychological support, and family and community-focused activities they try to advance systemic climate solutions, increase public participation, especially women and parents, and support a just environmental transition.

**Link:** https://znepokojene.sk/kto-sme/

**Country:** Italy

**Name of the measure**: Poderosa – Women and Ecological Transition

**Description**: Poderosa is an initiative aimed at empowering women in Italy to actively participate in the ecological transition and circular economy sectors. The project offers inclusive training programs focused on environmental journalism and green marketing, emphasizing gender perspectives. It also promotes ecofeminism principles and raises awareness about the intersection of gender and sustainability.

In addition to education and awareness, Poderosa supports female entrepreneurship by providing tools and opportunities for women to enter and thrive in green jobs. The initiative features a job board connecting women with green employment opportunities and produces a podcast sharing inspiring stories of women leaders in ecology and circular economy.

**Link:** https://economiacircolare.com/poderosa-donne-e-transizione-ecologica/

**Country:** Germany (Global Network)

**Name of the measure**: GenderCC – Women for Climate Justice

**Description**: GenderCC is a global network of organizations, experts, and activists dedicated to integrating gender equality into climate change policies. Established in the context of international climate negotiations (UNFCCC), GenderCC works at local, national, and international levels to raise awareness, build capacity, and empower women and marginalized groups in climate action. The network emphasizes the importance of gender-responsive climate policies and advocates for women's leadership in environmental decision-making.

One of GenderCC's notable initiatives is the **Gender and Climate-Resilient Communities Initiative (GCRCI)**, implemented in South Africa. This project focuses on locally led adaptation strategies, involving women in co-designing community climate actions and climate-smart enterprises. The initiative has led to increased women's participation in leadership roles, enhanced decision-making processes, and improved climate resilience in grassroots communities.

**Link**: https://gendercc.net/

# 7. Who Shapes Green Knowledge? Gender and Inequality in Research and Innovation

## 7.1 The Ideal Scientific Trajectory and Its Gendered Barriers

Scientific careers are often imagined as linear, merit-based progressions driven purely by talent and dedication. In reality, the structures that define what counts as “excellence” in science are deeply gendered.

The concept of the ideal scientific trajectory refers to a linear and uninterrupted progression from early education through doctoral studies, postdoctoral research, and ultimately into a stable academic or research career. This model emphasizes early specialization, international mobility, continuous publication output, and the absence of career interruptions, and it remains the benchmark of excellence in most academic systems, funding schemes, and promotion procedures.

However, this rigid model disproportionately disadvantages certain groups due to gendered social roles, institutional bias, and unequal access to support. It assumes full-time dedication and geographic mobility that are difficult to maintain for researchers with caregiving responsibilities. In the European Union women are still the primary users of parental leave, even though the share of men going on parental leave increased from an average of 19.1% in 2013 to 26.1% in 2023.[591]

At each stage of this “ideal” path, barriers accumulate from gender-biased recruitment and mentoring to the penalty for career interruptions or reduced mobility. These structural constraints are reflected in the She Figures 2024 indicators, which track gender segregation across disciplines, representation in research sectors, career progression, leadership, and the integration of gender perspectives into scientific content.[592]

Understanding these barriers is crucial, because they not only limit women’s participation in STEM, but also shape what kind of research is conducted, whose knowledge is valued, and how innovation responds to environmental and social challenges.

**Key takeaways from this chapter:**

- The standard benchmark for scientific excellence demands an uninterrupted career path of full-time dedication and continuous geographic mobility. This model structurally penalizes researchers with caregiving responsibilities, who are predominantly women utilizing parental leave, by punishing career gaps and restricting their participation in STEM.

[591] OECD. 2025. Paid leave for fathers: Recent OECD policy trends. OECD [online]. Available from: .https://www.oecd.org/en/publications/paid-leave-for-fathers_07442bed-en/full-report.html#section-d1e427
[592] European Commission. 2025. SheFigures 2024. Available from: https://projects.research-and-innovation.ec.europa.eu/en/knowledge-publications-tools-and-data/interactive-reports/she-figures-2024

## 7.2 Gendered Structures of Research and Innovation

The structural barriers outlined in the previous chapter are clearly reflected in the gender composition of research and innovation systems. Despite decades of progress, gender parity in science remains a distant goal, particularly in the technical and environmental fields that are key to the green transition.

Globally, women make up only 33% of researchers, and although their participation has been increasing, progress has been slow and uneven.[593] In the European Union, gender equality in research and innovation is systematically monitored through the SheFigures report, which evaluates six key dimensions, including participation, career progression, leadership, and gender integration in research content.[594]

According to SheFigures 2024, overall equality in research and innovation has slightly improved, but large gaps persist across disciplines, countries, and institutional levels. Among project countries, **Italy** ranks 14th (73.4 points), **Slovakia** 15th (73.0 points), and the **Czech Republic** 22nd (65.2 points). The widest disparities remain in research leadership, technical disciplines, and the private sector.[595]

These disparities are driven by two interconnected forms of segregation:

- **Horizontal segregation**, meaning the concentration of women and men in different disciplines (e.g. women in life sciences, men in engineering and ICT).
- **Vertical segregation**, referring to the underrepresentation of women in senior or leadership positions.

Both patterns are reinforced by gendered socialization, implicit bias, and institutional cultures that privilege traditionally male career trajectories. From an early age, girls are less encouraged to pursue technical subjects or careers in physics, engineering, or computer science, fields still perceived as “masculine”. These perceptions shape educational choices, mentoring opportunities, and ultimately access to higher positions within the research hierarchy.[596]

Data from SheFigures also highlight that women are disproportionately affected by precarious contracts, limited mobility opportunities, and the absence of work–life balance support. In 2018, 11.1% of women researchers in higher education work part-time and under precarious working contracts, compared with 7.2% of men.[597] In 2022 this difference improved and only 18.85% of

[593] Unesco Science report 2021. Share of women among total researchers by country, 1996–2018 (%). Unesco [online]. Available from: https://www.unesco.org/reports/science/2021/en/dataviz/share-women-researchers-radial
[594] European Commission. 2025. *SheFigures 2024.* Office of the European Union [online]. Available from: https://projects.research-and-innovation.ec.europa.eu/en/knowledge-publications-tools-and-data/interactive-reports/she-figures-2024
[595] Ibid.
[596] Unesco. 2017. Cracking the code: girls' and women's education in science, technology, engineering and mathematics (STEM). UNESDOC Digital Library [online]. Available from: https://unesdoc.unesco.org/ark:/48223/pf0000253479
[597] European Commission. 2022. SheFigures 2021. European Commission [online]. Available from: https://projects.research-and-innovation.ec.europa.eu/en/knowledge-publications-tools-and-data/interactive-reports/she-figures-2021

women, compared to 19.1% of men, are working under precarious contracts.[598] Women also represent only 29% of researchers who have undertaken international mobility, compared with 42% of men.[599] Such constraints directly reflect the gendered assumptions embedded in the "ideal scientific trajectory" described earlier.

At the EU level, gender balance is largely achieved among Bachelor's, Master's, and PhD students and graduates. However, as academic careers progress, women's representation steadily declines. This pattern illustrates the **"leaky pipeline"** in science, whereby women gradually leave or are pushed out of the academic trajectory before reaching senior positions.[600]

Women currently hold only about 30% of top academic posts (grade A, equivalent to full professorships) across all fields. While the gap is visible in the humanities, social sciences, and medicine, it is particularly pronounced in science and engineering, where women account for only around one fifth of grade A positions. A similar trend appears in academic leadership: women make up only about a quarter of heads of institutions. Overall, the data show that although women enter academia in comparable numbers to men, far fewer advance to the highest levels of the academic hierarchy.[601]

Such uneven gender participation is not merely a matter of representation; it affects the very substance of innovation. When women's perspectives and experiences are missing from research teams and leadership positions, entire fields, including environmental sciences, green technologies, and digital transformation, risk reproducing blind spots that weaken both equity and effectiveness.

**Key takeaways from this chapter:**

- Even though overall equality has improved, women make up only 33% of researchers globally, facing severe horizontal segregation (concentrated away from engineering and ICT) and vertical segregation (holding only 30% of top academic posts).
- While gender balance is achieved among university graduates, women are gradually pushed out as academic careers progress due to precarious contracts and limited mobility. This systemic exclusion leaves critical blind spots in teams designing green technologies and digital transformation, weakening both the equity and effectiveness of the green transition.

[598] European Commission. 2025. SheFigures 2024. Available from: https://projects.research-and-innovation.ec.europa.eu/en/knowledge-publications-tools-and-data/interactive-reports/she-figures-2024
[599] Ibid.
[600] European Commission. 2025. *She figures 2024 – Infographic.* Office of the European Union [online]. Available from: https://op.europa.eu/en/publication-detail/-/publication/9a6eb251-e82e-11ef-b5e9-01aa75ed71a1/language-en
[601] European Commission. 2025. SheFigures 2024. Available from: https://projects.research-and-innovation.ec.europa.eu/en/knowledge-publications-tools-and-data/interactive-reports/she-figures-2024

# 8. Conclusion and Recommendations

## 8.1 Executive Conclusion: Translating Intersectional Equity into Ecological Stability

The comprehensive findings of this report demonstrate that the global environmental crisis and systemic gender inequalities are not separate, isolated challenges; they are deeply entangled manifestations of an extractive, growth-oriented socioeconomic paradigm. Across every sector analyzed, from the micro-spaces of everyday household practices to the macro-dynamics of global climate governance, social power structures dictate who consumes resources, who reaps the economic benefits of digital innovation, and who ultimately bears the physical and environmental costs of ecological degradation.

A profound structural paradox lies at the center of the contemporary green transition, manifesting as a stark decarbonization divide. The European Union's ambitious legislative path toward climate neutrality by 2050 is inherently dependent on mineral-intensive technologies, clean energy infrastructures, and digitized systems. However, the raw materials fueling this shift (such as lithium, cobalt, and rare earth elements) are systematically extracted from the Global South under hazardous, unregulated conditions. In these extraction hotspots, women confront a severe dual burden: they perform grueling, low-paid, and chemically toxic processing work above ground while carrying the heavy weight of unpaid domestic labor within ecosystems heavily contaminated by industrial runoff and heavy metals. This dynamic ensures that while wealthy nations, of which the European Union is a part, externalize their environmental and social costs, vulnerable global populations suffer direct bodily exposure, physical violence, and structural displacement.

This global asymmetry is mirrored inside European societies through a persistent policy-practice-representation disconnect. On an individual level, women statistically exhibit a smaller carbon footprint, a higher willingness to adopt sustainable plant-based diets, and a greater reliance on low-emission public transport and waste minimization strategies. Yet, everyday ecological stewardship is systematically devalued as a natural extension of unpaid domestic care or hidden household labor. When transition policies rely on individual consumer choices rather than robust institutional regulation, the practical burden of mitigating chemical toxicity, sorting e-waste, managing food waste, and navigating flawed public transport infrastructure is quietly shifted onto households, resulting in severe time poverty for women. Furthermore, corporate greenwashing exploits eco-conscious consumers through unverified "natural" or "organic" labeling while simultaneously masking deep labor exploitation across multi-layered supply chains.

Crucially, while women perform the daily labor of sustainability, they remain fundamentally locked out of the structural power required to govern it. High-value digital eco-innovations, transport engineering, and national energy strategies remain overwhelmingly male-dominated, resulting in gender-blind policies that overlook cross-cutting social vulnerabilities. In agricultural governance, formalistic compliance reduces complex social equity goals to administrative boxes, such as the mechanical budget splitting seen in the Czech CAP Strategic Plan, failing to dismantle structural imbalances in land tenure, finance, and leadership. This exclusion is further

reinforced in academia and STEM pipelines by the "leaky pipeline" phenomenon, where rigid benchmarks for scientific excellence penalize caregiving responsibilities and push women out before they reach top research or executive leadership roles.

This disconnect is heavily reinforced by structural friction on the ground, where acute constraints in time, specialized training, and financial resources continuously limit the capacity of educators, public officials, and practitioners to deploy gender-responsive frameworks in everyday practice. Consequently, even when gender equality is explicitly recognized as an overarching policy objective, institutional actors face severe operational hurdles when trying to integrate intersectional equity alongside fast-paced digital innovations, sweeping green transitions, and highly complex regulatory frameworks.

Ultimately, this report confirms that technical efficiency, digital innovation, and market-based environmental fixes are completely insufficient on their own. True sustainability cannot be achieved within an economic or legal framework that treats nature and human labor as disposable external inputs. Accelerating a genuinely just green transition requires a radical shift away from profit-driven growth toward an inclusive, care-centered model that integrates social, gender, and climate justice into the core of environmental governance.

## 8.2 Narrative Breakdown by Chapter Contribution

**Chapter 1 & 2 (Introduction & Frameworks):**

Establishes the interdisciplinary framework connecting environment, gender, and power. It provides the definitions of hegemonic systems and utilizes ecofeminist and queer ecology concepts to argue that ecological destruction, capitalism, and gender hierarchies share a common structural root.

**Chapter 3 & 4 (Consumption & Social-Environmental Entanglements):**

Explores the eco-gender gap and carbon footprints at the individual level. It details women's everyday management of household resources and waste streams (food waste, cosmetics, chemical hygiene exposure) against an unpaid care penalty and persistent horizontal segregation in green tech and digital spaces.

**Chapter 5 (Global Frameworks & Climate Injustice):**

Outlines the macro-dynamics where the Global North's clean tech demands externalize heavy material, social, and physical costs to the Global South. It covers how climate extremes trap populations, drives land degradation, utilizes greenwashing to shift systemic failures onto individual emotional labor, and emphasizes how legal structures fail to criminalize large-scale ecocide.

**Chapter 6 (Policy & Climate Governance):**

Documents the formalistic and superficial approach to gender mainstreaming within national Common Agricultural Policy (CAP) strategic plans across Italy, Slovakia, and the Czech

Republic. It reviews how traditional subsidies ignore underlying structural exclusions in land tenure and credit , summarizes numerical gaps in environmental ministries , and details the corporate lobby forces driving the green backlash.

**Chapter 7 (Knowledge Production & Innovation):**

Explains how structural constraints - such as rigid linear career path expectations, publishing metrics, and geographic mobility requirements - punish caregiving duties. This mechanism locks women out of senior academic and technological governance roles, creating critical blind spots in teams designing the future green transition.

## 8.3 Strategic Recommendations by Chapter

### Recommendations for Chapter 2: Conceptual Framework: Environment, Gender and Power

Shift from Market-Driven to Regenerative Policy: Environmental policies must move away from top-down, purely technocratic, and market-based solutions that look at nature as a passive resource to be controlled. Future frameworks should center on relational, ecofeminist, and community-driven models that value environmental care and indigenous or local lived experiences.

Transition Systemically to a Circular Economy: Climate frameworks must actively replace the traditional linear “take–make–waste” system with a circular economy model focused on systematically reducing waste, reusing materials, and regenerating natural systems. To ensure this transition is socially equitable, funding and support systems must be redesigned to eliminate structural disadvantages for women-led, community-based, and localized sustainable business models that prioritize ecological integrity over rapid export scalability.

Integrate Queer Ecology into Environmental Design: Overcome rigid binary thinking (e.g., male/female, human/non-human) in policy documentation to ensure climate planning accommodates fluid social realities and acknowledges the inherent diversity and interdependence found within biological ecosystems.

### Recommendations for Chapter 3: Gendered Consumption: Everyday Life in the Age of Sustainability

Alleviate the Household "Third Shift": State bodies must stop treating daily environmental stewardship (such as sorting waste, managing packaging, or recycling) as a natural extension of unpaid female domestic labor. Transition responsibilities must be supported through public infrastructure and systemic regulations rather than passing the burden onto individual consumer choice.

Enforce Strict Safety Standards on Menstrual Hygiene and Cosmetics: Address the severe regulatory failures within the EU regarding endocrine-disrupting chemicals (EDCs), toxic heavy

metals, and pesticides commonly found in widely available tampons, personal care items, and beauty products. Replace voluntary labels with mandatory bans on chemicals of very high concern across all commercial and e-commerce distribution channels.

Redesign Public Transport for Caregiving Realities: Shift municipal transportation budgets away from prioritizing linear, peak-hour commuter paths traditionally traveled by men. Invest heavily in public transit networks that safely and affordably accommodate the complex, multi-stop "trip-chaining" travel patterns associated with local caregiving and shopping routines predominantly undertaken by women.

## Recommendations for Chapter 4: Transcending the Individual: Social-Environmental Entanglements

Mandate Environmental Transparency for AI System: Establish binding policy interventions requiring major technology firms to disclose comprehensive data center performance metrics, specifically tracking the massive electricity surges, water cooling depletion, and carbon emissions generated by training large language models.

Expand the Scope of the CSDDD to Eliminate SME Gaps: Directly address the structural limitations of the Corporate Sustainability Due Diligence Directive (CSDDD) by expanding its monitoring mandates to encompass small and medium-sized enterprises (SMEs). This expansion is vital to reliably track and penalize human rights abuses, modern slavery vulnerabilities, and toxic heavy metal exposures confronting women and children performing manual ore sorting across critical mineral supply chains.

Dismantle Algorithmic Biases: Apply strict fairness and inclusive design principles to machine learning models to prevent AI systems from replicating or amplifying existing socio-economic, racial, and gender disparities in crucial decision-making processes like hiring, credit scoring, and salary modeling.

Close the Regional Green Jobs Gap: Address the persistent occupational segregation in Central Europe's energy transition (where men hold 78% of renewable jobs) by implementing targeted, gender-responsive retraining programs for women in service sectors during regional industrial restructuring.

## Recommendations for Chapter 5: Climate (In)Justice: Exposure, Capacity, Recovery

Codify Ecocide into Law: Formally recognize ecocide as a severe international and domestic crime to hold corporate and state actors fully accountable for wanton acts that trigger long-term, widespread ecosystem destruction. Legal parameters must actively account for the gendered impacts of ecocide, protecting vulnerable populations who depend directly on local natural resources for daily survival and livelihood security.

Protect Climate-Induced Displaced Populations: Implement human-rights-based, gender-sensitive migration pathways and legal protection frameworks that specifically account for "trapped populations" and involuntary immobility caused by severe resource depletion,

preventing the exploitation, trafficking, and gender-based violence that spikes in humanitarian crisis zones.

## Recommendations for Chapter 6: From Policy to Power: Gender Equality in Agricultural and Climate Governance

Reallocate Funds within the Just Transition Mechanism (JTM): Directly address the critique of the JTM by shifting its funding priorities. Pivot resources away from exclusively subsidizing heavy industrial and automotive sectors to actively invest in low-carbon, high-social-value sectors such as formal care infrastructure and education where women predominate.

Overhaul Strategic CAP Implementations: Move away from superficial administrative compliance, such as the mechanical budget-splitting seen in the Czech CAP Strategic Plan, which fails to alter underlying power balances. Future agricultural interventions must feature clear, qualitative objectives that confront deep-seated structural barriers limiting women's direct access to land tenure, financial credit, and technical training.

Achieve a Critical Mass of Diverse Representation: Systematically remove institutional and cultural barriers to guarantee a minimum threshold (the recognized 30–40% "critical mass") of diverse women, caregivers, and marginalized groups within local municipal councils, national legislative environmental bodies, and international climate delegations.

## Recommendations for Chapter 7: Who Shapes Green Knowledge? Gender and Inequality in Research and Innovation

Modernize Scientific Trajectory Metrics: Abandon the traditional, rigid benchmark for scientific "excellence" that requires an uninterrupted, linear career path of continuous publication outputs and constant geographic mobility. Academic promotion systems, recruitment frameworks, and grant selection panels must adjust evaluation criteria to accurately value and protect researchers with caregiving responsibilities or parental leaves.

Eliminate Academic Segregation: Establish targeted pipelines, inclusive mentoring networks, and stable funding guarantees to actively dismantle horizontal and vertical gender segregation in STEM fields. Ensuring that women are fairly represented in teams creating green technologies, environmental science, and digital transformations is essential to eliminate systemic blind spots that weaken the overall effectiveness of the transition.



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