

The Influence and Role of Women in Shaping the Circular Economy: An Emerging Paradigm

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Abstract This chapter embarks on a comprehensive investigation into the significance and role of women in the circular economy context. Guided by the research questions, ‘How do women influence the development and implementation of the circular economy, and what unique contributions do they make?’, we aim to shed light on how gender-specific perspectives contribute to this paradigm. First, the chapter briefly outlines the circular economy concept, emphasising the existing gender gap and compelling case for increased women’s participation. Second, it examines the challenges women leaders face in this domain and recommends strategies for overcoming these obstacles. By addressing challenges faced by women in this domain, we aim to encourage greater diversity in this field, asserting that increased female participation can hasten the transition towards the circular economy while simultaneously promoting gender equality. This research provides crucial insights into the untapped power of women in shaping our sustainable future.

Keywords: • circular economy • women • sustainable future • local/regional development • gender equality

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1 Introduction

The circular economy (CE) is a robust response from the European Union (EU) to address the escalating strain of growing economies and the consumption of finite resources and environmental capacities. As defined by the Ellen MacArthur Foundation (Ellen MacArthur Foundation, 2015; 2017), this concept embodies a transformation grounded in reusing, adapting, and processing existing materials and products. This paradigm shift aims to limit waste generation by leveraging renewable energy sources, eliminating hazardous chemicals, minimising raw materials, and redesigning products for enhanced recyclability while retaining their value (Ellen MacArthur Foundation, 2017).

It embodies a vision of economic progress that is compatible with environmental protection. This transition involves creative solutions and inclusive, egalitarian behaviours that empower all parts of society. Here, we find the intersecting points of *sustainable development – CE – women and gender equality*.

A defining characteristic of CE is the extension of a product's environmental existence even after its initial lifecycle. This multifaceted concept encapsulates a global model for sustainable economic development. The approach advocates for judicious resource utilisation, distinguishing between biological and technical materials, and maximising their applicable lifespan (Ellen MacArthur Foundation, 2015; 2017).

CE necessitates careful planning in the pre-manufacturing phase to facilitate a seamless circular flow of products. It advocates innovation across a product's lifecycle spectrum, presenting a blueprint for a new sustainable system with economic prospects. CE encapsulates a holistic approach to balancing economic growth with resource conservation, forging a more sustainable future (Ellen MacArthur Foundation, 2017).

In 2019, the European Commission (EC) introduced a comprehensive overview of its endeavours through the *Circular Economy Action Plan* (European Commission, 2019a). As stated by the EC, out of the 54 actions outlined in the plan since its initiation in 2015, a significant number have already been executed or are currently in progress (European Commission, 2019a; 2019b).

The Circular Economy Action Plan is a strategic programme to modernise economies, create jobs, and protect the environment. However, while we strive for a more sustainable future, we must take a moment to consider another essential aspect: women's role and gender equality.

Undeniably, women's role as catalysts for change spans diverse domains, and one notable arena where women have excelled is CE. By embracing the principles of reusability and recycling, CE advocates resource optimisation. However, its implementation poses significant challenges. The staggering annual production of 2.01 billion tonnes of solid

waste globally, a substantial portion of which is managed unsustainably, accentuates the urgency of adopting CE practices, as the World Bank emphasises (The World Bank Group, 2023).

Women emerge as key players in driving the CE narrative in this landscape. Their innate collaborative approach and long-term vision align remarkably well with the CE's principles. As transformative agents, women are reshaping business models and contributing to the larger goal of sustainable development. Every year, we celebrate International Women's Day, and in 2022, the theme was 'Gender equality today for a sustainable tomorrow', which underscores the vital role of women in shaping a more sustainable world. In particular, 2022's focus on achieving gender equality within the context of climate change, the environment, and disaster risk reduction highlights the intersectionality of these critical issues.

As we reflect on the potential of women to lead us towards a greener future, it is essential to recognise and support their efforts in reshaping economic and environmental paradigms through initiatives like CE (Khan, 2022).

Kalujji (2020) emphasises the critical role of women's and economic empowerment in driving a sustainable local/regional CE. The fact that only 9% of the world's economy is circular underscores the need for immediate attention. The evident gender disparity in positions worldwide, where only 29% of women hold senior management roles, is a significant bottleneck. Kalujji stresses the urgent call for enhanced women and inclusion in driving CE to create a more sustainable and fair future.

Undoubtedly, CE acts as a gateway to inspire fresh ethical paradigms into business operations, recalibrating the equilibrium between profit and social responsibility. Across diverse industries, women lead the charge in exemplifying their readiness to venture beyond conventions, steering enterprises towards sustainable practices that yield positive social outcomes (Kalujji, 2020).

Women support activities that unite responsible planning and management of resources and social benefits. In this landscape, numerous inspirational instances spotlight women and girls at the helm of innovative, socially conscious, and climate-smart enterprises. At the same time, CE is a fertile ground for such transformation. An illustrative case is Otro Tempo in Spain, a pioneering endeavour that ingeniously converts discarded cooking oil into biodiesel. Simultaneously, this enterprise empowers women of gender-based violence, enlisting them into the workforce, thereby fostering empowerment and sustainability hand in hand. Likewise, BeeUrban in Sweden emerges as a catalyst for environmental preservation through services like pollination-enhancing beehives, biodiversity gardens, and rooftop farms. These endeavours shape tangible responses to multifaceted challenges led by proactive women. Not only do they address climate change, but they also tackle economic and gender disparities head-on. Women (also as

leaders or decision-makers), with their innovative business models intertwined with social responsibility, are moving towards a more sustainable, just and greener future (UN Women, 2019).

For instance, Kaluiji (2020) stated that considering the combination of almost 29% of women in executive roles with the existing 9% CE rate, the world could have achieved a 38% CE by now. This underscores the remarkable impact that women can have on advancing sustainable economic models. These numbers paint a vivid picture of the transformative potential of women's leading.

This chapter comprehensively explores women's pivotal role and significance within the context of CE. Guided by the research questions, 'How do women influence the development and implementation of CE, and what unique contributions do they make?' our primary aim is to illuminate the intricate interplay of gender-specific perspectives in the transformative shift from linear to CE models.

By coupling women's expertise with CE principles, local/regional development is stimulated with sustainability and well-kept with a more reasonable and inclusive vision. This comprises a transformative crescendo resonating across communities and economies.

As explained by Kukovič (2023a), local/regional development hinges on the management and capacity of local actors to harness their region's potential, fostering collaboration and kindling community participation. The pivotal role of over a million elected politicians across European regional and local echelons cannot be overlooked; their adaptability and responsiveness are crucial. These leaders must navigate the dynamic landscape, anchoring an authentic bond with citizens while envisioning and steering towards the future, which must be equal for all fields.

Local/regional sustainable development, CE, and women in leading positions emerge as an ideal of transformation in this context. With their distinctive traits and foresight, women become torchbearers of CE models.

The chapter starts with an overview of the short EU CE institutional agenda and concept, underlining its vital role in fostering sustainable development. It continues with the main points of establishing gender equality and acknowledges the prevailing gap in CE. The research advocates for greater involvement of women in this field.

Delving deeper, we investigate the challenges women encounter within the CE sphere. Through this examination, we intend to address gender-specific obstacles and endorse diversity.

We assert that elevated women catalyse the transition towards a sustainable local/regional economy and concurrently foster gender parity. In essence, this research endeavours to offer invaluable insights into the latent potential of women in shaping a sustainable future.

1.1 Bridging sustainable development and gender equality: A circular economy perspective

Since 1970, EU countries have radically transformed their approach to environmental concerns. This period has witnessed the adoption of an extensive array of environmental legislation, collectively forming what can be considered the most comprehensive and contemporary compilation of standards on a global scale.

In 2015, the Sustainable Development Goals (SDGs), introduced by the United Nations, solidified the commitment to global sustainability by endorsing the *Agenda 2030 for Sustainable Development*. This transformative framework encompasses 17 distinct SDGs spanning the economic, social, and environmental dimensions.

SDGs, gender equality, and CE form the remainder of our chapter and are interrelated concepts that hold significant importance in the global effort to create a more sustainable and conscious future (Fric et al., 2023).

Speaking about gender equality, Goal 5 of the SDGs focuses explicitly on empowering women and girls. This goal recognises that gender equality is a fundamental human right and a cornerstone for a prosperous and sustainable future. It seeks to dismantle discrimination, violence, and gender disparities across all aspects of society (United Nations, 2023).

The concept of gender equality has its roots in the EU's foundational documents, most notably in the Treaty of Lisbon (Irigoién, 2021). It represents not just a legal obligation but a moral imperative.

Through this research, we realise that gender inequities continue in the landscape of sustainable development, notably in areas critical to achieving CE. At the same time, the lack of women in executive positions in industries supporting circularity is a potent reminder that the path to a circular and sustainable economy must be inclusive. It is not limited to an organisation's corporate boards but reaches the public level, including many views and opinions.

Murray et al. (2017) state that while the concept of CE shows promise in terms of environmental sustainability, its direct impact on broader gender equality remains relatively unclear. Key aspects like inter- and intra-generational equity, gender equality, racial and religious equality, financial parity, and social opportunity equality are complex and multifaceted dimensions that deserve careful consideration within the construct of

CE. Incorporating these moral and ethical considerations into the CE discourse is essential for fostering a sustainable future that prioritises environmental well-being and upholds social justice and equality.

2 Gender equality and sustainability

The Treaty of Lisbon represents a pivotal moment in the EU's commitment to gender equality, building upon the foundation of the Treaty of Amsterdam in 1999. Through its provisions, the Treaty of Lisbon solidified the EU's dedication to promoting and achieving gender equality across its member states (Koukoulis-Spiliotopoulos, 2008). However, adopting the Treaty of Lisbon uncovers broader democratic apprehensions pertaining to participation, consultation, and transparency within the EU framework. Notably, this examination reveals that the voices of civil society organisations, which prominently emphasised the concept of 'social Europe' and incorporated concerns regarding gender equality, were marginalised during the negotiation process. Instead, the negotiations and the eventual treaty appeared to prioritise neoliberal and market-driven positions (Kantola, 2010; Lombardo, 2007; Irigoien, 2021).

In the context of *The 2030 Development Agenda*, Goal 5 stands out for its focus on achieving gender equality by dismantling discrimination, violence, and harmful practices against women and girls across public and private domains. The recognition of gender equality extends to various international platforms, including the United Nations. A significant initiative is the *Commission on the Status of Women*, a dedicated forum that concentrates on gender equality and the empowerment of women and girls. This commission aligns with the *Beijing Declaration and Platform for Action*, an agenda that propels gender equality forward (European Commission, 2023a; 2023b).

Collectively, these efforts signify a global push to advance gender equality as an integral element of sustainable development and societal progress. Embedding gender considerations throughout policy frameworks and international dialogues reflects a concerted drive to create a world where gender disparities are eliminated, and women's rights are upheld across all spheres of life. Ultimately, the *EU Gender Equality Strategy 2020-2025* sets the course for a transformative journey towards a society where gender equality is not just a principle but a lived reality for all, fostering a more inclusive, fair, and progressive EU. A pivotal focus of this strategy lies in rectifying the gender imbalance prevalent in decision-making processes and equal opportunities for growth participation within society, encompassing women and men, girls and boys (European Commission, 2020).

However, Warth and Koparanova's study (in Odrowaz-Coates, 2021) underscores that the absence of women's active participation in policy and decision-making can potentially lead to a disconnection between the policy and the community, inadvertently attributing sustainability responsibilities predominantly to men (Warth & Koparanova,

2012). Moreover, research highlights women's heightened sensitivity to certain forms of pollution, which can pose health risks and even elevate infant mortality rates. Despite this vulnerability, women remain significantly underrepresented in decision-making bodies dealing with pollution control. The importance of women's inclusion in environmental management and development, as highlighted in the *Rio Declaration (1992)*, is highlighted by Warth and Koparanova's study, resounding the response that women's full participation is imperative for achieving Sustainable Development Goals (SDGs).

The gender gap is especially evident in sectors crucial for the transition to CE, such as the power and utilities industry. The strikingly low percentages of women in executive positions within this sector indicate a prevailing gender disparity. This extends to sectors that underpin circularity, accentuating the need for a comprehensive involvement of women across the CE spectrum rather than being confined to the informal sector or activities with limited technology use.

In essence, these insights emphasise the vital role of women in advancing sustainability agendas in CE. They underscore the urgency of breaking down gender barriers in decision-making roles across various sectors to ensure a more inclusive, equitable, and successful transition to circularity (Joshi, 2022).

The historic election of Ursula von der Leyen as the President of the EC in 2019 marked a significant milestone, as she became the first woman to hold this esteemed position. In her inaugural speech to the European Parliament, von der Leyen expressed her vision for revitalising European democracy, indicating the beginning of a 'new push' towards gender equality and women in decision-making roles (European Commission, 2019c).

3 Empowering women in decision-making roles in the circular economy

The circular economy, a concept that has gained significant traction in the most recent decade, represents a transformative economic model that seeks to reshape prevailing production and consumption patterns profoundly. Notably, scrutinising CE through a gender lens becomes imperative to unveil its capacity to foster equity.

For CE to emerge as an enduring, equitable, and holistic framework, it necessitates a societal, economic, and political structure rooted in gender equality. The incorporation of a gender perspective into the public policies that steer and fuse this transition stands as crucial. This awareness is grounded in understanding structural dynamics and their capacity to influence and, to some extent, shape the eventual outcomes of this transition (Joshi, 2022).

Public policies and programmes, if they overlook a gender perspective and evade gender mainstreaming, maintain existing injustices. For instance, such oversights might exacerbate women's vulnerability to risks linked to waste disposal and unsafe work

environments. The consequence is twofold: the continuation of inequalities and the missed potential for comprehensive resolutions. Therefore, the true efficacy of the CE initiatives hinges on their capacity to integrate a gender-sensitive approach into their framework, defending gender equality and ensuring that the positive impact extends across the entire societal spectrum (Joshi, 2022).

As argued by Kukovič (2023b), when it comes to making decisions, men and women differ; we might say they balance each other out (Kathlene, 2001). Reingold (2008 in Kukovič, 2023b) stated that women provide fresh aspects to the decision-making process by involving citizens as much as possible, encouraging greater democratic openness. Unlike their male counterparts, they spend more time recognising people's needs and listening to the electoral body, which is how they attain the shared goals of the local community. Beck (1991 in Kukovič, 2023b) said that males frequently describe women as being too emotionally interested in the problems of their local community, which hinders them from being analytical enough. This aspect of gender differences in decision-making underscores the importance of diverse and inclusive leadership, particularly in European democracy and the European response to crises (e.g., the COVID-19 pandemic). Embracing a variety of perspectives and approaches can lead to more comprehensive and practical solutions that consider the needs and concerns of all citizens. As Ursula von der Leyen embarks on her mission to push European democracy forward, these gender-related insights can inform the development of policies and strategies that prioritise consultation, inclusivity, and constructive dialogue, ultimately enhancing the democratic foundations of the EU.

The underrepresentation of women in key decision-making positions within policy areas linked to climate change and the environment is a concerning reality. This gender disparity reflects an imbalance and potentially leads to overseeing critical issues disproportionately affecting women, notably highlighting gaps within policies aligned with the *Green Deal* initiative.

A simple statistic emerges in the context of EU Member State governments: a mere 27% of government ministers responsible for environmental and climate change policies are women (European Institute for Gender Equality, 2023). This data underscores a significant gender gap in roles in areas that hold the potential to shape the future of our planet.

Amongst this scenario, it is urgent to recognise that the transition to environmentally sustainable practices presents an opportunity for substantial job creation, potentially yielding up to one million new jobs by 2030. In pursuing gender equality, fostering avenues for skill development accessible to all is pivotal. By ensuring that relevant skills are encouraged and made accessible across gender lines, we lay the foundation for a future that is not just ecologically sustainable but also promotes gender parity and inclusivity. This convergence of environmental sustainability and gender equality signifies a path

towards a more reasonable and prosperous world (European Institute for Gender Equality, 2023).

Furthermore, gender equality and women's empowerment are universal values underpinning the SDG. Consequently, gender equality emerges as an inherent component in steering us towards inclusive and sustainable development (Albaladejo et al., 2021).

Here, CE, as a transformative model, proposes a radical shift in economic paradigms, radically transforming prevailing production and consumption patterns. Positioned as a potential paradigm shift, CE offers a promising avenue for addressing systemic challenges. In this light, it can be seen as a catalyst and instrument for achieving multiple SDGs (Schroeder et al., 2019).

As mentioned, a comprehensive understanding of how CE can contribute to greater equality becomes crucial to much more profound analysis in the future.

This exploration could discover the potential of CE to overlay the way for gender-reasonable development, encapsulating environmental sustainability and social progress (Albaladejo et al., 2022).

Existing research (Chavatzia, 2017) reveals a concerning pattern: women are disproportionately represented in low value-added, informal, and end-of-pipe activities within CE, which include tasks like recycling, reuse, and waste management. However, women's participation diminishes when the focus shifts to higher value-added circular activities, such as industrial eco-design and developing circular products involving advanced technologies. This discrepancy is partly a consequence of women's limited engagement in science, technology, engineering, and mathematics (STEM), primarily influenced by gender-based societal norms and the division of labour.

From the survey distributed to female students enrolled in higher education by field of study, the world average, and research made by UNESCO in 2017, for instance, on a global scale, both revealed an interesting fact: only around 30% of higher education students enrolled in STEM-related disciplines are women. This disparity is also evident in key sectors like power and utilities, which are pivotal in transitioning to circular practices. In these sectors, men overwhelmingly dominate positions, with women accounting for 5% of executive board members, 21% of non-executive board members, and 15% of senior management roles (Albaladejo et al., 2022; UNESCO, 2017).

This portrayal underscores the persistence of gender disparities within CE and its foundational sectors. Consequently, achieving a just and inclusive transition towards circularity necessitates the involvement of women in informal or low-productivity roles and robust participation across the entire spectrum. Bridging the gender gap within CE demands broader and more equitable access to opportunities in both informal and formal

sectors and dismantling barriers that impede women's engagement in roles within the STEM fields (UNESCO, 2017).

A study conducted in 2020 demonstrates a compelling correlation: companies that witnessed an improvement in gender diversity on their boards between 2013 and 2018 showed heightened environmental management. These companies were 60% more likely to reduce energy consumption intensity, 39% more likely to cut greenhouse gas emissions, and 46% more likely to curtail water usage (FB Analytics, 2020). This insight underscores that the underrepresentation of women could impede progress in achieving and decelerate the much-needed transition towards sustainable practices (Albaladejo et al., 2022).

This revelation is indicative of a profound interplay between gender diversity, environmental conscientiousness, and objectives. It suggests that achieving gender equality within local/regional CE roles is a matter of fairness and a strategic imperative for CE's success.

Considering these findings, the formulation of policies that proactively foster the recruitment, advancement, and retention of women in management positions assumes critical importance. This proactive stance not only enriches organisational diversity but also fuels the momentum towards a more sustainable and circular future, harmonising the agendas of gender equality and environmental responsibility.

Indeed, Albaladejo et al. (2022) argue that the connection between CE and gender extends beyond the conventional boundaries of productive activities. This linkage is evident not only in the formal economic realm but also within the domestic sphere, as well as within alternative economies and spaces outside traditional paradigms. Recognising this broad spectrum is crucial to fully understanding the depth and diversity of women's involvement in local/regional circular and environmentally conscious practices (Albaladejo et al., 2022).

However, it is vital to move beyond the perspective that solely represents women's contributions within CE as a response to discrimination and weakness. While it is true that gender disparities have often led women to engage in certain circular practices, it is equally important to empower women to access opportunities that enable them to lead transformative change across all sectors and fields. This empowerment signifies rectifying a historical imbalance and harnessing the full potential of women in driving circularity across the entire socio-economic spectrum. Ultimately, equal access to executive roles in the context of CE should be an aspiration that transcends sectors, allowing women to emerge as change agents irrespective of the sphere in which they operate (Albaladejo et al., 2022).

4 Conclusion

While CE is viewed as a paradigm based on natural evolution, the result is that ‘people’ must be seen as the primary players since any change or evolutionary adoption constantly touches them (Tavera Romero et al., 2021). A prevailing notion is well captured by Kirchherr et al. (2017), according to whom CE notion is associated with ‘... end-of-life concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, thus operating at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), to accomplish sustainable development, which implies creating environmental quality, economic prosperity, and social and gender equity, to the benefit of current and future generations’ (Kirchherr et al., 2020: 222-224; Corvellec et al., 2022).

EU (or other relevant) documents may mention the gender dimension. At present, however, these references often remain at a rhetorical level, lacking concrete strategies or action plans for achieving greater gender equality and women’s inclusion (European Commission, 2020; Irigoien, 2021; Koukoulis-Spiliotopoulos, 2008). Neglecting to integrate a gender perspective into policies related to CE risks spreading existing gender inequalities concerning women’s participation and access to the opportunities and benefits promised by CE. Gender equality is not just a peripheral concern – it is a foundational element for attaining sustainable development, which stands as the ultimate goal of CE. Disregarding the gender lens and not leveraging women’s full potential as catalysts of change within CE strategies might inadvertently reinforce historical discrimination and disadvantages women face.

The analysis undertaken in this research aligns closely with the research questions that guide our investigation. Our main findings of women’s impact on CE are nothing short of transformative. Through diverse perspectives, inclusive decision-making, and long-term vision, women enrich the CE landscape with fresh insights and innovative solutions. Their commitment to social responsibility ensures that CE thrives economically and promotes equity and societal well-being (Chavatzia, 2017; European Institute for Gender Equality, 2023; Unay-Gailhard & Bojnec, 2021; United Nations, 2023).

We found that women’s abilities in innovation and adaptability overlap with the path of CE evolution, driving the development of new technologies and sustainable business models. Their mentorship and empowerment initiatives foster a new generation of leaders, creating a robust talent pipeline for the CE community.

In the spirit of collaboration and networking, women amplify the global impact of CE, connecting stakeholders and advancing knowledge sharing. Their advocacy for sustainable practices drives industries towards circularity, reducing waste and conserving resources.

Furthermore, the resilience and determination of women make them indispensable in overcoming challenges and navigating the complexities of transitioning to a circular economy. Women exemplify the values of sustainability, equality, and responsible resource management (Gharbi et al., 2022; Leach et al., 1999; Leuenberger & Lutte, 2022; Vérias, 2015).

As we may note, women who are leaders can serve as role models, inspiring individuals from all backgrounds to engage in CE and contribute to a more inclusive future. Their journeys embody the transformative potential in shaping a world where environmental sustainability and social justice go hand in hand.

As we progress towards a circular and sustainable economy, their influence transcends industries and borders, forging a future where CE thrives, society additions, and opportunities thrive for all.

As evidenced through the brief discussion of local/regional EU policies on CE, it is evident that while the concept of CE has gained substantial traction, the gender dimension and women in leading position needs to be implemented more in practice (European Commission, 2015; 2023a; 2023b; Irigoien, 2021; United Nations, 2023).

There is a little disconnect between acknowledging the gender dimension and actual policy implementations that resonates with the observation made in the *EU Gender Equality Strategy 2020–2025* (European Commission, 2020).

The highlighted discrepancy between rhetoric and action underscores the need to bridge the gap and proactively embed women's considerations into the local/regional CE management framework. The insights provided in the discussions above mirror this critical gap in the current CE discourse, emphasising the potential risks associated with neglecting gender perspectives in policies related to sustainability and circularity.

Women's unique contributions to local/regional circular practices, be they through inclusive management, diverse decision-making approaches, or advocacy for gender equality, can potentially reshape the trajectory of CE policies in the EU. This underscores the need for a more comprehensive integration of gender perspectives and principles into CE strategies, thereby weaving gender equality into the evolution of circularity. This necessitates gender-responsive policymaking, which demands an understanding of gender roles, the embedded gender-based division of labour, and the inequalities that underpin our current local/regional EU system.

When joined effectively, such contributions can permeate the CE paradigm with equity, social justice, and inclusion principles, setting the foundation for a transformative and just transition. Therefore, investigating how women catalyse CE local/regional

development becomes even more important. And this small research may bust future research, raising awareness of women in the CE.

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