



Research article

Green finance and gender equality: Keys to achieving sustainable development

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Abstract: This research investigates the relationship between Green Finance (GF) and Gender Equality (GE) within the context of sustainable development, revealing that existing frameworks lack an integrated approach to incorporating GE into GF. By reviewing 125 relevant articles published from 2004 to 2024, the author also found that women’s empowerment significantly promotes GF development, while gender diversity enhances environmental management and corporate performance. Furthermore, the contributions of women in climate adaptation and environmental sustainability should not be overlooked. In conclusion, there is a pressing need to incorporate a gender perspective into GF policies and practices, which calls for further exploration of gender-sensitive financing models and the culture impact on GF and GE, aiming to achieve the Sustainable Development Goals (SDGs) more effectively.

Keywords: green finance (GF); gender equality (GE); sustainable development of work; systematic review

JEL Codes: J7

1. Introduction

In today’s world, green finance (GF) and sustainable development (SD) have established a close and forward-looking connection, providing us with new ways of thinking and solutions to a series of challenges we face. SD is not only the key to ensuring the long-term coexistence of humanity and the

planet but also the foundation for addressing urgent global issues such as poverty, inequality, and environmental degradation (Cannon & Dobbin, 2022; Yu et al., 2023). However, the literature lacks a systematic discussion on how GF addresses these challenges, especially regarding the impact on economic and environmental aspects and is deficient in an in-depth elaboration of its importance and novelty. Gender inequality creates barriers in many fields, including education, employment, healthcare, and political participation (Odrowaz-Coates, 2021). The 2030 Sustainable Development Goals (SDG5) particularly emphasize the importance of gender equality (GE), clearly stating that it is an indispensable part of achieving the other 16 goals. Effective strategies to address gender inequality are crucial for enhancing the ability to combat climate change and promoting climate-resilient development (Shang et al., 2022). However, research lacks a comprehensive framework that integrates GE and GF, which constitutes a significant research gap.

GF refers to financial institutions supporting environmentally friendly and sustainable industries through innovative financial products and services, achieving net-zero transition (Huang et al., 2022, 2023; Mbanyele et al., 2024). This type of financial transaction follows ESG principles. Despite facing challenges such as unifying green financial standards and improving information sharing, countries have started to introduce products like green bonds and credits, significantly promoting high-quality green innovation and ensuring more efficient and effective green technological advancement (Huang et al., 2022). However, existing research has not fully explored the impact of GF on economic growth and renewable energy development and this has become an important research gap. Additionally, the collaboration between GF and GE in the SD of Work is shaping a resilient and forward-looking financial system. Research shows that incorporating GE into SD strategies can not only reduce financing constraints and enhance corporate social responsibility but also promote sustainable economic development (Andrijevic et al., 2020; O'Manique & Fourie, 2016). Despite this, current policies and practices have not yet fully harnessed the combined benefits of GF and GE, highlighting the need for more empirical research and policy recommendations. On this basis, I aim to clarify the importance of GF in promoting green technological advancements and economic growth and further explore the role and impact of GE in GF. I hope these additions will enrich the literature, fill the aforementioned research gaps, and provide valuable references for future policy-making and practical operations. Therefore, by integrating GE and GF, I aim to advance the realization of global SD.

2. Materials and methods

2.1. Literature review: Analysis of research on GF and GE

The intersection of GF and GE has recently attracted widespread attention in various aspects and impacts through recent studies. Using Web of Science as an example, 485 top-tier journals containing GF and GE can be searched using GF and GE as keywords. By conducting a comprehensive cross-disciplinary analysis of the literature from 2004 to June 2024, 125 SSCI, SCI, and ESCI publications related to the topic were selected. Combining keyword searches, trend analysis, and correlation ranking, the research on GF and GE is discussed from different perspectives (as shown in Figure 1).

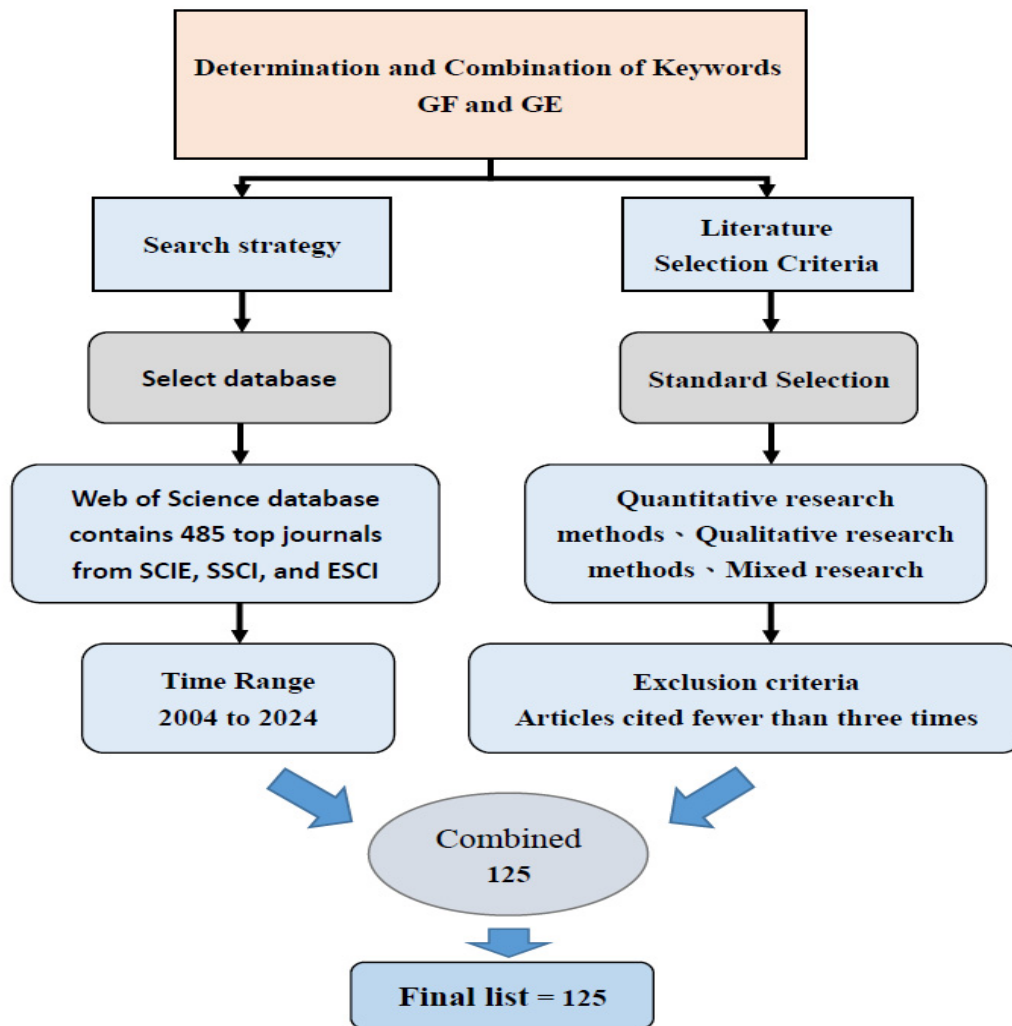


Figure 1. GF and GE Keywords Literature Selection Flowchart.

Supporting environmental sustainability and mitigating climate change GF remains an emerging interdisciplinary field; its key areas include green bonds, green credit carbon markets and climate finance policy (Pasupuleti & Ayyagari, 2023). GF products mainly include Green Bonds, ESG Funds, Green Deposits, and Green Industry Financing Policies. The core purpose of this system is to promote economic growth while protecting our living environment (Wang et al., 2022). GF supports environmentally friendly investments and financial products, guiding funds toward projects and companies that can reduce pollution, improve efficiency, and promote environmental protection (Volz, 2018). However, Afzal et al. (2022) found that financial development has a negative impact on SD, further pointing out the necessity of formulating GF policies and sustainable financing and investment solutions.

As the world faces increasingly severe climate change challenges, GF has become a key tool in driving countries to achieve low-carbon and greener economic transitions (Cen & He, 2018; Jha & Bakhshi, 2019; Lee, 2020; Mohd & Kaushal, 2018; Mumtaz & Smith, 2019; Zhang & Wang, 2021). For example, China's GF reform pilot zones and Singapore's ESG disclosure requirements both reflect efforts to achieve greater environmental and social benefits (Chen et al., 2022). Compared to traditional

finance, GF pays more attention to environmental factors, covering ESG issues (Sun et al., 2023; Xie, 2024; Yang et al., 2022).

GF is an important mechanism for promoting SD of Work, and GE has significant differences in its impact on women and men. Previous literature, from an interdisciplinary perspective, synthesizing research results from economics, environmental science, and social science, deeply explores the relationship between GF and women's empowerment and how these factors together promote SD of Work, address climate change, and reduce gender disparities (Afzal et al., 2022; Jha & Bakhshi, 2019; Lee, 2020; Mohd & Kaushal, 2018; Mumtaz & Smith, 2019; Zhang & Wang, 2021). It is proven that GE, especially in the context of corporate governance, affects Corporate Environmental Responsibility (CER). The gender diversity of bank boards (BGD) positively influences eco-innovation and emissions management, although national gender inequality can mitigate this impact. Promoting women's empowerment through financial literacy also plays a crucial role in promoting green microfinance, indicating that policies promoting literacy are essential for sustainable GF initiatives (Belingheri et al., 2021). Additionally, the potential of empowering women through green growth is evident in sectors such as tourism, where tailored educational programs and financial support for female entrepreneurs are needed (Zhang et al., 2022). The literature also emphasizes the need for a comprehensive policy framework and financial tools to support GF initiatives, while gender-targeted programs can provide support for GF initiatives (Bhatnagar & Sharma, 2022; Debrah et al., 2023). By providing microloans to women in green sectors, these financial tools not only support the development of environmentally friendly businesses but also enhance women's status and decision-making power within communities and families. In addition, the gender pay gap in the GF field is also an important topic of discussion. Researchers have found that even when women and men perform the same jobs, women often receive lower pay (Mia et al., 2023; Saha et al., 2022). This phenomenon highlights the issue of gender inequality, which requires more effort to resolve (Mani et al., 2020; Puaschunder, 2021).

Regarding green travel choices, compared to men, women are more influenced by external factors and are more likely to choose low-carbon transportation methods (Dai et al., 2022; Dawkinset al., 2023). They are more inclined to engage in low-carbon transportation methods (Javaid et al., 2020; Li et al., 2018; Mundaca et al., 2022). This indicates that women may have a higher interest and participation in low-carbon, sustainable travel, which may be related to their deeper concern for environmental issues (Fletcher et al., 2019). O'Garra and Fouquet (2022) as well as Sovacool et al. (2022) emphasize the importance of promoting low-carbon lifestyles and GE in developing countries from the perspectives of lifestyle, climate policy, and household consumption behavior, pointing out that gradually achieving a low-carbon future from the household level is key.

Howell (2013) and Dubois (2019), and Wang et al. (2021) have also extensively explored this perspective. Research indicates that GE plays a crucial role in promoting GF and SD, as it ensures the fair distribution of resources and opportunities, which is essential for achieving the SD of Work (Carlsen & Bruggemann, 2021; Leach et al., 2016). GE plays a key role in the investment decision-making process, profoundly influencing financial success and sustainability. By advocating for equal opportunities for female leadership, supporting gender diversity in corporate governance, and incorporating gender perspectives into the investment process, investors can help narrow the gender gap and promote more equitable and inclusive investment outcomes. In this regard, advancing Gender-Responsive Budgeting (GRB) is a crucial tool, as it ensures budgetary decisions consider gender impacts, thereby making public administration more fair and accountable (Martínez Guzmán, 2024; Sraieb & Labadze, 2022). For example, the GRB process at Ferrara University has evolved from an

accountability role to a performance evaluation role, demonstrating the potential of incorporating gender factors into strategic policies (Dorman & Cipler, 2022). In addition, it has been proven that gender diversity in corporate boards has a positive impact on the company's environmental performance, indicating that promoting gender diversity can improve environmental outcomes, especially in economically and politically uncertain contexts (Plaček et al., 2022). Furthermore, international financing mechanisms, such as programs supporting Women, Peace, and Security (WPS), often fail to provide sufficient funding to support gender-inclusive peace processes, highlighting the need for more financial support to uphold the gender clauses in peace agreements (Dorman & Cipler, 2022). The investment of the private sector in sustainable energy projects is also crucial. Japan's efforts to attract private investment in SD projects are a very good example (Oppiet al., 2021). Finally, although the EU's development cooperation budget aims to promote GE, due to gender blind spots in external services, it often cannot truly achieve accountability to women (Edmans & Kacperczyk, 2022). The above literature conducts trend analysis using a time series as shown in Table 1.

Table 1. GE and GF: evolution, progress, and future prospects.

Time Periods	Focus	Case Studies
2000s - early 2010s	GE began to be emphasized in policies, aiming to ensure fair distribution of resources and opportunities.	The international financial mechanisms supporting the Women, Peace, and Security (WPS) agenda have developed, but funding remains relatively limited.
Mid-2010s	The rise of GF aims to promote SD, yet the role of GE has not been fully emphasized.	The promotion of Gender-Responsive Budgeting (GRB), the GRB process at the University of Ferrara evolved from an accountability tool to a performance assessment tool.
Late 2010s	Research indicates that gender diversity on corporate boards has a positive impact on environmental performance in uncertain economic and political environments.	Increased private sector investment in sustainable energy projects, such as efforts in Japan.
Early 2020s	GE is gradually being integrated into investment decisions, becoming a key factor in the success of GF projects.	The EU's development cooperation budget supports challenges and progress in GE, as gender-blind practices within external services impact accountability mechanisms.
Current and future outlook	Increasing evidence supports the critical role of GE in advancing GF and SD of work, with expectations of further integration of gender perspectives in future policies and practices.	International and local financing mechanisms are gradually improving to more effectively provide funding for inclusive peace and SD processes.

From the above era development and research trends, we can observe the following important insights and changing trends:

(1) The evolution of policy emphasis on GE: Since the early 2000s, GE has gradually shifted from policy declarations to concrete practices and has been strengthened and promoted in multiple fields.

From the early goals of equitable distribution of resources and opportunities to incorporating GE into investment decisions and GF projects, it reflects the deepening recognition of the importance of GE by policymakers and society.

(2) Development of international financing mechanisms: The timeline shows that international and local financial support systems have played an important role in promoting peace, security, and SD. This is especially true for financing mechanisms targeting GE, although early financial support was limited, investments in GE have gradually increased over time and have played a critical role in GF and SD fields.

(3) The connection between GE and SD: Since the mid-2010s, the rise of GF has highlighted the importance of SD. From this period, the role of GE in SD has gradually been recognized. Especially in the early 2020s, GE was seen as one of the key factors for the success of GF projects. This recognition reflects the profound intrinsic link between GE and environmental protection, socio-economic development, and the SD of work.

(4) The value of gender diversity in the business environment: Research shows that gender diversity has a positive impact on a company's environmental performance. This proves that in a rapidly changing economic and political environment, companies must recognize the importance of gender diversity and incorporate it into corporate governance and decision-making processes to improve overall performance and SD capabilities.

(5) Challenges and future prospects: Although the status of GE in policy and financial support has significantly improved, many challenges remain, such as gender-blind approaches existing in external services. Future prospects indicate that more policies and practices are expected to further integrate gender perspectives to achieve a more inclusive and SD process.

2.2. Empirical analysis: Exploring the practical impact of GF on GE

Through in-depth research on GF and GE, GF plays a significant role in promoting GE and SD. Numerous examples worldwide demonstrate their synergistic effects, providing important foundations for further discussions and policy formulations in this field. By combining GE principles with financial policies, we can achieve a more inclusive and fair economic development. The following content will explore the actual impact of GF on GE, supported by cases and studies. I selected 125 top journals from the Web of Science, identifying 12 major themes concerning the current discussion of the impact of GF on GE, analyzed as follows:

(1) Financial Knowledge and Women's Empowerment:

Financial knowledge plays a crucial role in enhancing women's economic empowerment and supporting the sustainability of small green credit projects. Lee and Huruta's (2022) study found that financial education is vital in enhancing women's ability to utilize such credit schemes, enabling them to have better financial and decision-making skills, enhancing their economic independence and promoting GE. This study emphasizes the role of financial knowledge as a bridge between women's empowerment and environmental financial tools, highlighting that increasing financial literacy not only enhances individual empowerment but also ensures the success and sustainability of green financing projects (Lee & Huruta, 2022).

(2) Gender Diversity in Boards of Directors:

Gender diversity in boards of directors has a positive impact on the adoption of Environmental Management Systems (EMS) and company performance (Rehman et al., 2020). Through empirical analysis, it was found that boards with a higher proportion of women achieve better results in the

adoption of Environmental Management Systems (EMS) and environmental responsibility, particularly in the banking sector. This also positively affects corporate financial performance, emphasizing the importance of gender-diverse management in enhancing SD and corporate competitiveness (Gangi et al., 2023).

(3) Green Entrepreneurship and Women's Empowerment:

In the tourism industry, enhancing women's empowerment is crucial for green entrepreneurship. Green entrepreneurship refers to business activities that prioritize SD and environmental protection. These ventures not only contribute to economic growth but also address climate change, protect ecosystems, and promote comprehensive social development. In the field of green entrepreneurship, women often face challenges such as limited resources and restricted access to relevant education and training opportunities. Empowering women involves improving their economic conditions, enhancing educational levels, and social status, enabling them to engage in green entrepreneurial activities. Increasing women's participation in this field not only promotes GE but also inspires innovation, bringing overall social and economic benefits. Targeted education and financial support are crucial for achieving this goal (Radović-Marković & Živanović, 2019). Targeted education enables women to acquire the knowledge and skills required for green entrepreneurship, while financial support (such as grants, low-interest loans, etc.) can address funding shortages that women may face during the initial stages of entrepreneurship, alleviating their financial pressures and encouraging more women to enter the field of green entrepreneurship. Empowering women in the tourism industry, especially in participating in green enterprises, is not only a crucial pathway to achieving GE and social justice but also a key driver for advancing SDGs. Providing targeted education and financial support effectively stimulates women's entrepreneurial potential, accelerating the green transformation of the tourism industry. Therefore, governments and various sectors of society should focus on and support women's development in the field of green entrepreneurship, creating more equal and favorable conditions for them.

(4) Sustainable Food Systems:

Viewpoints provided by empirical analysis indicate that women's contributions to sustainable food systems are often underestimated, especially in cases like breastfeeding. According to researchers such as Smith et al. (2023), acknowledging the contributions of women in carbon offset programs can enhance environmental sustainability. First, breastfeeding, as a natural and direct method of feeding, holds multiple benefits for both infants and mothers. For infants, breast milk is the initial and optimal source of nutrition, containing antibodies that can boost the infant's immune system; for mothers, breastfeeding helps with uterine recovery and may reduce the risk of specific types of cancer. Besides these health benefits, breastfeeding also carries significant environmental advantages by reducing the negative environmental impact of formula production, packaging, and transportation processes. Incorporating women's contributions such as breastfeeding into carbon offset programs signals the formal recognition and evaluation of these contributions. From an environmental conservation perspective, this not only reduces carbon emissions but also promotes the efficient utilization of environmental resources, enhancing environmental sustainability. For example, supporting and promoting breastfeeding can reduce the demand for formula, thereby lowering the carbon footprint associated with formula production. Furthermore, integrating women's contributions into carbon offset programs helps raise awareness of the importance of these contributions. This not only promotes GE but also supports broader social and environmental SDGs.

(5) Technological Innovation and Industrial Upgrading:

Empirical analysis demonstrates that GF significantly enhances Green Total Factor Productivity

(GTFP) by promoting technological innovation and driving industrial structural upgrading. This conclusion was proposed by Ramos et al. (2022) in the study. GF encompasses various fiscal and financial policies, market tools, products, and services to support climate and environmental goals. By funding clean energy, energy-saving technologies, green transportation, and other SD projects, GF facilitates technological advancement and scaling in these areas. Ramos and colleagues' research indicates that the impact of GF on different regions is not uniform, influenced by specific regional conditions such as natural resources, economic structures, technological capabilities, and policy environments. This suggests that when promoting GF strategies, policies and measures need to be adjusted based on regional characteristics to achieve optimal green development effects (Ramos et al., 2022).

(6) GE in Agricultural Investment:

Recent research, such as that by Xu & Zhao (2023), proposes a crucial and insightful perspective: investing in resilient crop and livestock production systems not only effectively reduces gender gaps but also enhances environmental sustainability. This study highlights the significant role that GE plays in agricultural investment and explores this through several dimensions. First, investing in resilient crop and livestock production systems benefits women agricultural workers, thereby narrowing gender gaps. In traditional agricultural systems, due to gender inequality in labor and resource allocation, women agricultural workers often face more challenges and constraints. Focusing investments on enhancing the adaptability and flexibility of agricultural production systems not only reduces women's vulnerability to natural disasters and market fluctuations but also provides them with more participation opportunities and empowerment. From the environmental sustainability perspective, developing resilient crop and livestock production systems helps enhance biodiversity and reduce agriculture's reliance on and depletion of natural resources. These systems typically emphasize recycling, natural harmony, and reduced use of chemicals, significantly mitigating the negative environmental impacts of agriculture. Xu & Zhao (2023) emphasize that achieving these benefits requires efforts and coordination from policymakers, agricultural enterprises, non-governmental organizations, and other stakeholders. Specific measures include but are not limited to formulating agricultural policies that promote GE, providing tailored professional training for female agricultural workers, and investing in the development of more sustainable agricultural technologies (Xu & Zhao, 2023).

(7) GE in Sustainable Energy Projects:

Promoting GE in sustainable energy projects offers dual benefits: advancing human rights and GE while attracting private investment. For example, India's Solar Mamas program in Rajasthan, by providing small-scale energy technology training to rural women, not only enhances their empowerment but also promotes GE and entrepreneurial spirit in the energy technology sector, attracting private investment (Mininni, 2022). Furthermore, gender-diverse boards of directors contribute to adopting clean energy, enhancing companies' reputation among stakeholders (Zhang et al., 2022).

(8) Gender Disparities in Household Energy Services:

In certain regions, there are gender disparities in awareness and utilization rates of household energy services. Addressing these disparities through awareness campaigns is crucial to further support sustainable energy policies (Issa, 2023). Gender audits demonstrate partial effectiveness in incorporating gender issues into energy policies, creating more inclusive and fair energy systems that attract investors interested in SD (Clancy & Mohlakoana, 2020).

(9) GE in Electric Cooperatives:

The EU's electric cooperatives often embody values of fairness and equality, potentially attracting investors who prioritize social responsibility (Łapniewska, 2019). However, addressing existing power

asymmetries is crucial to ensure that renewable energy projects do not merely replicate structural inequalities, making them fairer and more appealing to ethical investors (Johnson et al., 2020).

(10) Energy Access and GE:

Addressing gender inequalities in energy access issues, such as initiatives in rural Brazil, ensures equal benefits for both men and women, enhancing community support and project success rates, thereby attracting more investment (Leduchowicz-Municio et al., 2023). In the EU's Fair Energy Transition initiative, gender has not yet been integrated into its mainstream policies, indicating a significant opportunity to combine GE with energy goals (Carroll, 2022).

(11) The Impact of Gender Diversity in Boards of Directors on Company Performance:

Studies indicate that the correlation between gender diversity in boards of directors and environmental performance is particularly significant in stable economic and political environments, making these companies more attractive to investors (Sraieb & Labadze, 2022). Private equity investors are increasingly feeling pressure to achieve ESG goals. Integrating GE can enhance investment valuations by aligning with these goals (Bian et al., 2023).

(12) Gender Audits in the Energy Sector:

Implementing gender audits in the energy sector can integrate gender issues into policies, enhance capabilities, and demonstrate a commitment to GE. This not only attracts investment through gradual and inclusive methods but also ensures continuous improvement in policies and practices (Clancy & Mohlakoana, 2020). Empirical analysis of gender audits in the energy sector highlights the importance of GE in energy implementation and its contribution to improving policies and practices. First, policies that incorporate gender considerations can more accurately meet the needs of different groups and make solutions more comprehensive and effective by enhancing policy inclusivity and implementation efficiency. Second, by conducting gender audits, the energy sector shows a firm commitment to GE, not only improving its social image but also attracting more investors and high-quality talent, thereby enhancing innovation and competitiveness. Additionally, the regular implementation of gender audits allows the energy sector to continuously track progress in GE, identifying new challenges and opportunities to provide impetus for ongoing improvement in policies and practices. Research by Clancy & Mohlakoana (2020) demonstrates the undeniable role gender audits play in promoting GE, enhancing the effectiveness and inclusivity of policies, strengthening industry image and competitiveness, and fostering continuous improvement and innovation. Through these empirical studies, we can see the inseparable connection between GF and GE. Investors should support equal development opportunities for women in leadership positions, promote gender diversity in corporate governance, and eliminate gender biases in investment activities. This can help narrow the gender gap in financial success and achieve more equitable and inclusive investment outcomes. Furthermore, Gender Responsive Budgeting (GRB) plays a crucial role in ensuring that budget decisions consider gender impacts, promoting fairness and accountability in public management (Martínez Guzmán, 2024; Sraieb & Labadze, 2022). The private sector's investment in sustainable energy projects also plays a significant role in promoting GE (Oppi et al., 2021). Incorporating a gender perspective into investment decisions and practices not only enhances organizational performance and environmental management but also contributes to the achievement of SDGs. In conclusion, the synergistic effects between GE and GF cannot be ignored; only through continued efforts and innovation can a fairer and more sustainable future be achieved.

3. Results

3.1. *The role and contribution of women in environmental sustainability*

The contribution and role of women in environmental sustainability, as seen through examples from various regions, are not only rich but also multifaceted (Haque et al., 2023). From the Vhembe region in South Africa to Mazandaran Province in Iran, and to Yunnan Province in China, women utilize their profound understanding of the local environment and unique position in the community to address climate change in various ways (Palacios et al., 2023). These strategies include livelihood and crop diversification, the application of indigenous knowledge systems, and the use of social capital (Sujakhu et al., 2023).

In Honduras and Ghana, women face challenges of gender asset gaps and labor divisions (Goli et al., 2023), yet through non-agricultural activities and emphasizing the need for financial support, they demonstrate resilience (Nuhu & Matsui, 2022). Similarly, in the Pacific Island nations and Fiji, women's networks and information dissemination are crucial for climate change adaptation, despite facing obstacles in decision-making processes and accessing external resources (Nyahunda & Tirivangasi, 2022).

In Latin America, the intersection of socio-economic factors such as education and livelihood diversification highlights the crucial role played by women in adopting climate-smart agricultural practices and utilizing climate information (Singh et al., 2022). This highlights the necessity to address gender-specific barriers and advocate for inclusive policies to enhance their roles in climate change adaptation and mitigation (Acosta et al., 2021; Yenglier Yiridomoh & Owusu, 2022).

In conclusion, despite facing numerous challenges in addressing climate change, women also exhibit significant resilience and innovation. By promoting inclusive policies and eliminating gender barriers, we can further leverage the critical role of women in environmental sustainability, ensuring recognition of their efforts and providing them with necessary resources and support.

3.2. *Case studies on promoting GE through GF*

GF has become a global focus for promoting GE. By studying the specific measures taken by different countries and regions such as the European Union, France, Malaysia, and Taiwan to promote GE, we can identify common trends and successful strategies. These case studies highlight that gender diversity is not only a moral consideration but also a key factor in improving the overall economic performance of businesses and society.

(1) Implementation Effects of Gender Quota Policies

Gender quota policies have been successful in the European Union and its member states, requiring a certain percentage of female members on the boards of listed companies. France, as a pioneer, set a legal target in 2011 and successfully implemented a 40% gender quota by 2017, surpassing this goal and becoming one of the EU countries that achieved it. This measure has not only enhanced gender diversity in corporate governance but also promoted broader social and cultural changes, increasing women's opportunities to participate in decision-making at the highest levels.

(2) Increasing the Proportion of Women on Boards

In addition to mandatory policies, many regions and countries are increasing female representation on corporate boards through encouragement and incentive measures. For example, in

Taiwan, state-owned enterprises and government-funded foundations have achieved a one-third gender balance. This is not only an example of the government's promotion of GE, but also demonstrates the effectiveness of policy intervention. The average proportion of female board members in listed companies in Taiwan has been increasing each year (see Figure 2). Based on data from 2022, the proportion of female directors in listed companies was 15.6%, an increase of 3.5 percentage points from 2012. However, the actual number of female directors remains significantly lower than male directors. In small and medium-sized enterprises, the number of female business owners is approximately 603,000, accounting for 37.3% of the total, an increase of about 129,000 businesses from 2012, showing a growth of over 27%. Furthermore, in state-owned enterprises, the proportion of gender balance reaching one-third continues to increase. In 2022, 73% of government-funded foundations and two-thirds of state-owned enterprises had boards with a one-third gender balance. Additionally, over 80% of government-funded foundations and state-owned enterprises had supervisors with a one-third gender balance.

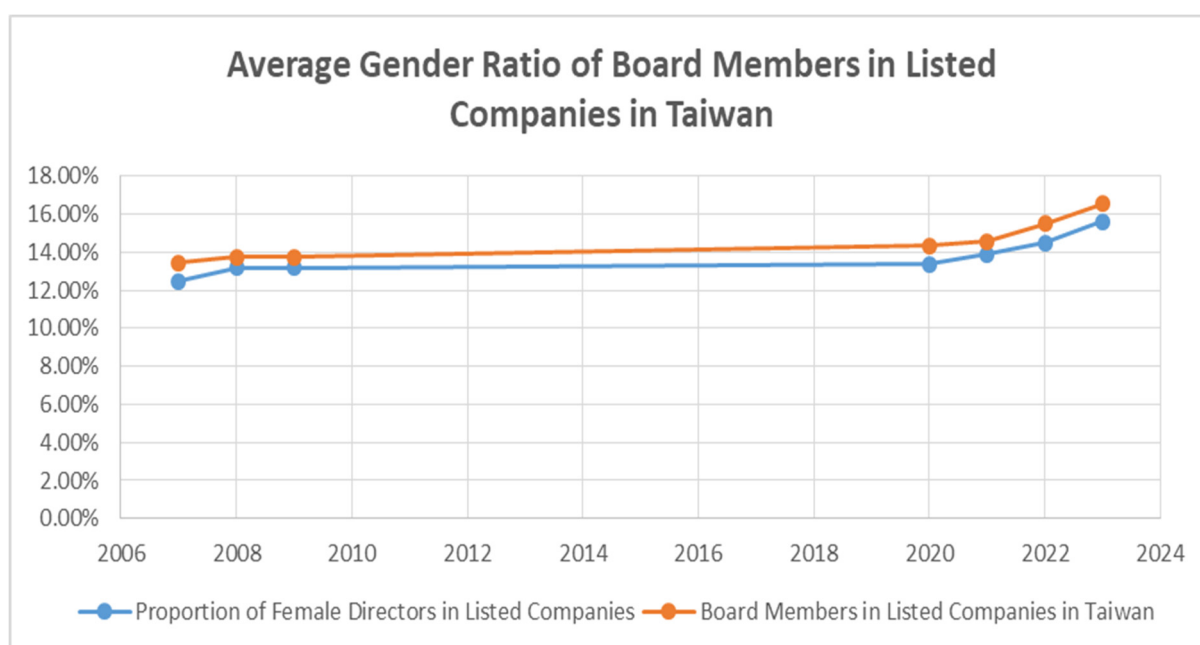


Figure 2. Average gender ratio of board members in listed companies in Taiwan. Source: Taiwan Executive Yuan 2024 Gender Image.

(3) Changes in Investor Roles

With the popularity of GE concepts, investors are beginning to realize the importance of GE in investment decisions. By supporting equal opportunities for women in leadership positions and advocating gender diversity in corporate governance, investors cannot only help narrow the gender gap but also promote more fair and inclusive investment outcomes. This marks a significant shift where investors are no longer solely focused on financial returns but are also concerned with corporate social responsibility and GE.

(4) Comprehensive Integration of Gender Perspectives

To achieve long-term GE goals, it is necessary to incorporate gender considerations at every stage, from policy formulation to implementation and evaluation. This requires a comprehensive approach

by governments, businesses, and various sectors of society to ensure GE when benefiting from policy dividends. Furthermore, challenging traditional gender roles and stereotypes, especially in male-dominated fields like the energy industry, is undoubtedly crucial for promoting gender equality.

Through the analysis of the above cases, we can understand that GF not only plays a key role in advancing environmental sustainability but also actively promotes gender equality. This highlights that achieving gender equality requires cross-industry, cross-disciplinary cooperation and effort, as well as the active participation and support of everyone.

3.3. Challenges of gender bias and inequality

Due to the combined effects of socioeconomic, political, and gender inequalities, women are particularly vulnerable to the impacts of climate change. The impacts of climate change worsen current vulnerabilities, resulting in higher mortality rates and increased burdens on families. In the Global South, socioeconomic and political inequalities, along with ineffective adaptation mechanisms, severely affect the livelihoods of marginalized groups, especially women, who are often discriminated against and ignored in climate intervention measures (Ngcamu, 2023). Gender plays a crucial role in shaping people's abilities to respond to the climate crisis due to social norms, asset control, and decision-making processes, creating complex vulnerabilities for women in developing countries (Dev & Manalo, 2023). Climate-induced disasters such as hurricanes, floods, and droughts have serious impacts on public health, including issues like food insecurity and malnutrition, particularly affecting women, infants, and children (Pérez-Escamilla & Moran, 2023). In Bangladesh, due to climate change, women face greater socioeconomic vulnerabilities, affecting their food security, water usage, health, and overall livelihoods (Tanjeela, 2023). Empowering women politically can reduce vulnerabilities to climate change, as evidenced by countries where women engage in civil society and political debates (Asongu et al., 2022). In South Africa, marginalized women's livelihoods face direct and indirect negative impacts due to climate change, with limited formal safety nets and gender-sensitive policies (Hlahla et al., 2022). In Pakistan, women's understanding of climate change is often based on personal experiences, highlighting the need for strong governmental measures to raise awareness (Memon et al., 2023). The Women's Climate Vulnerability (WCV) Index in Vietnam reveals various risks rural women face, emphasizing the need for evidence-based localized assessments to support resilience and adaptation (Quang, 2022).

Gender equality and GF are intertwined challenges that necessitate a diverse approach for the realization of sustainable development. Challenges in the realm of gender equality and GF include gender economic inequalities, making many women, especially female heads of households, more prone to poverty and residing in poor housing in lower-value urban and rural areas, making them more vulnerable to natural disasters. Gender inequalities severely limit women and girls' control over life decisions and access to basic resources, exacerbating their vulnerabilities to disaster risks and livelihood-related losses. In rural Bangladesh, due to social roles, unequal decision-making powers, and resource rights, women face greater flood vulnerability, weakening their adaptive capacities (Jerin et al., 2023). Inadequate disaster preparedness, lack of safe shelters, and risk mismanagement further exacerbate these vulnerabilities (Fatema et al., 2023). In Indonesia's Nusa Tenggara Province, disaster management plans often lack strategies supporting women's participation, underscoring the necessity of integrating gender equality into Disaster Risk Management (DRM) mainstreaming (Septanaya & Fortuna, 2023). Disasters exacerbate potential economic inequalities, limiting women's economic freedom and opportunities to

access recovery resources (Kreutzer et al., 2023). In sub-Saharan Africa, gender constraints hinder women's access to water, energy, land, and food, thereby limiting their ability to address climate change. Consequently, policies sensitive to gender issues need to be carefully formulated within the Water, Energy, Land, and Food (WELF) domain (Hlahla, 2022). Female-headed households, especially those reliant on agriculture, are more susceptible to extreme climate events, such as in Kerala, India (Aiswarya et al., 2023). Limited control over loan investments and financial resources further weakens the adaptive capacities of women in flood-prone areas (Naz & Doneys, 2022). Gender inequalities persist in accessing Climate Information Services (CIS), as technological solutions often limit access to financial resources and power dynamics, leading to unfavorable health outcomes, highlighting the necessity of gender-sensitive health interventions (Mapedza et al., 2022). In rural Nigeria, unequal responsibilities in household chores related to water and energy expose women to violence, health risks, and disempowerment, underscoring the necessity of fair resource access (Sani & Scholz, 2022), while mandatory climate factors and lack of coordination may hinder achieving SDGs by 2030.

To effectively address gender inequalities under climate change, gender perspectives must be mainstreamed throughout the entire strategic cycle of mitigating and adapting to climate change. This approach ensures gender coordination by involving men and women of all ages in decision-making processes. Studies show that current gender discourse in climate action often narrowly focuses on women's involvement in poverty reduction and empowerment projects, overlooking broader social norms and diverse needs of marginalized groups, including non-binary categories and minority ethnicities (Dev & Van De Fliert, 2023). Elevating women's leadership in climate governance is crucial for achieving more equitable outcomes, as evidence shows that inclusive leadership rooted in gender justice is more effective (Wray et al., 2023). The intersection of gender, education, and climate justice for adolescent girls in low- and middle-income countries needs enhanced coordination to address potential gender inequalities (Kwauk & Wyss, 2023). Climate adaptation actions must be consciously designed to promote gender equality, with policies aligning with SDG 5 not only considering women but also addressing intersectional and gender aspects (Roy et al., 2022). Incorporating gender into climate policies is also crucial, as demonstrated by the need for governance levels to promote gender equality in budgeting and policy implementation, which remains inconsistent and underfunded (Cohen, 2018; Smith et al., 2023). Moreover, providing tailored education programs and financial support for female entrepreneurs can promote women's empowerment in the green economy, including through sectors like tourism (Radović-Marković & Živanović, 2019). Developing tools such as green feeding instruments ensures recognition and funding for women's contributions to sustainable food systems under carbon offset schemes (Cohn & Duncanson, 2023). Finally, adopting ecological plans with flexible reward systems, such as ecological credits models, can align farmers' participation with budget constraints to promote sustainable agricultural practices while addressing gender disparities in rural areas (Ampaire et al., 2020). These comprehensive strategies highlight the interconnectedness of GE and GF and emphasize the necessity of adopting comprehensive and inclusive policy approaches.

4. Gender specificity in GF

4.1. Opportunities and challenges for women in the green industry

As the global economy transitions, the green industry—encompassing areas like renewable energy, green construction, and green entrepreneurship—has become a crucial engine for future

development (Baruah & Gaudet, 2022; Nhamo & Mukonza, 2020; Sharma et al., 2022), positively impacting the economy, communities, and the environment. These fields not only provide pathways for SD in human society, but also unprecedented employment opportunities for women. However, behind these opportunities lie numerous challenges, especially for women.

First, the rapid growth of the green industry provides women with diverse career paths, offering more opportunities for them to contribute to environmental sustainability through roles ranging from technical innovation to business management. Yet, women's representation and influence in these fields face limitations stemming from societal traditional gender roles and underestimations of women's technical abilities (Baruah, 2017).

Second, governments and international organizations have recognized gender participation disparities and are beginning to implement targeted strategies to enhance opportunities for women in the green industry. Examples include South Africa's "Gender Framework in the Environment Sector" (Lindberg et al., 2023) and Canada's policies focusing on social equity (Lindberg et al., 2023). While these policies mark a step in the right direction, resolving these issues entirely will require more concrete actions and resource allocation.

Furthermore, challenges for women stem not only from gender discrimination in the job market but also from limitations in funding sources. Green entrepreneurship and sustainable business models often necessitate significant initial capital support, but women have significantly fewer opportunities to secure startup funding compared to men (Compion et al., 2022). Addressing this requires proposing innovative financial mechanisms and policy reforms to tackle gender inequalities in funding, a crucial step toward advancing GE in the green industry.

The expansion of the green economy has brought employment opportunities to fields such as renewable energy, green construction, and green enterprises (Sharma et al., 2022). However, realizing these opportunities is constrained by challenges in education, skills, and funding. For instance, despite providing opportunities in transitioning to a green economy, Zambia highlights limitations faced by women in accessing education, skills, and financial resources (Namukombo, 2016). In Canada, although renewable energy creates more job opportunities than fossil fuels, women's participation remains limited due to societal barriers and a lack of comprehensive social equality policies (Lindberg et al., 2023). In a global context, as more and more women enter non-traditional employment sectors, they face unique workplace challenges due to physiological and anatomical differences, as well as limited data on female-specific occupational hazards. In Nigeria, female participation in green construction remains low (Afolabi et al., 2017), influenced by factors like job pressures, slow career development, and inadequate investment in green projects.

Striving for GE while promoting the development of a green economy requires increasing investment in women's education and training, alongside carefully crafted policies and changes in societal attitudes. Moreover, bridging the GF gap requires increased participation of public financial institutions and non-bank financial institutions in long-term green investments, lowering investment risks through initiatives like green credit guarantee schemes and community trust funds (Taghizadeh-Hesary & Yoshino, 2020). Proposals for establishing a global women's fund through innovative finance aim to facilitate substantial progress in achieving GE (Erten & Çağatay, 2017). However, challenges persist, such as potential biases against female-supported women entrepreneurs, which could hinder their ability to access additional funding (Compion et al., 2022). Despite these challenges, the #MeToo movement has shifted investor beliefs, favoring companies with inclusive cultures and adequate female board representation, reflecting a growing recognition of the value of gender diversity in mitigating risks

associated with misconduct and fostering positive corporate cultures. Furthermore, disclosures of gender pay equity influence investor judgments, with companies indicating that gender pay equity is more attractive to investors due to fairness and positive economic outcomes (Butticè et al., 2023).

Additionally, the gender of investors and analysts can mutually influence investment decisions, with female investors showing stronger responses to recommendations from female analysts. Efforts emphasizing gender performance equality may trigger conventional biases, although investing from a gender perspective not only supports GE but also aligns with broader SDGs, such as the focus of South African asset management companies on climate action and social considerations (Billings et al., 2022). This approach underscores the necessity of substantial involvement in GE within corporate social responsibility activities, particularly in industries like petroleum where gender-neutral language often obscures male-dominated gains in social investments.

In conclusion, addressing the opportunities and challenges presented by the green economy requires a comprehensive and inclusive policy approach. This underscores the interconnectedness of GE and GF, emphasizing the importance of driving specific actions and innovative solutions to ensure women can actively participate in and benefit from the development of the green economy.

4.2. The importance of gender perspectives in green investment decisions

The importance of gender perspectives in green investment decisions is reflected not only in promoting GE in social justice but also in the economic benefits and corporate performance of green investments. By setting GE as a prerequisite for financing, investors can encourage companies to take GE measures, thereby enhancing financial stability and inclusivity, especially in developing countries.

Research demonstrates that GE can have a positive impact on financial stability and inclusivity (Predmore, 2023). This indicates that incorporating gender perspectives into green investment decisions can not only improve the overall financial health of companies but also promote GE development. Furthermore, the implementation of gender pay transparency (Ozili, 2024) can influence investors' decisions, making them more inclined to invest in companies that achieve gender pay equality, highlighting the economic benefits of transparency and fairness.

Despite some progress being made, many interventions for GE have only achieved partial success, highlighting the need for stronger and more comprehensive strategies (Guthridge et al., 2022). Additionally, there is a gap between the surface support of multinational corporations for GE and substantive participation, especially in certain industries where social investments often lean towards males. However, integrating GE into Corporate Social Responsibility (CSR) can align with broader human rights obligations, making interpretations of international investment agreements more balanced (Lange & Wyndham, 2021). The performance of GE indices (Austin et al., 2021) indicates that investors have not significantly differentiated companies based on their GE commitments, providing an opportunity for investors to drive change by prioritizing gender-focused investments. This further underscores the importance of collective action and strategic financial support for GE initiatives (Choudhury, 2021). Multilateral collaboration involving policymakers, private enterprises, and gender experts can provide a structured approach to implementing GE principles, highlighting the crucial role of cooperation in promoting successful GE (Binagwaho et al., 2021). Based on the above analysis, it is evident that integrating gender perspectives into green investment decisions not only helps promote social justice but also has the potential to enhance economic outcomes and corporate performance. Therefore, investors should actively consider incorporating GE into their decision-

making processes as part of driving future development in green and inclusive finance. The importance of gender perspectives in green investment decisions cannot be overlooked. By considering GE as a prerequisite for financing, investors not only promote social justice but also have the potential to improve economic outcomes and corporate performance. In fact, some institutions have already begun integrating gender perspectives into their lending and investment decisions.

Since the late 2000s, Multilateral Development Banks (MDBs) have increased their focus on gender issues, although this focus mostly remains limited to promoting domestic economic growth rather than addressing broader gender inequality issues (Bazbauers, 2023). Following the 2008 financial crisis, diversity and inclusion measures, especially those related to gender, have rapidly increased in global financial centers, although at times these measures may be used to legitimize existing institutional practices rather than drive substantive change (Bazbauers, 2023).

In Canada, the province of New Brunswick adopted gender-targeted public finance in 2017. This practice highlights how economic stimulus measures encourage political parties to nominate more women, under the combined advocacy of feminism and strategic political interests (Everitt & Albaugh, 2022). Development Financial Institutions (DFIs) are increasingly interested in gender-focused investments, particularly in the care economy, indicating the potential to establish a more flexible and gender-equal economic system post-COVID-19 (Espinoza Trujano & Lévesque, 2022).

Research funding agencies such as the National Institutes of Health, CIHR, and the European Commission have implemented policies requiring the consideration of sex and gender factors in biomedical research, while incentivizing compliance through measures and requirements. This demonstrates that financial empowerment can mitigate gender disparities in health among elderly individuals in India, showcasing the broader benefits of financial inclusion (Banerjee & Gogoi, 2023). Suggestions have also been made to integrate gender perspectives into government budget processes at all levels as a means to achieve more inclusive public participation and resource allocation (Brenton, 2023; Polzer et al., 2023).

In conclusion, integrating gender perspectives into green investment decisions is undoubtedly an effective way to achieve dual objectives of economic growth and social justice. Not only does it help narrow gender gaps, but it also promotes inclusive growth and environmental sustainability, serving as a forward-looking investment strategy.

4.3. Establishment and implementation of gender-sensitive investment standards

In the context of small and medium enterprise financing, it has been observed that women have lower demand for bank loans but higher success rates in their applications, possibly due to more conservative application strategies during financial uncertainty periods (Cowling et al., 2020). Additionally, community financing schemes like Nigeria's "Ajo" support female entrepreneurs by promoting reciprocal and cohesive pro-social behaviors, helping them navigate gendered financial markets (Cowling et al., 2020). High carbon risk enterprises respond to green credit policies by reducing the inefficiency of labor investment, indicating that such policies can improve the efficiency of labor investment in heavy polluters (Mbanyele et al., 2024).

Gender lens investing involves incorporating gender considerations into investment analysis and decision-making to enhance societal and business outcomes. This strategy emphasizes the importance of promoting gender diversity in the workplace and leadership, recognizing how it contributes to improving performance and advancing SD. Studies indicate that female board directors can mitigate investment shortages and enhance corporate value, underscoring the significance of gender diversity

in governance (Nel et al., 2023). Furthermore, gender diversity within investment management teams positively influences the ESG ratings of investment portfolios, indicating that diverse teams tend to prioritize sustainable practices (Kwon et al., 2023). The establishment of any investment standards should be based on thorough gender analysis to identify specific challenges and opportunities faced by different genders. This includes collecting and analyzing gender-disaggregated data to understand gender differences (Schalatek, 2009; Seguíno, 2016). Gender analysis is crucial as it helps reveal how gender power dynamics influence access to resources within healthcare systems and other areas, as well as labor allocation, social norms, and decision-making processes. Ensuring gender diversity within investment decision-making teams helps examine investment opportunities from various perspectives, promoting more comprehensive and equitable decisions. This approach responds to the need to differentiate biological gender from social gender factors, both of which significantly impact health outcomes and access to services. Despite awareness of this need, incorporating gender analysis into research and policy-making faces challenges, often due to insufficient data and inadequate representation of women in research (Bird & Sharman, 2014). For instance, clinical guidelines and trials often fail to differentiate results by gender, potentially leading to biased recommendations, perpetuating ongoing gender inequalities. In addition, the lack of reliable self-reported data and the absence of comprehensive tools to assess women's health status make addressing these disparities more complex. Systematic reviews also frequently overlook considerations of gender and gender aspects, diminishing the quality and applicability of their findings.

5. Discussion

Through a systematic literature review, we can see that the importance of this approach is increasingly prominent in current green finance research. Establishing a clear, comprehensive, and consistent SD planning framework is key to achieving sustainable goals. This approach ensures that public spending and green finance initiatives have strategic significance and effectiveness (La Torre et al., 2023). La Torre et al. (2023) pointed out that the government plays an important role in advancing green finance, particularly in using public funds to attract private investment. In addition to supplementing this view, our research also emphasizes that incorporating GE strategies into green finance policy is crucial. We propose that not only relying on public funds is insufficient, but it is also necessary to consider how to enhance women's participation in green finance to aid in achieving SDGs.

Ante (2024) analyzed 942 peer-reviewed articles and 37,255 references up to December 2020, identifying nine major research areas and their influential publications. The study revealed a lack of information exchange between most research fields, showing low efficiency in green finance research. Based on this, we provide an in-depth analysis that includes a gender perspective, which has not been given enough attention in Ante's research. We believe that combining gender with green finance should become an important direction for future research, as the role of gender in promoting environmental sustainability is increasingly recognized and there is much potential that has not been fully utilized. Agrawal et al. (2024) embarked on an explorative journey to decipher the influence of green finance and green innovation on the sustainability of circular economy mechanisms. Their investigation underscored the catalytic role of green finance in spurring innovation, particularly emphasizing the transformative potential of novel technological and business model advancements. The research illuminated that a synergistic interplay among diverse innovation domains—encompassing product, process, organizational, and marketing innovations—substantially informs corporate decisions

towards embracing Geographic Information Systems (GIS). Through meticulous case studies sourced from France and Italy, the research evidenced a generally positive cumulative impact of these innovation facets in championing GIS adoption, albeit it acknowledged the existence of certain process and marketing innovation combinations that could potentially impede GIS integration (Vasileiou et al., 2024). In dissecting the methodological landscape of green innovation research, the study employed propensity score matching alongside Difference-in-Differences (DiD) analysis to ascertain the influence of GIS on enhancing business competitive advantage. Notably, an examination of the Spanish Technological Innovation Panel (PITEC) database through these statistical lenses affirmed the positive moderating influence of R&D endeavors on the nexus between GIS practices and competitive leverage (Bataineh et al., 2024a). Further, the research harnessed Structural Equation Modeling (SEM) to unravel the dynamics through which executive leadership's penchant for green technologies translate into competitive upper hands. Here, SEM proved instrumental in clarifying the intricate interdependencies between corporate environmental stewardship, stakeholder pressures, among other variables (Del Gaudio et al., 2024). Last, the application of the Generalized Method of Moments (GMM) in scrutinizing the repercussions of organizational innovations on GIS revealed the capacity to manage latent heterogeneities and explore enduring variable relationships, thus furnishing profound insights into the facilitative role of organizational schemas in GIS deployment (Bataineh et al., 2024b). In comparison, our research further analyzes the role of GE in this process and reveals the creative and strong potential of women in driving green innovation. My research shows that enhancing women's economic opportunities not only increases their participation but also further promotes innovation and green growth. Integrating GE strategies deeply into green finance is not only necessary but also plays a key role in promoting inclusive and equitable economic growth, reducing poverty and inequality, and fostering social cohesion and peace. These are at the core of the United Nations SDGs. Incorporating a gender perspective into investment decisions and practices can significantly promote GE, as reflected in assessing gender issues, reporting on GE measures, and taking corrective actions. Through the above research, several important key points between green finance and GE can be seen.

- The close connection between women's empowerment and GF: Whether by enhancing financial knowledge, increasing gender diversity on boards, or supporting female entrepreneurship, women's empowerment and participation are crucial to driving the development of GF.
- The positive impact of gender diversity on improving environmental management and corporate performance: Evidence shows that gender diversity not only helps achieve GE but also leads to better environmental management outcomes and corporate performance.
- Women's key role in climate change and environmental sustainability: Whether in traditional agricultural production, climate change response strategies, or the energy transition process, women's participation and contributions are deemed critical to achieving environmental sustainability.
- GF product design needs to consider GE: Considering gender factors in the design and promotion of GF products and services can accelerate the achievement of GE and environmental sustainability goals.
- Gender-sensitive policies for the dual benefits of promoting green development and GE: Implementing green financing policies that consider gender differences can not only enhance women's economic empowerment but also promote green development.
- The impact of cultural and regional differences on research and practice: Cross-national studies highlight the influence of cultural and regional differences on the relationship between GE and GF, pointing out the importance of international cooperation and strategic adjustments.

6. Conclusions

My aim is to explore the relationship between green finance and gender equality and their role in achieving SDGs. The results show that women's empowerment is closely related to green finance, gender diversity has a positive impact on environmental management and corporate performance, and women have played an important role in addressing climate change and ensuring environmental sustainability. Possible explanations for these results include recognizing the role of women in sustainable practices (Cannon & Dobbin, 2022; Odrowaz-Coates, 2021); gender-sensitive policies can enhance gender equality and green finance (Andrijevic et al., 2020; O'Manique & Fourie, 2016); and cultural and regional differences affect the relationship between gender equality and green finance (Zhang & Wang, 2021).

This study emphasizes the importance of integrating gender considerations into green finance and advocates for policies supporting women's participation. Moreover, it is suggested that researchers could further explore the effectiveness of gender-sensitive financing models and the impact of cultural contexts on the implementation of green finance and gender equality initiatives.

Use of AI tools declaration

The author declares they have not used Artificial Intelligence (AI) tools in the creation of this article.

Conflict of interest

The author declares no conflicts of interest in this paper.

References

- Acosta M, Riley S, Bonilla-Findji O, et al. (2021) Exploring Women's Differentiated Access to Climate-Smart Agricultural Interventions in Selected Climate-Smart Villages of Latin America. *Sustainability* 13: 10951. <https://doi.org/10.3390/su131910951>
- Afolabi AO, Tunji-Olayeni PF, Oyeyipo OO, et al. (2017) The Socio-Economics of Women Inclusion in Green Construction. *Constr Econ Build* 17: 70–89. <https://doi.org/10.5130/AJCEB.v17i1.5344>
- Afzal A, Rasoulinezhad E, Malik Z (2022) Green finance and sustainable development in Europe. *Econ Res-Ekonomska istraživanja* 35: 5150–5163. <https://doi.org/10.1080/1331677X.2021.2024081>
- Agrawal R, Agrawal S, Samadhiya A, et al. (2024) Adoption of green finance and green innovation for achieving circularity: An exploratory review and future directions. *Geosci Front* 15: 101669. <https://doi.org/10.1016/j.gsf.2023.101669>
- Aiswarya TP, Parayil C, Bonny BP, et al. (2023) Gendered vulnerabilities in small scale agricultural households of Southern India. *Int J Disast Risk Re* 84: 103475. <https://doi.org/10.1016/j.ijdr.2022.103475>
- Ampaire EL, Acosta M, Huyer S, et al. (2020) Gender in climate change, agriculture, and natural resource policies: Insights from East Africa. *Climatic Change* 158: 43–60. <https://doi.org/10.1007/s10584-019-02447-0>
- Andrijevic M, Crespo Cuaresma J, Lissner T, et al. (2020) Overcoming gender inequality for climate resilient development. *Nat Commun* 11: 6261. <https://doi.org/10.1038/s41467-020-19856-w>

- Ante L (2024) The scope of green finance research: Research streams, influential works and future research paths. *Ecol Econ* 224: 108302. <https://doi.org/10.1016/j.ecolecon.2024.108302>
- Asongu SA, Messono OO, Guttemberg KTJ (2022) Women political empowerment and vulnerability to climate change: Evidence from 169 countries. *Climatic Change* 174: 30. <https://doi.org/10.1007/s10584-022-03451-7>
- Austin CR, Bobek DD, Harris LL (2021) Does information about gender pay matter to investors? An experimental investigation. *Accounting Org Soc* 90: 101193. <https://doi.org/10.1016/j.aos.2020.101193>
- Banerjee S, Gogoi P (2023) Exploring the role of financial empowerment in mitigating the gender differentials in subjective and objective health outcomes among the older population in India. *PLOS ONE* 18: e0280887. <https://doi.org/10.1371/journal.pone.0280887>
- Baruah B (2017) Renewable inequity? Women's employment in clean energy in industrialized, emerging and developing economies. *Nat Resour Forum* 41: 18–29. <https://doi.org/10.1111/1477-8947.12105>
- Baruah B, Gaudet C (2022) Creating and Optimizing Employment Opportunities for Women in the Clean Energy Sector in Canada. *J Can Stud* 56: 240–270. <https://doi.org/10.3138/jcs.2019-0010>
- Bataineh MJ, Sánchez-Sellero P, Ayad F (2024a) Green is the new black: How research and development and green innovation provide businesses a competitive edge. *Bus Strateg Environ* 33: 1004–1023. <https://doi.org/10.1002/bse.3533>
- Bataineh MJ, Sánchez-Sellero P, Ayad F (2024b) The role of organizational innovation in the development of green innovations in Spanish firms. *Eur Manag J* 42: 527–538. <https://doi.org/10.1016/j.emj.2023.01.006>
- Bazbauers AR (2023) The multilateral development banks: Conceptualising and operationalising gender. *Women's Stud Int Forum* 99: 102758. <https://doi.org/10.1016/j.wsif.2023.102758>
- Belingheri P, Chiarello F, Fronzetti Colladon A, et al. (2021) Twenty years of gender equality research: A scoping review based on a new semantic indicator. *PLOS ONE* 16: e0256474. <https://doi.org/10.1371/journal.pone.0256474>
- Bhatnagar S, Sharma D (2022) Evolution of green finance and its enablers: A bibliometric analysis. *Renew Sust Energ Rev* 162: 112405. <https://doi.org/10.1016/j.rser.2022.112405>
- Bian Y, Gao H, Wang R, et al. (2023) Sustainable development for private equity: Integrating environment, social, and governance factors into partnership valuation. *Bus Strateg Environ* 32: 3359–3370. <https://doi.org/10.1002/bse.3304>
- Billings MB, Klein A, Shi YC (2022) Investors' response to the #MeToo movement: Does corporate culture matter? *Rev Accounting Stud* 27: 897–937. <https://doi.org/10.1007/s11142-022-09695-z>
- Binagwaho A, Mathewos K, Bayingana AU, et al. (2021) Commitment to gender equality through gender sensitive financing. *BMJ Glob Health* 6: e006747. <https://doi.org/10.1136/bmjgh-2021-006747>
- Bird CE, Sharman Z (2014) Gender-Based Analysis Is Essential to Improving Women's Health and Health Care. *Women's Health Iss* 24: e163–e164. <https://doi.org/10.1016/j.whi.2013.11.008>
- Brenton S (2023) The institutionalization of gender budgeting and prospects for intersectional analysis. *Public Money Manage* 43: 533–542. <https://doi.org/10.1080/09540962.2022.2159167>
- Butticè V, Croce A, Ughetto E (2023) Gender Diversity, Role Congruity and the Success of VC Investments. *Entrep Theory Pract* 47: 1660–1698. <https://doi.org/10.1177/10422587221096906>
- Cannon CEB, Dobbin KB (2022) Unpacking sustainability. *Elementa: Sci Anthropocene* 10: 00038. <https://doi.org/10.1525/elementa.2022.00038>

- Carlsen L, Bruggemann R (2021) Gender Equality in Europe: The Development of the Sustainable Development Goal No. 5 *Illustrated by Exemplary Cases*. *Soc Indic Res* 158: 1127–1151. <https://doi.org/10.1007/s11205-021-02732-5>
- Carroll P (2022). Gender Mainstreaming the European Union Energy Transition. *Energies* 15: 8087. <https://doi.org/10.3390/en15218087>
- Cen T, He R (2018) Fintech, green finance and sustainable development. *2018 International Conference on Management, Economics, Education, Arts and Humanities (MEEAH 2018)*: 222–225. <https://doi.org/10.2991/meeah-18.2018.40>
- Chen Z, Hu L, He X, et al. (2022) Green financial reform and corporate ESG performance in China: Empirical evidence from the green financial reform and innovation pilot zone. *Int J Env Res Pub He* 19: 14981. <https://doi.org/10.3390/ijerph192214981>
- Choudhury B. (2021) Investor Obligations for Human Rights. *ICSID Review - Foreign Invest Law J* 35: 82–104. <https://doi.org/10.1093/icsidreview/siaa002>
- Clancy JS, Mohlakoana N (2020) Gender audits: An approach to engendering energy policy in Nepal, Kenya and Senegal. *Energy Res Soc Sci* 62: 101378. <https://doi.org/10.1016/j.erss.2019.101378>
- Cohen MG (2018) Gender and Climate Change Financing: Coming Out of the Margin. *Fem Econ* 24: 188–190. <https://doi.org/10.1080/13545701.2017.1421319>
- Cohn C, Duncanson C (2023) Critical Feminist Engagements with Green New Deals. *Fem Econ* 29: 15–39. <https://doi.org/10.1080/13545701.2023.2184844>
- Compion S, Lough BJ, Jeong BG (2022) Gendered Disparities in Funding for Non-Profit, Hybrid, and for-Profit Start-Ups. *J Soc Entrep*, 1–14. <https://doi.org/10.1080/19420676.2022.2143871>
- Cowling M, Marlow S, Liu W (2020) Gender and bank lending after the global financial crisis: Are women entrepreneurs safer bets? *Small Bus Econ* 55: 853–880. <https://doi.org/10.1007/s11187-019-00168-3>
- Dai YY, Shie AJ, Chu JH, et al. (2022) Low-carbon travel motivation and constraint: Scales development and validation. *Int J Env Res Pub He* 19: 5123. <https://doi.org/10.3390/ijerph19095123>
- Dawkins E, Strambo C, Xylia M, et al. (2023) Who is most at risk of losing out from low-carbon transition in the food and transport sectors in Sweden? Equity considerations from a consumption perspective. *Energy Res Soc Sci* 95: 102881. <https://doi.org/10.1016/j.erss.2022.102881>
- Debrah C, Darko A, Chan APC (2023) A bibliometric-qualitative literature review of green finance gap and future research directions. *Clim Dev* 15: 432–455. <https://doi.org/10.1080/17565529.2022.2095331>
- Dev DS, Manalo JA (2023) Gender and adaptive capacity in climate change scholarship of developing countries: A systematic review of literature. *Clim Dev* 15: 829–840. <https://doi.org/10.1080/17565529.2023.2166781>
- Dev DS, Van De Fliert E (2023) Discourses on gender in climate change adaptation projects of Bangladesh: New dimensions or reinscribing the old? *J Lang Polit* 22: 707–729. <https://doi.org/10.1075/jlp.22121.dev>
- Del Gaudio G, Parvez MO, Hossain MS, et al. (2024) The antecedents of top management's involvement in green technology innovation. *J Hosp Market Manag*, 1–24. <https://doi.org/10.1080/19368623.2024.2367463>
- Dorman DR, Ciptet D (2022) Sustainable Energy for All? Assessing Global Distributive Justice in the Green Climate Fund's Energy Finance. *Global Environ Polit* 22: 94–116. https://doi.org/10.1162/glep_a_00621

- Dubois G, Sovacool B, Aall C, et al. (2019) It starts at home? Climate policies targeting household consumption and behavioral decisions are key to low-carbon futures. *Energy Res Soc Sci* 52: 144–158. <https://doi.org/10.1016/j.erss.2019.02.001>
- Edmans A, Kacperczyk M (2022) Sustainable finance. *Rev Financ* 26: 1309–1313. <https://doi.org/10.1093/rof/rfac069>
- Erten B, Çağatay N (2017) Proposal for a Global Fund for Women through Innovative Finance. *Fem Econ* 23: 170–200. <https://doi.org/10.1080/13545701.2017.1287931>
- Espinoza Trujano J, Lévesque AM (2022) Development finance institutions and the care economy: Opportunities for building more resilient and gender-equitable economies. *J Sustain Financ Inv* 12: 704–723. <https://doi.org/10.1080/20430795.2022.2030662>
- Everitt J, Albaugh Q M (2022) The origins of gender-targeted public finance measures: The case of New Brunswick, Canada. *Eur J Politics Gender* 5: 127–144. <https://doi.org/10.1332/251510821X16354220366241>
- Fatema SR, East L, Islam S, et al. (2023) Gender-based vulnerabilities for women during natural disasters in Bangladesh. *Front Commun* 8: 1180406. <https://doi.org/10.3389/fcomm.2023.1180406>
- Fletcher J, Longnecker N, Higham J (2019) Envisioning future travel: Moving from high to low carbon systems. *Futures* 109: 63–72. <https://doi.org/10.1016/j.futures.2019.04.004>
- Gangi F, Daniele LM, D’Angelo E, et al. (2023) The impact of board gender diversity on banks’ environmental policy: The moderating role of gender inequality in national culture. *Corp Soc Resp Env Ma* 30: 1273–1291. <https://doi.org/10.1002/csr.2418>
- Goli I, Omid Najaf Abadi M, Lashgarara F, et al. (2023) Women and climate change adaptation behaviour: What’s the problem and solution? *Clim Dev* 15: 535–552. <https://doi.org/10.1080/17565529.2022.2121597>
- Guthridge M, Kirkman M, Penovic T, et al. (2022) Promoting Gender Equality: A Systematic Review of Interventions. *Soc Justice Res* 35: 318–343. <https://doi.org/10.1007/s11211-022-00398-z>
- Haque ATMS, Kumar L, Bhullar N (2023) Gendered perceptions of climate change and agricultural adaptation practices: A systematic review. *Clim Dev* 15: 885–902. <https://doi.org/10.1080/17565529.2023.2176185>
- Hlahla S (2022). Gender perspectives of the water, energy, land, and food security nexus in sub-Saharan Africa. *Front Sustainable Food Syst* 6: 719913. <https://doi.org/10.3389/fsufs.2022.719913>
- Hlahla S, Simatele MD, Hill T, et al. (2022) Climate–Urban Nexus: A Study of Vulnerable Women in Urban Areas of KwaZulu-Natal Province, *South Africa*. *Weather Clim Soc* 14: 933–948. <https://doi.org/10.1175/WCAS-D-20-0180.1>
- Howell RA (2013) It’s not (just) “the environment, stupid!” Values, motivations, and routes to engagement of people adopting lower-carbon lifestyles. *Global Environ Chang* 23: 281–290. <https://doi.org/10.1016/j.gloenvcha.2012.10.015>
- Huang H, Mbanyele W, Wang F, et al. (2022) Climbing the quality ladder of green innovation: Does green finance matter? *Technol Forecast Soc* 184: 122007. <https://doi.org/10.1016/j.techfore.2022.122007>
- Huang H, Mbanyele W, Wang F, et al. (2023) Nudging corporate environmental responsibility through green finance? Quasi-natural experimental evidence from China. *J Bus Res* 167: 114147. <https://doi.org/10.1016/j.jbusres.2023.114147>

- Issa A (2023) Shaping a sustainable future: The impact of board gender diversity on clean energy use and the moderating role of environmental, social and governance controversies. *Corp Soc Resp Env Ma* 30: 2731–2746. <https://doi.org/10.1002/csr.2512>
- Javaid A, Creutzig F, Bamberg S (2020) Determinants of low-carbon transport mode adoption: Systematic review of reviews. *Environ Res Lett* 15: 103002. <https://doi.org/10.1088/1748-9326/aba032>
- Jerin T, Azad MAK, Khan MN (2023) Climate change-triggered vulnerability assessment of the flood-prone communities in Bangladesh: A gender perspective. *Int J Disast Risk Re* 95: 103851. <https://doi.org/10.1016/j.ijdr.2023.103851>
- Jha B, Bakhshi P (2019) Green finance: Fostering sustainable development in India. *Int J Recent Technol Eng* 8: 3798–3801. <https://doi.org/10.35940/ijrte.D8172.118419>
- Johnson OW, Han, JYC, Knight AL, et al. (2020) Intersectionality and energy transitions: A review of gender, social equity and low-carbon energy. *Energy Res Soc Sci* 70: 101774. <https://doi.org/10.1016/j.erss.2020.101774>
- Kreutzer W, Millerd C, Timbs N (2023) Disasters and the diminishing of women’s economic empowerment. *Disasters* 47: 891–912. <https://doi.org/10.1111/disa.12582>
- Kwauk CT, Wyss N (2023) Gender equality and climate justice programming for youth in low- and middle-income countries: An analysis of gaps and opportunities. *Environ Edu Res* 29: 1573–1596. <https://doi.org/10.1080/13504622.2022.2123894>
- Kwon H, Moon C, Kim J (2023) The impact of female board directors on effective investment management: Evidence from Korean firms. *Gender Manage An Int J* 38: 705–729. <https://doi.org/10.1108/GM-04-2022-0131>
- La Torre M, Leo S, Palma A, et al. (2023) Public spending and green finance: A systematic literature review. *Res Int Bus Financ* 68: 102197. <https://doi.org/10.1016/j.ribaf.2023.102197>
- Lange S, Wyndham V (2021) Gender, regulation, and corporate social responsibility in the extractive sector: The case of Equinor’s social investments in Tanzania. *Women’s Stud Int Forum* 84: 102434. <https://doi.org/10.1016/j.wsif.2020.102434>
- Łapniewska Z (2019) Energy, equality and sustainability? European electricity cooperatives from a gender perspective. *Energy Res Soc Sci* 57: 101247. <https://doi.org/10.1016/j.erss.2019.101247>
- Leach M, Mehta L, Prabhakaran P (2016) Gender equality and sustainable development: A pathways approach. *The UN Women Discussion Paper* 13: 2016.
- Leduchowicz-Municio A, Domenech B, Ferrer-Martí L, et al. (2023) Women, equality, and energy access: Emerging lessons for last-mile rural electrification in Brazil. *Energy Res Soc Sci* 102: 103181. <https://doi.org/10.1016/j.erss.2023.103181>
- Lee CW, Huruta AD (2022) Green Microfinance and Women’s Empowerment: Why Does Financial Literacy Matter? *Sustainability* 14: 3130. <https://doi.org/10.3390/su14053130>
- Lee JW (2020) Green Finance and Sustainable Development Goals: The Case of China. *J Asian Financ Econ Bus* 7: 577–586. <https://doi.org/10.13106/jafeb.2020.vol7.no7.577>
- Li J, Lo K, Guo M (2018) Do socio-economic characteristics affect travel behavior? A comparative study of low-carbon and non-low-carbon shopping travel in Shenyang City, China. *Int J Env Res Pub He* 15: 1346. <https://doi.org/10.3390/ijerph15071346>
- Lindberg B, Rerucha C, Givens M (2023) Occupational and Environmental Challenges for Women. *Curr Sport Med Rep* 22: 120–125. <https://doi.org/10.1249/JSR.0000000000001055>

- Mani M, Narayanan Gopalakrishnan B, Wadhwa D (2020) Regional integration in south asia: Implications for green growth, female labor force participation, and the gender wage gap. *World Bank Policy Research Working Paper* 9119. <https://doi.org/10.1596/1813-9450-9119>
- Mapedza E, Huyer S, Chanana N, et al. (2022) Framework for Incorporating Gender Equality and Social Inclusion (GESI) Elements in Climate Information Services (CIS). *Sustainability* 15: 190. <https://doi.org/10.3390/su15010190>
- Martínez Guzmán JP (2024) Can gender-responsive budgeting change how governments budget?: Lessons from the case of Ecuador. *Public Admin* 102: 388–404. <https://doi.org/10.1111/padm.12926>
- Mbanyele W, Huang H, Muchenje LT, et al. (2024) How does climate regulatory risk influence labor employment decisions? Evidence from a quasi-natural experiment. *China Econ Rev* 87: 102236. <https://doi.org/10.1016/j.chieco.2024.102236>
- Memon FS, Abdullah FB, Iqbal R, et al. (2023) Addressing women’s climate change awareness in Sindh, Pakistan: An empirical study of rural and urban women. *Clim Dev* 15: 565–577. <https://doi.org/10.1080/17565529.2022.2125784>
- Mia MA, Dalla Pellegrina, L, Wong, W. et al. (2023) Gender pay gap in the microfinance industry: A global perspective. *Ann Public Coop Econ* 95: 835–862. <https://doi.org/10.1111/apce.12461>
- Mininni GM (2022) The Barefoot College ‘eco-village’ approach to women’s entrepreneurship in energy. *EnviroN Innov Soc Tr* 42: 112–123. <https://doi.org/10.1016/j.eist.2021.12.002>
- Mohd S, Kaushal VK (2018) Green finance: A step towards sustainable development. *MUDRA J Financ Accoun* 5: 59–74. <https://doi.org/10.17492/mudra.v5i01.13036>
- Mumtaz MZ, Smith ZA (2019) Green finance for sustainable development in Pakistan. *IPRI J* 19: 1–34. <https://doi.org/10.31945/iprij.190201>
- Mundaca L, Román-Collado R, Cansino JM (2022) Assessing the impacts of social norms on low-carbon mobility options. *Energ Policy* 162: 112814. <https://doi.org/10.1016/j.enpol.2022.112814>
- Namukombo J (2016) Information and communication technologies and gender in climate change and green economy: Situating women’s opportunities and challenges in Zambian policies and strategies. *Jamba J Dis Risk Stud* 8: 1–7. <https://doi.org/10.4102/jamba.v8i3.243>
- Naz F, Doneys P (2022) Gender-based differences in access to and use of loans from rural credit programs for flood adaptation in the farming-dependent char communities of Bangladesh. *Women’s Stud Int Forum* 95: 102651. <https://doi.org/10.1016/j.wsif.2022.102651>
- Nel K, Mans-Kemp N, Erasmus PD (2023) Sustainable Thematic Investing: Identifying Opportunities Based on an Analysis of Stewardship Reports. *Sustainability* 15: 8411. <https://doi.org/10.3390/su15108411>
- Ngcamu BS (2023) Climate change effects on vulnerable populations in the Global South: A systematic review. *Nat Hazards* 118: 977–991. <https://doi.org/10.1007/s11069-023-06070-2>
- Nhamo G, Mukonza C (2020) Opportunities for women in the green economy and environmental sectors. *Sustain Dev* 28: 823–832. <https://doi.org/10.1002/sd.2033>
- Nuhu MG, Matsui K (2022) Gender Dimensions of Climate Change Adaptation Needs for Smallholder Farmers in the Upper East Region of Ghana. *Sustainability* 14: 10432. <https://doi.org/10.3390/su141610432>
- Nyahunda L, Tirivangasi HM (2022) Adaptation strategies employed by rural women in the face of climate change impacts in Vhembe district, Limpopo province, South Africa. *Manag Environ Qual* 33: 1061–1075. <https://doi.org/10.1108/MEQ-09-2021-0207>

- Odrowaz-Coates A (2021) Definitions of Sustainability in the Context of Gender. *Sustainability* 13: 6862. <https://doi.org/10.3390/su13126862>
- O'Garra T, Fouquet R (2022) Willingness to reduce travel consumption to support a low-carbon transition beyond COVID-19. *Ecol Econ* 193: 107297. <https://doi.org/10.1016/j.ecolecon.2021.107297>
- O'Manique C, Fourie P (2016) Affirming Our World: Gender Justice, Social Reproduction, and the Sustainable Development Goals. *Development* 59: 121–126. <https://doi.org/10.1057/s41301-017-0066-0>
- Oppi C, Cavicchi C, Vagnoni E (2021) The Journey to Gender-Responsive Budgeting: Lessons Learned from Higher Education. *Sustainability* 13: 2019. <https://doi.org/10.3390/su13042019>
- Ozili PK (2024) Effect of gender equality on financial stability and financial inclusion. *Soc Responsib J* 20: 205–223. <https://doi.org/10.1108/SRJ-12-2022-0565>
- Pailman W, De Groot J (2022) Rethinking education for SDG 7: A framework for embedding gender and critical skills in energy access masters programmes in Africa. *Energy Res Soc Sci* 90: 102615. <https://doi.org/10.1016/j.erss.2022.102615>
- Palacios HV, Sexsmith K, Matheu M, et al. (2023) Gendered adaptations to climate change in the Honduran coffee sector. *Women's Stud Int Forum* 98: 102720. <https://doi.org/10.1016/j.wsif.2023.102720>
- Pasupuleti A, Ayyagari LR (2023) A Thematic Study of Green Finance with Special Reference to Polluting Companies: A Review and Future Direction. *Environ Processes* 10: 24. <https://doi.org/10.1007/s40710-023-00642-x>
- Pérez-Escamilla R, Moran VH (2023) Maternal and child nutrition must be at the heart of the climate change agendas. *Maternal Child Nutrition* 19: e13444. <https://doi.org/10.1111/mcn.13444>
- Plaček M, Del Campo C, Valentinov V, et al. (2022) Gender Heterogeneity and Politics in Decision-Making About Green Public Procurement in the Czech Republic. *Politics Gov* 10. <https://doi.org/10.17645/pag.v10i3.5408>
- Polzer T, Nolte IM, Seiwald J (2023) Gender budgeting in public financial management: A literature review and research agenda. *Int Rev Adm Sci* 89: 450–466. <https://doi.org/10.1177/00208523211031796>
- Predmore S (2023) Inclusion or co-optation? Navigating recruitment as a gender diversity candidate in finance. *New Polit Econ* 28: 897–909. <https://doi.org/10.1080/13563467.2023.2200242>
- Puaschunder J M (2021) Gender inequality in the global warming era: The disparate impact of climate change on female. Available at SSRN 3942935. <https://doi.org/10.2139/ssrn.3942935>
- Quang NM (2022) A method for measuring women climate vulnerability: A case study in Vietnam's Mekong Delta. *Int J Clim Chang Str* 14: 101–124. <https://doi.org/10.1108/IJCCSM-05-2021-0047>
- Radović-Marković M, Živanović B (2019) Fostering Green Entrepreneurship and Women's Empowerment through Education and Banks' Investments in Tourism: Evidence from Serbia. *Sustainability* 11: 6826. <https://doi.org/10.3390/su11236826>
- Ramos A, Latorre F, Tomás I, et al. (2022) Women's Promotion to Management and Unfairness Perceptions—A Challenge to the Social Sustainability of the Organizations and Beyond. *Sustainability* 14: 788. <https://doi.org/10.3390/su14020788>
- Rehman S, Orij R, Khan H (2020) The search for alignment of board gender diversity, the adoption of environmental management systems, and the association with firm performance in Asian firms. *Corp Soc Resp Env Ma* 27: 2161–2175. <https://doi.org/10.1002/csr.1955>

- Roy J, Prakash A, Some S, et al. (2022) Synergies and trade-offs between climate change adaptation options and gender equality: A review of the global literature. *Hum Soc Sci Commun* 9: 251. <https://doi.org/10.1057/s41599-022-01266-6>
- Saha T, Sinha A, Abbas S (2022) Green financing of eco-innovations: Is the gender inclusivity taken care of? *Econ Res-Ekonomska istraživanja* 35: 5514–5535. <https://doi.org/10.1080/1331677X.2022.2029715>
- Sani Y, Scholz M (2022) Gender and Other Vulnerabilities to Water–Energy Accessibility in Rural Households of Katsina State, Northern Nigeria. *Sustainability* 14: 7499. <https://doi.org/10.3390/su14127499>
- Schalatek L (2009) Gender and climate finance: Double mainstreaming for sustainable development. *Heinrich Böll Foundation Berlin* Available from: http://www.indiaenvironmentportal.org.in/files/DoubleMainstreaming_Final.pdf.
- Seguino S (2016) Financing for Gender Equality in the Context of the Sustainable Development Goals. *UN Women New York* Available from: <https://www.undp.org/sites/g/files/zskgke326/files/migration/by/financing-for-gender-equality-in-the-context-of-the-SDGs.pdf>.
- Septanaya IDMF, Fortuna S (2023) Gender mainstreaming efforts in disaster management plans: Case study West Nusa Tenggara province, Indonesia. *Int J Disast Risk Re* 87: 103576. <https://doi.org/10.1016/j.ijdr.2023.103576>
- Shang Y, Sivertsen G, Cao Z, et al. (2022) Gender differences among first authors in research focused on the Sustainable Development Goal of Gender Equality. *Scientometrics* 127: 4769–4796. <https://doi.org/10.1007/s11192-022-04430-6>
- Sharma N, Pundir V, Goel M, et al. (2022) Green Entrepreneurship: Prospects and Challenges. *2022 International Conference on Fourth Industrial Revolution Based Technology and Practices (ICFIRTP)*: 96–100. <https://doi.org/10.1109/ICFIRTP56122.2022.10059446>
- Singh P, Tabe T, Martin T (2022) The role of women in community resilience to climate change: A case study of an Indigenous Fijian community. *Women's Stud Int Forum* 90: 102550. <https://doi.org/10.1016/j.wsif.2021.102550>
- Smith JP, Borg B, Iellamo A, et al. (2023) Innovative financing for a gender-equitable first-food system to mitigate greenhouse gas impacts of commercial milk formula: Investing in breastfeeding as a carbon offset. *Front Sustainable Food Syst* 7: 1155279. <https://doi.org/10.3389/fsufs.2023.1155279>
- Sovacool BK, Newell P, Carley S, et al. (2022) Equity, technological innovation and sustainable behaviour in a low-carbon future. *Nat Hum Behav* 6: 326–337. <https://doi.org/10.1038/s41562-021-01257-8>
- Sraieb MM, Labadze L (2022) A Dynamic Perspective on the Gender Diversity–Firms' Environmental Performances Nexus: Evidence from the Energy Industry. *Sustainability* 14: 7346. <https://doi.org/10.3390/su14127346>
- Sujakhu NM, Ranjitkar S, Su Y, et al. (2023) A gendered perspective on climate change adaptation strategies: A case study from Yunnan, China. *Local Environ* 28: 117–133. <https://doi.org/10.1080/13549839.2022.2130883>
- Sun X, Zhou C, Gan Z (2023) Green finance policy and ESG performance: Evidence from Chinese manufacturing firms. *Sustainability* 15: 6781. <https://doi.org/10.3390/su15086781>

- Taghizadeh-Hesary F, Yoshino N (2020) Sustainable Solutions for Green Financing and Investment in Renewable Energy Projects. *Energies* 13: 788. <https://doi.org/10.3390/en13040788>
- Tanjeela M (2023) Understanding the struggles of Bangladeshi women in coping with climate change through a gender analysis. *Gender Technol Dev* 27: 250–265. <https://doi.org/10.1080/09718524.2022.2144101>
- Vasileiou E, Georgantzis N, Attanasi G, et al. (2024) The role of innovation portfolio in green innovation decisions: A study of French and Italian firms. *Technovation* 130: 102921. <https://doi.org/10.1016/j.technovation.2023.102921>.
- Volz U (2018) Fostering green finance for sustainable development in Asia, *Routledge handbook of banking and finance in Asia*, Routledge, 488–504. <https://doi.org/10.4324/9781315543222-27>
- Wang KH, Zhao YX, Jiang CF, et al. (2022) Does green finance inspire sustainable development? Evidence from a global perspective. *Econ Anal Policy* 75: 412–426. <https://doi.org/10.1016/j.eap.2022.06.002>
- Wang T, Shen B, Springer CH, et al. (2021) What prevents us from taking low-carbon actions? A comprehensive review of influencing factors affecting low-carbon behaviors. *Energy Res Soc Sci* 71: 101844. <https://doi.org/10.1016/j.erss.2020.101844>
- Wray B, Veidis EM, Flores EC, et al. (2023) A Call to Action for Gender Equity in Climate Leadership. *Am J Tropical Med Hygiene* 108: 1088–1092. <https://doi.org/10.4269/ajtmh.22-0674>
- Xie Y (2024) The Interactive Impact of Green Finance, ESG Performance, and Carbon Neutrality. *J Clean Prod* 456: 142269. <https://doi.org/10.1016/j.jclepro.2024.142269>
- Xu K, Zhao P (2023) Does Green Finance Promote Green Total Factor Productivity? Empirical Evidence from China. *Sustainability* 15: 11204. <https://doi.org/10.3390/su151411204>
- Yang Q, Du Q, Razzaq A, et al. (2022) How volatility in green financing, clean energy, and green economic practices derive sustainable performance through ESG indicators? A sectoral study of G7 countries. *Resour Policy* 75: 102526. <https://doi.org/10.1016/j.resourpol.2021.102526>
- Yenglier Yiridomoh G, Owusu V (2022) Do women farmers cope or adapt to strategies in response to climate extreme events? Evidence from rural Ghana. *Clim Dev* 14: 678–687. <https://doi.org/10.1080/17565529.2021.1971943>
- Yu H, Zhao Y, Qiao G, et al. (2023) Can Green Financial Reform Policies Promote Enterprise Development? Empirical Evidence from China. *Sustainability* 15: 2692. <https://doi.org/10.3390/su15032692>
- Zhang AT, Patnaik S, Jha S, et al. (2022) Evidence of multidimensional gender inequality in energy services from a large-scale household survey in India. *Nature Energy* 7: 698–707. <https://doi.org/10.1038/s41560-022-01044-3>
- Zhang B, Wang Y (2021) The Effect of Green Finance on Energy Sustainable Development: A Case Study in China. *Emerg Mark Financ Tr* 57: 3435–3454. <https://doi.org/10.1080/1540496X.2019.1695595>
- Zhang Z, Liu Y, Han Z, et al. (2022) Green Finance and Carbon Emission Reduction: A Bibliometric Analysis and Systematic Review. *Front Environ Sci* 10: 929250. <https://doi.org/10.3389/fenvs.2022.929250>

