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Sanayinde
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Yönelik Model
Geliştirme Projesi

Developing
Women Empowerment Models
in Manufacturing Industry Project

EMPOWERING WOMEN IN THE GREEN AND DIGITAL TRANSFORMATION IN THE MANUFACTURING INDUSTRY

CURRENT DISCUSSIONS, POLICIES, ACTION AREAS AND BEST PRACTICES

Background Document for The Equality in
Twin Transformation Model Proposal



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A MODEL PROPOSAL FOR
EMPOWERING WOMEN IN THE
MANUFACTURING INDUSTRY:
BACKGROUND DOCUMENT

INTRODUCTION



Introduction

The Equality in Twin Transformation Model focuses on sustainable, resilient, and long-term solutions that will guide the empowerment of women in the transition process of the manufacturing industry. The Model centers on the conditions necessary for an environment conducive to the twin transition, as well as on enhancing the capacity of companies, actors in the ecosystem, and the workforce, all from the perspective of women's empowerment. The proposed Model is based on prominent issues at the national and global levels, analysis of the current status of the manufacturing industry in Türkiye, relevant legislation and policy frameworks, best practices, and comprehensive analysis of relevant stakeholders. It aims to identify actionable steps in light of the findings of these analyses.

This document serves as a source of information that forms the basis for the proposed model and its women's empowerment approach, which supports the goal of ensuring that the green and digital transition process in the manufacturing industry proceeds in an inclusive and equitable manner. The analyses conducted aim to provide insight into actionable steps in light of the current status of the manufacturing industry in Türkiye, prominent issues at the national and global levels, the relevant legislative and policy framework, key approaches, and best practices. The document addresses the key discussions, current status, needs, policies, and stakeholders underpinning the model that will create a policy area designed to ensure the green and digital transition process in the manufacturing industry proceeds in an inclusive and equitable manner, and advances the goal of "women's empowerment."

To this end, the document provides conceptual insights that will foster the development of a **holistic perspective** integrating social, economic, and environmental dimensions, in line with the goals of preventing the reproduction of inequalities during the twin transition process and ensuring women's equal participation in production. Moreover, the interconnected structures, processes and institutions necessary for the achievement of these objectives are addressed within a **systems approach**, highlighting the necessity of policy and stakeholder analyses, as well as multi-sector **collaboration** and its implementation tools.

Many of the projects undertaken as part of UNDP's development partnership process in Türkiye demonstrate best practices in different areas of the subject. Under the *Model Development Project for Empowering Women in the Manufacturing Industry (WE Project)*, the project implementations, developed through extensive consultation processes and participatory methods, along with the current status and needs analysis, the social impact assessment, and the planning recommendations (blueprint) document, serve as three key sources providing information and recommendations on diverse areas of intervention. These resources were also used as a basis for the model proposal. The document also includes academic studies, reports, and assessments on the subject, as well as national and international documents and examples from around the world and within Türkiye. The analyses at various levels that informed the development of the proposed model are as follows:

- » Analysis of relevant literature and best practices to identify potential implementations at the industry, workplace, and workforce levels
- » Analysis of the international policy framework
- » Analysis of the current status in Türkiye and the national policy framework
- » Stakeholder analysis

Consultation meetings with stakeholders were held at various stages of the process to develop a feasible model proposal. The proposal was finalized at the technical level through collaboration with relevant stakeholders at a validation meeting.

The first section of the study focuses on the meaning of green and digital transition, the innovations, opportunities, and risks the transition brings, and emphasizes the significance of the twin transition process in terms of human development. The study then addresses discussions on integrating green and digital transition with women's empowerment, presenting views on managing the current period of change in a way that prevents the reproduction of inequalities and identifies and evaluates the opportunities that arise to ensure equality. Additionally, it analyzes international policies regarding women's empowerment in the context of green and digital transition. In this context, the study assesses the status of women's employment in a market where digitalization and green production approaches have taken root, and discusses the steps that need to be taken and the measures that need to be implemented.

The second section presents an analysis of priority areas for implementation and national and international examples. This section addresses three areas: industry, workplace, and workforce. While examining these three interrelated areas, the study discusses potential interventions, supported by best practices, related to employee-focused initiatives such as skills development and leadership; workplace-focused initiatives ranging from physical arrangements to organizational structure and culture; and policy and organizational frameworks/coordination structures, as well as labor organizations involved in the workforce, with a view to fostering growth in the industry and creating a favorable environment. The objective here is to identify the necessary steps for the targeted policy area.

The third section contains a detailed analysis of the current status in Türkiye, as well as policies, strategic decisions and plans, programs, and stakeholders. This analysis lays the groundwork necessary for achieving the target of women's empowerment.



WOMEN'S EMPOWERMENT IN THE GREEN AND DIGITAL TRANSITION: TRENDS AND CURRENT DISCUSSIONS



Green and Digital Transition:

Scientific development and progress have had significant impacts on the production of goods and services and all aspects of labor relations. This journey, spanning from the use of water and steam to electricity, and from information technologies to digitalization, has had an impact on both the planet and humanity. The impacts of these periods of change have been observed not only in the economy but also in social life (Batmaz and Keskin, 2023). Today's world is witnessing the transformation brought about by the last of four major shifts in industry (referred to in the literature as the Fourth Industrial Revolution, as described in the literature), each following a technological advancement.¹ One of the sectors most affected by these changes is the manufacturing industry.

Studies conducted by international organizations highlight the types of changes the transition process will bring about in terms of production relations, the economy, and development. It is argued that, in line with technological advancements, the use of robots and smart machines in production will create a need for a workforce with different qualities and skills. This change is expected to lead to the disappearance of certain jobs, while the emergence of new ones will transform the employment landscape.

However, technological advancements are not the only factors driving change today. Environmental impacts have reached undeniable dimensions, and a production philosophy that safeguards the right to live in a human-centered environment and that preserves the resources future generations need for development has been recognized as a global imperative. The international community and all relevant stakeholders agree that all industry-related activities must be organized and restructured in a way that enables both current and future generations to live in environmental well-being.

The green transition is also creating significant opportunities and risks in labor markets, which are affecting certain countries, industries, and groups of employees more than others. The green transition process indirectly affects all professions through energy prices, green technologies, and work practices; however, certain industries, such as energy supply and energy-intensive industries, face more significant impacts (European Parliament, 2022). For example, it is projected that more than half of the jobs in the coal industry will be eliminated, and fossil fuel-related industries will also face significant declines; conversely, employment is expected to increase in industries such as electricity supply and construction. It is expected that the new jobs created in areas such as renewable energy and building retrofitting will primarily target low- and medium-skilled employees, which will offset the risks of digital transition for low-skilled jobs. However, it is clear that employees will need to update their skills in order to move into different sectors and occupations, and to adopt alternative production methods. Consequently, significant investments in human capital are necessary for labor markets to align labor supply with demand.

Technological changes and environmental crises are bringing production structures and the economy to the brink of simultaneous transformation, significantly affecting virtually every segment of the economy, particularly the manufacturing industry. Under these conditions, development is inseparable from economic growth that prioritizes green and digital transition.

¹ The First Industrial Revolution was characterized by the transition to factory-based production systems; the Second Industrial Revolution by the use of electricity in industry and the shift to mass production; the Third Industrial Revolution by advancements in electronics and communication technologies alongside automation; and the Fourth Industrial Revolution by digitalization (see Leventer and Altun Ada, 2023).

Twin Transition in the Context of Human Development: A Just Transition

Ensuring that the process of digitalization and the transition toward green production in the manufacturing industry is a just transition that benefits everyone remains one of the most fundamental goals of development. This transformation process must be guided not only by the goal of economic growth, but also by the principles of equality and inclusivity, which constitute the most important pillars of human development. All development initiatives undertaken with a human development approach, which has been globally adopted since 1990, are shaped by the principles of equality, inclusivity, and leaving no one behind.

It has been widely recognized since the early 20th century that the steps taken by nations toward development, both individually and globally, are not limited to economic growth, increased income, or higher production. The UNDP Human Development Report, published in 1990, and the United Nations Sustainable Development Goals both frame the goal of equality and environmental and social well-being as priorities, defining economic growth as a means to achieve these priorities. Accordingly, the fundamental objective of development is to build a fair and equitable world where all present and future people can fully enjoy their fundamental rights and freedoms. This framework emphasizes the need to prioritize sustainability and equality over the target of economic growth in development efforts, and it also serves as a guiding standard for the twin transition process. Environmental and social well-being create a favorable environment for the productivity of resilient sectors. While investments in diverse and non-traditional areas may appear to run counter to productivity, which is measured by the ratio of outputs to inputs, these investments will eliminate the significant costs that inequality and environmental degradation impose on productivity (Bayrakçeken Tüzel, 2018).

Just transition is an inclusive concept that addresses a range of socioeconomic dimensions inherent in the green and digital transition process. The just transition process can be defined as a transformative process that addresses climate change, development, and the fight against poverty in an interconnected manner. The concept also serves as a key pillar of the UN 2030 Agenda for Sustainable Development. By emphasizing equality and justice, a just transition acknowledges that certain groups are more vulnerable and face greater challenges, while also addressing the employment impacts of environmental and climate policies. Furthermore, the just transition process has increasingly focused on addressing climate-related socioeconomic inequalities across countries, thereby securing a prominent place on the development agenda (OECD, 2025).

The World Economic Forum's (WEF) 2025 Future of Jobs study (WEF 2025) highlights technological change and the green transition as the two main trends that will be prominent in the economy by 2030. These trends are accompanied by macroeconomic uncertainty, geo-economic fragmentation, geopolitical tensions, and demographic shifts (WEF, 2025). The World Employment Confederation underlines that, during this process of change, labor and production relations must take on a society- and human-centered form. IRENA and the ILO (2024) emphasize that, in the twin transition process, innovative dynamics must be managed responsibly, ensuring that people's jobs, rights, and health remain at the center of decision-making processes. It is also highlighted that while priority is given to an energy transition and rapid technological innovation driven by the desire to minimize costs and maximize profits, certain aspects such as occupational health and safety, equal access to employment, and growing waste volumes may be overlooked in the pursuit of responsible production.

This necessitates taking steps to avoid creating new forms of inequality, to prevent the reproduction of existing inequalities, to combat inequality, and to ensure equality. Creating a workforce equipped with the skills required by the transition process and addressing skill gaps, ensuring decent work conditions and wages, and establishing a balanced participation of women and men through women's equal participation in the workforce both in terms of numbers and conditions are

Women's Empowerment in Green and Digital Transition

Social change has a significant impact on many factors related to women's entry into and participation in the workforce, including their workforce participation rate, sectors in which they work, wages, working arrangements and hours, and labor rights. Social welfare, much like poverty, conflict, and disasters, affects women's participation in the workforce much more than men's. While women's participation in employment increases during periods of labor shortage, in times of labor surplus or when cost-cutting measures are prioritized, women are often viewed as the first individuals to be excluded from the workforce due to entrenched stereotypes. Numerous dynamics influence women's participation in the workforce, including discriminatory beliefs that women lack the necessary skills, barriers to accessing education and professional development opportunities, the lack of quality public care services, and the unequal distribution of care responsibilities that creates an additional workload on women. The transition process we are currently undergoing also has the potential to perpetuate privilege and discrimination. While privileged groups benefit from the advantages of change, those who face discrimination are left with disadvantages.

Unlike other periods of change, the green and digital transition is taking place in a world where women have achieved significant gains and where the mainstreaming of equality has gained widespread acceptance. The necessary groundwork for steering this change toward the goal of equality is in place, along with tools developed in various fields such as national and international agreements, equality programs, and budgeting methods.

According to the OECD, the twin transition offers numerous opportunities to eliminate the inequalities faced by women both in relevant fields and in society at large. The necessary measures must be carefully implemented, and plans and programs must be developed to realize these opportunities (OECD, 2024). On the other hand, the advantages that inclusive approaches enabling women's participation in green and digital jobs will bring to the manufacturing industry should also be taken into account. Women's participation should be considered not only in terms of ensuring equal rights and inclusivity, but also in terms of the pace, effectiveness, and success of the transition:

"Given that many women-led public and private sector organizations have proven to increase the effectiveness of climate action initiatives, greater gender equality in sector such as innovation and renewable energy can foster inclusive and resilient economies, and help accelerate the transition to net-zero emissions. Digital transformation of society may also unlock new economic opportunities, enhance employment prospects, increase participation in political and public life, and provide greater access to education, including for women and girls. The digital sphere where democratic participation, notably through social media interaction and access to information, can also bring about new policies of inclusion."

(OECD 2024: 6)



Demographic factors accompanying this period of change, such as the aging population and the increase in those requiring care, declining birth rates, and the shrinking working-age youth population, groups currently excluded from the labor market” ifadesi “may lead to increased workforce participation among groups currently excluded from the labor market, particularly women. Technological advancements and new forms of green production, along with the resulting new skills and demographic shifts, have the potential to create significant pressure on the labor market. In this context, women’s participation in the workforce is emerging not merely as an issue of equality and justice, but as an opportunity to address the contraction in employment and as an economic responsibility (WEC, 2024). The outcomes of the twin transition regarding women’s workforce participation are discussed separately in the literature in terms of both digitalization and green transition processes.

Digital Transition and Women’s Employment

As digital advancements continue to transform the labor market, society, and workplaces, the demand for a skilled workforce is growing in sectors related to information and communication technologies (ICT) and in digital-intensive sectors. However, these fields are characterized by inequalities and underrepresentation of women (OECD, 2024). Contrary to popular belief, technology and communication are not independent of inequalities. Indicators such as differences in internet usage between women and men; the proportion of women in cloud computing, the technology workforce, and STEM fields, which require the professional knowledge needed for green and digital jobs; as well as the specific sub-disciplines in which they are represented, highlight the imbalances between women and men. It is estimated that if existing inequalities in the ICT sector, recognized as the sector of the future, are not addressed, the likelihood of creating new job opportunities for women will be low, and the employment gap in future jobs will deepen (Leventer and Altun Ada, 2023).

Research highlights the importance of developing targeted initiatives to encourage women’s participation in the digital economy, as well as establishing policy frameworks that enhance digital literacy, provide training and/or mentoring to women entrepreneurs, and eliminate barriers specific to inequalities between women and men. It is noted that investing in women’s entrepreneurship and digital skills will foster an innovative and creative environment that will benefit the entire society, leading to increased economic efficiency and competitiveness. It is also emphasized that eliminating inequalities between women and men in digital literacy and employment will serve not only to empower women, but also to foster an inclusive and equitable society (Ahmad et al., 2024).

The World Economic Forum’s (WEF) “2025 Future of Jobs” Report, based on the strategic plans of over 1,000 global employers across 22 sectors and 55 economies, projects that by 2030, structural transformation will result in the creation of 170 million new jobs, the loss of 92 million jobs, and a net increase of 78 million jobs. Among the fastest-growing professions are technology and big data expertise, fintech engineering, artificial intelligence and machine learning expertise, and autonomous and electric vehicle expertise, that is driven by the impact of the green transition, as well as environmental engineering and renewable energy engineering. The report emphasizes that jobs prone to automation, repetitive in nature, and easily performed by algorithms are among the 92 million jobs that will disappear as a result of this process (WEF, 2025).

It is noted that these developments could expand women’s employment opportunities and access to the workforce, and it is emphasized that commercial activities typically conducted via internet infrastructure will provide income-generating alternatives for women. Research shows that increased participation of women in the digital economy will contribute to workforce growth, support socioeconomic development, increase household income, reduce poverty, and improve living conditions (Ahmad et al., 2024).

Considering the effects of digitalization, it is also possible to expect that it could facilitate the shared division of household chores; that supporting care and daily household tasks with digital and technological methods could create an equitable division of labor between men and women; that women could more easily enter the workforce; and that jobs could become suitable to everyone as technological advancements replace the need for physical strength and endurance.



BEST PRACTICE

In the fieldwork conducted as part of the We Project Needs Analysis, private sector representatives noted that increased automation in production has also boosted women's employment potential, and that investment in automation requires supporting a skilled workforce and updating their skills. Therefore, the skills women acquire in this context are seen as a key tool for their inclusion in the workforce.

KORDSA created a production area where automation plays a more prominent role, specifically in a production site involving large coils requiring physical strength, and hired female employees to provide more opportunities for women. In this process, the company also took into account women's needs, such as transportation and work uniforms. The company managed to meet its employment target of 60 women. In addition, the company is working to implement an approach that prevents discrimination in language and communication, based on the guidelines developed by the UNDP on the use of equality-focused inclusive language.

Mercedes has set clear targets for increasing women's employment by 2030, noting that as automation advances, opportunities for women in body manufacturing have increased, and in this context, the company has hired female robotic welding operators. The company is taking steps to promote shared caregiving responsibilities through initiatives such as childcare support, the option to work remotely, part-time work, and paternity leave beyond the statutory minimum.

As part of the development agenda, it is debated that the digital transition accompanying all these changes, while creating certain opportunities for equality between women and men, also poses significant risks (OECD, 2024). There is also a risk that the decline in employment currently anticipated as part of the digital and green transition could have adverse effects on women (due to issues such as a lack of investment in women's vocational training, and the perception of women as temporary employees or individuals bound by life cycles and decisions of their families and spouses), particularly for those who are unable to acquire new skills and thus may struggle to find employment opportunities in new industries. It is emphasized that the male-dominated nature of the ICT sector, in particular, is the most significant obstacle to ensuring that digital transition is inclusive. Even in economies with the highest shares of ICT professionals in the total workforce, such as Sweden (7.8%) and Finland (7.2%), disparities between women and men mirror that of countries with lower proportions (OECD, 2024).

KPMG and the Digital Türkiye Platform (2022) report that 81.1% of ICT professionals in the EU in 2022 were men, while only 18.9% were women. The WEF's Future of Jobs 2023 report predicts a 25% decline by 2027 in jobs within the service sector that are predominantly held by women. The report also highlights that while many new jobs will emerge in fields such as artificial intelligence, cloud computing, and data analysis, only 26% of such jobs in the technology sector are held by women (WEF, 2023). According to the ILO's measure of the "employment gap," which includes unemployment and underemployment data, the employment gap for women is higher than that for men across all national income groups. This disparity between women and men is particularly striking in low- and lower-middle income economies. The employment gap for women exceeds that of men by 7.5% in these economies (WEF, 2025). Among the roles expected to see the largest decline in 13

absolute numbers, driven by factors such as the proliferation of information processing technologies, robotics and autonomous systems, artificial intelligence, and digital access, are professions such as tellers, ticket agents, administrative assistants, and secretaries (WEF, 2025:20). The WEF's "Future of Jobs 2025" report notes that the decline in these roles, which are predominantly held by women, has the potential to have a disproportionate impact on women's employment.

According to 2023 figures, of the ICT professionals in Türkiye, 360,000 are men and 75,000 are women. In EU countries, only 1.5 million of the 8.8 million professionals are women.² Considering the share of digital-intensive sectors in the labor market, Türkiye ranks 40th among 43 countries. In Türkiye, jobs with high digital intensity account for 13% of all jobs, a rate that is significantly below the OECD average (21%).

The transformation process brought about by digital transition can be equitable (i.e., not creating new areas of inequality, not deepening existing gaps, and ensuring that necessary opportunities for promoting equality are seized) only through the development of appropriate intervention models. Steps to be taken to empower women should be planned in a way that takes all stakeholders into account. There are steps to be taken in every area, from education to politics, and from domestic work to entrepreneurship. Accordingly, "it is necessary to develop policies that focus on education, a key factor in women's participation in the workforce, to increase women's representation at all levels of education, and to encourage girls to pursue vocational programs in engineering, information technology, and mathematics, to develop policies to eliminate the distinction between "women's work" and "men's work" in Türkiye, to distribute traditional roles equally between men and women, to create a suitable work environment under appropriate conditions that addresses the diverse needs of different women, and to support women's entrepreneurship" (Leventer and Altun Ada, 2023).

Green Transition and Women's Employment

The green transition presents both significant opportunities and challenges for employees in developed and developing economies (IMF, 2024). Green jobs, by reflecting a transition toward sustainability, are employing an increasing number of employees globally. In 2023, 16.2 million new jobs were created in the renewable energy industry (IRENA and ILO, 2024). It is estimated that there are 41,000 new job opportunities related to solar power and 5,100 related to wind power in Türkiye. Diversity is important in the expanding labor market driven by the creation of new jobs and the green transition; however, initiatives designed to help employees acquire new skills must encourage women to participate in the workforce. Therefore, measures must be taken to support women in education and employment, aiming at preventing occupational segregation between men and women.

The OECD (2024:11) notes that demand for green jobs is increasing, emphasizing that the circular economy creates significant job gains, opens up new fields, and that the manufacturing industry, in particular, is affected by this shift. The OECD report states that "green jobs pay approximately 20% more than other jobs," and notes that women's exclusion from green jobs will widen the wage gap between women and men. Furthermore, scenarios regarding employment dynamics following the implementation of the European Green Deal indicate that there will generally be a positive net impact on employment. CEDEFOP (2021) forecasts a significant increase in employment in sectors directly related to the environment, while also predicting that, in spite of the shift in skills due to the transition to clean production in other sectors, employment levels will remain unchanged. The manufacturing industry is expected to benefit from this growth overall, but digital skills are projected to become increasingly in demand. This projection once again highlights the need to consider the green transition and digitalization together.

² OECD Going Digital Toolkit, Share of ICT task-intensive jobs, goingdigital.oecd.org/indicator/40

Drawing attention to the imbalance in women's employment in green jobs, the IMF (2024) points out that, based on representative calculations and analyses for both developed (the United Kingdom and the United States) and developing (Brazil, Colombia, South Africa) economies, the number of men in green jobs exceeds that of women. While 20.3% of employed men in the UK and the US work in green jobs, only 6% of employed women do so. These figures are similar for developing economies such as Brazil, Colombia, and South Africa (16% of employed men and 4.6% of employed women).

Despite findings in the report published by the OECD following its 2024 forum,³ which revealed that women are more likely to demonstrate basic competencies in environmental sustainability, women remain underrepresented in STEM fields, which provide the skills necessary for green jobs (OECD, 2024). Global figures show that women account for 28% of the renewable energy industry and 14% of the wind energy industry (IRENA and ILO, 2021).

Studies point to the benefits that women's employment will bring to sustainable economies and the green transition process. The IMF (2024) notes that ensuring equality in green jobs will create three new pathways. Firstly, the inclusion of women in many sectors involved in environmentally-friendly decision-making will create significant advantages for the green transition. Secondly, removing barriers faced by women will foster a labor market rich in diverse and complementary skills, where both women and men can realize their full potential. Finally, in today's environment shaped by digital transition, the convergence of diverse perspectives will drive innovation in sustainable practices and technologies.

It is particularly important to develop policies focused on creating a balanced employment structure, one in which women and men participate equally at all levels, and on shaping an experienced workforce in an equitable manner equipped with green and digital skills and capable of adapting to the new work models brought about by digital transition, all while actively harnessing the job-creation potential of the green transition.

Interconnectedness and the Holistic Approach in the Context of Equality in Twin Transformation

Digitalization and the transition to a green economy are vital for building a socially and economically sustainable future. A systematic and holistic approach is required for this profound transformation, which involves the interplay of various dynamics, to occur in harmony with the fundamental principles of human development. Development goals can only be achieved through an approach that ensures no one is left behind and does not reproduce inequalities, as well as by capitalizing on the opportunities that arise to create inclusive and equitable labor relations. After all, development is not merely a means of economic growth, but also a vehicle for environmental sustainability and social well-being. Concepts such as innovation, inclusivity, equality, sustainability, and circularity, which accompany these three qualities, are shaping the digital and green transition that the manufacturing industry is currently undergoing.

Considering this entire framework, it is clear that the manufacturing industry's green and digital transition process, and the Model to be developed to empower women within this process, must be addressed **based on a common understanding** that acknowledges **the multidimensional nature of the issue, within a framework of multisectoral participation and partnership**. This requires a holistic and systematic approach.

The inequalities faced by women persist in all countries, including those with very strong equality policies. These inequalities must be addressed to ensure an inclusive green and digital transition.

³ OECD (2024).

Empowering women in the green and digital transition process presents an opportunity to create an inclusive and non-discriminatory manufacturing industry. Making structural inequalities in society visible and addressing them is a prerequisite for transforming inequalities in the manufacturing industry, and ensuring inclusivity (OECD, 2024:25). Inequalities must be addressed from many angles, including skills, leadership, and occupational segregation in the areas of workforce and employment. Additionally, connections must be established with many intersecting areas, such as education, the division of labor within the household, care work, and violence. This underscores the need for a green and digital transition that promotes women's empowerment with a holistic perspective and a systemic framework.

A wide range of issues surrounding the context of digital and green transition and production processes in the manufacturing industry must be addressed within this framework:

- » **Inequalities in the private sphere**, such as caregiving work, the relationship between reproduction and production, and domestic violence;
- » **Inequalities related to individual empowerment**, such as discriminatory and unequal practices in access to education, and career choices based on stereotypes that keep women and girls away from technical fields;
- » **Segregation and discrimination in the labor market**, such as glass ceilings, occupational segregation, low employment rates, and pay inequalities;
- » **Issues related to private sector dynamics**, such as problems with access to financial resources and challenges related to women's entrepreneurship; and
- » **Issues related to the public sphere**, such as women's limited representation in leadership, decision-making processes, and policymaking.

These issues must be addressed not only through practical measures but also through research, information campaigns, awareness-raising efforts, and policies, while taking into account the direct and indirect impacts that such steps will have on the manufacturing industry.

The holistic approach also points to partnerships and shared responsibilities. As envisaged by human development, the transition process must be supported by planning based on multisectoral collaboration and dialogue to adopt a sustainable production model that prioritizes "a human- and planet-centered approach, not a profit-centered one" (IRENA and ILO, 2024), and that ensures decent work conditions and respect for fundamental human rights.

From the perspective of women's empowerment goals, multi-stakeholder partnerships including governments, businesses, civil society organizations, and international and multilateral organizations are accelerating the process of achieving equality and creating a safe and inclusive environment for everyone (OECD, 2024:8). Giesemann (2023) emphasizes the need to develop a common ground that benefits everyone, including social partners, unions, the business world, and workers, in the development of policies that facilitate a just transition.

Similarly, the ILO's guiding principles for a just transition (2015) highlight the importance of developing policies that are multisectoral and grounded in social dialogue. Furthermore, these principles highlight the need to establish national and international partnerships, and to design policies from a perspective that takes into account the differing interests and needs of women and men, as well as manifestations of inequality and discrimination, through an inclusive and well-planned approach that ensures the active participation of workers, employers, governments, and all segments of society in the process.

The proposed model embraces **an inclusive, holistic, systematic, and participatory approach** to address this framework within an interconnected context. It outlines the goals that must be set for women to have equal opportunities in the twin transition process of the manufacturing industry, as well as which stakeholders should achieve these goals and within what structure and coordination mechanism they can be implemented.

International Policy Framework

UN



EU



Paris Agreement

The Paris Agreement is a legally binding international climate change treaty that brings together all nations to combat climate change and adapt to its impacts (UN, 2015). Adopted on 12 December 2015, in Paris at the 21st Conference of the Parties (COP 21) to the United Nations Framework Convention on Climate Change (UNFCCC), the Agreement entered into force on 4 November 2016. Following the Kyoto Protocol, the Agreement marks a new era in terms of the legal framework on climate change. The primary objective of the Paris Agreement is to coordinate international and national efforts on climate change management, including reduction of emissions and adaptation to the impacts of climate change. Article 2 sets out the Agreement's objectives as follows:

- » Holding the increase in the global average temperature to well below 2°C above pre-industrial levels, and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.
- » Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production.
- » Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Meanwhile, world leaders in recent years have begun to emphasize the need to limit global warming to 1.5 °C by the end of the century. This is because the UN Intergovernmental Panel on Climate Change warns that warming exceeding 1.5 °C will lead to far more severe climate change impacts, such as more frequent and intense droughts, heat waves, and extreme precipitation events. To achieve this target, greenhouse gas emissions must be reduced by 43 percent by 2030.⁴

Looking at the implementation mechanisms employed to achieve these objectives, it is evident that the Agreement, in comparison to the Kyoto Protocol, adopts a "bottom-up" approach, thereby allowing Party States to prioritize their own "Nationally Determined Contributions" (NDCs).⁵ Party States are required to submit new or updated NDCs every five years, outlining the measures and actions they will take to achieve the objectives set forth in Article 2. The Agreement also invites

⁴ UN Climate Change, The Paris Agreement. <https://unfccc.int/process-and-meetings/the-paris-agreement>

⁵ Mitchell, T. (2017) Women in Paris: The inclusion of gender considerations in the negotiation and text of the Paris Agreement. New Zealand Women's Law Journal, Vol.1: 113-141.

countries to develop long-term low greenhouse gas emission development strategies (LT-LEDS), which lend a long-term dimension to the NDCs and provide a vision and direction for the future.

The Paris Agreement establishes a financial, technical, and capacity-building framework, particularly for countries in need of support. The Agreement emphasizes the need for large-scale investments in mitigation and, in this regard, encourages developed countries to take the lead in providing financial support to more vulnerable countries. It also highlights the importance of technology development and technology transfer for building resilience to climate change and reducing greenhouse gas emissions, and to this end, establishes a “technology framework” that provides guidance for a well-functioning technology mechanism.⁶

The Preamble to the Agreement emphasizes the importance of a just transition for the workforce and the creation of decent and quality jobs. At the same time, the Agreement emphasizes that climate change is a common concern for all of humanity and, as such, all parties must respect, protect, and take into account their obligations regarding human rights, the right to health, the rights of indigenous peoples, local communities, vulnerable populations, equality, women’s empowerment, and intergenerational equity.

The Paris Agreement goes further on the issue of equality than its predecessors, the Kyoto Protocol and the UNFCCC, and makes references to the issue in various sections. In addition to the Preamble mentioned above, Article 7 emphasizes that adaptation actions must focus on countries’ priorities and pursue the goal of equality through a participatory and fully transparent approach, while Article 11 specifies that the capacity-building process in developing countries must adopt a participatory, cross-cutting approach that takes equality into account and incorporates it.

On the other hand, the fact that the equality dimension is limited solely to adaptation and capacity-building issues, and is not included, for example, in Article 4, which deals with emission reductions, has led to criticism that the Agreement treats women as a group that requires greater support rather than viewing them as agents of change who are capable of actively combating with global warming.⁷

There is an Action Plan (Gender Action Plan – GAP) adopted under the UNFCCC framework that provides guidance on the dimensions of inequality which must be addressed in the implementation of the Paris Agreement. The GAP, based on the framework of the Lima Work Programme on Gender (LWPG), was first adopted in 2017 at the 23rd Conference of the Parties (COP 23). The purpose of the Action Plan is to support the implementation of relevant decisions and mandates within the UNFCCC process, including the development of an equality-sensitive climate policy and the mainstreaming of the equality perspective in the implementation of the UNFCCC and the Paris Agreement.

The Action Plan translates the aforementioned references in the Paris Agreement into concrete actions by identifying five priority areas for achieving the objectives:

- » **Capacity building, knowledge exchange, and communication:** Strengthening awareness, knowledge, and expertise regarding the integration of the equality dimension into the thematic areas of the UNFCCC and the Paris Agreement
- » **Equal participation and women’s leadership:** Ensuring and sustaining the full, equal, and meaningful participation of women in the UNFCCC process
- » **Coherence:** Ensuring the integration of the equality considerations within UNFCCC bodies and other UN agencies

⁶ UN Climate Change, The Paris Agreement. <https://unfccc.int/process-and-meetings/the-paris-agreement>

⁷ Ibid.

- » **Equality-focused implementation and implementation tools:** Ensuring that the implementation of the UNFCCC and the Paris Agreement respects issues of equality and women's empowerment, and that equality is upheld and taken into account in implementation
- » **Monitoring and reporting:** Monitoring the implementation and reporting processes of relevant UNFCCC obligations

Activities undertaken within the framework of the GAP contribute to the development and implementation of actions aimed at an equality-focused just transition. Looking at the progress made in the implementation of the GAP, it is evident that Parties are increasingly aligning with the Plan, particularly in their climate reports. GAP's priority areas are used to analyze how Parties have incorporated equality into their Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs). It is noted that all NAPs prepared between 2022 and 2024 reference equality, and that Parties have made progress in aligning the policies they have developed with all GAP priority areas. It is also emphasized that the commitment to mainstreaming equality into climate actions enhances the effectiveness and transformative power of climate actions outlined in the Paris Agreement (UNFCCC, 2024).

At COP 29, held in November 2024, it was decided to extend the Lima Work Programme for another ten years, to develop a new and strengthened Action Plan, and to adopt this plan at COP 30 in November 2025.⁸ The strengthened Plan will set targets and actions in the five priority areas mentioned above to ensure equality-sensitive climate actions and their implementation under the UNFCCC; to mainstream these actions throughout the work of the Parties, the Secretariat, UN bodies, and all stakeholders at every level; and to ensure women's full, equal, and meaningful participation in the UNFCCC process.



COALITION FOR DIGITAL ENVIRONMENTAL SUSTAINABILITY (CODES)

One of the most important partnerships at the intersection of digitalization and the green transition is the Coalition for Digital Environmental Sustainability (CODES). CODES is an international, multi-stakeholder alliance established in March 2021, in response to the UN Secretary-General's Roadmap for Digital Cooperation. It aims to accelerate environmentally and socially sustainable development through the design, development, deployment, and regulation of digital technologies, while mitigating potential risks and unintended consequences. The Coalition operates at the intersection where digital technologies are harnessed for environmental sustainability. CODES positions digital transition as a driving force that will advance environmentally and socially sustainable development, and fosters the necessary collaboration to achieve this. This collaboration brings together key global stakeholders, including governments, the private sector, academia, and civil society.

CODES is based on three fundamental shifts. The first shift is to create the necessary conditions for aligning the vision, values, and goals of the digital age with sustainable development. In this context, it strives to connect digital and sustainability-related networks to accelerate the twin transition; build interdisciplinary skill sets; foster a culture of multilateralism and multi-stakeholder collaboration; and promote the adoption of common principles, normative frameworks, and global standards. The following concrete initiatives are proposed to advance this transformation:

⁸ UN Climate Change. The Gender Action Plan. <https://unfccc.int/topics/gender/workstreams/the-gender-action-plan>

Initiative	Focus
World Commission on Sustainability in the Digital Age	To establish a science-based, globally represented commission supported by the UN to provide evidence-based guidance and recommendations for accelerating sustainability in the digital age.
Clearing House for Digital Sustainability Standards	To create a new, multi-stakeholder, and globally represented platform to jointly define key standards for digital sustainability and serve as a clearing house.
Education for Digital Sustainable Development	To adopt a decentralized approach to develop needs-based, localized, and context-specific literacy and education programs on digital sustainability.

The second shift centers on mitigating negative impacts, reducing energy consumption, and lowering related emissions. This shift includes addressing material use and waste issues that are associated with digitalization; restricting persuasive technologies and implementations that accelerate consumption; preventing the spread of misinformation and disinformation regarding sustainability and related topics; bridging the digital divide in an environmentally and socially sustainable manner; and upholding human, civil, and environmental rights. The following concrete initiatives are proposed to advance this transformation:

Initiative	Focus
Harmonization of Digital Companies' GHG Inventories	To establish new international platforms to facilitate the harmonization, interoperability, and adoption of greenhouse gas (GHG) inventories and reporting standards for digital companies, products and services.
Sustainable Procurement and Green Digital Infrastructure Pledge	To establish an international framework to ensure the standardization and harmonization of sustainable procurement principles for green digital infrastructure and related digital services among governments and companies.
Digital Product Passport for Circularity	To initiate the design and development of standards for digital product passports that track a product's climate, environmental, and social impacts throughout the value chain, and to conduct pilot tests.

The third shift relates to innovation. It aims to channel innovative efforts and investments toward digitalization for sustainability, thereby accelerating environmental and social sustainability. Innovation should be used to measure, monitor, and model the health of the planet's biosphere and its interactions with economic and social systems; to promote an inclusive, net-zero, and sustainable circular economy; to encourage sustainable lifestyles, behaviors, and collaboration; to create an accessible shared knowledge space; to establish a network-based,

rapid, effective, and collaborative approach to governance; and to accelerate the transition to a green, digital, and just economy for sustainable development. The following concrete initiatives are proposed to advance this transformation:

Initiative	Focus
Digital Sustainability Innovation Hubs and Accelerators	To launch a global, interconnected, and collaborative network of Innovation Hubs to accelerate the development and scaling of digital tools for national climate mitigation and adaptation targets and other environmental commitments.
Data and Assessments as Digital Public Goods for Sustainability	To develop and implement open global standards and governance frameworks for high-value environmental and climate data, which are needed as digital public goods, to guide sustainability assessments, global stocktaking, and decision-making processes.
Decentralized Financing of Sustainable Solutions	To facilitate new, transparent, decentralized financing and matching mechanisms for sustainability solutions (e.g., crowdfunding, payments for ecosystem services, algorithms).

CODES provides an inclusive, transnational platform that brings together key global stakeholders, including governments, the private sector, academia, and civil society, to achieve these goals. Within this collaboration, stakeholders seeking to engage directly in leadership and catalytic roles with one or more of the Impact Initiatives proposed in the Action Plan or those that may emerge in the future are designated as “Catalysts”; stakeholders contributing to and benefiting from the three systemic shifts proposed in the Action Plan to support progress toward digital sustainability are designated as the “Action Network”; and stakeholders seeking to contribute their expertise to the CODES group and serve as advocates for the CODES vision and values are designated as “Advocates.”

Sources:

Coalition for Digital Environmental Sustainability (CODES). (2022). *Action plan for a sustainable planet in the digital age*. <https://doi.org/10.5281/zenodo.6573509>.

Coalition for Digital Environmental Sustainability (CODES). (2022). *Action plan for a sustainable planet in the digital age: Supplement 1. Accelerating sustainability through digital transformation - Use cases and innovations*.

Coalition for Digital Environmental Sustainability (CODES). (2022). *Action plan for a sustainable planet in the digital age: Supplement 2. Mapping global and regional stakeholders working on digital sustainability*.



European Union Legislation

The EU's legislation on green and digital transition is shaped within the framework of the European Green Deal, and follows the approach adopted by Member States in line with the UN's global goals. The 2030 Agenda, which views development from an innovative, equitable, and sustainable perspective within the UN framework, forms the fundamental approach for the Union's legal and policy steps on this issue.

European Green Deal

Adopted in 2019, the Green Deal (European Commission, 2019), aims, in the broadest sense, to transform the EU economy for a sustainable future. In this regard, it seeks to transform the EU into a just and prosperous society through a modern, resource-efficient, and competitive economy with net-zero greenhouse gas emissions. At the same time, the Deal emphasizes the need to protect and enhance the Union's natural resources and to safeguard the health and well-being of its citizens from environmental risks and impacts, underscoring that this transformation must be fair, inclusive, and human-centered. Within this context, it highlights the need to focus particularly on regions, sectors, and employees facing the greatest challenges, and notes that this is a transition process in which citizens, in all their diversity, must actively participate in shaping policies. Serving as the EU's pledge to achieve the UN 2030 Agenda and the Sustainable Development Goals, the Green Deal emphasizes that the factors driving climate change and biodiversity loss require a global effort, and that the EU will leverage its influence, expertise, and financial resources in collaboration with its neighbors and partners, thereby enabling progress along a sustainable path. To this end, the Deal sets out a roadmap and defines key policies and measures, underscoring that all EU actions and policies must contribute to the objectives of the Green Deal. It also emphasizes that these policies must be bold and inclusive, delivering maximum benefits in terms of health, quality of life, resilience, and competitiveness.

The key objectives and scope of the European Green Deal can be summarized as follows:

- » **New Growth Strategy:** The Green Deal is a new growth strategy designed to address climate and environmental challenges for the Union and its citizens.
- » **Climate Neutrality:** The primary goal is to transform the EU into a fair and prosperous society with net-zero greenhouse gas emissions by 2050.
- » **Economic Decoupling:** The goal is to decouple economic growth from resource use.
- » **Just Transition:** This transition must be just and inclusive, with special attention given to regions, sectors, and employees who will face the greatest challenges.

The key elements of the proposed legislative and policy framework to achieve these objectives can be summarized as follows:

- » **European Climate Law:** The European Commission will propose the first European Climate Law by March 2020 to enshrine the 2050 climate neutrality target in legislation.
- » **2030 Target:** By the summer of 2020, the Commission will present an impact-assessed plan to increase the EU's 2030 greenhouse gas emission reduction target to at least 50% and up to 55% below 1990 levels.
- » **Carbon Border Adjustment Mechanism:** A carbon border adjustment mechanism will be proposed for selected sectors to reduce the risk of carbon leakage. This mechanism will ensure that import prices more accurately reflect their carbon content.

- » **Zero Pollution Target:** An action plan for zero air, water, and soil pollution will be adopted in 2021.

The Green Deal also calls for several sectoral transformations:

- » **Energy:** Prioritizing energy efficiency, developing the energy industry largely based on renewable sources, rapidly phasing out coal, and decarbonizing natural gas.
- » **Industry and the Circular Economy:** Fully mobilizing industry toward a clean and circular economy, establishing an EU industrial strategy, and creating a new circular economy action plan.
- » **Transportation:** Targeting a 90% reduction in transportation emissions by 2050; shifting domestic freight transported by road to rail and inland waterways; and expanding the European Emissions Trading System to the maritime transportation.
- » **Buildings and Construction:** Launching a “renovation wave” in public and private buildings to improve energy efficiency, reduce energy poverty, and support small and medium-sized enterprises (SMEs) and local businesses.
- » **Food and Agriculture (“Farm to Fork”):** Significantly reducing the use of chemical pesticides, fertilizers, and antibiotics through the “Farm to Fork” strategy.
- » **Biodiversity:** Developing a Biodiversity Strategy to halt biodiversity loss, along with effective afforestation, forest conservation, and restoration.

The Deal also projects that approximately €260 billion in additional investment per year will be required to meet the 2030 climate and energy targets, and has proposed a **Just Transition Mechanism** for this purpose. This mechanism will focus on regions and industries most dependent on fossil fuels or carbon-intensive processes. At the same time, a revised sustainable finance strategy will be presented in the third quarter of 2020 to redirect financing and capital flows toward green investment in the long term.

Another key point emphasized by the Green Deal is the global leadership role the EU must play. Accordingly, the EU will continue to promote ambitious environmental and climate policies worldwide and develop a stronger “Green Deal diplomacy.” Respect for the Paris Agreement is proposed as a fundamental element for all future comprehensive trade agreements. In addition, the launch of a European Climate Pact by March 2020 is planned to ensure citizen participation. This pact will encourage information exchange and provide platforms for citizens to express their views on climate action.

The Deal also makes the “green oath: ‘do no harm’” principle an official commitment. This principle is intended to ensure that all EU actions and policies are aligned to support a just and successful transition toward a sustainable future. Existing ‘better regulation’ tools will be used to implement this principle, which will include public consultations, *impact assessments* that identify environmental, social, and economic impacts, and analysis of how SMEs are affected and how innovation is either encouraged or hindered.

The Green Deal does not make direct reference to women’s empowerment or equality, but it emphasizes that the envisaged transition process must be fair, inclusive, and people centered. In addition, it prioritizes improving citizens’ well-being and promoting sustainability by emphasizing the principle of leaving no one behind. The Just Transition Mechanism envisaged by the Deal aims to protect the most vulnerable groups of citizens and employees in the face of transition and to ensure their access to skills upgrading opportunities and jobs in new economic sectors.

Women and Equality in the EU Legal and Policy Framework

The EU's recent legal and policy framework, which is based on the Green Deal and focuses particularly on the green and digital transition of the manufacturing industry, includes provisions for inclusivity, and addresses the needs of groups requiring special support. Women are generally considered alongside other vulnerable groups in need of support, and related support measures primarily focus on skills development.

Adopted in 2020, one of the key policy tools defined within the framework of the Green Deal is the **European New Industrial Strategy** (European Commission, 2020a). This Strategy places special emphasis on green and digital transition processes in the manufacturing industry, underscoring the need for the EU's manufacturing industry to be globally competitive, resilient, and sustainable. Therefore, the Strategy's objective is not only decarbonization, but also strengthening digitalization, that is, accelerating the "twin transition" process. In doing so, it emphasizes the need to prioritize new business models, resource-efficient production, high-skilled jobs, and innovation.

Key elements of the Industrial Strategy that address women's interests, needs, and equality focus on skills acquisition and reskilling. Accordingly, the Strategy emphasizes the need to establish a better balance between women and men in the manufacturing industry, and states that women must be supported, particularly in STEM education, technology careers, and digital skills development. It also highlights the importance of implementing the **2020–2025 EU Strategy for Gender Equality** (European Commission, 2020b), which is adopted in March 2020, to achieve the goals related to skills development. This Strategy for equality contains key points regarding women's role in the economy and industry during the twin transition. Highlighting the equality dimension in the challenges encountered during the EU's green and digital transition, the Strategy states that equality is a prerequisite for an innovative, competitive, and growing European economy.

The EU Gender Equality Strategy states that digital transition will radically change our lives and that it is vital for women to play an active role in shaping this future. Across the EU, women account for only 17% of those pursuing ICT education and careers in this field, and 36% of STEM graduates. Digital transition means that 90% of today's jobs require basic digital skills. Developed within this regard, the **'Women in Digital'** program aims to ensure equal participation of women in ICT, digital professions, and STEM fields by 2030. The strategy also emphasizes artificial intelligence, highlighting the need for women to participate in this field as researchers, programming experts, and users, given the strategic importance of AI. In addition, it is noted that Horizon Europe funds will be directed toward technology startups founded by women.

Regarding the green transition and climate change, it is emphasized that policies such as the Building Renovation Wave or the EU Climate Adaptation Strategy will affect women differently. For example, energy poverty affects women disproportionately, and women rely more heavily on public transportation. Therefore, for these policies to be successful, they must take into account the different interests and needs of women and men, the roles society assigns to them, and the existence of unequal power dynamics.

The Strategy seeks to create an economy based on equality, where women have equal opportunities to achieve financial independence. Empowering women in the labor market requires supporting them as investors and entrepreneurs as well. Highlighting that women are underrepresented in high-paying professions, the Strategy states that discriminatory social norms and stereotypes, along with the perception that women's work is of lower value, are the root causes of occupational segregation in the workforce. Accordingly, the Strategy notes that the European Skills Agenda will support the promoting a balanced representation of women and men in professions traditionally dominated by either women or men, and the fight against stereotypes. The Strategy also points out that women's representation in decision-making positions in European manufacturing industry and

business is low, and states that measures, including a Directive, will be developed to address this.

These strategies are shaping laws, programs, and various initiatives that focus on digitalization and sustainability, particularly targeting the manufacturing industry. Adopted in 2024, the **Net-Zero Industry Act** (European Parliament, 2024) aims to establish a framework that strengthens Europe's net-zero technology manufacturing ecosystem. The Act addresses the issue of women and equality primarily within the context of building skills and strengthening the workforce for net-zero industries. Emphasizing that a highly skilled workforce is the most fundamental prerequisite for strengthening manufacturing capacity for net-zero technologies, the Act highlights the need to increase women's participation in the workforce for net-zero technologies.

The European Net-Zero Industry Academies, established under this framework, are specifically mandated to develop training programs for net-zero technologies, create educational content that promotes a balanced representation of women and men, combat stereotypes, ensure equal access to learning materials for all, and, in particular, to encourage the participation of women and other underrepresented groups. The Net Zero Europe Platform, which oversees the academies, is authorized to monitor participation in learning programs, including the collection of disaggregated data based on equality principles. The Platform seeks to support Member States in developing skills. In this context, ensuring the integration of women and other underrepresented groups (such as youth, older adults, and migrants) into the workforce that is necessary for the net-zero technology manufacturing industry to promote workforce diversity is also among the Platform's responsibilities. The primary objective of all these initiatives is to promote equality and increase women's participation in the rapidly expanding net-zero technology manufacturing industry.

In addition, the **Green Deal Industrial Plan** (European Commission, 2023), which is adopted in February 2023 to enhance the competitiveness of EU industry in clean technologies and the net-zero transition, simplify regulatory frameworks to attract investment, increase access to financial resources, and promote skills development, emphasizes the importance of providing inclusive skills support for everyone, including women and youth. However, while the Plan underlines the importance of women's skills and workforce development, it lacks a strong equality strategy or legally binding targets set for this purpose (EU Observer, 2024).

In summary, along with the wide range of initiatives it encompasses, the European Green Deal framework includes important commitments regarding women's role and equality in the twin transition. Building equality between women and men is an objective pursued in all areas, in accordance with the EU's principle of mainstreaming. Key EU policies related to the issue, including environment, climate, energy, green transition, digitalization, research, and funding, take into account their impacts on equality, and incorporate various measures to ensure that the green transition aligns with equality objectives (in areas such as budgeting, data collection, stakeholder participation, innovation policies, etc.). Therefore, the EU views equality not merely as a "social" issue, but as a fundamental dimension of a just and inclusive twin transition, emphasizing the importance of women's participation in this transition at the strategy and policy levels. On the other hand, a report by the *European Institute for Gender Equality (EIGE)*, which examines best practices for mainstreaming equality in policy areas covered by the Green Deal (EIGE, 2024), underscores the need to reinforce mainstreaming strategies and the analytical tools used by both the EU and the Member States. Accordingly, ensuring an equal distribution of jobs created by the green transition between women and men is key to a just transition. In this regard, data disaggregated by women and men and indicators that facilitate the collection of such data stand out as fundamental tools for mainstreaming equality in the green transition. Another important tool is equality-sensitive budgeting and public procurement processes to ensure the equal distribution of funds allocated for the green transition.

PRIORITY AREAS AND BEST PRACTICES FOR AN EQUITABLE AND INCLUSIVE TRANSITION



Introduction: The diversity of priority areas and the empowerment approach

To achieve the goal of women's empowerment, it is crucial to implement not only micro-level studies focused on the individual, but also mezzo-level studies addressing organizational processes and macro-level studies addressing sectoral and structural processes. In the broadest sense, "empowerment," which can be defined as an individual's ability to take control of their own life and access information and resources, is not merely an intervention directed at the individual but rather an outcome that emerges in an individual or group through the elimination of existing disadvantages and the provision of resources and opportunities. Therefore, holistic interventions are also necessary regarding the organizations, structures, laws, regulations, practices, and legal frameworks that accompany initiatives targeting individuals or groups. Therefore, empowerment carries a broad meaning that includes not only education, training, raising awareness, building self-confidence, having expanded opportunities, and increasing access to and control over resources, but also taking action to transform the structures that lead to discrimination and inequality.⁹

Efforts to empower women in the process of digital and green transition should include interventions that enable women to enter the workforce by acquiring knowledge, skills, and resources, while also focusing on organizational and structural practices that will play a role in ensuring equality. Planned interventions targeting different areas of the process within a holistic approach will support women's equal and effective participation in this process.

The OECD (2024) emphasizes the diversity of policy areas related to women's empowerment in the green and digital transition. Accordingly, measures should be taken to empower women in the transition process through multi-stakeholder interventions across various domains, ranging from the labor market to individual development opportunities, and from social policies to institutional mechanisms.

1. Increasing Participation in the Labor Market

- » Targeted programs to increase women's participation in the green and digital sectors (scholarships, vocational training, STEM courses, etc.)
- » Measures that support women in balancing their caregiving responsibilities with their professional lives, such as flexible work models and remote work
- » Special financing and mentoring mechanisms for women entrepreneurs

2. Training and Skills Development

- » Early-age incentive programs for STEM education for girls
- » Reskilling and upskilling projects for women
- » Reducing bias in training materials

3. Caregiving Economy and Social Policies

- » Institutionalizing free caregiving services (childcare centers, elder care services, etc.)
- » Policies encouraging men to share caregiving responsibilities (paternity leave, care leave, etc.)

⁹ <https://trainingcentre.unwomen.org/mod/glossary/view.php?id=36&mode=letter&hook=E&sortkey=&sortorder=asc>. See also ILO A manual for gender audit facilitators: The ILO participatory gender audit methodology, 2nd Edition Geneva, International Labour Office, 2012, p. 107

4. Institutional Mechanisms and Policy Tools

- » Measuring the impact of every new climate, energy, or digital policy decision on women and men through impact analysis
- » Equality-responsive budgeting and public procurement
- » Empowering organizations focusing on equality and building their capacity

5. Multi-Stakeholder Collaborations

- » Inclusive transition projects through collaboration between the government, the private sector, academia, and civil society
- » Greater representation of women in decision-making mechanisms (e.g., quotas for women on the boards of energy companies)

The analysis presented in this section includes steps that can be categorized into three areas, industry, workplace, and workforce, aimed at empowering women in the manufacturing industry during the twin transition process. At the **industry** level, the analysis addresses the evolving industry structure, the review of skills forecasts, job classifications, and rankings, as well as policies, interface structures, organizational relationships, and financial resources, along with the necessary steps to be taken. At the **workplace** level, the steps to be taken will be addressed in the context of both physical working conditions that take into account the needs of both female and male employees, and the regulations necessary to establish inclusive labor relations. Finally, the section will focus on the strategic interventions proposed to ensure women's equal participation in economic and social life, and in this context, the necessary measures regarding **skills, resources, and awareness-raising**. This section will also focus on the importance and potential impacts of women's leadership and women's entrepreneurship.

INDUSTRY



WORKFORCE



WORKPLACE



1. INDUSTRY

The digital and green transition process marks a significant turning point for the manufacturing industry. Policies specifically targeting the industry must first be developed to support this process and to implement initiatives to empower women during the transition. In other words, the empowerment of women in the digital and green transition process should, in and of itself, serve as a new policy area that guides the industry. On the other hand, policy serves as a tool that enables women's empowerment in the twin transition, lays the necessary groundwork, and ensures a conducive environment and continuity.

Decisive steps must be taken to ensure that this tool be used effectively and respond to the industry's transition goals. Mapping existing policies under this thematic area, assessing their alignment with the transition process, monitoring implementation, and making revisions through collaboration to facilitate necessary policy changes constitute a fundamental starting point. These policy improvements must be comprehensive and evidence-based to drive transformation in the industry. Identifying trends related to the twin transition and women's empowerment in the manufacturing industry, mapping existing programs and practices, and conducting analyses that provide insights into future trends regarding new skills and working methods should be treated as tools for providing the necessary information for policy improvements and programs.

The goal of the twin transition in the manufacturing industry and the empowerment of women involves many diverse areas, ranging from workplaces to employees, and from caregiving responsibilities to digital skills. Therefore, incorporating women's empowerment in the twin transition process as a policy area requires a comprehensive effort within a collaborative framework that recognizes the multidimensional nature of the issue and that facilitates the implementation of multi-stakeholder steps tailored to its characteristics. Identifying overlaps and duplications among existing programs and practices, pinpointing gaps and necessary new steps, and developing and implementing roadmaps in line with identified needs through collaboration and coordination can yield effective results by establishing multi-stakeholder partnerships and collaborations.

Empowering Women in Green and Digital Transition as a Policy Area

It is essential to develop policies targeting the workforce, companies, and the industry as an implementation tool in interventions to empower women during the green and digital transition process. Organizations such as EIGE and the IMF are calling for policy measures to establish **a better balance between women and men in the green transition**. This call emphasizes the need to develop policies on fundamental issues such as combating discrimination, access to care services, and parental leave; it also involves reviewing policies related to tax policies, budgeting, financing, and access to employment through an equality lens, and taking the necessary corrective and transformative measures. These policy actions will not only promote equality, but also contribute to a more dynamic and resilient economy (Alonso-Albarran et al., 2021).

The WE Project's Current Status and Needs Analysis Report, which is based on extensive field study and stakeholder consultations, also underscores that efforts to promote equality between women and men must be **translated into a public policy priority to be implemented by stakeholders**, moving beyond corporate social responsibility, so that these efforts can be viewed as a sectoral priority. The importance of public service provision is highlighted among policy measures to support working life, and recommendations are made for specific concrete steps.

- » **Ensuring access to quality healthcare, childcare, and transportation services:** Expanding affordable childcare and elder care services, strengthening specialized health services for women, and providing safe transportation options are fundamental steps to support women's sustainable employment.
- » **Facilitating access to social services for manufacturing industry workers:** Women working in the manufacturing industry face challenges in accessing childcare, education, and healthcare services, which negatively impacts their career development. Enhancing and improving the quality of these services in industrial zones will increase the industry's capacity to attract and retain talented employees.
- » **Developing social services tailored to regional differences and specific needs:** Social service needs and preferences vary by region. Localized social service delivery models that take regional needs into account can be developed to increase women's employment in industrial zones. Periodic needs assessments can be conducted in this context. This will allow for planning and programming that accurately addresses employees' needs and interests, based on the data obtained from these assessments.

The Impact Analysis conducted and planning recommendations presented as part of the WE Project offer the following suggestions for planning effective public interventions:

- » **Collecting data** on women's employment incentives that goes beyond the number of women employed, and includes information on the positions they hold, how long they remain in those positions, and their career progression.
- » Linking KOSGEB/TUBITAK support to diagnostic applications such as SIRI and similar tools to **strengthen support for treatment applications** beyond mere diagnosis.
- » Introducing **a requirement for a specific percentage of female employees** when providing support for digital transition projects, or awarding bonus points to companies that hire female engineers and technicians.
- » **Implementing a "women in the manufacturing industry" curriculum** in the final year of Vocational Schools of Higher Education and vocational high schools to **enhance career literacy** in this field, and sharing career paths, success stories, and rights and responsibilities for women in the manufacturing industry within this context.
- » **Providing infrastructure grants to ensure the necessary physical arrangements are made in workplaces** to increase women's employment (e.g., dressing rooms, daycare centers).

The WE Project highlights the importance of public service delivery among **policy measures that support working life** through its analysis of the current status and needs, and offers recommendations for concrete steps.

- » **Ensuring access to quality healthcare, childcare, and transportation services:** Expanding affordable childcare and elder care services, strengthening specialized health services for women, and providing safe transportation options are fundamental steps to support women's

sustainable employment.

- » **Facilitating access to social services for manufacturing industry workers:** Women working in the manufacturing industry face challenges in accessing childcare, education, and healthcare services, which negatively impacts their career development. Enhancing and improving the quality of these services in industrial zones will increase the industry's capacity to attract and retain talented employees.
- » **Developing social services tailored to regional differences and specific needs:** Social service needs and preferences vary by region. Localized social service delivery models that take regional needs into account can be developed to increase women's employment in industrial zones. Periodic needs assessments can be conducted in this context. This will allow for planning and programming that accurately addresses employees' needs and interests, based on the data obtained from these assessments.

Mainstreaming Policy

The digital and green transition process is accompanied by **a broad policy framework and organizational diversity** encompassing the fields of manufacturing industry, production relations, labor relations, the environment, climate change, and technology. **The equality and inclusion perspective must be mainstreamed** so that this framework serves as a tool that supports equality, and prevents the reproduction of existing inequalities.

The key elements of **a public policy that mainstreams equality in the twin transition** can be outlined as follows: (1) developing **budgeting** methods that take into account the different impacts of public expenditures on women and men in order to ensure a more equitable distribution of resources; (2) generating **disaggregated data** for initiatives across a wide range of sectors, from energy consumption to digital education programs; (3) **building the capacity** of agencies responsible for climate and digital transition in matters of equality; and (4) **collaborating** with organizations working in this field.

One way to establish an effective policy framework is **to draw on the guidance and recommendations of international conventions**. International conventions addressing numerous issues, such as caregiving work, parental rights, labor rights, and inclusive workplaces that are relevant to the goal of empowering women in the digital and green transition process contain certain recommendations for policymakers. These recommendations outline the steps to be taken to ensure that practices, regulations, rules and the legal system are aligned with the relevant standards. For example, the recommendations for policymakers in the ILO Convention No. 190 concerning the elimination of violence and harassment in the world of work can be summarized as follows:



BEST PRACTICE EXAMPLES

ILO Convention No. 190's Recommendations for Policymakers:

1. Strengthening the International Legal and Regulatory Framework:

- » Legal frameworks should be developed by ratifying international conventions such as ILO Convention No. 190 (C190) and Recommendation No. 206 (R206) to combat violence in the workplace.

- » **The criterion set out in C190, that even a single instance of unacceptable behavior constitutes a form of violence,** should be incorporated into the definition of violence in national legislation to protect employees' well-being and safety.
- » Necessary steps should be taken to ensure the adoption of international conventions aimed at eliminating violence at the national and organizational levels.

2. Expanding the Scope of Occupational Safety and Health (OSH) Legislation:

- » **The scope of the Labor Law and OSH legislation** should be reviewed and expanded, recognizing that violence and harassment in any workplace constitute an **occupational safety and health issue**.

3. Ensuring Access to Justice and Complaint Mechanisms:

- » **Barriers preventing women and men from accessing legal remedies in cases of violence must be identified,** and solutions to these barriers must be developed.
- » Victims of sexual violence must have access to **an effective, independent, and confidential complaint procedure**.
- » Complaints must be thoroughly investigated; **perpetrators must be prosecuted and receive adequate punishment;** and victims must be **protected against retaliation**.
- » Barriers to accessing legal rights must be identified to ensure that all citizens, without exception, can safely exercise their rights, and mechanisms to overcome these barriers must be developed.

4. Standards for Developing Organizational Policies and Monitoring:

- » Public authorities **should support employers in developing policy documents** designed to prevent workplace violence and harassment.
- » **Standards should be developed for companies to assess and report on the effectiveness of** systems and mechanisms designed to prevent workplace violence.
- » The social sustainability perspective and related indicators **should be further integrated into national sustainability reporting standards and legislation to include combating workplace violence and monitoring its effectiveness**.

5. Targeted Interventions and Promotion of Unionization:

- » Studies should be conducted to understand the specific vulnerabilities of sectors such as **"other service activities"** (hairdressing, tailoring, dry cleaning, repair work, etc., where exposure to all five types of violence is most common), and analysis should be performed **to enable the implementation of specific measures**.
- » Public authorities should **foster an environment of freedom for unionization and the exercise of union rights,** thereby creating opportunities for all employees to benefit from the protective effect of union membership against violence.
- » **Efforts to coordinate and integrate** the activities of various government agencies and units to eliminate different forms of violence must be enhanced, as workplace violence is an intersectional phenomenon and fragmented approaches fall short.

Policies pertaining to working life must be supported by structural monitoring processes carried out in light of national and international principles to ensure they incorporate an equitable and inclusive perspective. For example, programs such as **the YONDE (Mentoring and Evaluation Support Program conducted by KOSGEB), Digital Transformation Assessment Analysis and Roadmap Service Support, Sustainability Reporting Service Support, and Lean Maturity Assessment Analysis (YODA) Service Support** must incorporate an approach that reflects the perspectives of equality and inclusivity. The Strategic Plan of the Ministry of Family and Social Services identifies the implementation of mainstreaming efforts, defined as “incorporating an equality approach into plans and policies,” as a mandatory task for public institutions.



BEST PRACTICE EXAMPLE

The practices in Costa Rica serve as an inspiring example of the mainstreaming approach in an organizational context. In Costa Rica, a new guideline was approved to help labor inspectors identify, prevent, and monitor unequal treatment of female and male workers in areas such as equal pay, recruitment, training, promotion, and occupational health and safety, including sexual and other forms of harassment. When labor inspectors are well-trained on equality, they play a key role in ensuring the application of the principles of equal treatment and non-discrimination. (Dedeoğlu & Ekiz Gökmen, 2021).

The Goal of Equality in Structures Supporting the Twin Transition

Digitalization and the green transition are expected to bring about change across a wide range of areas, including industry-specific ways of doing business, organizational structures, labor relations, and partnerships. Among the catalysts for effective transformation in the manufacturing industry are organizational structures that promote learning and experience, structures that sometimes rely on the public sector, sometimes the private sector, and sometimes civil society initiatives. Structures grouped under umbrella concepts such as **centers of excellence, learning factories, model factories, and digitalization centers** can be considered within this context. Various studies emphasize the importance of new centers of excellence for managing the implementation of digital technologies and leveraging the expertise of critical resources (Digital Türkiye Platform, 2021).



BEST PRACTICE EXAMPLE

EIT Manufacturing, a public-private partnership established in 2019 and co-funded by the European Union, is one of nine Knowledge and Innovation Communities (KICs) supported by the European Institute of Innovation and Technology (EIT). Recognizing that the manufacturing industry is the foundation of global prosperity and the key to Europe’s economic, social, and environmental sustainability, as well as the primary driver of industrial innovation, job creation, and growth, the community plans and carries out its work with the following objectives: (i) to improve people’s lives through sustainable production; (ii) to accelerate sustainable innovation in Europe; (iii) to foster talent and entrepreneurship; (iv) to

integrate education, innovation, and business establishment; and (v) to connect actors in the manufacturing industry.

EIT Manufacturing brings together a growing network of high-level industrial partners comprising leading academic and research institutions across the region, as well as innovative startups, scalable companies, and SMEs. The community focuses on the five core priorities (5P) of sustainable development within its strategic framework: people, planet, prosperity, peace, and partnerships. The community has three primary objectives:

1. Putting people at the center of production and building a highly skilled workforce: Enhancing education and innovation at higher education institutions through initiatives such as the Skills.move learning platform and the EIT Deep Tech Talent Initiative.
2. Accelerating green production: Significantly reducing the impact on the climate by promoting closed-loop production in line with the European Green Deal, the Net-Zero Industry Act, and the Critical Raw Materials Act, reducing emissions, and by supporting the circular economy.
3. Enhancing autonomy and competitiveness: Increasing the manufacturing industry's ability to adapt to change, its flexibility, and its resilience through innovations that both create new systems (disruptive*) and improve existing systems for large companies, startups, and SMEs.

Diversity and, in particular, equality are strategic priorities for the community. In this context, the community aims to make the work environment in the manufacturing industry more attractive through technology and digitalization, and to create socially sustainable jobs. Health, safety, diversity, and inclusion are prioritized, and initiatives such as the EIT Manufacturing Equality Policy and mentoring programs supporting women in the manufacturing industry are being implemented. The community has established key performance indicators (KPIs) in line with this objective and within the framework of skills development programs and entrepreneurship support. Additionally, it is projected that half of the 15-member management team of the unit will be women.

** Innovation that replaces complex and costly production systems with simple and accessible ones, creates a new market and value network, or penetrates the lowest tier of an existing market and ultimately displaces established market-leading companies, products, and alliances*

These structures, which foster knowledge and expertise in the green and digital transition, can undertake initiatives, such as expanding digital and green transition training programs for the female workforce, establishing sector-specific mentoring and networking platforms for female employees and leaders, and creating programs that support women who have had to take a break from their careers in returning to work with new skills. There are many steps that competence centers can take to serve the transformation in the industry at the intersection of green and digital transition and women's empowerment:

- » Incorporating **a perspective to eliminate stereotypes** regarding green and digital skills in training and communication efforts on technical issues
- » Highlighting **women's role in the digital and green transition**

- » Conducting **media and communication campaigns to help both female and male employees overcome stereotypes**
- » Sharing insights and providing information **on the meaning, role, and benefits of inclusive work environments** in collaboration with companies
- » Implementing **transformative programs targeting organizational structures and relationships to promote the widespread adoption of inclusion and equality practices** within their own organizations and ensure these practices are reflected in their plans, programs, and operations



BEST PRACTICE EXAMPLE

STRADA PROJECT

The STRADA — Women in Manufacturing Project is a leadership initiative focused on empowerment. It is being implemented in Spain, Italy, Bosnia and Herzegovina, Bulgaria, Estonia, Lithuania, and Ireland. The project targets female engineering students who have completed their master's and doctoral degrees. The program's content focuses on skills in high demand within the manufacturing industry, including entrepreneurship, sustainability, and digitalization. Through the project, participants find the opportunity to build connections across Europe, engage with like-minded peers, benefit from mentoring support in the leadership program, and to access career development coaching and networking opportunities. The primary objective is to ensure that women take on managerial and leadership roles in their professional careers, whether in academia or industry, and to facilitate the equitable transition of the manufacturing industry. The project's overall goal is to ensure that women are treated as equal partners in the industry and to create an equitable environment for future generations by changing the mindset that views women as unsuitable for the manufacturing industry. It is reported that a network of approximately 400 people has been created under the project, involving 120 mentees, hosting over 25 hours of webinars, and including more than 100 companies and universities.

Equitable Transition in Sectoral Organizations

Organized industrial zones, trade unions, employer associations, chambers of industry, and other learning structures involved in the development of the manufacturing industry can play significant roles in developing, implementing, sharing, and disseminating the perspective of women's empowerment at the intersection of green and digital transition and equality in the manufacturing industry.

The current activities of these organizations should be reviewed to ensure they incorporate the goal of women's empowerment, and efforts to foster inclusivity and equality within their internal operations should be supported. **These organizations, which will determine their plans based on needs identified through sector analyses and directly on the demands of companies, must take pioneering steps to develop the workforce, knowledge, and skills required by the sector.**

The WE Project's Current Status and Needs Analysis has established a framework based on assessments conducted with stakeholder participation to ensure the effective and systematic implementation of the above functions, and the creation of replicable models across different industrial zones. Within this framework, the Fourth Industrial Revolution, a period of transformation

in the manufacturing industry, must be accompanied by a performance management system that fosters inclusive and equitable labor relations.

ETT Performance Management System for Industrial Zones

Industrial zones serve as the ideal spatial interfaces for the private sector to design and implement the necessary interventions for the empowerment of women. Organized Industrial Zones (OIZs) can play a leading role in facilitating the dissemination of best practices from leading firms to SMEs, incentivizing companies, ensuring the monitoring and evaluation of interventions, and increasing the efficiency of service delivery. Establishing interfaces within OIZs, defining specific criteria, developing certification systems at the OIZ and company levels, and standardizing service delivery through these interfaces will ensure the widespread implementation of interventions. A performance-based system, modeled after the Green OIZ certification system implemented in collaboration with the Ministry of Industry and Technology, the Turkish Standards Institute, and other development stakeholders, could encourage OIZs to take concrete steps toward women's empowerment. Recommendations to achieve this goal consist of four priority actions:

- » **Implementing interfaces to transfer best practices from large corporations to SMEs:** Interventions at the industrial zone level can be implemented spatially within OIZs. OIZs play a significant role in Türkiye's manufacturing industry and are well-positioned to support policies designed to promote equality and increase economic opportunities for women. The strategic role of OIZs can be leveraged to create more inclusive and supportive work environments, particularly in SMEs within the manufacturing industry.
- » **Developing criteria that support women's participation:** Measurable indicators that support inclusive and equitable workplaces and women's participation should be defined, training and capacity-building programs should be promoted, and physical conditions and schedule flexibility should be improved to increase and sustain women's employment in the manufacturing industry. The performance monitoring and management system to be developed should be reviewed and evaluated at both the interface and company levels. The established criteria should aim to promote training and capacity building, ensure compliance with legal regulations and international standards, support the widespread use of ergonomic equipment and automation, improve social and fringe benefits, and instill equality.
- » **Developing a certification system and ensuring compliance with standards:** A certification system should be established using defined criteria to achieve the goal of women's empowerment. This system, similar to the green industrial zone certification model, can be implemented in industrial zones that demonstrate high performance in terms of women's empowerment.
 - ◊ The certification model should be improved to evaluate women's employment rates, career development opportunities, inclusive workplaces, workplace safety, equal opportunity, and access to supportive social services in industrial zones, with a view to incentivizing industrial zones identified as high performers. Organized Industrial Zones (OIZs) and industrial zones that provide adequate healthcare, childcare, and educational services should be granted special advantages.
 - ◊ An equality-focused audit and monitoring system should be established in industrial

zones to regularly assess workplaces' compliance with established standards. Participation in international monitoring initiatives, such as the ILO/IFC Better Work Initiative, should be encouraged to boost the competitiveness of industrial zones. Internal audit committees should be established to ensure the effective implementation of policies protecting women's rights in the workplace.

- ◇ Effective complaint mechanisms should be implemented at the industrial zone level to ensure that female employees can report rights violations in a safe and accessible manner. Hotlines, counseling centers, and online complaint platforms should be established to facilitate reporting. Complaint mechanisms should be linked to a legal support center to provide female employees with information on how to defend their rights.

It is critical to create an environment conducive to taking steps aimed at women's empowerment, not only for women but also by women and in collaboration with them. This will be possible through the establishment of structures where women can freely express their concerns, develop solutions, and implement those solutions. The Current Status and Needs Analysis conducted as part of the WE Project highlights the need to support the establishment of women's committees to develop policies that address women's needs in industrial zones, trade unions, and chambers of industry, and the need to ensure equality within companies, outlining a framework to this end. These committees can create a platform for dialogue and advocacy where women are represented at various levels (PAL, 2025).

Why are women's committees important?

Establishing platforms that address the needs of female employees:

Independent platforms where female employees can voice their concerns, demands, and suggestions will not only allow them to share their views on working conditions, equal pay, and career opportunities, but will also enable them to communicate directly with employers, unions, civil society organizations, and public institutions.

Supporting initiatives to mainstream diversity and equality:

Approaches to mainstreaming equality will facilitate the recognition of the different needs of women and men and help improve conditions for female employees. In addition, projects that encourage greater participation of women in decision-making mechanisms should be developed and monitored, with the goal of increasing diversity.

Developing mentoring programs for women:

Mentoring programs should be developed to encourage women to pursue careers in industrial professions, support their career development, facilitate their adaptation to the workforce, and enhance their leadership skills. These programs, which will match female employees or students with experienced professionals, will contribute to building professional competencies and expanding professional networks.

An Industry-Specific Approach to Digital and Green Skills Intelligence

The World Economic Forum's Future of Jobs Report 2025 reveals that "skills" are one of the most fundamental issues for the economies of the future. By 2030, 39% of the core skills possessed by employees will change or become obsolete, and 59 out of every 100 people will need new skills. Projections indicate that 29% of employees will take on new roles through skill development, 19%

will be able to assume different roles with new skills, and 11% may face the risk of losing their jobs due to skill gaps (WEF, 2025).

Today's fast-paced technological advancements are creating a need for the workforce to acquire digital skills. On the other hand, as the green transition, climate policies, and the development of adaptation technologies reshape the production landscape, there is a growing demand for a workforce equipped with green skills and technological knowledge. This process of change will bring about significant shifts in the labor market, and new production relations will require new and constantly evolving skills.

Described by the **European Centre for the Development of Vocational Training (CEDEFOP) as a "skills revolution,"** this period necessitates the development of existing skills and the acquisition of new ones. This does not merely mean the formation of a core workforce to work in the green economy; rather, it signifies a paradigm shift that points to the skills and approaches of the entire workforce in production and society as a whole (CEDEFOP and UNEVOC, 2025). Ensuring that this era is marked by an inclusive and just transition process is possible primarily by understanding the industry's and markets' needs regarding skills, assessing those needs, and developing policies based on **a skills intelligence**.

Skills assessment is the strategic analysis of current and future skills needs in the labor market using consistent and systematic methods. This process involves identifying skills gaps and deficiencies, and evaluating the capacity of qualification systems (education and training services, funding mechanisms, etc.) to meet economic needs. Skills assessment can be conducted at the national, regional, local, or sectoral level. The purpose is to provide a comprehensive analysis of current skills needs, evaluate the future impacts of past trends, and provide information on emerging skills needs or potential future skills gaps.

This information can provide descriptive data, either quantitative (e.g., changes in the number of people employed in a particular profession or the number of people with a specific skill level) or qualitative (e.g., changes in skill profiles across jobs).

Skills intelligence is the process of identifying, collecting, analyzing, synthesizing, and presenting quantitative or qualitative information related to skills and the labor market. Skills intelligence is acquired in the following areas:

- » Labor market profiles and trends, including employment, unemployment, and earnings;
- » Skill needs, skill mismatches, and skill gaps;
- » Current skill and competency requirements, working conditions, and skill deficiencies for relevant professions;
- » Pathways to entering and advancing in professions;
- » Changes and adaptations needed in education and training to acquire skills for a profession or to address a skills gap in a specific profession;
- » Need for and forms of career guidance (CEDEFOP and UNEVOC, 2025).

The ability to assess skills and make projections plays a crucial role in identifying the needs of the manufacturing industry at the sectoral level, enhancing the industry's readiness within this framework, and guiding investments. Furthermore, these assessments will ensure that skill acquisition and development efforts are tailored to meet those needs.



BEST PRACTICE EXAMPLES

CEDEFOP's **VET Toolkit**, used across Europe, provides a comprehensive framework that supports guiding youth toward the right skills required by the digital and green transition. The tool enables the early identification of youth at risk of dropping out of education and training. It facilitates their access to the right skills through analysis and guidance mechanisms aimed at reintegrating them into the vocational training system and the labor market.

CEDEFOP – Skills Intelligence is another program designed to monitor the demand for skills required by the digital and green transition in the European labor market across EU countries, provide evidence-based forecasts on future competency needs by sector and profession, and to support policy-makers in shaping education and employment policies based on this data. The program's target audience includes policymakers who design skills development programs, trainers, vocational training institutions, sector representatives, and employers involved in human resource planning. Therefore, it has a industry-specific character.

BusinessEurope, Europe's largest business organization, is developing policy recommendations and guiding strategic frameworks to create an inclusive skills ecosystem aiming at increasing women's participation in STEM fields, helping them build STEM and computer skills required by digital and green transformations, and promoting employment in sectors where men are underrepresented. This holistic approach makes a significant contribution to building the capacity to anticipate the new competencies needed in the labor market.

Employers participating in the World Economic Forum's survey indicate that, over the 2025-2030 period, they will address skill gaps and transform their business models by either upskilling their employees (85%) or hiring talents with new skills (70%). Meanwhile, 70% of businesses view taking steps to equip their employees with new competencies as a priority (WEF, 2025). These findings suggest that, in terms of the industry's future, skills development will be intertwined with work.

The Needs Analysis conducted as part of the WE Project indicates that the low number of female students in vocational high schools, which serve as the source of the industrial workforce, and the low participation of women in relevant vocational training programs constitute a barrier to women's inclusion as a qualified workforce in the manufacturing industry. Creating environments that enable women to work in the manufacturing industry and fostering a positive image will increase demand for education in these fields, thereby producing a larger pool of skilled female workforce and ensuring greater participation of women. Therefore, policies that consider education and employment together are becoming increasingly important.

Consequently, it is essential to approach initiatives related to skills assessments and skills intelligence from an equality perspective. When planning interventions, an equality-focused perspective must be integrated into skills assessments and skills intelligence to avoid reproducing existing inequalities and to capitalize on opportunities for achieving equality.

Within this framework, analytical studies conducted to identify and assess inequalities regarding women's participation in STEM fields and the causes of occupational segregation will serve as a vital resource for developing effective policies.

Collaboration for Sectoral Progress

Coordination and consistency among policies related to the green and digital transition, along with collaboration and dialogue among different sectors, enhance impact, minimize duplication, and maximize effectiveness. It is crucial that this process be facilitated with the participation of public institutions, employers, employees, civil society organizations, and institutions and individuals involved in education and training at various levels (IRENA and ILO, 2024:72).

Similarly, the WE Project's Current Status and Needs Analysis study emphasizes the need to establish a strong collaboration and dialogue mechanism among the public sector, the private sector, academia, and civil society organizations, aiming at ensuring the implementation and sustainability of policies (PAL, 2025).

Monitoring and sharing best practices:

The effectiveness of sensitive and inclusive practices regarding women's employment and equality, models that promote women's employment in the private sector and public institutions, and incentive mechanisms for women's employment should be monitored, measured, documented, widely shared, and the most successful approaches should be supported.

Establishing a dialogue and advocacy platform that brings together the public sector, CSOs, academia, and key stakeholders:

Objectives such as developing long-term and inclusive policies, ensuring stakeholder participation in policy-making processes, increasing women's employment and workforce participation, generating practical solutions across various sectors, and developing joint strategies to create an inclusive and equitable work environment must be pursued through dialogue with public institutions, the private sector, academia, and civil society organizations.

Within this framework, it is recommended that "Women-Friendly Workplace Networks" be established with the support of structures such as Chambers of Industry and Organized Industrial Zones (OIZs) as part of the development of joint initiatives in the industry. It is also emphasized that partnerships with grassroots organizations can lay the groundwork for developing effective strategies for women's employment, tailored to local knowledge and needs (Impact Hub, 2025).

2. Inclusive Labor Relations and Workplaces

As companies adapt their business practices to the trends created by the green and digital transition process and seek to address emerging needs, it is crucial that they act in a manner that does not reinforce inequalities, but rather supports equality. Ensuring equal employment opportunities for women, particularly in sectors where they are underrepresented, is not something that will occur spontaneously, independent of challenging external conditions such as labor shortages, economic downturns, and poverty, nor without organizational incentives such as education, loans, and employment support.

According to the WEF's "Future of Jobs 2025" study, women's employment is being prioritized in response to the global talent shortage and the transformation of the labor market. While digitalization and automation pose a risk of job loss in administrative and support roles, where women are heavily concentrated, employers are prioritizing women to meet their talent needs by

increasing their commitment to inclusivity. According to this study, 83% of the companies surveyed have diversity and equality initiatives in place, and 76% indicate that these programs focus on women's employment. Inclusivity approaches focusing on women are considered important by 47% of employers because they offer the opportunity to expand their talent pools.



EXAMPLES FROM TÜRKİYE

A company located in the Antalya Organized Industrial Zone and operating in the heavy industry has addressed the problem of finding qualified workforce by providing training and employment opportunities to women willing for work in nearby villages. A company executive states that they have begun to observe that discipline, politeness, respect, and productivity are improving day by day in a work environment with female employees, and that the number of female employees is steadily increasing. The executive also notes that, thanks to the training provided, the majority of operators working in the factory are now women.

Similarly, the company Ateş Çelik designed a special technical training program for women during a period when it was struggling to find welding operators, and trained female welders. The company noted that the women who completed the training stood out for their high work discipline, continuity, and performance metrics, that women's turnover rates were extremely low, and that the company was highly pleased with the program. This example demonstrates that companies can not only close the skilled labor gap by increasing women's employment through targeted training programs, but also create positive transformation in production processes and workplace culture.

On the other hand, steps to be taken in the field of training to develop a female workforce, both blue-collar and white-collar, with the qualifications required by the manufacturing industry are directly linked to the creation of a favorable work environment. Studies have revealed that a favorable work environment can encourage female students and their parents to develop a positive attitude toward pursuing vocational training in relevant fields. Therefore, work environments that support women's participation in the workforce will also increase women's participation in training programs, thereby fostering the development of the skilled workforce needed by the manufacturing industry in an inclusive manner.

Workforce Management and Women's Employment in the Digital and Green Transition

The Impact Assessment study as part of the WE Project demonstrates that investments in strategic human resource management and governance within companies have a significant impact on all other dimensions of company performance, and that companies with strong strategic capabilities are more successful not only in these areas, but also in other critical performance areas such as organizational connections, operational competence, and digital transformation capacity (Impact Hub, 2025).

Companies aim to employ workers who have acquired new skills in suitable jobs during the transition process, ensuring that skills align with job requirements to enhance production efficiency and

fostering harmonious relationships between employees and companies. In today's world, where skills have changed significantly and rapid technological progress has made change a constant reality, workforce management must be supported by new approaches. The process of addressing workforce challenges in the manufacturing industry is too complex to be resolved solely through the acquisition of new skills by the workforce. Therefore, emphasis is placed on the societal factor that accompanies and adapts to the Fourth Industrial Revolution, and the concept is highlighted by the term "Industry 5.0."¹⁰ These effects are also influencing and transforming labor relations, which are a form of social interaction.

Current developments require enhancing employee-job fit through **job decomposition and job design** approaches. Job decomposition is an organizational method applied by employers in connection with workforce management to increase productivity by breaking down the various components within a job description to create one aligned with employees' competencies and by distributing the tasks under each job description according to the workforce structure. However, this method must employ an inclusive approach free from stereotypes. The impact analysis conducted for the WE Project highlights the need for companies to "develop detailed position designs (job descriptions, performance indicators, reporting, and feedback mechanisms) and provide guidance to managers on how to manage new employees."

Another workforce management approach that minimizes the risk of stereotypes influencing work practices is the "job design" method, which allows employees to proactively shape their job descriptions (Wrzesniewski and Dutton 2001, cited in Impact Hub 2025). The concept refers to a process in which employees organize their tasks, relational and cognitive boundaries, demands, and resources according to their own needs. In this way, employees will find greater meaning in their work, increasing their commitment and motivation. However, this process is also closely linked to career literacy and career management skills, which must be supported by skills development. At all levels of education and training where job-related competencies are acquired, such as vocational high schools, vocational training courses, on-the-job trainings, and higher education, the curriculum must also include the development of these non-technical skills.

Another impact of the digital and green transition on labor relations and workforce management is the emergence of new organizational forms where work and learning functions are integrated. The need to transfer up-to-date knowledge regarding the use of evolving technologies and a growing variety of digital tools for the jobs of the future will necessitate **work models where work and training are intertwined**. Such a context will necessitate new labor relations that move away from traditional approaches treating skills development and work as two separate domains, and companies will build a workforce with the skill sets they need through training programs that are an integral part of their recruitment processes. Giesemann (2023), while emphasizing that digitalization should be a tool that benefits both employees and employers, suggests that the time saved through the use of digital tools should be utilized for continuous training. This presents an opportunity for a just transition. At this point, it should also be emphasized that a just transition is an endeavor that encompasses equality and inclusivity.

Equitable and Inclusive Labor Relations

Efforts to empower women in the twin transition process should also include plans to create an inclusive workplace structure and labor relations. Such plans ensure women's participation and retention in the workforce. UNDP (2021) identifies three interconnected key areas among the steps

¹⁰ The term "Industry 4.0" refers to technological advancements in digitalization and automation in manufacturing. The term "Industry 5.0," on the other hand, is a critical term used to draw attention to the social and environmental consequences of the industrial revolution in today's world, where human development and social and environmental sustainability are recognized. This term emphasizes the social and environmental dimensions that must be carefully addressed alongside technological development in the industrial revolution. The term is used to indicate an industrial structure that prioritizes an environmentally sustainable and just transition. Both terms point to the structural relations within the context of change created by the Fourth Industrial Revolution.

toward diversity and inclusivity for a just work environment: (1) questioning and transforming socially accepted norms that perpetuate inequality; (2) creating a supportive and conducive environment for inclusive labor relations; and (3) developing and implementing organizational policies, as well as shaping organizational culture in an equitable manner free from discrimination, to ensure effective change. This framework also applies to evolving labor relations in the context of digital and green transition.

Ensuring that all elements of work, from the work environment and physical conditions to the language used and personal protective equipment, are inclusive and equitable means creating a work environment that is favorable for women. Organizational policies must be reviewed from an equitable and inclusive perspective, and be structured to address the differing interests and needs of both female and male employees. These policies and practices should also support the establishment of a workplace culture where women are represented in green and digital jobs and assume leadership roles.

This process, which can be defined as mainstreaming the principles of equality and inclusivity in labor relations, involves corrective, adaptive, and transformative steps. The corrective steps to be taken to create inclusive and equitable workplaces and labor relations to empower women are those that seek to eliminate direct discrimination between women and men, and establish equality guaranteed by laws and regulations (equal pay for equal work, prevention of discrimination in hiring, etc.). Adaptive steps, on the other hand, involve measures that ensure beneficiaries can take advantage of the opportunities provided by formal equality. Transformative steps, meanwhile, are about challenging the discriminatory nature of the existing system of relations and implementing the structural and organizational changes that this challenge highlights.

There are numerous programs available at the national and global levels to support companies in implementing inclusive workplace practices. These programs typically involve the following three stages: (i) conducting rapid analysis to assess the current state of the company, identify areas of inequality, and pinpoint areas for improvement; (ii) creating a roadmap outlining the steps to be taken to establish inclusive workplace relations through corrective and transformative measures, and defining goals, actions, roles, and responsibilities; and (iii) providing support for the implementation of the roadmap in line with these goals. Such initiatives, which vary depending on company size, are sometimes accompanied by a certification process.



BEST PRACTICE EXAMPLE

The **MIGSCORE** program, developed by the ILO as a global initiative, seeks to improve productivity, competitiveness, and working conditions in small and medium-sized enterprises (SMEs) and to steer organizational change toward equality.

The program consists of four stages: identifying areas for improvement through analytical steps; acquiring the necessary tools and raising awareness through informational activities; and planning and implementing steps to drive progress. It focuses on five key areas: equal pay, inclusive recruitment, equal pay for equal work, the work environment, and work-life balance. (For details, see <https://www.ilo.org/resource/mig-score-gender-equality-module-explained>).



BEST PRACTICE EXAMPLE

EDGE Certification is a global certification system that evaluates companies' performance in equality, diversity, and inclusion across a wide range of areas, from hiring processes to equal pay, from promotion mechanisms to leadership development, and to workplace culture, using independent and measurable criteria.

The UNDP Equality Seal technical support program, on the other hand, focuses on seven key areas:

1. Strengthening the inclusive and equitable characteristics of strategic documents and developing policies on fundamental issues such as equality, zero tolerance for violence, and work-life balance;
2. Improving physical infrastructure and conditions to make workplaces more inclusive;
3. Identifying and eliminating discriminatory practices at all levels, including in pay and promotions;
4. Achieving balanced representation of women and men in various roles, supporting women's leadership, ensuring equal access to professional development opportunities, sharing caregiving responsibilities, and ensuring a healthy work-life balance;
5. Supporting workforce participation and regulating practices such as job postings, recruitment, and promotions;
6. Developing equality-focused record-keeping, data collection, and evaluation systems;
7. Promoting the use of equality-focused language and making equality an integral part of organizational culture.

Such programs use international benchmarks as guiding principles, and involve providing the necessary planning and technical support for implementation to translate these into actionable standards.



BEST PRACTICE EXAMPLE

The Women's Empowerment Principles (WEPs) have served as an important guide for many private sector organizations since 2010. A joint initiative of UN Women and the UN Global Compact, the WEPs have a dynamic quality, involving self-assessment followed by planning and implementation processes. The WEPs include a commitment to implementing the following seven core principles:

1. Ensuring high-level organizational leadership for equality;
2. Treating all women and men fairly in the workplace, respecting human rights and the principle of non-discrimination, and promoting these principles;
3. Ensuring the health, safety, and well-being of all women and men in the workplace;

4. Supporting women's access to education, training, and professional development opportunities;
5. Implementing entrepreneurial development, supply chain, and marketing strategies to empower women;
6. Promoting equality through social initiatives and advocacy efforts;
7. Evaluating and publicly reporting on progress toward equality;

There are also mainstreaming programs that focus on one of the themes related to equality. Examples of such programs include the inclusive advertising approach developed as part of the global "Unstereotype Alliance" program coordinated by UN Women and led by the Advertisers Association and the Advertising Agencies Association, the "equal pay for equal work" certification program run by EDGE, the "Business Against Domestic Violence" program supported by UNFPA Türkiye and the Sabancı Foundation, implemented in collaboration with the Turkish Industry and Business Association (TUSİAD) and coordinated by the Sabancı University's Corporate Governance Forum.



BEST PRACTICE EXAMPLE

The "Business Against Domestic Violence" (BADV) project seeks to raise awareness of domestic violence in the business world, foster a work culture based on the principle of zero tolerance for violence, and to establish the necessary support mechanisms in the workplace to ensure the full and effective participation in the workforce of all employees, particularly women, who are affected by or at risk of domestic violence. Improving women's working conditions to increase their participation in the workforce and their retention in employment is also one of the project's key objectives.

A "Workplace Policy Development and Implementation Guide for Domestic Violence Against Women" was developed to assist companies in fostering a work culture that does not tolerate violence against women, and to be implemented in the workplace. The guide focuses on the violence women have experienced, or are currently experiencing, in their personal relationships, as well as the impact of such violence on their work and the workplace. It also includes policies that can be established within companies to combat violence against women, and highlights examples of best practices.

Source: turkiye.unfpa.org/tr/badv; badv.sabanciuniv.edu/

There are examples of monitoring and evaluation studies (including documentation) that are being conducted among employees of civil society organizations to create equitable and inclusive workplaces. It is significant that these initiatives are organized and implemented by female employers, particularly in the manufacturing industry.



BEST PRACTICE EXAMPLE

The Women Employers and Industrialists Association of Türkiye (KAISDER) launched a project in collaboration with the Turkish Standards Institute (TSE) to develop a national certification standard in Türkiye. The project is based on the "Equality-Sensitive

Workplace (EKD)” criteria set developed by KAISDER. The goal is to restructure this criterion set in accordance with TSE’s standard development and certification framework, transforming it into a measurable, verifiable, and reportable model.

The certification system covers five key areas: women’s representation in management and employment; in-company training and capacity building; organizational equality policies and governance; social impact and awareness initiatives; and measurement, transparency, and sustainability. These key areas are designed to evaluate organizations’ performance in equality of opportunity for women and men through a holistic approach.

The model is designed to be applicable to all organizations across various sectors, including the private sector, export companies, public institutions, and supply chains. The certification process is conducted by TSE; applicant organizations undergo on-site audits, those found compliant are certified, and the certification is maintained through periodic inspections.

The EKD certificate is positioned as a strategic tool that not only enhances organizations’ performance in equality, but also directly contributes to their ESG scores and international sustainability reporting. It is also expected to play a significant role in meeting investor expectations and supporting global competitiveness within the framework of the European Green Deal.

The approach to creating equitable and inclusive workplaces should not remain limited to mainstreaming programs that rely solely on companies’ preferences and voluntary participation; rather, this approach must become an integral part of routine workplace operations. Workplaces must be inclusive and equitable to ensure that employees enjoy their rights in the workplace and to support women’s participation in the workforce; this should be an integral part of occupational health and safety practices and audit.

1. Combating Discrimination and Establishing Complaint Mechanisms

Establishing mechanisms to prevent all forms of discrimination, rights violations, and harassment faced by women in the workplace, and to ensure such cases are reported, is an indispensable element of women-friendly workplace practices (Ünlütürk, 2019). A study conducted by the ILO and Özyeğin University (2024) with 3,000 employees in Istanbul to reveal the prevalence of harassment and violence in the workplace revealed that one in five participants had been the target of discrimination at work. Various forms of discrimination based on interpersonal differences arise for both men and women employees; however, unlike men, women are more likely to report their experiences of discrimination. The WE Project’s Current Status and Needs Analysis emphasizes the importance of combating harassment, discrimination, and other rights violations in the workplace, as well as ensuring women have access to effective complaint mechanisms through which they can safely report such incidents, and offers recommendations in this regard (PAL, 2025).

Developing safe and confidential reporting systems: Independent complaint units or helplines should be established in workplaces, taking employee feedback into account. These mechanisms will serve as important tools to address the issues women face. In addition, companies should conduct regular awareness campaigns to inform employees about these mechanisms. These systems will also serve as a fundamental tool for monitoring and evaluation processes.

Ensuring access to legal counseling and support centers: Improving access to free or low-

cost legal counseling services will support women in taking action against rights violations in the workplace.

The ALO 170 Working Life Contact Center, provided by the Social Security Institution in Türkiye, has been in operation since 15 November 2010. The center aims to effectively and promptly address all types of questions, suggestions, criticisms, reports, complaints, applications, and requests submitted by users regarding working life and social security. It is crucial to strengthen the center's capacity through an equality perspective in the context of digital and green transition, enabling it to provide support in addressing potential issues that may arise during this process and to combat discrimination.

2. Combating Violence and Harassment in the Workplace

Occupational safety and health for women is not limited to issues such as transportation, equipment use, and decent working conditions. Harassment and violence in the workplace are factors that undermine workplace safety and threaten women's participation and retention in the workforce. Findings from the study conducted by the ILO and Özyeğin University (2024) show that violence and harassment in the workplace are widespread problems affecting both women and men across various sectors. Three-quarters of the participants reported having experienced at least one of the various forms of violence, including economic, psychological, physical, or sexual violence, while more than half reported being exposed to two or more forms of violence. The study's findings reveal that physical violence predominantly affects men, while sexual violence primarily affects women; one in four women has experienced sexual violence at least once during their professional careers; and women are twice as likely as men to be subjected to sexual violence. Despite these findings, nearly 90% of participants reported that their organizations did not provide adequate information regarding workplace violence. The study shows that workplaces rarely take steps to combat violence, and that those exposed to violence may lack the necessary organizational support.

This critical yet often overlooked issue, which affects women's participation in the workforce, has gained prominence on the global agenda in recent years. Adopted in **2019**, the ILO Convention No. 190 Concerning the Elimination of Violence and Harassment in the World of Work (C190) represents a crucial step toward addressing one of the sources of discrimination that drives women out of the workforce. **By drawing attention to the existence of violence and harassment in the workplace, particularly against women**, the Convention guides governments as well as workers' and employers' organizations in establishing **zero-tolerance policies** toward violence and harassment.

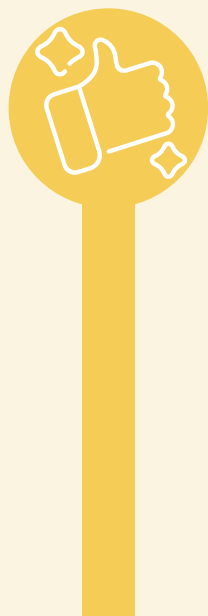
The prevention of violence and harassment in the workplace is a fundamental policy area that must be addressed through measures taken by public authorities. At the same time, workplaces, private sector organizations, and third sector organizations can take measures through internal regulations governing labor relations. Guidelines prepared by the ILO and UN Women on this subject provide guidance for organizations on the steps involved in developing and implementing policies (UN Women, 2019). Today in Türkiye, many workplaces, employers, and labor unions are carrying out initiatives based on Convention No. 190, establishing internal regulations to comply with the Convention's provisions, conducting awareness campaigns, and developing and implementing policies.

3. Regulations related to Reproductive Health

The ILO Convention No. 183 on Maternity Protection, adopted in 2000, focuses on the protection of health, maternity leave, breastfeeding leave, leave in the event of complications or illness, and

financial aid, and sets out the necessary steps to ensure that procedures related to postnatal care do not result in any discrimination against female employees, and to safeguard their employment. It is important to bear in mind that if rights related to reproductive health are not established and implemented on the basis of non-discrimination and equality, these rights may not always be empowering for women, and carry the risk of making women less desirable employees. Therefore, it is crucial to raise awareness regarding the definition of pregnancy and postpartum needs for both female and male employees, and regarding their implementation on the basis of collective responsibility and equality.

The WE Project's Current Status and Needs Analysis emphasizes that strengthening mechanisms for return to work following pregnancy and childbirth is a key element for the well-being of female employees and their participation in the workforce. Accordingly, the widespread adoption of practices such as maternity leave, parental leave, breastfeeding leave, flexible work models, and return-to-work programs is essential for ensuring that women can continue their careers without interruption. Priorities should include the widespread adoption of flexible work arrangements, remote work options, breastfeeding rooms, and childcare support, as well as the provision of return-to-work training (PAL, 2025). However, it should also be noted that when flexible work models are not implemented systematically and effectively, they do not provide adequate support for women. Consequently, while they are viewed as a tool for increasing participation in the workforce, they can actually exacerbate the double burden on women. Despite these requirements, the findings of a study conducted with 2,000 companies show that initiatives intended to provide specific support for women's reproductive health, such as menstrual leave, daycare and transportation support, and pregnancy nutrition packages, are among the lowest priorities for companies, with each having an implementation rate of only 3%. Measures to facilitate adaptation to work during and after pregnancy, on the other hand, were implemented at a rate of 10%.



BEST PRACTICE EXAMPLE

Maxion Wheels, which operates in the automotive supply industry, a industry known to be male-dominated where women primarily work in administrative and service roles, is participating in various programs intended to increase the number of female employees and improve their working conditions. As part of these efforts, the company implements a maternity mentoring program to facilitate the process of return-to-work after maternity leave, and help employees achieve their prior performance levels. This mentoring program, which begins during pregnancy, pairs women with experienced mothers within the company to provide support on a wide range of topics, including nutrition, breastfeeding, and child development. In addition, the company, which employs 2,000 workers across five factories, has allocated separate dressing rooms for women and men, special lockers for women, individual cosmetic cabinets in restrooms, and baby care rooms.

4.Regulations related to Care Services

Collectively providing the care needs is a fundamental responsibility for ensuring women's equal and effective participation in the workforce, and for reaping the benefits this will bring to economic and social development.¹¹ However, while employers participating in the WEF's "Future of Jobs" report are highly likely to view women's employment as a central focus of their inclusion and equality

¹¹ The ILO Convention No. 156 (Workers with Family Responsibilities Convention, 1981) focuses on care work and addresses the need to take necessary measures to ensure that the responsibilities of female and male workers toward the children in their care do not restrict their opportunities to prepare for, enter, participate in, or advance in economic activities. Türkiye is not a party to this

efforts (76%), only 26% of them plan to provide support to their employees regarding caregiving responsibilities. For initiatives designed to ensure women's equal access to and participation in employment during the digital and green transition to be grounded in realistic foundations, they must include interventions that also address the provision of services related to caregiving responsibilities.

Statistics compiled from the Time Use Survey data collected by TURKSTAT for 2014-15 show that domestic labor in Türkiye is disproportionately shouldered by women.

- » When the daily activities of individuals aged 10 and older are reviewed, women spend an average of 4 hours and 35 minutes per day on household and caregiving tasks, while men spend only 53 minutes.
- » Regardless of their participation in the labor market, women devote significantly more time to domestic work and caregiving tasks than men. Inequality within the household can deepen inequalities in the labor market, and women's burden of domestic and care work can exacerbate the disadvantages they face in their professional lives, thereby perpetuating inequalities within the household.
- » While women spend 83% of their total working hours (the sum of both labor market work and unpaid household work) on household and caregiving tasks, men devote 78% of their total working time to income-generating work in the labor market.
- » In Türkiye, even when women are employed in the labor market, they spend 3 hours and 31 minutes per day on domestic and caregiving tasks, whereas employed men spend only 46 minutes.
- » When women's caregiving responsibilities and working hours are taken into account, it is observed that their working hours are significantly longer than those of men. The workload resulting from women's simultaneous performance of both paid work and domestic tasks is referred to as the 'double burden' or 'double shift' of women. Just as much as paid work, the domestic and care work (reproductive activities) that women perform at home are indispensable for the functioning of society. Despite being so essential, these reproductive activities are not remunerated.

When the time women spend on care work and their working hours are considered together, it can be observed that their working hours are much longer than those of men. Despite being necessary for both the production and reproduction of the workforce, failing to recognize the value created within the economy by reproductive activities and the labor expended on them, and thereby disregarding the interdependence of reproduction and production, and assuming that one form of production is superior and takes precedence over the other, establishes the hierarchical and unequal structure of the division of labor. This inequality has negative consequences for both the social structure and the economy. The fact that care work is not viewed as a public responsibility, and is provided largely through women's time and labor, sustains and perpetuates existing inequalities. Statistics indicate that caregiving responsibilities negatively affect women's participation in the workforce, and their wages (Dedeoğlu and Ekiz-Gökmen, 2021). On the other hand, men are often viewed as the sole or primary breadwinners in households due to stereotypes, leaving them with virtually no option to achieve a work-life balance or raise their children. According to a study conducted in seven countries with middle- and upper-income groups, 85% of men stated that they would like to take on much more responsibility in the care of their children (Van der Gaag et al., 2019).

Approaches that link daycare and accessible care services solely to the number of female employees reinforce unequal division of labor. The assumption that a female employee will neglect her job due

to caring for children, the elderly, or the sick in her family constitutes the biggest obstacle to women being hired. This assumption can also have a discouraging effect on employers' willingness to hire female employees. Therefore, such interventions should advocate for the equitable sharing of caregiving responsibilities, and include provisions that ensure service delivery covers all employees.

The provision of free or affordable care services and social protection is a fundamental component of the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), ILO conventions, and the Sustainable Development Goals.¹²

Physical Arrangements for Inclusive Work Environments

Organizing work environments to be inclusive and tailored to everyone's needs is crucial for women's participation and retention in the workforce. Creating an inclusive work environment requires reviewing not only labor relations, but also physical conditions. Developing an occupational safety and health culture that takes into account the specific needs of female employees, and creating safe, ergonomic, and healthy work environments is important for both productivity and employees' rights, and is guaranteed by legislation.

The WE Project's Current Status and Needs Analysis emphasizes the need to improve workplace conditions to ensure that women can work in a healthy, safe, and productive environment. Accordingly, increasing access to hygiene, nutrition, and psychosocial support services; ensuring that women can adequately meet their basic needs, such as rest and transportation; and providing them with appropriate work uniforms and tools have a positive impact on the individual well-being and productivity of working women.

Shortcomings such as working with inadequate equipment, having to walk a long distance to the restroom at the workplace, or having to change in a confined space designated for this purpose due to the lack of a private changing area not only pose safety and hygiene risks, but also convey the message to women that "you do not belong here." This is a form of indirect discrimination and systematically excludes women from work environments.

1. Developing an Inclusive Occupational Health and Safety Approach

Arrangements that address the different attributes and needs of women and men, including adequate and appropriate spaces and suitable personal protective equipment, must be addressed as an occupational health and safety issue. The Future of Jobs 2025 Report reveals that businesses view steps taken to support employee health and well-being as one of the most important strategies for attracting talent (64%) (WEF, 2025:6). Designing occupational health and safety frameworks with an understanding that addresses diversity and varying needs, rather than basing them on a standard profile of predominantly young and healthy male employees, is a practice that will support women's participation in the workforce.

The literature indicates that occupational health and safety approaches often overlook the needs of women, who are underrepresented in the workforce, disregard differences among workers, or result in a male-centered approach (Sorrentino et al. 2016; Gök Metin 2025; Yıldız, 2022). It is necessary to focus on the implications of various biological characteristics, such as hormonal differences, musculoskeletal structures, and body fat percentage, as well as psychosocial risks including violence and harassment in the workplace, and the double burden on women resulting from care work in the context of labor, in order to establish an inclusive occupational safety and health approach (Gök

¹² In Objective 5. Article 11.2.c of the CEDAW Convention, regarding the right to work, reads: "States Parties shall take appropriate measures (...) to encourage the provision of the necessary supporting social services to enable parents to combine family obligations with work responsibilities and participation in public life, in particular through promoting the establishment and development of a network of childcare facilities."

Metin 2025; Yıldız, 2022).

Occupational health and safety frameworks implemented through equality-focused risk analyses that assess the differing interests and needs of women and men, as well as their psychological, social, and physiological vulnerabilities and distinctions, and planning based on these analyses, are crucial for creating inclusive workplaces that enable women to remain in employment.

2. Appropriate and Adequate Workspaces

Physical conditions are crucial for supporting women's health and well-being in the manufacturing industry, as well as for ensuring their participation and retention in the workforce (PAL, 2025). Improving physical working conditions, such as access to hygiene products, clean facilities, and quality meals; promoting best practices; dedicated rest areas; personal lockers; a sufficient number of hygienic restrooms designed taking into account the different usage patterns and durations of women and men, cleaned regularly, and equipped with soap and hygiene supplies, and exclusively reserved for female employees; products for menstrual needs; designated waste bins; short-term rest areas; dedicated dressing rooms appropriate for the number of female employees; hygienic showers and areas for hair drying and personal care; personal care services, and social, sport and recreational areas can be considered within this scope.

According to the Regulation on Health and Safety Measures to be Taken in Workplace Buildings and Annexes:

- » Separate, appropriate dressing areas shall be provided for female and male workers required to wear work uniforms; dressing rooms shall be of sufficient size, and each worker shall have a locker to store their clothes during working hours;
- » If required by the nature of the work or for health-related reasons, separate shower facilities shall be provided for female and male workers; showers shall be spacious enough for workers to wash comfortably and maintained to appropriate hygienic standards; hot and cold running water shall be available; a sufficient number of toilets and sinks shall be provided in locations close to work areas, rest rooms, dressing rooms, and shower and washing areas; and toilets and sinks shall be separate for male and female workers;
- » If required for the health and safety of employees due to the nature of the work performed, or in workplaces where ten or more workers are employed, a suitable rest area shall be provided; rest areas shall be sufficiently spacious and shall be equipped with adequate seating with backrest and tables;
- » Necessary conditions shall be provided so that pregnant and breastfeeding women can lie down and rest.

3. Ergonomic Work Environments, Work Uniforms, and Personal Protective Equipment

Designing a workplace to suit employees is a minimum requirement for both production and safety. When making ergonomic adjustments, the anthropometric characteristics of female employees (e.g., average height, hand and wrist size, arm length) must be taken into account, and adjustable equipment should be preferred where possible. Designs should take into account not only the average physical characteristics of men, but also those of women. The height of desks, chairs, and equipment should be adjustable to accommodate individual differences; mechanical aids should be provided for tasks requiring heavy lifting; and personal protective equipment used in the workplace, such as hard hats, gloves, shoes, and coveralls, should be designed to fit both women and men, and be available in different sizes.

Various studies show that when workplace equipment, tools, and protective equipment are designed primarily based on men's body measurements, safety risks (workplace accidents, musculoskeletal disorders, etc.) arise for female employees. More than half of women report facing risks due to personal protective equipment that does not fit them properly, and state that this significantly affects the way they perform tasks (TUC, 2017). When hard hats, boots, goggles, hats, protective coveralls, vests, and pants are designed without taking into account the different physical characteristics of women and men, they lose their ability to ensure worker well-being and protect workers (Uvex 2024; Oteplace n.d.).



PURPLE BOOTS CAMPAIGN

The Women's Engineering Society (WES) investigated the issue of inadequate and unsuitable personal protective equipment in the construction industry by conducting a comprehensive survey on safety clothing and footwear. The survey results revealed that personal protective equipment designed for women was lacking, and that women were typically offered smaller sizes of men's clothing. WES partnered with a manufacturer to develop a new pair of boots and bring them to market. Through this campaign, WES raised awareness among women and ensured they have access to personal protective equipment that fits their body sizes and body types (TUC, 2017:4).

4. Transportation Options

Transportation options are a key strategic need for women's access to employment. A study conducted by Akyelken (2017) in two OIZs (Afyonkarahisar and Şanlıurfa) shows that access to these zones and the transportation arrangements differ between women and men, and that women face various disadvantages due to public transportation schedules, safety concerns, and caregiving responsibilities.

In particular, challenges related to commuting to workplaces in the manufacturing industry, along with caregiving responsibilities and safety concerns, continue to pose a fundamental challenge for women. Seventy percent of women who do not consider working in the manufacturing industry cite "transportation limitations" as one of the issues contributing to this decision (PAL, 2025). Therefore, providing safe transportation options is one of the fundamental steps to be taken to support sustainable employment for women.

Adaptive Support Programs for Inclusive Labor Relations

Companies should be provided with technical support to enable them to take steps toward inclusivity and women's empowerment alongside the green and digital transition. Diversified approaches that take into account the differences among companies are crucial in the development of support programs for companies. Findings from the WE Impact Analysis reveal that the experiences of female employees vary depending on company size: large companies that already employ women provide more favorable environments for women's empowerment and equal participation in the workforce; however, women may face challenges in companies where they are sometimes the only female engineer or operator. For this reason, interventions targeting companies and the private sector to empower women in the manufacturing industry must be tailored to the companies' sizes,

interests and needs, and must consist of company-specific initiatives. Assessing companies' current status and level of readiness regarding the digital and green transition, and identifying their needs and the areas requiring support, is key to an effective transition. The WE Project's Impact Analysis indicates that companies can be categorized into three groups, and that **differentiated support packages** tailored to these groups can be offered. This classification is important for the efficient use of resources, the establishment of realistic expectations, and the creation of opportunities for companies at different levels.

The table below summarizes this recommendation:

	Pioneer Companies	Developing Companies	Early-Stage Companies
Readiness	High	Moderate	Low
Criteria	» Signatory to the WEPs or similar international commitments » Percentage of female managers 20%+ » Has initiated digital transition (ERP, data analytics) sustainability report	» Digital transition in the initial phase » Willing to hire women but lacks a systematic policy » HR department exists but is weak	» Low digital maturity » Very low female employment (below 10%) » There is no HR department » Small-scale SME
Type of Support	Catalyst	Building	Basic Capacity Building
Support Package	» SIRI Plus (pilot project support) » 3–5 DE (multiple; a transition team must be established) » Peer learning network leader (lessons learned are shared with other companies) » Media visibility (success stories are disseminated)	» SIRI (diagnostic report) » HR capacity building (training, templates, and tools for HR) » 1-2 DE + 1 operator » TCE policy development support	» Not SIRI; a simplified "digital health check" is implemented » Support for establishing basic HR infrastructure (HR software, procedures, templates) » 1 DE (white-collar only, no operators) » Physical infrastructure support (50% grant for women's restrooms and dressing rooms)
Expected Impact	High – these companies will serve as showcases and attract the industry	Medium – these companies will raise the average	Low – they lay the foundation, and these companies may transition to Group 2 in the future

Source: The table was prepared based on the information included in the plan proposals developed by Impact Hub.

Programs should be developed to ensure that **initiatives carried out with pioneer companies** under the company support programs serve as models for the entire industry. Programs targeting these companies should aim to strengthen their practices regarding women's employment by aligning them with digital and green transition goals, and to enhance their visibility. The knowledge and experience gained through multi-stakeholder collaboration programs involving academia, the private sector, civil society, and international organizations can be utilized in these support programs.



WEF GLOBAL LIGHTHOUSE NETWORK

The WEF Global Lighthouse Network is an alliance comprising 201 companies from around the world. These pioneer companies are manufacturers that are transforming their factories, value chains, and business models to achieve significant improvements in finance, operations, and sustainability by applying Fourth Industrial Revolution technologies on a large scale.

Technology-driven industrial transformation has the potential to significantly improve the financial, operational, and sustainability metrics of production and supply chain facilities. However, most organizations in these industries are struggling to realize this potential growth by scaling the adoption of technology across their operations.

The **Global Lighthouse Network** identifies and recognizes leader companies in the field of technology-driven industrial transformation. It also helps the entire ecosystem reach the next level of transformation by providing a neutral platform for these leaders to share their insights and lessons learned. Seven companies from Türkiye are part of this network.



See: <https://initiatives.weforum.org/global-lighthouse-network/home>

In an interview with Tüpraş, one of the member companies, the company noted that it implements equitable practices to ensure the retention and continuity of female blue-collar workers, particularly operators, in the workforce. In this context, efforts are made to foster awareness and a common understanding (awareness campaigns and training); to ensure an equality-sensitive language; make physical improvements (breastfeeding rooms, women's dressing rooms; prioritizing equitable design in new investments; physical improvements; suggestion boxes for women, etc.); to undertake support initiatives (post-pregnancy mentoring, an inclusivity development platform, a committee where female employees discuss their concerns, etc.), and to provide daycare assistance and equal pay. Additionally, the company aims to increase women's representation in senior management positions, and addresses women's participation not only in terms of numerical visibility, but also in terms of the impact it will have in creating a shift in perspective.

The WE Project's Impact Analysis shows that companies make progress by learning from one another, and the potential to serve as a model for others motivates them to take forward-looking steps. Witnessing a company's direct implementation of a specific initiative and its success encourages and motivates other companies to implement similar initiatives much more quickly and effectively than abstract advocacy efforts alone.

For this reason, platforms where companies can share not only their best practices but also the lessons they have learned, the challenges they have faced, the risks they have identified, and the measures they have taken to address these risks and challenges must be established as a fundamental tool for progress. In this way, successful practices can move beyond being isolated, individual achievements and become steps that shape the direction of change at the industry level. Within this context, an approach focused on replicating successful practices and learning from one another will be effective. Initiatives such as opening up a company's best practices for visits by other organizations, creating and sharing information resources on best practices, implementing one-time or ongoing mentoring programs through company matching, and spreading success stories through media visibility efforts should be considered as recommendations to accelerate change. Such initiatives by companies can be recognized and incentivized through mechanisms such as visibility campaigns and awards.

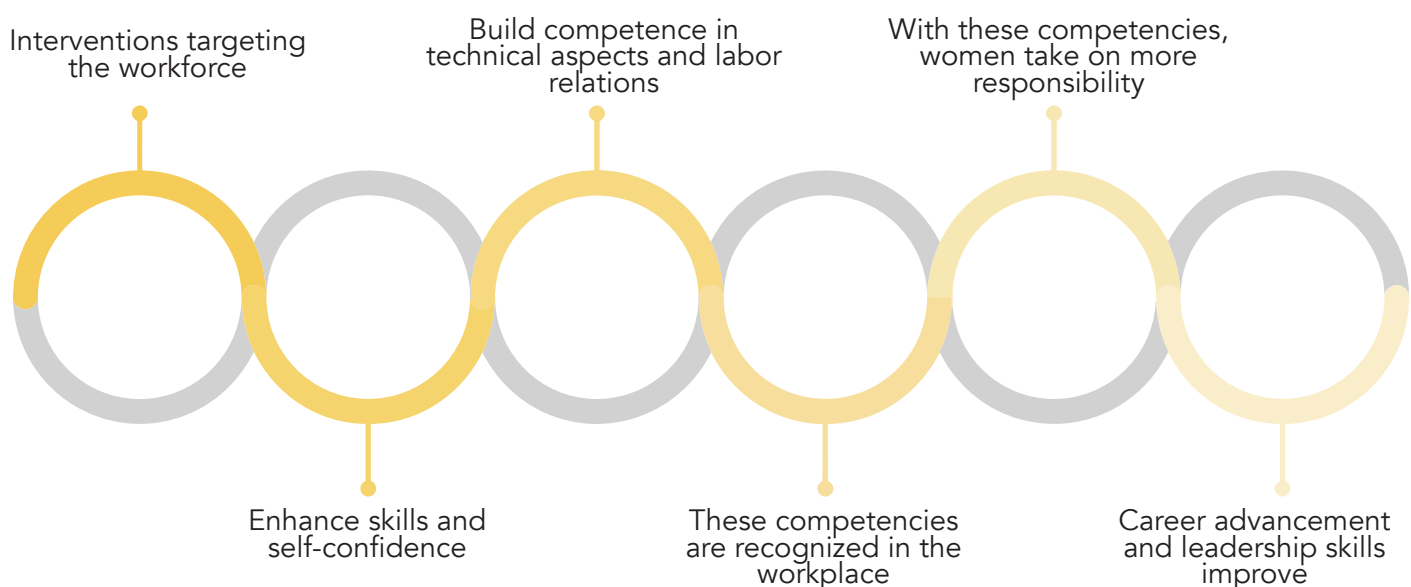
3. Interventions Targeting the Workforce

In the context of the digital and green transition, approaches focused on inclusivity and a just transition primarily and above all center on interventions targeting the workforce, specifically, initiatives aimed at skills acquisition and skill development. Skills acquisition and development initiatives, mentoring programs, empowerment and awareness-raising efforts targeting different employee groups, and workforce support measures can be included among these support initiatives.

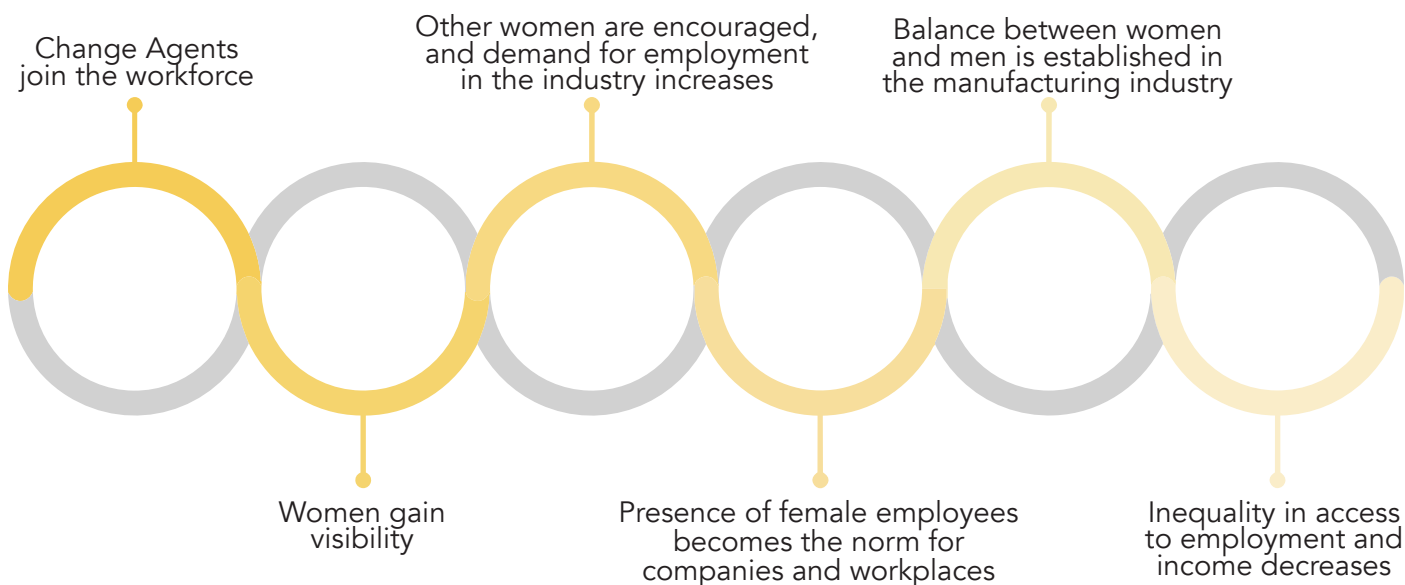
Workforce support measures primarily contribute to individual employees' acquisition of knowledge, skills, and competencies, as well as their career development. Women thus become a viable workforce, gaining access to employment opportunities and income; while male employees, by witnessing the necessity of equality in the workplace and its positive impact, contribute to the establishment of a participatory organizational culture. The presence of skilled and qualified women in the workforce, particularly in industries where they are relatively underrepresented, such as the manufacturing industry, will encourage more women to enter the industry and prompt more companies to stop discriminating among employees, thereby promoting equality not only at the individual and industry levels, but also at the societal level.

The WE Project's Impact Analysis presents findings that demonstrate the outcomes of workforce initiatives designed to enable female engineers, referred to as "Change Agents," to gain skills in the green and digital transition domains and enter the workforce:

INDIVIDUAL LEVEL



SOCIETAL LEVEL



Interventions targeting the workforce in the context of this transition *include skills acquisition and development, awareness-raising initiatives, job placement, and mentoring programs.*

Supporting Women's Skills Development in the Manufacturing Industry

In the twin transition process, where digital and green skills have become key factors in employability in the manufacturing industry, it is crucial for women to have access to opportunities to acquire the relevant technical skills. Women who are supported through skills acquisition and development during this transition process and who have the opportunity to join the workforce in equitable workplaces are not only increasing their presence in employment and the workforce in numerical terms, but are also working in green and digital fields, which are typically associated with the primary labor market. This makes it possible to address not only inequality in participation, but also the segmentation of the labor market.

The WE Project's Needs Analysis proposes five areas of action to support women's increased presence in manufacturing-related training, enhance their technical skills and leadership competencies, improve the quality of education and training at higher education institutions, vocational high schools, and training courses, and support women's access to these opportunities (PAL, 2025):

- » **Expanding education and training programs focused on developing technical and leadership skills:** Increasing access to educational programs focused on technical skills will facilitate career planning for women in the manufacturing industry. Expanding government-supported education and training opportunities, increasing private sector partnerships, and expanding vocational high school programs will significantly contribute to women's employment in the manufacturing industry.
- » **Supporting initiatives that encourage women to pursue careers in engineering and ICT:** Encouraging women to pursue education in technical fields such as engineering and information and communication technology is crucial for reducing the imbalance in women's and men's representation in the sector. Starting STEM (Science, Technology, Engineering, and Mathematics) education at an early age, improving scholarships, and highlighting successful female graduates as role models will accelerate this transformation. Additionally, creating incentive mechanisms to hire women in technical fields can increase women's participation in the workforce.

- » **Integrating manufacturing companies into the education ecosystem:** The active participation of manufacturing companies in the education ecosystem will ensure that programs align with the needs of the industry. This process has already begun, particularly in Organized Industrial Zones and at vocational schools established under the corporate social responsibility programs of larger organizations. The process should be further developed to empower women in the manufacturing industry. In this context, university-industry partnerships, internship programs, and vocational training centers will facilitate graduates' transition into the labor market. Furthermore, manufacturing companies that support vocational training programs for women will expand their talent pools and promote equality in employment while strengthening graduates' commitment to the industry.
- » **Enhancing women's financial independence through basic education:** Improving women's financial literacy will help them achieve financial independence and manage their income. Women who are knowledgeable about financial matters can make informed decisions regarding their careers, savings, investments, and budgets management, thereby strengthening their long-term financial well-being. Financial literacy programs provided as part of the education system that are covering topics such as banking systems, loan management, insurance services, and investment instruments will empower women financially and enhance their financial independence.
- » **Providing women with training on budget management and personal savings:** Women should be offered courses on budget management and personal savings to help them manage their income effectively and secure their future. These courses can cover topics such as balancing income and expenses, debt management, savings strategies, and the use of investment instruments.

On the other hand, in a rapidly digitizing world, it is not always possible for educational programs to keep pace with evolving technology, or to provide comprehensive knowledge of all the diverse digital tools available. For this reason, **on-the-job training focused on the technologies used and required by the companies** where women are employed is particularly important for youth studying and working in STEM and digital fields. It is important to plan skills development programs in line with needs, and to offer a variety of programs in the short, medium, and long term.

As women enter the workforce in an industry marked by inequalities and where they are relatively underrepresented, they need to possess not only technical knowledge and skills, but also non-technical skills. In the WEF's Future of Jobs 2025 Report, only one of the three categories of new skills focuses on technical skills, described as "general technological literacy manifesting in AI and big data." According to the report, **"cognitive skills, including analytical and creative thinking," and "behavioral skills such as self-efficacy, resilience, flexibility, and agility"** are becoming increasingly important (WEF, 2025).

The WE Project's Impact Analysis highlights the importance of including content on **effective communication, teamwork, and problem-solving skills** in the workplace within training programs designed to support women's skills development and entry into the workforce. In addition to technical training and practice, the fact that the process of acquiring knowledge and skills is a continuous process that accompanies working life is one of the inevitable requirements of new labor relations.

The table below provides a summary of international programs intended to improve women's technical knowledge, behavioral competencies, and career paths in the manufacturing and STEM fields.

Initiative / Program	Objective	Target Group
<u>STRADA – Great Minds (EIT Manufacturing)</u> <i>EU</i>	» Developing women’s technical and behavioral skills in production processes, and providing opportunities for networking across Europe; » Providing support in entrepreneurship, innovation, sustainability, digital transformation, effective management practices, and career development coaching.	Female employees, young female engineers
<u>Great Minds in STEM – MentorNet</u> <i>USA/Global</i>	» Providing mentoring and career guidance for women in STEM fields; » Supporting students and professionals, particularly those from disadvantaged communities, to build a talent pool of STEM leaders.	College students and female professionals early in their careers
<u>Girls Go STEM (EIT)</u> <i>EU</i>	» To help young women gain awareness and competence in the circular economy and digital skills.	Young women, high school/ university students
<u>Women STEM UP</u> <i>Austria/EU</i>	» Enhancing women’s leadership and technical capacity in STEM fields, and accelerating their career advancement.	Women transitioning into STEM careers
<u>Stream IT</u> <i>EU</i>	» Reducing inequalities in STEM education and research; » Boosting equality-focused career paths by increasing women’s and girls’ access to STEM fields.	Young women and girls in STEM education, along with STEM education providers (lecturers, institutions)
<u>Teen Turn</u> <i>Ireland</i>	» Supporting young girls in disadvantaged areas to pursue STEM fields; » Building awareness and interest in STEM career paths through hands-on experience, mentoring, and career development activities.	Young women aged 13–17, particularly those living in disadvantaged areas and interested in pursuing STEM fields
<u>Equate Scotland</u> <i>Scotland</i>	» Supporting the entry, retention, and career advancement of women and other disadvantaged groups in STEM fields; » Strengthening equality of opportunity and EDI (equality, diversity, and inclusion)-focused transformation by fostering inclusive work cultures in organizations and academia.	Women studying or working in STEM fields, as well as employers and academic institutions seeking to develop inclusive recruitment practices and organizational cultures.

The WE Project’s Impact Analysis shows that the difference in career success among Change Agents, who graduated from similar technical programs and underwent the same technical skills training, stems from non-technical skills. The common characteristics of successful Change Agents include gaining an understanding of the industry and workplace dynamics through internships or the experiences of those in their immediate circle, as well as possessing career literacy competencies that include career goals, company knowledge, and expectations aligned with their current situation (Impact Hub, 2025).

Career literacy is a type of competency necessary for individuals to make informed decisions in their career development processes. This competency includes **skills, such as self-awareness, evaluating career options, setting goals, and managing career paths** (Brown & Lent, 2019). Career literacy is the ability to relate one’s own knowledge and skills, goals, and expectations to the dynamics of the job market, the options it offers, and the qualifications and expectations it entails. This skill enables employees to position themselves effectively, prepare for potential challenges, and manage their

careers successfully. The WE Project's Impact Analysis also shows that Change Agents with high career literacy are more successful in finding a suitable company and position upon entry into the workforce, adapt to their job more quickly, see their responsibilities increase within the first six months based on their achievements, and, as a result of all this, have a higher intention to remain with the company (Impact Hub, 2025).

It is important to offer skills development initiatives as short-, medium-, and long-term programs, aligned with skills inventories, to ensure that efforts can be tailored to the needs of the field. Additionally, mapping out who will teach green and digital skills and how they will be taught requires that skills development initiatives be carried out using an approach that incorporates and reflects an equality perspective.

Job Placement

During the digital and green transition process, the creation of an inclusive manufacturing industry, the empowerment of women and the increased participation of women in the workforce are not solely related to women acquiring skills. Another factor that is at least as important is ensuring that skilled women are given the opportunity to secure employment. In line with this goal, initiatives that holistically design the training and employment process should be implemented, offering a comprehensive package that includes skills development tailored to companies' specific needs, job placement, employment support, and mentoring programs to ensure job retention. Companies must be encouraged to invest in human resources, and incentives should be introduced to promote the employment of women in SMEs. Companies should be supported in hiring women for various positions, and efforts must be made to combat biases. Furthermore, it is important to view the proportion of female employees as a factor that increases companies' access to incentives, support, and loan.

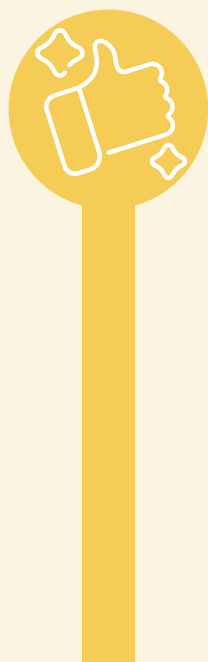
In the manufacturing industry, women are primarily employed in office-based roles, such as in human resources departments and office services. They are also represented in relatively higher numbers in software-related white-collar roles, followed by automation positions. The number of female employees in field roles is steadily decreasing; particularly in construction sites and assembly processes, women are almost entirely absent, a situation attributed to practical reasons such as limited accommodation options (PAL, 2025). The increase in automation efforts driven by the digital transition process, and the replacement of physically demanding jobs with automation, presents an opportunity toward change that will enable women to find more jobs in these fields.



BEST PRACTICE EXAMPLE

The GMR Varalakshmi Foundation's (GMRVF – India) Skills Development and Employment Model offers short-term, hands-on vocational training programs tailored to youth aged 18–30, aligned with labor market demand. The curriculum, which is fully aligned with the labor market, continuously updated, and developed in partnership with the private sector using a hands-on learning approach, is shaped based on labor market demand analysis and employer expectations. The program specifically targets unemployed youth, women, and individuals who have dropped out of school. Incorporating local practices, the program has set up eight training centers across five states, offering more than 32 vocational training programs in these centers and reaching over 30,000 young people. The training provided by the program is integrated through modules covering theory, practical skills, and life skills. Boarding, safe transportation, and female instructors are provided to increase women's participation in the training. A robust follow-up system has been established to track graduates for 6-12 months and to measure employment retention; the integration of life skills has helped increase job retention rates.

Employment support is crucial for **the young workforce, particularly for young women who have recently graduated, to gain experience and enter the industry**, given that they face multiple disadvantages due to both their age and because they are women.



BEST PRACTICE EXAMPLES

The **STEM Returners** program, an example of an international solution addressing the issue of young women's workforce participation and lack of experience, aims to break the work-experience cycle by offering paid internships, interview preparation and guidance, career coaching, and mentoring services to professionals seeking to return to or transition into the STEM fields.

Year Up and Genesys Works from the United States and Year Here from the United Kingdom are cited as examples of successful workforce development and job-matching programs. These programs offer intensive training and preparation, as well as paid full-time internship opportunities. In addition to technical skills and professional social skills, the training includes financial literacy, industry introduction, and workplace visits, and participants are also offered scholarship support.

The WE Project's Planning Recommendations report emphasizes the need to implement initiatives that enable blue- and white-collar candidates in the manufacturing industry to gain technical and social skills through training programs, allowing them to familiarize themselves with the industry and workplaces, and to support their interaction with employer representatives. These training programs should be supported by paid internship programs lasting at least six months.

Mentoring Programs

Mentoring programs are a popular practice frequently used in projects and programs designed to empower women. It is noted that mentoring conducted by women and for women is a common approach to addressing workplace inequality, and in recent years, there has been a frequent turn to programs that include mentoring components such as diversity initiatives and informal networking programs (Harris, 2022).

Mentoring can be provided as an informal, self-initiated relationship developed between a mentee and a more experienced individual with whom the mentee maintains regular contact, or it can be part of a formal, structured, and organized program with well-defined stages, formats, and techniques. It can take the form of a single mentor working with a single mentee in a one-on-one setting; a group of mentors sharing their knowledge with a single mentee; a mentor working with multiple mentees; knowledge and experience sharing among peers or individuals of similar age and experience; relationships established through online peer groups; relationships structured within a program; and even experience sharing through carefully designed short-term seminars, workshops, or presentations (NASEM, 2019:22).

This relationship centered on sharing knowledge and experience can encompass multiple dimensions, including both professional and human values. Whether it develops spontaneously in an informal manner or is implemented through structured frameworks, pre-designed models, and formulas within established programs, the most distinctive feature of mentoring is the dynamics between the individuals involved in the relationship. When this relationship is built between women, it also

involves sharing experiences related to facing and combating discrimination. Sharing experiences is the key to helping women develop a collective awareness that the inequality they face has a societal rather than an individual dimension, to cultivate the awareness needed to recognize the traces of this inequality in their personal lives, and to transform this shared experience of inequality through solidarity.

Research shows that mentoring programs have a positive impact on women's career development, access to various opportunities and achievements, building organizational commitment, access to higher-paying positions, career advancement, the development of communication and networking skills, and time management and productivity (Block & Tietjen-Smith, 2016; Harris, 2022).

While a good mentoring program provides support, particularly regarding issues such as mobbing, crisis management, and career decisions, poorly implemented mentoring programs can lead to a loss of motivation, especially for women early in their careers. Accordingly, there is a meaningful and positive correlation between effective mentoring and career planning, self-confidence, perceptions of leadership, job retention, and the ability to drive change. While the motivation of employees who receive effective mentoring support to remain in their jobs approaches 90%, this rate remains around 50% for those who are dissatisfied with their mentoring support (Impact Hub, 2025).



BEST PRACTICE EXAMPLES

The [**Society of Women Engineers Mentor Network \(SWE\)**](#) is a structured mentoring network designed to support female engineers not only in terms of their technical expertise, but also in leadership, professional development, and career planning skills.

The [**Women MAKE Mentorship Program**](#) provides professional guidance and networking opportunities to help women in the manufacturing and engineering industry overcome the barriers they face and advance in their careers.

The [**Million Women Mentors**](#) initiative is implemented globally, and establishes an effective mentoring network designed to support young women pursuing careers in STEM fields.

The training and mentoring programs run by [**Women in Tech Turkey \(Wtech\)**](#) in Türkiye are another example of best practices designed to boost women's skills in the technology sector and increase their access to employment.

Mentoring is **a dynamic, mutual learning process that focuses on generating solutions based on experience rather than formal education**. For this process to be successful, the expectations and roles of all parties involved in the mentoring process must be clearly defined and accepted. These should be shared through meetings held as part of mentoring programs, creating opportunities to learn from one another and grow together. Meetings can take place among peers (between mentors and mentees) or in formats that include all parties involved. This will also provide an opportunity to experience expanded forms of solidarity. After all, experiencing broader forms of solidarity and engaging with individuals and organizations involved in different stages of the same journey are among the most important elements of women's empowerment.

Awareness-Raising Initiatives for Women and Men Employees

Best practices and role models are crucial for raising awareness among both female and male employees to achieve women's empowerment. Initiatives and awareness campaigns targeting not only female employees, but also male employees play a critical role in creating equitable work environments. It is, therefore, essential to conduct awareness-raising initiatives targeting male employees in all companies, but especially in small businesses that have not taken any action in areas such as equality (Impact Hub, 2025).

The increasing number of female employees, coupled with the pressure to adapt to new production and work models brought about by the digital and green transition, presents both an opportunity and a risk. Women may face resistance as agents of this multifaceted process of change. Today's job market is characterized by companies cutting back on hiring due to the effects of poverty, unemployment, and periods of economic hardship, while technological advancements are putting increased pressure on employees due to the risk of job loss. In such environment, the fact that women are entering the workforce with public or organizational support may not always be viewed favorably by their colleagues. One way to address this resistance is to undertake initiatives aimed at improving organizational culture.



BEST PRACTICE EXAMPLES

ILO KARSAN Training Programs

In 2019, Karsan and the ILO signed a protocol to promote equality between women and men and increase women's employment, and within this framework, efforts to promote equality at Karsan have begun. Under the ILO's "Model for Improving Gender Equality in Companies," a project was designed to include improvement plans covering issues such as equal participation, inclusive employment, equal pay for equal work, a violence-free work environment, and work-life balance.

In this context, ILO Türkiye organized seminars titled "I Support Equality" on workplace practices that support women's employment and equality, with the participation of all employees, including both women and men. To ensure the continuity of these seminars and training sessions, an "Internal Trainer Team" was established to provide training to new employees. This initiative in the automotive industry has created an opportunity for a large number of male employees to develop greater awareness and foster an equitable workplace culture.

Increasing Women's Representation in STEM Fields

A comprehensive regional study conducted in collaboration with the UNDP and the OECD on women's representation in green jobs and STEM fields in the twin transition **reveals**¹³ that women are underrepresented in STEM fields (particularly in Engineering, Manufacturing, and Construction, as well as Information and Communication Technologies); despite relatively high representation in the natural sciences and mathematics, women account for **only 35%** of STEM graduates globally. In Türkiye, women account for 35% of graduates in Engineering, Manufacturing, and Construction, and 23.2% of graduates in Information and Communication Technologies.

¹³ The research covers a total of 11 ECA countries (Albania, Azerbaijan, Georgia, Kyrgyzstan, Moldova, Montenegro, North Macedonia, Serbia, Türkiye, Ukraine, and Uzbekistan).

One of the main factors affecting women's participation in STEM fields is the stereotypes instilled by parents, teachers, and society from an early age. These stereotypes steer girls toward fields considered more "appropriate" for women, such as the social sciences or caregiving professions, while encouraging boys to pursue science, technology, and engineering. The lack of visible female role models and mentors also limits women's access to the networks critical for success in STEM fields, and discourages future generations from choosing these career paths. An inclusive culture must be fostered to ensure that women can not only enter STEM fields, but also thrive in them without facing exclusion or disadvantages.

Efforts are being made under the WE Project to help women who have graduated from STEM fields associated with the manufacturing industry enter the workforce by acquiring green and digital skills, and to encourage their employment by providing support to companies, all as part of an effort to bring about a transformation in these fields, which are often shaped by stereotypes. The fact that these women, who are supported in the early stages of their careers, are referred to as "Change Agents" relates not only to their role in driving change toward the twin transition through green and digital skills, but also to their potential to trigger a shift in women's representation in areas required by the twin transition.



BEST PRACTICE EXAMPLES

The **W-STEM Project** is an initiative that promotes awareness, provides guidance, and establishes support mechanisms at higher education institutions to increase women's participation in STEM fields; measures equality in enrollment and retention rates in STEM programs; and that offers guidance during the early years of STEM education by encouraging women's career orientation and choices.

The **FemSTEM initiative** seeks to transform societal perceptions through role model meetings, communication campaigns, and visibility efforts organized for girls and young women.

The **STEM4ALL platform**, run in partnership with UNDP and UNICEF, contributes to an equitable transformation model at the regional level by facilitating access to STEM education for girls and young women, raising awareness through role models, and promoting inclusive approaches in educational institutions.

Supporting Women's Leadership and Entrepreneurship in the Private Sector

In Türkiye, women's entrepreneurship stands at 33% in early-stage entrepreneurship and 17% in entrepreneurship overall, while the percentage of female employers is 12% and the percentage of self-employed women is 19% (PAL, 2025). One of the private sector interventions designed to empower women in the manufacturing industry is supporting women as entrepreneurs, business owners, and leaders. International initiatives toward this goal offer effective models in both access to financing and organizational capacity building. These models demonstrate that when women's leadership in the private sector is addressed in conjunction with financial support, professional networks, and organizational development mechanisms, it can produce more inclusive and sustainable outcomes.



BEST PRACTICE EXAMPLES

The [Women in Manufacturing Leadership Council](#) contributes to strengthening women's leadership by creating a learning network for female leaders and professionals in the manufacturing industry through periodic meetings, experience-sharing sessions, and leadership development workshops.

The **EBRD Women in Business Program** helps women entrepreneurs build and grow their businesses by combining loan opportunities, risk-sharing, technical support, consulting, and mentoring services for women-led SMEs.

The [Women Entrepreneurs Finance Initiative \(We-Fi\)](#), which operates on a global scale, offers a multi-stakeholder funding mechanism that supports women-owned businesses' access to finance, organizational development, and market entry capabilities.

The IFC [Banking on Women Program](#), on the other hand, improves women entrepreneurs' access to financing by encouraging financial institutions to develop appropriate loan schemes and financial products for women-led businesses.

Women's leadership and the number of female employees significantly influence women's choice of company (PAL, 2025). 66% of women who do not wish to work in the manufacturing industry state that the absence of female managers is one of the challenges they face in the industry. This challenge has been identified as a higher priority than practical needs, such as the lack of daycare centers (50%) and limited pay (48%). According to the report, the factor that female candidates and employees value most when choosing a company is "the presence of female employees and managers." Companies that take women's interests and needs into account and highlight women as visible role models within the organization are more likely to attract female talent and gain access to a broader talent pool (PAL, 2025).



BEST PRACTICE EXAMPLE

TSE K 645 — WOMEN ENTREPRENEUR CERTIFICATION CRITERIA

The TSE K 645 Women Entrepreneur Certification Criteria is a certification scheme established by the Turkish Standards Institute (TSE) that certifies businesses' compliance with specific standards in their management practices. This criterion establishes common definitions for businesses such as those owned by women, led by women, or managed by women, and includes determining that ownership, management, and control of such businesses reside with women entrepreneurs.

Companies applying for the TSE K 645 Women Entrepreneur Certification Criteria are certified following an on-site audit conducted by TSE officials. Training programs conducted under the TSE K 645 criteria are carried out with the support of authorized civil society organizations.

For example, KAISDER (Women Employers and Industrialists Association of Türkiye) plays an active role in delivering these training programs. KAISDER also collaborates with TSE to evaluate the existing criteria and scoring system, thereby supporting its members in preparing for the process.

Through surveys conducted with the participation of its members, KAISDER analyzes the current status regarding women entrepreneurs and shares concrete recommendations for improving the criteria to be implemented. Thus, KAISDER actively contributes to shaping the certificate to meet field-specific needs in addition to promoting the widespread adoption of the TSE K 645 Certificate. As part of the collaboration with TSE, the training programs offered by KAISDER and the KAISDER Certificate of Workplace Sensitive to Equality Culture are considered officially recognized documents that are directly evaluated during the TSE K 645 certification process. Member companies' participation in these training programs provides a significant advantage during the certification process.

Supporting women's entrepreneurship and leadership is essential not only for increasing women's representation at the upper echelons of the hierarchy, but also for increasing the number of women employees in the industry and fostering an equitable manufacturing industry. Research shows that women entrepreneurs play a pioneering role in women's empowerment and employment, thereby contributing to significant gains in social progress, development, and equality (Sayın, 2025). There are numerous studies demonstrating that women increase diversity within the ecosystem through innovative business models and different perspectives; increase workforce participation rates by supporting one another in the business world; show greater empathy in understanding the challenges faced by other women; are committed to creating an equitable and inclusive work environment; and that all of these factors tend to increase women's employment (Aydın 2024, 65–66).

Having more women in leadership positions can facilitate the empowerment of women in the manufacturing industry. Entrepreneurship and leadership support programs should be offered to enable women to assume leadership roles as employers and business owners in the manufacturing industry. In this context, initiatives such as increasing women entrepreneurs' access to financial support mechanisms, venture capital, loan support, mentoring programs, and financial advisory services provided by the public sector, international funds, or the private sector; strengthening women's entrepreneurship networks and partnerships to make women entrepreneurs more visible in the market; enabling them to benefit from initiatives designed to improve their competitiveness through market access programs and export incentives; facilitating their participation in trade fairs and industry-specific events, and promoting policies that prioritize women entrepreneurs in supply chains will create opportunities to strengthen women-led businesses in the manufacturing industry (PAL, 2025).



THE CURRENT SITUATION, STAKEHOLDERS, AND POLICY FRAMEWORK IN TÜRKİYE



Women in the Turkish Manufacturing Industry

According to TURKSTAT data, the workforce participation rate in Türkiye stood at 53.2% as of February 2025, and the gap between the workforce participation rates of women and men was found to be nearly twofold. The workforce participation rate for men was 70.8%, while that for women was 35.9%.¹⁴ The workforce participation rate for women in Türkiye lags significantly behind the global average (48%) and the EU average (52%). TURKSTAT's February 2025 data shows the employment rate at 48.8%. This rate is 31.9% for women and 66% for men.

Between 1990 and 2022, the total employment rate for women increased only slightly, rising from 30% to 32% (from 5.6 million to 9.9 million). During this period, those employed in the manufacturing industry, which expanded in line with the increase in production volume (6,711,000), accounted for 21.2% of total employment, while women's share of employment in the manufacturing industry rose from 18% to 27% (from 490,000 to 1.7 million). This figure represents 17% of total female employment. Türkiye ranks 13th among the top 15 countries with the highest industrial production in terms of women's share in the manufacturing industry (PAL, 2025).

Years	Total Employment	Total employment in the manufacturing industry	Total men's employment	Men's employment in the manufacturing industry	Total women's employment	Women's employment in the manufacturing industry
2020	26,695	5,059	18,396	3,781	8,299	1,278
2021	28,797	5,662	19,792	4,205	9,005	1,457
2022	30,752	6,158	20,818	4,507	9,935	1,651
2023	31,632	6,229	21,286	4,520	10,346	1,709

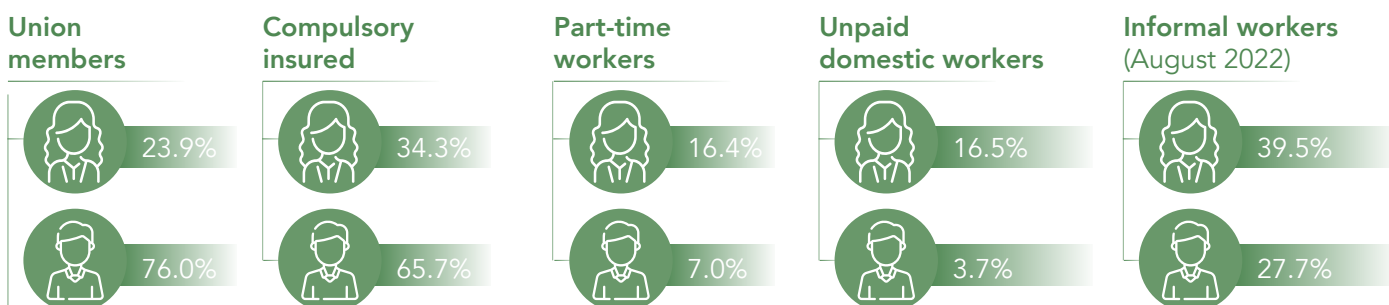
The majority of women working blue-collar jobs in the manufacturing industry are concentrated in **low- and medium-technology** sectors such as apparel, pharmaceuticals, food, and textiles. These four industries account for **62%** of women employed in manufacturing.

Sub-sector	Rate of women	Number of female employees
Apparel	55%	548,000
Pharmaceuticals	44%	39,000
Food	39%	218,000
Textile	38%	266,000

It is evident that women in the workforce are more likely than men to be subject to working conditions described by the terms "secondary labor market" and "precarious employment." These conditions describe the circumstances of self-employed workers and unpaid domestic workers, where informal, low-wage employment, excluded from the social protection system, is common, along with part-time, low-security or insecure, flexible work and underemployment (Dedeoğlu and Ekiz Gökmen,

¹⁴ data.tuik.gov.tr/Bulten/Index?p=Isgucu-Istatistikleri-Subat-2025-54060

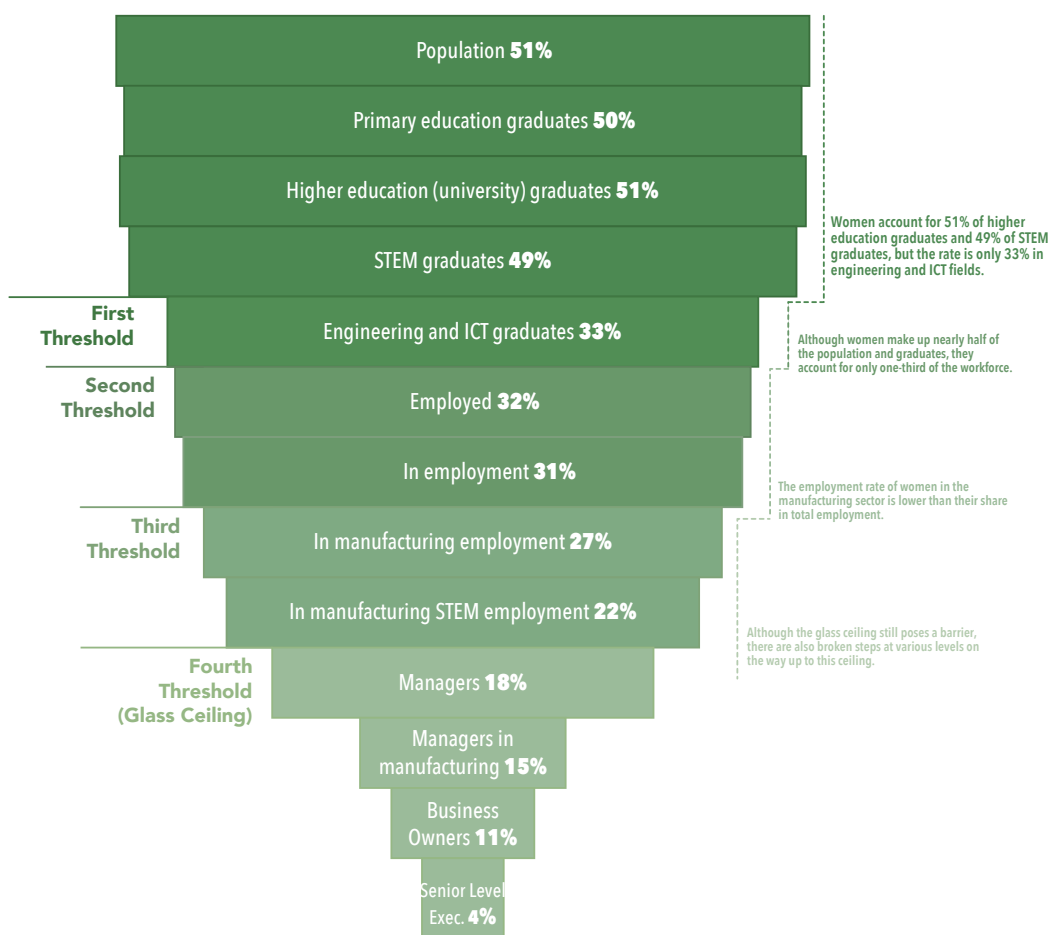
2021). Although the rate of informal employment among women in the manufacturing industry fell from 46% in 2004 to 19% in 2022, women continue to be employed informally at a higher rate than men. Furthermore, while the wage gap stands at 4% in Türkiye, it rises to 23% in the manufacturing industry (PAL, 2025).



Source: Directorate General of Labor, September 2024, Labor Market Statistics and TURKSTAT, Household Workforce Statistics, 2021

There is inequality based on occupational segregation among white-collar workers. Although 57% of STEM graduates are women, the proportion of women working in engineering and ICT fields is only 24-33%. Only 9% of female STEM graduates are able to find employment in engineering or ICT. On the other hand, the wage gap between women and men in professional roles can reach up to 21% (PAL, 2025).

The WE Project's Needs Assessment examines **the key challenges and primary issues hindering the empowerment of women in the manufacturing industry**. Accordingly, women face significant barriers in the manufacturing industry and the broader labor market, creating a striking "inverted pyramid" effect. This effect shows that women, who make up half the population, face multidimensional disadvantages in both public and private life.



"In Türkiye, women account for half of all graduates in primary school, university, and STEM fields. However, the proportion of women drops to 33% in engineering and ICT. While women account for more than 60% of graduates in certain STEM fields such as health sciences, mathematics, and biology, they make up only 28% of computer and information science graduates and only 24% of engineering graduates. This points to educational segregation between women and men., and constitutes the first level of the inverted pyramid.

Workforce participation represents the second level. At this level, the inequality between women and men becomes even more pronounced. Although women make up half of the population and the educated population, they represent only one-third of the workforce and 31% of those employed. This disparity exposes systemic barriers that hinder women's workforce participation and retention.

At the third level, comprising manufacturing and STEM-related fields, women's representation is even lower. Women hold only 27% of jobs in the manufacturing industry and only 22% of STEM-related positions within the industry. Occupational segregation and exclusion from leadership roles further limit women's participation and advancement in these fields.

The fourth level is the "glass ceiling," where women's underrepresentation in management positions is evident. Women hold only 18% of management positions across all industries and only 15% in the manufacturing industry. This vertical occupational segregation reflects the cumulative barriers women face in the workforce, from early education through to the management level."

Source: ILOStat, OECD, TURKSTAT, Council of Higher Education (YOK), PAL calculations

Companies participating in the WE Project's Needs Assessment study cited, respectively, **cultural stereotypes (56%), caregiving responsibilities (57%), lack of flexible work options (56%), lack of role models, and structural barriers such as safety and transportation issues** as the reasons for women's underrepresentation in manufacturing. An assessment of long-term trends shows that although female employment doubled between 1988 and 2022, women accounted for only 36% of new jobs created in the manufacturing industry over the past 12 years. Although women accounted for 43% of the overall increase in employment, their share in manufacturing remains lower (PAL, 2025).

The possible impact of the green and digital transition on manufacturing companies in Türkiye must be addressed in conjunction with the goal of an equitable and inclusive twin transition. According to the WE Project's Current Status and Needs Analysis report, while there is an upward trend toward digitalization in Turkish companies, this transformation lags behind that of EU countries. Enterprise Resource Planning (ERP) adoption stands at 28% in Türkiye, compared to the EU average of 36%. While the percentage of companies using cloud computing in Türkiye is 11%, the EU average is 36%. The report states that there has been limited progress in the use of big data and the Internet of Things (IoT) in Türkiye. It also notes that there is a significant gap in digital skills and that companies with a high degree of digital transition are more inclined to support women's empowerment. However, the rate of women possessing basic digital skills is 26%, compared to 34% for men (PAL, 2025). This reveals that, due to the inequalities women face in accessing digitalization processes, they are incorporated into digitized production processes later, which in turn limits their career advancement. Due to occupational segregation, women, who are underrepresented in high-demand fields within the manufacturing industry, such as engineering, ICT, mechanical engineering, and electronics, are also able to participate in the changing labor market driven by the effects of digitalization at a lower rate.

According to the WE Project's Current Status and Needs Analysis report, Türkiye's low ranking on the environmental performance index indicates a need for transformation. According to ILO and UNICEF estimates, **300,000 new green job opportunities will be created by 2030, and an additional 100,000 jobs will be added with zero-waste targets.** Green jobs hold high potential for women's participation, particularly in fields such as **energy efficiency, recycling, sustainable production, and environmental monitoring.** Research findings show that companies with high **digital and green transition scores also systematically have higher scores for women's empowerment.** It can be declared that companies that utilize high technology and pursue environmental sustainability goals tend to have a more structured and inclusive structure. Since companies with green transition goals adhere to Environmental, Social, and Governance (ESG) Standards, **equality** has also become a priority for these organizations. Viewed from another perspective, it can be said that the digital and green transition process tend to progress more rapidly in companies with a high proportion of female employees.

The current situation, which we have attempted to briefly summarize through indicators related to women's participation in economic life and their role in the manufacturing industry, is directly linked to an asymmetry that extends far beyond social life. Socially constructed concepts create a hierarchical order between women and men, which affects women's access to rights and opportunities, as well as their equal and equitable participation in social life.

National Policy Framework

Increasing women's employment in Türkiye is a strategic priority addressed by ministries responsible for social policy, such as the Ministry of Industry and Technology, the Ministry of Labor and Social Security, the Ministry of Trade, and the Ministry of Family and Social Services, as well as numerous agencies operating under them, including İŞKUR and KOSGEB. This objective is addressed in high-level policy documents such as strategy papers and plans developed with a focus on development, industry, employment, and women's empowerment, as well as mandates issued by the Prime Ministry and the Presidency. It is observed that the intersection of women's empowerment with the twin transition of the manufacturing industry is incorporated into these institutional priorities and policies, and that organizational programs are being implemented in line with this objective.

This section provides an assessment of the strategic approaches and policies addressing the green and digital transition with a focus on the manufacturing industry in Türkiye, as well as how the perspective of women's empowerment is addressed within this context. Thus, it summarizes how the priority areas discussed in the previous section are incorporated within the framework of specific policies and strategic objectives. The section also evaluates regulations addressing climate change and industry within the national policy framework, as well as regulations concerning working life in the context of a just transition and those addressing women's participation in the workforce. The section then summarizes how the key plans that guide implementation and the strategy papers, which serve as overarching policy documents, address the twin transition process and the context of women's empowerment. The purpose is to identify the current status and areas for improvement in the policy framework.

Legislation

There is no general legal framework in Türkiye that specifically addresses the green and digital transition in the manufacturing industry. The primary regulation addressing the green transition is the **Climate Law (No. 7552)**, adopted in 2025, which enshrines "equality" as a fundamental principle in its wording. Accordingly, the section on general principles states that climate actions in Türkiye will be guided by principles such as equality, climate justice, participation, and sustainability. Among the definitions provided in the Law, it is noted that the principle of "just transition" means

that groups most adversely affected by climate transformation, such as women, children, the elderly, and individuals with disabilities, will be prioritized in all policies and programs. However, the Law does not contain targeted and detailed provisions, obligations, or measures regarding women's empowerment and equality; instead, it adopts a general approach that includes women among vulnerable groups.

Article 10 of the Constitution of Türkiye defines the principle of equality before the law as follows: "Everyone is equal before the law without distinction as to language, race, color, sex, political opinion, philosophical belief, religion and sect, or any such grounds." The amendment made in 2004 emphasizes that women and men have equal rights and the State's obligation in this regard: "Women and men have equal rights. The State has the obligation to ensure that such equality exists in practice." The sentence added in 2010 draws attention to the measures to be taken to ensure equality: "Measures taken for this purpose shall not be interpreted as contrary to the principle of equality." This provision highlights the concept of substantive equality, while also emphasizing the intent to adopt temporary special measures. In another amendment intended to enshrine the principle of equality in the Constitution, the phrase "and is based on equality between spouses" was added to Article 41, following the statement "The family is the foundation of Turkish society."

Article 49 of the Constitution states that "Work is the right and duty of everyone." The subsequent article regarding the fulfillment of this right and duty includes the following provision carried over from the Constitution of 1961: "No one shall be required to perform work that is unsuited to their age, gender, or physical capacity. Minors, women, and physically and mentally disabled persons shall enjoy special protection with regard to working conditions."

Furthermore, the Constitution guarantees that the international framework of fundamental rights is effectively reflected and implemented within the national legal system. Article 90 of the Constitution states that "In the case of a conflict between international agreements, duly put into effect, concerning fundamental rights and freedoms and national laws due to differences in provisions on the same matter, the provisions of international agreements shall prevail."

The Civil Code (No. 4721), adopted in 2001, not only upholds equality between women and men in many areas, such as inheritance rights, parenthood, marriage, and divorce, but also introduces new provisions regarding participation in the workforce. Provisions in the previous Civil Code that required women to seek permission from their spouses regarding their employment and choice of profession have been amended in the new Civil Code. Accordingly, neither spouse is required to seek permission from the other in choosing a profession or a job. The relevant article goes on to state that "spouses must take into account the peace and well-being of the marital union when choosing a profession." While under the previous Law the husband was responsible for providing for the household and the children, the New Civil Code includes a provision stating that "Spouses contribute to the expenses of the marital union in proportion to their means, through both their labor and their assets."¹⁵

The Turkish Penal Code (No. 5237) addresses the issues of working life and equality within the framework of "sexual harassment in the workplace." In other words, under the laws of the Republic of Türkiye, sexual harassment in the workplace is a matter of criminal law. The Penal Code defines the aggravated forms of sexual harassment in the workplace. Accordingly, sexual harassment committed against a person by abusing authority arising from a hierarchical or service relationship, or by taking advantage of the opportunity provided by working at the same workplace, is punishable by a more severe penalty than the basic form of the offense. This provision establishes the penal system regarding sexual harassment offenses that may arise both within employer–employee hierarchical relationships and among coworkers.¹⁶

¹⁵ Ministry of Family, Labor, and Social Services, General Directorate of Women's Status, Women in Türkiye, March 2020. Ankara www.ailevecalisma.gov.tr/media/44013/02-03-2020-tr-de-kadin-donusturuldu.pdf, p. 4-5

¹⁶ Ministry of Family, Labor, and Social Services, General Directorate of Women's Status, Women in Türkiye, March 2020. Ankara www.ailevecalisma.gov.tr/media/44013/02-03-2020-tr-de-kadin-donusturuldu.pdf, s. 6

Furthermore, Article 122 on discrimination has been amended in 2014 and restructured under the heading “Hate and Discrimination,” defining discrimination as the prevention of a person’s access to public goods and services, or their engagement in economic activities, “due to differences in language, race, nationality, color, gender, disability, political opinion, philosophical belief, religion, or sect,” which is punishable by imprisonment for a term of one to three years.¹⁷

The most detailed piece of legislation regarding women’s participation in the workforce is in the Labor Law (No. 4857). Since the Labor Law directly concerns women working in the manufacturing industry, it is a legal framework that deserves special attention from a regulatory perspective. The Labor Law, dated 10 June 2003, prohibits discrimination on the basis of gender.

Article 5 of the Law stipulates the following provisions regarding the prohibition of discrimination:

- » No discrimination based on language, race, color, gender, disability, political opinion, philosophical belief, religion and sect or similar reasons is permissible in the employment relationship.
- » Unless there are essential reasons for differential treatment, the employer must not make any discrimination between a full-time and a part-time employee or between an employee working under a fixed-term employment contract and one working under an open-ended employment contract.
- » Except for biological reasons or reasons related to the nature of the job, the employer must not make any discrimination, either directly or indirectly, against an employee in the conclusion, conditions, execution and termination of their employment contract due to the employee’s gender or pregnancy.
- » Differential remuneration for similar jobs or for work of equal value is not permissible.
- » Application of special protective provisions due to the employee’s gender shall not justify paying them a lower wage.¹⁸

Consistent with the overarching framework of the non-discrimination norm and the principle of inclusivity, this Law stipulates that no direct or indirect differential treatment is permissible on the fact that whether the employee is female or male or pregnancy in the conclusion, implementation, or termination of an employment contract, and that an administrative fine will be imposed on employers who fail to comply with the provisions regarding maternity leave.

The provisions regarding the prevention of harassment in the workplace (Articles 24-25) state that “if an employee is subjected to sexual harassment by the employer, another employee, or a third party, and the employer fails to take the necessary measures despite being notified of the harassment, the employee has the right to immediately terminate the employment contract for just cause.”¹⁹

Issues related to care obligations for families and women’s needs related to reproductive health are addressed in Article 74 of the Labor Law. This article regulates matters such as leave entitlements applicable in cases of childbirth and related circumstances, parental leave, and breastfeeding leave. It sets forth provisions regarding the durations of paid and unpaid leave, parental leave, maternity leave, and breastfeeding leave granted to female employees. Additionally, an amendment enacted in 2015 granted a 5-day paternity leave to employees whose spouses have given birth. This leave is included under the heading of “leave of absence.”²⁰ Article 13, which concerns part-time and full-time employment contracts, includes provisions regarding requests for part-time work due to parenthood.

17 Women’s Empowerment Strategy and Action Plan, 2017-2023, p. 24. . www.ailevecalisma.gov.tr/media/6315/kad%C4%B1n%C4%B1n-que%C3%A7lenmesi-strajesi-belgesi-ve-eylem-plan%C4%B1-2018-2023.pdf

18 Labor Law, www.mevzuat.gov.tr/MevzuatMetin/1.5.4857.pdf

19 Labor Law, www.mevzuat.gov.tr/MevzuatMetin/1.5.4857.pdf

20 Ministry of Family, Labor, and Social Services, General Directorate of Women’s Status, Women in Türkiye, March 2020. Ankara, www.ailevecalisma.gov.tr/media/44013/02-03-2020-tr-de-kadin-donusturuldu.pdf

Maternity Leave and Breastfeeding Leave (Article 74)

As a general rule, female employees are not required to work for a total of sixteen weeks, eight weeks before childbirth and eight weeks after giving birth. In the case of a multiple pregnancy, two weeks are added to the eight-week period before childbirth. However, if her health permits, a female employee may, with a doctor's approval and if she so desires, continue to work for up to three weeks before childbirth. In this case, any time worked by the female employee is added to the post-partum leave duration.

(Additional statement: 13/2/2011- Article 6111/76) In the event of a premature birth, the leave duration not used by the female employee prior to childbirth is granted by adding it to the post-partum leave duration.

(Additional statements: 29/1/2016-Article 6663/22) In the event of the mother's death during or after childbirth, the unused post-partum leave duration is granted to the father. One of the spouses who adopts a child under the age of three, or the adoptive parent, is granted eight weeks of maternity leave starting from the date the child is actually placed with the family.

(Additional paragraph: 29/1/2016-Article 6663/22) Starting from the end of the maternity leave used in accordance with the first paragraph, for the purpose of caring for and raising the child, and provided the child is alive, female employees and male or female employees who have adopted a child under the age of three are entitled, upon request, to sixty days of leave for the first birth, one hundred twenty days for the second birth, and one hundred eighty days for subsequent births, equivalent to half of the weekly working hours. Thirty days are added to these durations in the event of a multiple birth. If the child is born with a disability, this duration is extended to three hundred sixty days. The provisions regarding breastfeeding leave do not apply during the period in which the provisions of this paragraph are utilized.

The duration of leave specified above may be extended before and after childbirth, as necessary, depending on the employee's health condition and the nature of the work. Such duration is specified in a physician's report.

During pregnancy, a female employee is granted paid leave for periodic checkups.

If deemed necessary by a medical report, a pregnant female employee is assigned to lighter duties appropriate for her health status. In this case, there is no reduction in the employee's wages.

Upon request, a female employee is granted up to six months of unpaid leave following the completion of the sixteen-week period, or the eighteen-week period in the case of a multiple pregnancy.

(Additional statement: 29/1/2016-Article 6663/22) This leave is granted to one of the spouses or to the adoptive parent in the event of the adoption of a child under the age of three. This term is not taken into account when calculating the right to annual paid leave.

Female employees are granted a total of one and a half hours per day as breastfeeding leave to breastfeed their children under the age of one. The employee decides the specific hours during which this time will be used and how it will be divided. This time is counted as part of the daily working hours.

In addition to the Labor Law, the Occupational Health and Safety Law (No. 6331) stipulates that employers must specifically take into account the situation of female employees when assessing and managing health and safety risks in the workplace. Although the Law does not contain specific sections dedicated to women, there are provisions addressing the special needs of women as part of the risk assessment and protective framework. For example, Article 10 of the Law stipulates that in risk assessments, employers must give special consideration to women, in addition to other groups with specific protection needs (youth, older workers, workers with disabilities, pregnant or breastfeeding workers, etc.). This article requires that risk assessments take into account the different effects that potential workplace accidents may have on women, and that protective measures be developed accordingly. The Regulation on the Conditions for the Employment of Pregnant or Breastfeeding Women, which enacted the Law, contains provisions such as the prohibition on employing pregnant women for 8 weeks before and 8 weeks after childbirth; the prohibition on assigning pregnant women to work that would jeopardize their health; breastfeeding breaks for breastfeeding women; a ban on overtime; and the prohibition on assigning pregnant women to hazardous work.

The regulation titled “Conditions for the Employment of Female Workers in Night Shifts,” developed in accordance with Article 73 of the Labor Law and Article 33 of the Occupational Health and Safety Law, stipulates that women may not be required to work more than 7.5 hours during a night shift, that pregnant and breastfeeding women may not work at night, that employers are required to provide transportation for female workers on night shifts (for locations outside municipal boundaries or with difficult access), and that mandatory medical reports and regular checkups are required. This regulation clearly defines the rights of and protective conditions for female workers, particularly in manufacturing companies where shift work and night work are common.

To summarize, Türkiye’s legislation on employment includes both general rights regarding equality and also specific protective provisions concerning the employment of women in the manufacturing industry and other sectors. The purpose of these laws is to prevent discrimination, establish protective working conditions, and ensure the continued participation of women in the workforce. On the other hand, the context of the green and digital transition is governed primarily by strategic and planning documents rather than by legislation.

Strategies and Action Plans

The twin transition is a key agenda item for Türkiye, featured in many high-level policy documents and an important part of the industry’s vision for the future. This goal is addressed alongside increasing women’s employment and promoting their active participation in economic life in key documents such as the 12th Development Plan.

The priority areas proposed under the ETT Model were developed by taking into account the issues that are intended to be implemented as part of Türkiye’s vision for the future, and have become priorities on the agenda through these plans.

The 12th Development Plan

Development plans are comprehensive roadmaps designed for five-year periods to achieve economic, social, and environmental goals in Türkiye. These plans address fundamental issues such as education, health, transportation, social security, justice, participation in economic life, and the working life, and incorporate strategies in these areas, reflecting current trends in the evolving social structure. Development plans serve as guiding documents for government agencies, setting budget and policy priorities. Therefore, projects to be implemented by relevant ministries and public institutions during the development plan period are carried out within this framework, and monitored using progress indicators.

The process of drawing up development plans is inclusive in nature. Various areas of economic and social development, such as transportation, urban services, the empowerment of women and girls, migration, information and communication technologies, entrepreneurship, and manufacturing, are addressed by specialized commissions through a process involving numerous working groups.

Development plans play a crucial role in guiding investments by coordinating government policies in the short and medium term, identifying priority areas for budgets and resources such as incentives and infrastructure investments, and outlining the key issues and priority areas of economic and social development.

Under the current 12th Development Plan (2024–2028), the transformations brought about by the Fourth Industrial Revolution, which has shaped the period it covers, along with the green and digital transition, are addressed as fundamental strategic areas. Furthermore, the “Policies,” “Measures,” and “Targets” sections of the 12th Development Plan address issues related to supporting women’s employment in the intersection of the green and digital transition. The first key theme in this context is the enhancement of vocational skills in line with the needs of the workforce, and in accordance with the requirements of the green and digital transition. The plan includes the enhancement of workforce policies in line with the twin transition, ensuring that women and girls acquire the knowledge and skills required by the digital and green transition, as well as promoting active participation in the labor market, equal representation in decision-making processes, and equal participation in STEM fields. Thus, the plan identifies the need to take steps to ensure that women benefit equally from the opportunities arising from skills development and the green and digital transition as a policy priority until 2028.

The second key theme concerns caregiving services. It is evident that targets relating to increasing women’s employment rate are being addressed in conjunction with policies on care services and access to education and training. This indicates that Türkiye has adopted an approach that seeks to remove barriers to women’s participation in the workforce.

While the third theme emphasizes increasing employment incentives for women, youth, and individuals with disabilities to achieve these goals, the fourth theme focuses on mainstreaming the development plan by ensuring that the priority of women’s empowerment is incorporated into all policy-making processes, and budgeting that promotes equality between women and men practices are expanded.

Paragraphs from the 12th Development Plan regarding women’s empowerment in the twin transition:

306. Programs aimed at promoting workforce participation, particularly among women and youth, will be implemented to activate the economically inactive population. These programs will also focus on **acquiring professional skills** required for the green and digital transition, and on making the labor market more flexible. Policies will be put into practice to ensure that every working-age individual can acquire skills to generate income and professions that foster a sense of belonging.

334. Qualified workforce will be one of the main elements of the stable growth envisaged in the Plan period. **Increasing the qualifications of the workforce**, directing them to more productive sectors and areas, ensuring harmony between education and employment, and including women and young people in employment by equipping them with the professional skills needed in the labor market are among the main priorities.

337. Regulations improving the flexibility of the labor market, increased **childcare services and training opportunities, and employment-oriented policies** will improve women’s labor market

competencies and support their more intensive participation in business life. Higher participation of women in the workforce with better jobs will increase household incomes and contribute to social welfare.

409.1. In order to enhance effectiveness of the employment incentive system, inefficient employment incentives will be terminated while **the emphasis on employment incentives for women, youth, and people with disabilities will be increased.**

650. **Within the framework of the twin transition, the implementation of measures that can keep the capacity of the workforce to create employment** at the highest level will be ensured in employment and work life. Active workforce policies will be enriched in terms of content, and used more effectively. The participation of women, young people, and persons with disabilities in the labor market will be supported during the planning phase, and measures for protecting and raising awareness for professionals working in the occupational health and safety field will be taken. Key priorities to accelerate the sustainable development of Türkiye include; **equipping women and girls with knowledge and skills that are appropriate for the requirements of digital and green transition**, ensuring that they participate and continue in all levels of education in compliance with the requirements of the current era and supporting their well-being through improving social services. It is of eminent value for **women to participate in employment fully and effectively, to be more included in decision-making mechanisms** in the public and private sectors and politics, and to take concrete steps to establish work and life balance.

721.1. To harmonize work and family life, to increase women's employment, and to maintain a dynamic population structure, secondary legislation covering working hours and alternative working methods will be prepared in cooperation with public institutions and organizations, and the private sector.

726. The priority of ensuring equality of opportunity for women and men and empowering women will take place in every plan, program, policy development, and implementation process.

727. To increase **the participation and representation of women in education, employment, and decision-making mechanisms**, "special provisional measures" such as quotas and additional support will be implemented.

728. Women's equal participation in economic, social, and cultural life along with their employment in conditions where the principle of **equal pay for equal work** is adopted will be increased.

728.1. In cooperation with the central administration, local administrations, the private sector, and CSOs, alternative models that are qualified, affordable, and **accessible care services** will be developed to increase women's employment, and will be made widespread following pilot implementations.

728.2. The scope of the programs in the fields of **entrepreneurship, financial and digital literacy, and cooperation**, which will increase women's participation in the workforce, will be expanded and disseminated.

728.3. Women's full, equal, safe, and efficient participation in the labor market that is changing with the twin transition will be ensured, and programs will be developed to equip women with **new skills and competencies** that will emerge in this context.

728.4. Efforts will be made to transform the public and private sectors based on equality and inclusion to increase women's education and employment in mathematics, science, technology and engineering, where women are underrepresented.

2030 Industry and Technology Strategy

The 2030 Industry and Technology Strategy, with its 20 macro goals, 5 objectives, 100 strategies, and priority programs and projects, focuses on transforming Türkiye's industry and technology ecosystem into a framework that generates higher added value, is innovation-driven, and has completed its digital and green transition. Structured around the transition to high technology, the 2030 Industry and Technology Strategy was developed with the goals of facilitating the transition to a digital economy and the green transition of industry, as well as integrating more competitively and deeply into the global economy.

The second objective of the strategy, the transition to a digital economy, involves improving Türkiye's digital infrastructure, accelerating the integration of businesses with technology, and establishing a strong presence in international markets through domestic digital solutions. The third objective is focused on enhancing environmental sustainability and reducing the carbon footprint by facilitating the green transition of the manufacturing industry. Both objectives serve the strategy's long-term growth vision while promoting transformation in both technological and ecological spheres. In this context, the targets include:

- » Reducing the industry's carbon footprint through regulations aligned with the European Green Deal, and ensuring compliance with the Carbon Border Adjustment Mechanism (CBAM);
- » Diversifying and expanding support mechanisms and international financing sources to accelerate the industry's transition to a green and circular economy;
- » Increasing investments for the green transition of Organized Industrial Zones and other planned industrial areas, reducing environmental impacts;
- » Transitioning to efficient technologies, increasing R&D activities and investment support, and developing energy technologies;
- » Increasing resource efficiency while reducing the industry's environmental impacts.

The Digital Transformation of the Workforce is a key topic of the 2030 Industry and Technology Strategy. The need to take measures related to training to address the skills mismatch (the gap between the skills possessed by the workforce and those required by industry) is highlighted in many parts of the Strategy. During the transition to a digital economy, identifying the skills required by Türkiye's manufacturing industry and training the workforce accordingly constitutes one of the Strategy's main pillars. The steps identified to achieve this goal can be outlined as follows:

- » Developing opportunities for theoretical and practical learning in emerging professions in fields such as artificial intelligence, big data, cloud computing, and cybersecurity, and increasing internship opportunities;
- » Updating vocational and technical secondary education programs in line with the needs of the digital economy, taking into account the national occupational standards established by the Vocational Qualifications Authority;
- » Establishing Industry and Technology Colleges focused on science, technology, and vocational education, and creating education and training platforms through public-private sector collaboration;
- » Organizing skills acquisition, development, and advanced training programs for employees to promote the more effective use of digital tools in the workplace;
- » Accelerating the Active Workforce Program initiatives targeting the 100 occupations identified by İŞKUR as "occupations of the future" and other occupational groups that are emerging in the context of digital transition.

According to the Strategy, individuals should have equal access to training opportunities offered to help them acquire new skills. This approach addresses inequalities in employment and participation in the manufacturing industry, helping women enjoy equal opportunities and benefit from skills development programs.

Another key area in the 2030 Industry and Technology Strategy related to the empowerment of women in the digital and green transition is “Inclusive Employment and Skills Alignment in Industry.” Inclusivity in employment in the manufacturing industry is identified as a policy objective, and the need to prioritize policies that encourage greater representation of women and youth in the technology sector is emphasized. The necessary steps to achieve this goal include skills mapping, labor demand analysis, university-industry collaboration, and the employment of women and youth. The Strategy also highlights the need to develop models specific to Türkiye to increase employment for women and youth, and promote inclusivity in the manufacturing industry. In this context, employment inclusivity will be enhanced by providing housing to meet accommodation needs in OIZs, creating social spaces for young employees, and offering facilities such as daycare centers and study centers.

The Strategy also highlights the need to establish specialized mentor pools, accelerator programs, micro loans, and grants for prototype development, particularly for women and young entrepreneurs, to bring innovative business ideas to life as part of the 2030 goals.

Women’s Empowerment Strategy and Action Plan

The Women’s Empowerment Strategy and Action Plan also highlights the role of women in the twin transition. The Plan points out that the number of women and girls pursuing education in STEM fields, which are key to many sectors of the green economy and the financial sector, remains low compared to that of men; these imbalances, along with the unequal participation of and access to opportunities for women and men in green jobs, are highlighted as significant areas of concern.

In relation to these areas, the Strategy identifies the need to develop and establish support mechanisms to ensure women’s equitable access to green jobs; enable them to assume greater leadership roles in sustainable social and economic growth; and facilitate women’s access to, and effective use of, green financing instruments in particular, as part of the strategy for women’s empowerment and poverty reduction with reference to the framework established by the ILO and the OECD.

There are four strategies listed under the “Economy” heading. These strategies, which form a cohesive whole with each other, specifically include the “twin transition.” In this context, the Strategy emphasizes that digital transition can create significant opportunities for women’s employment; that women, particularly young women who are not in education, employment, or training (NEET), need support to adapt to the impacts of the green and digital transition and the needs of the future; and that they must acquire skills for the jobs of the future, especially digital skills, and gain access to decent work opportunities. In the context of higher education, the Strategy states that, as part of the green transition, necessary training and skills acquisition initiatives will be implemented to develop the knowledge and skills of girls and women, with the aim of ensuring adequate representation and participation of women in fields, such as data analysis, software, cybersecurity, robotics, and digital business processes, and renewable energy sectors such as wind, solar, wave, tidal, hydrogen, geothermal, and biomass energy, which are considered the sectors of the future.

The Plan states that the following activities will be carried out during the Action Plan period within this strategic framework.

Strategic Area	Activity	Context
Education/ Training	Free programs designed to promote the social and economic empowerment of women will be organized at universities' continuing education centers. <i>The agencies responsible for implementing this initiative are the Council of Higher Education (YOK) and the General Directorate of Women's Status, Ministry of Family and Social Policies (ASPB-KSGM).</i>	These activities are aligned with workforce development initiatives aimed at advancing the green and digital skills required by the manufacturing industry.
Sağlık	Awareness campaigns will be organized for employees and employers in industries with a high proportion of female employees regarding occupational health and safety, and materials such as posters and brochures will be produced for use in these campaigns. Information materials and training sessions will be developed for female employees and employers in industries where women are heavily concentrated, covering topics such as health risks in the workplace, occupational diseases, supportive treatments, measures to prevent workplace accidents, complaint mechanisms, current legislation, and rights and responsibilities. In addition, courses on women's health and reproductive health will be organized for occupational health and safety specialists/trainers. Written and visual materials will be produced in a format accessible to individuals with disabilities and in the necessary languages. <i>The agency responsible for implementing this activity is the Ministry of Labor and Social Security.</i>	These activities are consistent with the occupational health and safety improvements outlined under the heading "Inclusive and Equitable Workplaces and Labor Relations."
Economy	Legislation will be reviewed and improved to facilitate women's entry into the labor market and increase their employment in decent jobs.	These activities are consistent with the improvements aimed at the policy priorities that are addressed under the "Industry" heading.
	As part of the strategy to equip women and girls with the new skills and competencies required in a labor market aligned with the twin transition: To support women's, particularly NEET young women's, access to decent work opportunities, they will be enabled to benefit more from vocational training courses, on-the-job training programs, and counseling services designed to help them acquire skills aligned with the evolving needs of the labor market.	These activities are consistent with efforts to support workforce improvements and skills development to advance green and digital skills required by the manufacturing industry.

Strategic Area	Activity	Context
	<i>The agencies responsible for implementing this activity include the Directorate General for Lifelong Learning and the Directorate General for Vocational and Technical Education of the Ministry of National Education, and İŞKUR.</i> Continuing education centers at universities will be encouraged to offer basic/introductory-level training on topics needed by the industry and on digital transition, with the aim of increasing women's employment and enabling them to secure skilled jobs. <i>The agency responsible for implementing this activity is the Council of Higher Education.</i>	
	Awareness campaigns will be organized to encourage girls to pursue careers in science, technology, engineering, and mathematics (STEM). The agencies responsible for implementing this activity is the General Directorate of Women's Status, Ministry of Family and Social Services (ASHB-KSGM).	These activities are consistent with awareness-raising efforts to promote inclusive and equitable workplaces and labor relations, as well as improvements for the workforce, with the goal of advancing green and digital skills needed by the manufacturing industry.
	The public and private sectors will be transformed on the basis of equality and inclusivity to support women's economic empowerment for sustainable development.	These activities are consistent with the improvements aimed at inclusive and equitable workplaces and labor relations, as well as policy priorities addressed under the "Industry" heading.
	In the context of the strategy to support women's entrepreneurship in all areas: Pilot projects will be developed and financial support will be provided specifically for businesses managed by women, primarily to facilitate access to digital tools, address infrastructure needs, and equip employees with the necessary technological competencies and skills. The agencies responsible for implementing this activity are the Directorate General of Development Agencies of the Ministry of Industry and Technology and KOSGEB.	These activities are consistent with the goal of promoting entrepreneurship and leadership as part of workforce improvements aimed at advancing green and digital skills required by the manufacturing industry.

Strategies and Action Plans on Climate Change

Women are primarily addressed in the context of the specific impacts of climate change and equal participation in strategic documents, such as the Climate Change Mitigation Strategy, the Climate Change Adaptation Strategy, and the Long-Term Climate Change Strategy.

Among these strategic documents, the **Climate Change Mitigation Strategy and Action Plan (CCMSAP)** serves as a global best practice, addressing both the manufacturing industry and a just transition with an equality perspective. The CCMSAP, which demonstrates Türkiye's commitment to combating climate change and was prepared for the 2024–2030 period, outlines specific strategies for the manufacturing industry. The 5th Strategy for the Manufacturing Industry covers topics such as energy efficiency, increased use of renewable energy, reducing the carbon footprint, promoting sustainability reporting, capacity building for industry stakeholders, encouraging the circular economy and resource efficiency, and developing new technology options through R&D and innovation. The Strategy states that “the assessment of the outcomes of a just transition and the transformation of employment from the perspective of women's employment, as well as the planning of measures to increase women's employment, will be taken into account in all these activities.”

S-S.3.1 As part of developing a roadmap to reduce the carbon footprint in sub-sectors, the goal is to develop a roadmap that includes reduction strategies and an implementation timeline covering all sectors, with a particular focus on energy- and carbon-intensive sectors. **Efforts will be made to encourage the significant participation of female experts in the relevant processes.**

S-S.5.1 As part of efforts to improve the technical knowledge and capacity of manufacturing enterprises, particularly SMEs, to mitigate the effects of and adapt to climate change, the goal is to **include business platforms for women, such as the KAGIDER and TOBB women entrepreneurs' boards, in planning for training and workshop participants, and to ensure a balanced representation of women and men among participants in these training programs and workshops.** Activities will be planned to include manufacturing enterprises, with a particular focus on the aforementioned SMEs and innovative companies that qualify as startups within this scope.

S-S.5.2 In relation to capacity building and the development of a roadmap for a just transition and the transformation of employment, the prepared roadmap must include all vulnerable groups (unemployed youth, vocational high school graduates, employees at risk of unemployment following the green and digital transition, people with disabilities, and women). This will include **an assessment of the outcomes of a just transition and employment transformation from the perspective of women's employment, as well as the inclusion of measures in the roadmap aimed at protecting and increasing women's employment** (skills acquisition, upskilling, reskilling, etc.). Measurement and evaluation criteria for the capacity building training programs will be established.

The Climate Change Mitigation Strategy and Action Plan also addresses the “Just Transition” as a strategic priority. This section aims to ensure that the principles of inclusivity and equality are upheld as a whole, and serves as the foundational context for the Fair Transition Strategy currently being developed by the Ministry of Labor and Social Security.

When implementing mitigation and adaptation policies to combat climate change, it is crucial to achieve a just transition by ensuring justice and employment across all segments of society, without further exacerbating social inequalities. The principles of equality and women's empowerment, addressed within this framework, are becoming increasingly important among the core principles guiding development efforts. This approach, which has evolved alongside a human-centered understanding of development, emphasizes women's empowerment, and is based on the effective participation of both women and men in development processes. Steps are being taken at various levels to develop an equality-sensitive approach and create inclusive content for climate change policies and mitigation strategies. These steps are outlined below:

- » Adopting an inclusive approach that ensures no one is left behind (e.g., taking measures to identify and overcome barriers to participation by different segments of society in educational planning);
- » Ensuring that everyone benefits equally from any activity to avoid reproducing inequalities;
- » Identifying issues in current activities that could lead to the reproduction of inequalities and taking measures regarding these issues as part of a corrective approach aimed at ensuring equality.

The strategy notes that an equitable and inclusive framework will be maintained in various areas within the context of a just transition. Accordingly, factors such as men/women, disability, and age will be taken into account when identifying the target audience for measures to promote the adoption of new technologies; research and development activities for green jobs, as well as the development of new jobs, new research areas, and new industries, will proceed on an equitable basis; actions including support for entrepreneurs, incentives for businesses, and the creation of employment opportunities will not create new inequalities, will not perpetuate existing ones, will promote equality, and will involve transformative steps; thereby adopting an inclusive and equitable approach. These objectives, which are closely linked to the empowerment of women in the twin transition under the heading of "Just Transition," are listed below:

Identifying the new qualification and skill requirements that the green transition process will create in the labor market, and undertaking initiatives to train a workforce with these new qualifications and skills in line with sectoral and regional needs;

Establishing standards for professions that will change or emerge during the green transition process;

Conducting efforts to align educational curricula and higher education programs with the newly defined skills framework, and developing and implementing educational programs to meet the workforce needs arising from the transition process;

Undertaking initiatives to ensure that all industries effectively benefit from vocational training, skills acquisition and development programs, and employment opportunities, by adopting an “leave no one behind” approach to the green transition, and ensuring the participation of groups requiring specific policies, particularly women, in decision-making processes.

“Just transition” has also been identified as one of the key cross-cutting areas within the long-term climate change strategy. In efforts toward a just transition, women, particularly those in small and medium-sized enterprises (SMEs), are prioritized because they face a high risk of job loss, and are part of segments of society that must be addressed in terms of climate vulnerability. The emphasis on managing the risks arising from economic transformation through an equality lens and ensuring that no one is left behind can be interpreted as providing women with equal access to opportunities in the green and digital transition. In this context, the Strategy, which relates to the twin transition and women’s empowerment, is aimed at developing data and information capacity. The Strategy also addresses identifying what green skills will emerge during the green transition process, what types of skill demands will arise, and what kinds of skills development and training programs will be needed. Therefore, this strategy is closely linked to the issues of women’s empowerment and their participation in the manufacturing industry through the acquisition of green and digital skills. The fourth strategy is titled “Ensuring the green and digital transition in labor markets under the fairest conditions for everyone by promoting equality and inclusivity.” In this context, the strategy is directly related to the empowerment of women in the green and digital transition.

Green Deal Action Plan 2021

The Green Deal Action Plan outlines Türkiye’s alignment with the European Green Deal, and defines the steps to be taken at the national level. This document contains content closely relevant to the manufacturing industry in terms of technological innovation, the use of technologies that support the green transition, resource and energy efficiency, and waste management and reduction. Developed in 2021, the Action Plan outlines national steps toward achieving the goal set forth in the European Green Deal: for Europe to become the first climate-neutral continent by 2050. The actions outlined in the document, developed under the coordination of the Ministry of Trade, require broad collaboration with other ministries, local and regional public institutions, universities, and civil society organizations.

To contribute to Türkiye’s transition to a sustainable and resource-efficient economy and to ensure that Türkiye adapts to the comprehensive changes outlined in the European Green Deal, while preserving and further advancing the integration achieved under the Türkiye-EU Customs Union, the Action Plan includes actions to be taken to achieve the objectives outlined in the following areas: (1) carbon border adjustments, (2) a green and circular economy, (3) green finance, (4) a clean, economical, and secure energy supply, (5) sustainable agriculture, (6) sustainable smart transportation, (7) combating climate change, (8) diplomacy, and (9) information and awareness-raising campaigns on the European Green Deal. Within this framework, the Action Plan includes a total of 32 targets and 81 actions under 9 main headings. However, among these objectives and initiatives, there is no framework specifically related to women’s empowerment.

The context of the green and circular economy is closely linked to the goal of empowering women in the process of digital and green transition. The Action Plan emphasizes the need for inclusive and multi-stakeholder engagement in the transition to a green and circular economy. Accordingly, public authorities must work in close collaboration with economic operators, consumers, citizens, and civil society organizations. In this regard, technical and administrative preparations for the

implementation of the Green OIZ and Green Industrial zone certification systems will be completed. The technological infrastructure necessary for the green transition will be strengthened, and sector-specific R&D efforts will be supported within the framework of a technology roadmap to be developed in collaboration with all stakeholders.

National Employment Strategy 2025–2028

The National Employment Strategy was developed within the framework of the fundamental principles that the economy must generate decent jobs to ensure economic growth, social development, individual life satisfaction, inclusivity, increased well-being, and sustainable development. One of the key arguments of the National Employment Strategy is that the Fourth Industrial Revolution is manifesting itself through rapid technological advancement, and that this process of change must be carefully addressed not only in manufacturing but also in terms of social relations, individuals' ability to manage technology and access the necessary knowledge and resources for this purpose, and the ways in which people engage with technology, and that this dimension, also known as Society 5.0, is closely linked to employment.

One of the objectives of the National Employment Strategy is to increase women's workforce participation rate. The policy priorities and actions included in the Strategy must serve the goal of raising women's workforce participation rate to 40.1% by 2028. This objective was set in line with the "Employment and Working Life Targets" outlined in the 12th Development Plan.

The Strategy has been developed within a framework that combines a holistic approach addressing mutually reinforcing policy areas; an understanding of inclusivity and equal opportunity that encompasses diverse social groups facing difficulties in entering and remaining in the labor market; a social dialogue approach that prioritizes participation and incentivization; and an approach to sustainability and risk management grounded in the principles of decent work. The 2025–2028 National Employment Strategy focuses on increasing the employment rate, developing forward-looking policies that anticipate the future of work and that support employment, and finding solutions to structural problems in the labor market.

The Strategy specifically states that efforts related to the current state and future of employment will be addressed within a process where "the impacts of green and digital transition on employment will be assessed as a policy priority based on the principles of inclusion, sustainability, and social dialogue." "Improving the skills alignment with green and digital transition in labor markets" is one of the Strategy's four core policy areas. The primary objective for this policy area has been defined as "strengthening the link between education and employment, and ensuring that labor markets adapt to the green and digital transition under the fairest possible conditions for everyone." In line with this objective:

İstihdamın güncel durumu ve geleceğine ilişkin çalışmaların, "yeşil ve dijital dönüşüm çalışmalarının istihdama etkilerinin kapsayıcılık, sürdürülebilirlik ve sosyal diyalog ilkeleri temelinde bir politika önceliği olarak değerlendirileceği" bir süreçte gündeme geleceği özellikle belirtilmektedir. "İş gücü piyasalarında yeşil ve dijital dönüşüm ile beceri uyumunun geliştirilmesi", Stratejinin 4 temel politika alanından birisidir.²¹ Bu politika alanı için temel amaç, "eğitim-istihdam ilişkisinin güçlendirilmesi ve herkes için en adil koşullarda iş gücü piyasalarının yeşil ve dijital dönüşüme uyumunun sağlanması" olarak belirlenmiştir. Bu amaç doğrultusunda:

1. Türkiye's skills ecosystem will be strengthened.
2. The impacts of the green and digital transition on working life will be assessed by taking all opportunities and risks into account, and just transition policies will be developed.
3. Employment policies designed to ensure skills alignment at the sectoral and regional levels will be made more effective.

Another policy area closely linked to women's empowerment in the digital and green transition within the National Employment Strategy is "the promotion of inclusive employment." This policy area requires supporting access to the labor market and employment under decent working conditions for all groups requiring special policies, particularly women, youth (including NEETs), individuals with disabilities, the elderly, and international migrant workers. In this context, women's participation in the labor market and employment rates are expected to increase during the Strategy period, and equal opportunities for women and men in the workplace will be further strengthened. Within this policy area, the goal is also to increase the labor market participation and employment rates of youth and NEETs, individuals with disabilities, and the elderly, and to support the connection of international migrant workers with working life and their formal employment. All of these priorities are closely linked to the empowerment of women. This is because, among the segments of society highlighted in these areas, women rank first and, due to their multiple disadvantages, constitute the most marginalized group.

From the perspective of women's empowerment in the twin transition of the manufacturing industry, the "Strengthening the Social Protection-Employment Link" policy within the National Employment Strategy is significant in the context of creating an enabling environment, and combating discrimination. In particular, areas for improvement related to labor relations and workplaces are closely linked to this policy area of the Strategy. The Strategy outlines the role that social protection plays in "ensuring social justice by supporting the full and equal participation of individuals in society." The primary objective in this policy area is "improving access to fundamental rights for all individuals in society, and developing solutions to the problems that hinder their participation in the workforce." It emphasizes the link between social protection, the concept of decent work, and socioeconomic empowerment. In this context, fundamental rights in the workplace will be protected, discrimination will be fought against, and decent work will be supported; informal employment will be tackled; the inclusiveness of the social security system will be improved; and the effectiveness and accessibility of labor market programs will be strengthened. These actions are closely linked to ensuring women's participation in employment under equal and favorable conditions, as well as to improvements in workplaces and labor relations. Strengthening the link between social protection and employment is a policy area closely related to empowering women in the twin transition.

Furthermore, as a high-level strategy document, the National Employment Strategy assigns tasks to other public institutions to achieve employment-related goals through the measures it outlines under various policy areas. The first section of the Inclusive Employment Strategy pertains to women and includes nine measures. One of these measures falls under the purview of the Directorate General of Labor, while the other eight are measures assigned to other agencies. The Strategy is monitored and reported on biannually.

Stakeholders

This section maps stakeholders in the manufacturing industry who are working toward, or have the potential to work toward, the goals of digitalization and the green transition with a focus on equality and women's empowerment. In this context, we will analyze the roles and potentials of stakeholders at various levels, including public institutions, industry organizations, regional development bodies, chambers of industry, organized industrial zones, labor unions, employer associations, academia, and civil society organizations. The goal is to highlight areas for collaboration to enable women to acquire digital and green skills, gain access to equal opportunities in employment, and promote the widespread adoption of inclusive policies within the manufacturing ecosystem.

Central Public Institutions

Ministries are institutions that, as fundamental elements of public order, are responsible for policy development, implementation, regulation, and oversight within their respective fields, and address intersecting areas through collaboration. Ministries are the cornerstones of the executive branch in Türkiye, and constitute the primary instruments of central government in ensuring the public interest, the orderly delivery of public services, and the maintenance of public order. As institutions that formulate national policies within their respective areas of responsibility, ministries define the strategic and normative framework of public order; ensure the delivery of essential services within this normative framework; and oversee compliance of implementation with the normative framework and established standards. Upon reviewing the strategic plans of ministries, it is possible to view the goal of empowering women in the digital and green transition process primarily in relation to the efforts of the Ministry of Industry and Technology, the Ministry of Labor and Social Security, the Ministry of Trade, and the Ministry of Family and Social Services.

A review of the strategic plans of these ministries reveals that they address the topics of digital and green transition, and link these issues to the context of women's empowerment at various levels. These forms of interconnection, which can be categorized under topics such as the representation of women in STEM fields, their economic empowerment through participation in the industrial workforce, the expansion of the talent pool in the industrial workforce through women's participation, the development of the required skilled workforce in a way that includes women, and the acquisition of green and digital skills by women and girls, vary depending on the specific areas of focus of each ministry.

Presidency of Strategy and Budget (PSB)

The 12th Development Plan serves as the foundational overarching policy document for the PSB, and the agency's strategy paper places a guiding emphasis on certain headings included in the 12th Development Plan. The Plan includes a target to increase employment incentives for women (409.1). In the context of the green economy and sustainability, a paragraph of the Plan (431.3) addresses the simplification and consolidation of similar government support measures for the manufacturing industry. Within the framework of the overarching goal of green and digital transition, the effective use of public resources, as well as monitoring and evaluation activities, are identified as one of the priority areas for the strategic plan of the PSB. Similarly, the effective use and management of R&D and innovation support are also addressed.

The PSB's mission is primarily related to various budget processes, including the proper planning and implementation of public investments and the development of financial models. The Presidency's responsibilities also include providing secretariat services for the National Sustainable Development Coordination Council. Therefore, PSB is one of the implementing organizations of the development approach including many frameworks, such as sustainable development goals, green and digital transition, and decent work. Given its role in regulating public spending, investments, and the budget, the PSB plays a decisive and guiding role in steps to be taken regarding the green transition and digitalization. Furthermore, the Presidency can assume tasks, such as developing policy recommendations and conducting analysis regarding the green and digital transition processes of the manufacturing industry, in line with its duty to conduct research on economic and social development issues, make short-, medium-, and long-term macroeconomic forecasts, and offer policy recommendations.

In fulfilling these roles, the PSB has the potential to collaborate with various stakeholders in the manufacturing industry, including industry organizations, chambers of industry, organized industrial zones, and professional associations. Indeed, the Presidency is a key stakeholder due to its role in the process of translating research findings and policy recommendations into public policies.

Such collaborations and partnerships are also articulated within the framework of its duties and responsibilities; preparing cooperation programs and projects with relevant national and international organizations in the field of development is listed among the Presidency's duties. This entire approach should be strengthened through the lens of inclusivity and equality, the common denominator of sustainable development partnerships, and should be implemented in line with the development plan's goals regarding support for women in the digital and green transition. The fact that the development plan is a high-level strategy paper serves as a rationale for the Presidency to take this framework into account.

Directorate for EU Affairs

The Directorate for EU Affairs is a strategic institution responsible for tasks such as managing relations with the European Union, overseeing the accession/negotiation process, ensuring legislative alignment, and coordinating EU funds. The Directorate coordinates the implementation and alignment of policies related to the twin transition and the empowerment of women, issues that hold a significant place among the European Union's core policy priorities. It coordinates funds such as Instrument for Pre-Accession Assistance (IPA), green transition grants, and digitalization support programs; supports the planning of related projects; and monitors their implementation. Hence, the Directorate plays a key role in the implementation of projects related to both the twin transition and equality initiatives. Ensuring that EU support for industrial and development initiatives is delivered in a manner that integrates the priorities of environmental sustainability, digitalization, and women's empowerment, as outlined by EU policies, serves as a crucial starting point and a powerful catalyst for the manufacturing industry's equitable twin transition process. The establishment and functioning of institutional structures, as well as the formulation and implementation of policies, are supported by strategic steps coordinated by the Directorate of EU Affairs.

Ministry of Industry and Technology

The Ministry of Industry and Technology's 2024–2028 Strategy addresses the green and digital transition in the manufacturing industry in alignment with the obligations and commitments set forth by the Paris Climate Agreement and the European Green Deal, as well as with the Industry and Technology Action Plan. The Ministry, which runs ongoing and thematic support programs to promote industrial investments in Türkiye, is implementing the Green Transition Program, which focuses on this issue as part of the process of aligning with the European Green Deal.

Green Transition Program

The Green Transition Program, implemented by the General Directorate of Strategic Research and Productivity of the Ministry of Industry and Technology, is a support program designed to address the need for a green transition arising from increasing climate change risks and the requirement to align with the European Green Deal. Open to all manufacturing businesses, including SMEs, this incentive system aims to facilitate the transition to low-carbon, resource-efficient production. In the application process, investors are required to submit a detailed Roadmap Report outlining their five-year plans, project objectives, and implementation strategies.

Investors must define one or more project objectives in the Roadmap Report that include concrete and measurable improvements, either in quantitative or proportional terms, for the project they are applying for. Projects must deliver concrete and measurable improvements in performance metrics per unit of production, such as energy consumption or greenhouse gas emissions. Under the project, achieving at least 75% of each performance indicator target set by the investor is essential for being successful.

Facilities that successfully complete the Roadmap Report are awarded the title of “Green Transition Center” as an indication of their sustainability commitments. Facilities that fail to meet the specified targets will have their “Green Transition Center” title revoked. Facilities that successfully complete the Roadmap Report are given one year to submit a new Roadmap Report to the investor. Facilities that fail to submit a new Roadmap Report will have their “Green Transition Center” title revoked at the end of this time frame.

This strategy highlights the need for human capital to acquire new competencies due to technological advancements related to Industry 4.0 and digital transformation across industries, the shortage of human resources in the industrial and technology ecosystems, and the inability to meet the demand for skilled labor in the manufacturing, information, and communications sectors. The Program points out the risks that, due to businesses’ lack of awareness of Model Factory services and their reluctance to work with Model Factories, high-tech and R&D-intensive investments may not reach the desired level during the transition process. A Digital Transition Program is being implemented within the Ministry to address these risks through public support.

Digital Transition Program

This program, administered by the General Directorate of National Technology under the Ministry of Industry and Technology of Türkiye, aims to promote digitalization in the manufacturing industry and the integration of digital technologies into production processes. The program’s objective is “to increase the productivity of businesses by improving their production and supply chain processes, to give businesses a competitive edge in the global marketplace, and to increase the number of competitive businesses that have either begun their digital transition journey or have advanced to a higher level of digital maturity.”

The program’s primary beneficiaries are SMEs and large-scale enterprises that have been operating in the manufacturing industry for at least five years. The benefits the program will generate include reduced costs, more efficient resource utilization, a lower error rate in production, and improved production quality, which in turn will lead to increased customer satisfaction, greater competitiveness in the global market, and enhanced product development knowledge and capabilities. This program does not address social development elements such as equality and inclusivity.

Green and digital transition are central themes within the Ministry’s strategic objectives. The program addresses the establishment of production structures aligned with the green and digital transition; the identification of new competencies in this context; the development of a workforce equipped with these new competencies; enabling companies to make the necessary investments for the transitions; the expansion of the investment climate; the development of the entrepreneurial ecosystem; and the implementation of support programs to facilitate the green and digital transition in the manufacturing industry. While women’s participation is addressed primarily within the context of entrepreneurship, the context of women’s participation in the workforce is not openly emphasized. The issue of competencies in green and digital production is raised, but it is not addressed in the context of the workforce, and no distinction is made between female and male employees. In contrast, the lack of the workforce with the necessary competencies is listed among the issues identified as risks in the program’s strategy. This issue, which is closely linked to the strategic framework of the Ministry of Labor and Social Security, presents itself as a risk that could directly affect the objectives of the Ministry of Industry and Technology.

Competitive Industries Program

The Competitive Industries Program (RSP) is a project-based operational program implemented by the Ministry of Industry and Technology within the framework of financial cooperation with the European Union, covering the periods 2007–2013 and 2014–2020. The program aims to improve the competitiveness and productivity of businesses in domestic and international markets, accelerate industrialization, and to develop a competitive production structure geared toward exports. It serves as an umbrella program bringing together various projects and initiatives implemented in seven-year cycles.

The manufacturing industry was identified as a strategic priority area during the program's implementation periods up to 2020. In this context, the program, which points to an increase in total factor productivity, pioneered an approach that addresses this priority area in relation to sustainable development goals through a project carried out in partnership with UNDP. The criteria for total factor productivity included the green transition, decent work, equality and women's empowerment, collaborations and partnerships, and industry and innovation, all of which were addressed not only from the perspective of economic growth but also from that of sustainable development. The program identifies priority areas and regions through sectoral and regional analysis, and establishes a thematic and regional focus by determining priority themes for each region.

The Competitive Industries Program addresses the issues of equal opportunities and equality through a participatory and inclusive approach. The program encourages applicants to propose measures to reduce inequalities and supports setting targets that promote equality in initiatives, particularly in areas where women's participation is low, such as the information society, research and technology development, communication technologies, and entrepreneurship.

With regard to the manufacturing industry, "contributing to the creation of an environment that enables women and youth to participate in and benefit from manufacturing value chains" has been identified as one of the four selection criteria. Furthermore, the program includes areas of action related to climate change, such as climate mitigation, capacity building, and the use of green technologies. Another area addressed during this period focuses on the innovation process. The program aims to support "accelerators owned by universities, either independently or in partnership," as part of efforts related to the manufacturing industry. This process is significant as a catalyst for digitalization and the Fourth Industrial Revolution. Science, technology, and innovation are included in the program as a distinct action area. This action area addresses the development of research infrastructure, university-industry collaboration, and the development of innovative green products and services. In the context of innovation, it is noteworthy that the program includes the criterion "Level of participation of female R&D engineers and/or researchers in product development," which contributes to women's empowerment.

The Directorate General of Development Agencies operating under the Ministry of Industry and Technology provides support through the Local Development Initiative, taking into account the regional industry priorities, with the aim of assessing regional potential, utilizing idle resources, mobilizing capabilities, meeting local needs, and raising the level of technology production. This support is crucial for the localization of the twin transition, and for ensuring that investments in the green and digital transition are made with regional priorities in mind. In the same context, there is also significant potential for the localization of equality and inclusivity priorities.

KOSGEB - Small and Medium Enterprises Development Organization of Türkiye

KOSGEB is an organization with roots dating back to 1973 that supports the development process and operates with the mission of “building a sustainable economic future by transforming small and medium enterprises into innovative, competitive, export-oriented, and twin-transition-ready enterprises.” Through the numerous programs it runs, the agency aims to help SMEs gain technological capabilities, foster innovation, expand production capacity, improve efficiency, build organizational capacity, and enhance their competitiveness, thereby increasing their contribution to the Turkish economy. While KOSGEB currently provides support to all industries, it has historically focused on supporting the manufacturing industry.

KOSGEB has included in its strategic plan the goals of supporting women entrepreneurs and ensuring that women and youth in specific target groups receive a greater share of entrepreneurship support. Accordingly, the goal is for women to account for 27.5% of entrepreneurship support. Green and digital transition is also a priority for KOSGEB. In this context, the objectives include accelerating SMEs’ environmental sustainability efforts (Objective 3.1) and their digital transition (Objective 3.2). While there are no specific cross-cutting areas related to supporting women in the green and digital transition process, a connection can be drawn to the empowerment of women in the context of entrepreneurship. However, current initiatives do not include a strategic approach aimed at the employment of women in green and digital transition processes, or at helping employed women acquire new skills.

KOSGEB plans and offers various programs to support SMEs in the manufacturing industry. These programs provide support toward objectives, such as building the capacity of the workforce and businesses and developing the knowledge and technical capabilities necessary for the digital and green transition. Although women’s empowerment is not considered a program objective in these programs, there is significant potential for expanding the program’s scope in this direction.

Capacity Building Support Programs aim to strengthen the organizational, administrative, and operational capacities of SMEs. Under the program, support is provided through the procurement of training, consulting, analysis, and certification services required by businesses from qualified service providers such as Model Factories (MF); this support enables businesses to benefit from hands-on capacity development in priority areas such as lean production, digitalization, quality improvement, and increased productivity.

Digital Transition Support Programs aim to support digital transition processes with a view to improving and streamlining SMEs’ business processes, boosting their competitiveness, and increasing their share in the economy.

The Technology Center (TEKMER) Support Programs seek to establish and operate technology centers that offer pre-incubation, incubation, and post-incubation services, with the goal of supporting the establishment and sustainability of R&D, innovation, and technology-focused businesses. The program aims to facilitate the commercialization of entrepreneurs’ business ideas and strengthen the entrepreneurial ecosystem.

Entrepreneurship Support Programs: These programs are designed to support newly established businesses, with a priority on sectors identified in line with Türkiye’s strategic priorities, to ensure their sustainability. The programs specifically encourage initiatives focused on manufacturing, technology, and innovation.

Global Competitiveness Support Program: To ensure that businesses become more resilient in the global competitive environment and gain a competitive advantage, the program aims to support projects that include strategies such as the development of innovative products; the production and commercialization of products developed through innovation efforts; the optimization of production processes and the improvement of efficiency; improving supply chain management; ensuring the effective use of new technologies; and establishing a presence in global markets through global partnerships.

Green Industry Support Program: This program aims to help SMEs achieve their green transition goals in line with the principles of environmental sustainability. The program supports investments in energy efficiency, resource efficiency, waste reduction, and environmentally-friendly production, and is implemented with the support of the World Bank.

Employment Protection Support Program: This program aims to protect employment in businesses operating in the manufacturing industry, and provides support to employers, particularly in labor-intensive industries (primarily textiles and ready-to-wear apparel).

Ministry of Labor and Social Security

The Ministry of Labor and Social Security's strategic plan is built upon core values such as the green and digital transition, social justice, innovation, inclusivity, and sustainable development. These core values relate to both the green and digital transition of the manufacturing industry and the empowerment of women. A core vision of the strategic plan is "sustainable development through full employment in a safe work environment that supports a human-centred green and digital transition" to ensure national welfare. The term "full employment" implies the full and equal participation of women and men in the workforce.

Improving access to sustainable employment for groups requiring specific policies, with a view to revitalizing the labor market, can be considered a priority area targeting women. Additionally, addressing structural and cyclical issues in labor markets includes focusing on the inequalities women face in accessing employment and in the context of the green and digital transition processes. The objective regarding industries experiencing labor shortages raises the issue of human capital assessment and, in this sense, lays the groundwork for taking steps to address the talent pool and labor shortages through the equal participation of women in the workforce. The second strategic objective addresses the challenges employment may face during the green and digital transition process, and defines the development and implementation of just transition policies as one of the Ministry's responsibilities. The Ministry's strategic plan follows the priorities outlined in the 12th Development Plan. Accordingly, the plan emphasizes efforts such as equipping workers with the professional skills required by the green and digital transition; reducing skills mismatches; establishing a balance between skills, productivity, and wages; improving working conditions for every individual of working age; mobilizing resources such as care services and training opportunities to increase women's participation in the labor market and enhance their competencies; ensuring women's inclusion in the workforce with decent jobs; ensuring that green and digital transition processes are implemented fairly and that workers are not adversely affected; increasing the job creation capacity of the twin transition; ensuring that women and girls, in particular, acquire the knowledge and skills required by the digital and green transition; women's effective participation in the workforce and access to decision-making mechanisms; and conducting the necessary analysis to inform the development of knowledge-based policies. In this context, the Ministry conducts analytical studies on green skills and green job criteria.

The Ministry of Labor and Social Security plays a central role in defining just transition policies

aimed at ensuring that the workforce's adaptation to the green economy takes place under the most favorable conditions for all stakeholders in the business world. The key related issues in this context can be outlined as follows:

- » Continuing to develop policies targeting broad segments of society through participatory methods;
- » Maintaining active workforce policies to ensure the working-age population acquires skills needed for the jobs of today and tomorrow;
- » Raising awareness regarding women's rights in the workplace and increasing their workforce participation rates;
- » Supporting women's equal participation in employment by helping them acquire the skills required by the labor market;
- » Conducting analysis to assess green and digital transition processes from the perspective of groups requiring special policies, and to identify the need for a skilled workforce;
- » Establishing mechanisms to develop a skilled workforce.

The Ministry is taking the lead in developing a high-level policy document that directly addresses inclusivity in the green and digital transition. The Just Transition Strategy, coordinated by the Ministry, is being developed through consultations in which a broad group of stakeholders come together in various sub-working groups. This process is proceeding with an approach that includes the goal of women's empowerment, and the issue is being addressed by a dedicated sub-working group.

In addition, the National Employment Strategy has been developed, and is being implemented under the coordination of the Ministry of Labor and Social Security.

İŞKUR

İŞKUR is a key stakeholder in terms of interventions targeting the workforce in the context of the digital and green transition. İŞKUR's programs play a key role, particularly in helping individuals acquire new skills and gain access to decent work opportunities. Among the tasks assigned to İŞKUR by overarching policy documents, such as the 12th Development Plan and the Medium-Term Program, is the goal of "ensuring the full, equal, secure, and effective participation of women in the labor market, which is changing due to the twin transition, and developing programs to equip women with the new skills and competencies that will emerge in this context," clearly highlighting İŞKUR's role in this regard.

İŞKUR maintains an approach that prioritizes "the full, equal, secure, and effective participation of women in the labor market" and "the continued implementation of incentives to increase women's employment" as a core strategy. The strategic plan identifies the need to develop active labor market policies and programs targeting women, as well as to promote awareness of and access to these programs, in response to the issue of low female employment. In this regard, "increasing the number of women placed in jobs in the private sector" (Objective 2.1) and "ensuring that women benefit from active labor market policies and job clubs" are among the strategic goals set for 2028. In the context of transforming patterns of occupational segregation based on women and men, İŞKUR seeks to ensure that employment opportunities reach more women by transitioning to a household-based monitoring system for career and vocational counseling.

In addition, İŞKUR emphasizes the need for initiatives to promote women's employment in professions other than traditional fields, to change employers' negative attitudes toward hiring

women, and to develop services related to women's access to the labor market. Through this approach, İŞKUR's efforts demonstrate the potential to have an impact not only on the workforce, but also on companies through employer visits and consulting services. İŞKUR works closely with companies at a grassroots level. Through trade fairs, the agency carries out activities closely aligned with local interests and needs.

Within the framework of the digital and green transition (the twin transition) outlined in the strategic plan, and taking a just transition into account, the agency's strategic plan includes objectives and initiatives, such as organizing active workforce programs and employment fairs with a focus on the twin transition, to address the new occupational groups that will emerge. Furthermore, the agency emphasizes the need for analysis in this area, noting that such analysis should focus on the impacts of digitalization on jobs and professions; skills and qualification needs; the identification of jobs and professions related to the green transition; the needs of workers in regions and occupational groups that may be affected by the green transition; and the impacts of active workforce programs. However, the connection between the twin transition and the female workforce has not been established, and aspects such as conducting analysis in this area in a sensitive manner and making inequalities visible have not been emphasized. On the other hand, it is possible to consider all of these efforts within the framework of equality-related interests and needs, in line with the tasks outlined in the 12th Development Plan.

İŞKUR implements active workforce programs, such as Vocational Training Courses, On-the-Job Training Programs, the Skilled Workforce Development Program (NIYEP), and the Vocational Training for the Employed Program, which are fundamentally aimed at fostering a skilled workforce, and can be linked to the goal of empowering women in the manufacturing industry.

To meet employers' staffing needs quickly and effectively, İŞKUR implements training and hands-on learning programs designed to develop vocational and technical skills using various programming tools. These programs are designed in line with employer demands, and typically include a commitment to recruitment. Therefore, the need for a qualified workforce in high-demand professions can be met without incurring direct costs for employers. The programs aim to increase employment through skills development. Although these programs evolve over time in response to changing needs and methods, employers currently participating in the programs must commit to employing at least 60% of trainees for a period of at least twice the duration of the program, which must be no less than 120 days. These obligations may vary depending on the sector and type of program.

The programs can be implemented for both current employees and job seekers, prioritizing groups with low workforce participation as the primary target audience. In this context, there are special provisions and incentives for women, youth, and individuals with disabilities.

Within this framework, the **Positive Discrimination Project for Women's Employment (KIPAP)** that is being implemented by İŞKUR offers employers the opportunity to observe the professional knowledge and skills of unemployed women they plan to hire in the workplace, provide on-the-job training, and make more informed employment decisions.

The agency organizes vocational training courses based on the relevant regulations, with a specific number of hours per week, and the total duration of the courses does not exceed the upper limits defined in the regulations. For trainees who actually attend the courses, İŞKUR covers their daily allowance, general health insurance premiums, and workers' compensation and occupational disease insurance premiums for the days attended. In addition, the expenses of trainers providing vocational training courses may also be covered under the program.

The **“Vocational Training for the Employed Program”** is implemented to train employees who are currently employed but lack the necessary competencies and/or do not possess the certifications required by relevant legislation. This program enables businesses to upskill their existing workforce and help them acquire new skills, particularly in fields requiring digital and green skills.

Special initiatives, such as the **“Women’s Touch in the Business World Project,”** are being implemented to help women develop skills in fields where they are relatively underrepresented and where occupational segregation is pronounced, as well as in fields involving digital and green skills.

The **“On-the-Job Training Program”** offers employers who struggle to secure a qualified workforce the opportunity to observe, train, and evaluate candidates, whether selected by the employer or referred by İŞKUR, at the workplace for a specified period. The duration of the program may vary depending on the industry, profession, and program type; longer-term placements are particularly common in manufacturing, information technology, and future-oriented professions.

Under the **“Skilled Workforce Development Program” (NIYEP)**, run in collaboration between İŞKUR and TOBB, workforce demands are collected from employers who are members of chambers of commerce and industry on an occupational basis; courses tailored to these demands are organized, and hands-on training is combined with a commitment to employment.

The **Job Positive** initiative is implemented as a collaborative system that aims to support women’s workforce participation and entrepreneurship through grants, incentives, loans, and tax exemptions, bringing together support offered by various public institutions under a single framework. By increasing the visibility and accessibility of existing active workforce programs aimed at boosting women’s employment, the Job Positive initiative contributes to expanding women’s participation in the workforce, including in the manufacturing industry.

İŞKUR’s vocational and on-the-job training programs may include streamlined procedures for application processes, employment commitments, and implementation conditions during specific periods for workplaces operating in the manufacturing industry, thereby contributing to the industry’s development.

Ministry of Family and Social Services

The 2024-2028 Strategic Plan of the Ministry of Family and Social Services was prepared with the vision of accelerating social development, empowering women and families, and developing rights-based social service models. The plan identifies equality between men and women, commitment to scientific and ethical values, evidence-based policy-making, and national and international cooperation as its core principles. The Women’s Empowerment and Equality Policies prioritize the implementation of measures to “ensure that women equally benefit from rights, opportunities, and resources in all areas of social life, and that they are empowered.” Although the Ministry’s strategic plan does not directly address the manufacturing industry, it does include themes such as the green transition, digital skills, and STEM fields. International cooperation and the EU alignment process are emphasized, and the goal is to develop social policies in alignment with the EU Green Deal and the UN Sustainable Development Goals (SDGs 5, 8, 10).

The Ministry’s policies on the intersection of Women, Industry, and STEM are based on the strategies and objectives outlined in the 12th Development Plan and in the Medium-Term Program. The goals

include the economic empowerment of women, their active participation in the green and digital transition, and the widespread adoption of inclusive policies in the manufacturing industry. Issues such as the evolving workforce driven by the digital and green transition, women's full, equal, secure, and effective participation in the workforce, and equipping women and girls with new skills and competencies are recurring strategic priorities for the MoFSS, all of which are included in the 12th Development Plan. The women's empowerment program emphasizes mainstreaming, and notes that efforts will be made to incorporate equality into core plans and policies. The following priority areas can be interpreted in relation to the goal of empowering women in the twin transition of the manufacturing industry:

- » Increasing employment rates of women in fields related to digital transition, climate change, and green transition
- » Analyzing the effects of the digital and green transition on women's employment, and developing projects and programs based on the results of such analysis
- » Increasing the employment of skilled women in the labor market and ensuring that women have a say in economic life
- » Highlighting the differing impacts of the digital and green transition on women and girls.

The **"My Mom's Job is My Future"** Project was launched to establish daycare centers in OIZs under a cooperation protocol signed between the General Directorate of the Status of Women (MoFSS), the Ministry of Science, Industry and Technology, and Borusan Holding. The project's goal was to open daycare centers in a total of 10 OIZs by the end of 2019; the construction of daycare centers in the Adıyaman, Afyonkarahisar, Balıkesir, and Malatya OIZs was completed, and they have started operating.

The Ministry is also launching complementary programs and platforms to support women's entrepreneurship. Through training courses organized under the "Rising Women Program," the goal is to enhance women's competencies, expand collaboration networks, and facilitate access to necessary resources. The program brings together women entrepreneurs with mentors and role models to strengthen mechanisms for sharing experiences and providing guidance.

The **"With Our Female Entrepreneurs Towards a Powerful Tomorrow"** was designed as a platform that provides information, guidance, and support related to women's entrepreneurship all in one place. The platform aims to facilitate women entrepreneurs' access to existing support mechanisms and increase their visibility within the entrepreneurship ecosystem.

Ministry of Trade

The Ministry of Trade's strategic plan addresses women's empowerment primarily under the headings of entrepreneurship and cooperatives. The most important document the Ministry references regarding the twin transition is the Green Deal Action Plan. The Ministry of Trade plays a leading role in efforts to monitor the European Green Deal and other global developments, and to identify potential steps to be taken. The contributions of various institutions toward a roadmap for Türkiye's adaptation to the European Green Deal have been identified, and an action plan has been developed. The Ministry of Trade has established the European Green Deal Working Group, coordinated by the Ministry, along with specialized working groups focused on different policy priorities to support the main working group, in order to ensure the achievement of the Action Plan's objectives and the alignment of actions with current developments.

The Ministry offers various support mechanisms designed to strengthen women's entrepreneurship and production-oriented cooperative models. The **Cooperative Support Program (KOOP-DES)**, implemented within this framework, aims to increase the production capacity of cooperatives, with a particular focus on women's cooperatives. The program provides support for production, the procurement of machinery and equipment, digitalization, and marketing activities, with a particular focus on encouraging manufacturing and production-oriented women's cooperatives to operate sustainably.

In addition, the **Project Support for Green Deal Compliance (Responsible Program)** facilitates companies' access to necessary consulting services to comply with regulations introduced in line with the Green Deal. The program seeks to help companies enhance their capabilities in areas such as environmental sustainability, carbon footprint, supply chain compliance, and reporting, thereby helping businesses in the manufacturing industry prepare for the green transition.

Within this context, a survey is administered to determine environmental and social assessment scores, with the survey covering topics such as inclusivity, equality, and shared needs. Companies' levels of awareness, strategic frameworks, monitoring and reporting practices, and the presence of KPIs are also considered within this framework. Gaps between the current situation and the target state are analyzed; based on the information obtained from this analysis, roadmaps are developed and implemented with the support of accredited experts designated by the Ministry.

The Ministry of Trade, as the body responsible for coordinating and implementing the Green Deal Action Plan, is a key stakeholder in the process of revising the plan, as it has the potential to adopt an approach that incorporates social development priorities and the goal of women's empowerment. This content presents an opportunity to align with the goal of women's empowerment in the twin transition, and to create a robust, mutually reinforcing policy priority. It is important for the Green Deal Action Plan to address issues such as skills, employment, and inclusivity in the twin transition, and for the programs developed under the plan to be linked to the agenda of a just transition.

Ministry of National Education

Published by the Ministry of National Education (MoNE) in 2024, the "Vocational and Technical Training Policy Document" outlines the future vision, core policies, and strategies for vocational training. This document was developed in alignment with the 12th Development Plan, the Medium-Term Program, and the Ministry's 2024-2028 Strategic Plan, and was published in the Official Gazette following approval by the Presidency.

The YEGITEK Project, World Bank, Türkiye: The Policy Paper supports the Ministry of National Education (MoNE) in implementing the Quality Education Project for the Future Workforce (P510381). The project's objective is to improve skills acquisition for entry into the labor market. Project activities will be carried out nationwide in general, vocational, and private schools across Türkiye.

The Ministry developed digital training content as part of the Operation for the Improvement of the Quality of Vocational and Technical Training (METEK), which was implemented in two phases between 2014–2017 and 2019–2023, and was supported under the IPA. In this context, the curriculum was updated in fields such as Industry 4.0, robotics, automation, CNC, and software; a focus was placed on green skills in areas such as energy efficiency, renewable energy, and environmental technologies; and new course modules and online content were developed.

The purpose of the Vocational and Technical Training Policy Document, prepared by the General Directorate of Vocational and Technical Training of the MoNE, is to increase access to and improve the quality of vocational training through private sector partnerships, and to ensure that students are prepared for life and employment. The purpose of the Craft Workshops is to structure school models integrated with the region and private sector, as well as incentives for employment, investment, and entrepreneurship, in a way that prioritizes vocational high school graduates.

The document highlights the need to conduct a nationwide inventory of vocational skills, conduct skill needs mapping, and to develop skill sets, all centered on the green and digital transition, in order to guide vocational training efforts. The policy document emphasizes the need to develop a qualified workforce by imparting the required skills through vocational training and higher education, as well as the necessity of adapting vocational training to evolving technologies, production structures, and service delivery models. While topics such as the transition from education to the workforce, educational environments, and access to education are addressed, the differing interests and needs of women and men are not explicitly acknowledged.

Ministry of Environment, Urbanization and Climate Change

There is no specific initiative within the Ministry's strategic plans and practices regarding the manufacturing industry and the twin transition. However, both women's empowerment and industrial issues are addressed in the statement of contribution to climate change, the long-term strategy, and mitigation and adaptation strategies.

Action plans and framework documents predominantly address women from the perspective of their vulnerability. A just transition framework is outlined in the mitigation action plan and the long-term strategy. Industrial and labor relations can also be considered in this context. References to women's empowerment in the strategies and plans include priorities such as women's participation in the workforce, access to skills development opportunities and loan, and equal representation in R&D activities and decision-making mechanisms within the context of the green economy. The Ministry, in accordance with its responsibilities to ensure that measures taken in the context of climate change are addressed in line with these references, has a potential role related to the process of women's empowerment in the twin transition.

Public Science and Technology Institutions

Promoting scientific research and developing science policies are important for establishing standards in production and identifying trends in the economy and the business world. Institutions such as the Turkish Standards Institute (TSE), the Turkish Academy of Sciences (TUBA), the Scientific and Technological Research Council of Türkiye (TUBITAK), and the Information Technology and Communications Authority (BTK) can be cited in this context.

Science and technology institutions promote automation, artificial intelligence, IoT, and data analytics projects in the manufacturing industry through R&D support programs, and they provide grants and project support for energy efficiency, carbon reduction, and sustainable production technologies. These institutions also offer mentoring and consulting support in the loan and grant processes for investments such as green production and recycling. Additionally, they offer product-specific innovation support and mentoring services within this framework.

These institutions guide the industry through academic research and reports, contributing to the development of the scientific foundations of technology policies. For example, TUBA provides scientific guidance on environmentally-friendly production and sustainability. They provide research infrastructure for the development and integration of new technologies into the manufacturing industry and set standards for digital security, energy efficiency, and environmentally-sustainable

production.

These institutions can play a significant role in the digital and green transition by providing current status analysis and statistical data on women's employment, identifying trends and needs, and developing evidence-based policies. They can contribute to the standardization of impact analysis related to digital and green transition in the manufacturing industry and its provision as a public service; to the establishment of standards for digital and green transition in the manufacturing industry and the creation of production standards; to ensuring that women's participation in production, as well as approaches to inclusivity and equality in employment, are incorporated into the scope of these standards; and to the development of standards aligned with these approaches. Moreover, they can collaborate with public institutions and policymakers, financial support organizations, academia, and international research and development organizations.

Their involvement in the process of empowering women within the twin transition of the manufacturing industry as stakeholders could have significant impacts in terms of establishing focus areas related to digitalization and environmental sustainability within existing program and project support mechanisms, enabling coordination with other organizations in these focus areas, reflecting an inclusive and equality-sensitive approach in policies and practices, and enhancing national and international visibility and reputation (mainstreaming).

REGIONAL AND LOCAL PUBLIC INSTITUTIONS

Development Agencies

The purpose of Development Agencies is to foster cooperation among the public sector, the private sector, and civil society organizations; ensure the effective and appropriate use of resources; mobilize local potential; accelerate regional development; ensure the sustainability of this development; and reduce disparities in development levels both within and among regions. Manufacturing is included as a priority area in the economic development agenda of Development Agencies. The objectives of Development Agencies include increasing local employment opportunities, establishing an industrial structure in the regions that is complementary from a sectoral perspective, promoting the development of existing industries and encouraging the formation of new ones, and strengthening interregional industrial and commercial cooperation.

Green transition is a fundamental concept underpinning the Development Agencies' activities related to the manufacturing industry. Digital transition in the manufacturing industry is also recognized as a key driver of competitiveness for both businesses and regions. The goal of developing digital services and operational capabilities in manufacturing initiatives is also emphasized.

The following activities form the basic framework for the Development Agencies' efforts related to the twin transition in the manufacturing industry:

- » Identifying potential production areas by assessing the production capabilities of regions and encouraging businesses to invest in these areas;
- » Enhancing businesses' ability to adapt to new products, markets, distribution channels, and business models, and fostering the development of knowledge-based, creative sectors;
- » Improving management quality and organizational development in businesses to boost competitiveness and efficiency;
- » Supporting businesses' transition to production processes that make efficient use of energy, water, and natural resources, and that are environmentally-friendly and more cost-effective.

Development Agencies also strive to achieve the following objectives related to the workforce within the context of social development:

- » Improving the quality of the workforce in the regions; attracting more businesses to the region by fostering a labor market that responds to the changing conditions required by businesses and is shaped according to the region's needs;
- » Taking measures to encourage the employment of a qualified workforce by developing the infrastructure for education, training, and healthcare services;
- » Building capacity in higher education and vocational training institutions to meet the requirements of the labor market;
- » Strengthening the partnership between vocational training and universities to foster skills development and support priority industries.

In this context, the need for a qualified workforce during the twin transition process must be addressed through skills development initiatives, and women's access to these opportunities must be carefully evaluated to ensure an equitable transformation of the workforce. Ensuring equal access to education and healthcare services, and addressing reproductive health and care services within this framework is critical. When defining the requirements of the labor market, the needs related to women's employment and equal opportunities must be taken into account in line with the objectives of development plans and employment plans, and higher education and vocational training institutions must be guided by policies in this direction. This is because women's participation in the workforce is directly linked to the goal of ensuring integration into economic and social life and social cohesion, which are among the priorities of social development.

Development Administrations

In Türkiye, Development Administrations are institutions operating under the Presidency of Strategy and Budget, established specifically for regional and rural development, and responsible for implementing development projects in specific regions. Their responsibilities are defined in accordance with policy documents such as the 12th Development Plan and the National Rural Development Strategy. They are responsible for coordination activities that include accelerating regional development, and ensuring that projects and initiatives implemented in the region are executed in a coordinated and integrated manner. The tasks of these institutions include unlocking the potential of industries in the region, including the manufacturing industry, monitoring and evaluating existing practices, and designing and implementing innovative support programs. They carry out their work with a human-centered, and environmentally-friendly, participatory, and innovative approach. The GAP Regional Development Administration operates in the Southeastern Anatolia Region, the DOKAP Regional Development Administration in the Eastern Black Sea Region, the KOP Regional Development Administration in the Konya Plain, and the DAP Regional Development Administration in the Eastern Anatolia Region.

Regional Development Administrations play a role in the regional implementation of plans and strategies related to the green and digital transition in the manufacturing industry. They have the potential to create impact at the local level through local partnerships, and can work on the evolving segments of the industry in different regions. They can work in collaboration with public institutions involved in manufacturing, technology, and the environment, especially at the regional and local levels, as well as OIZs and chambers of industry. The inclusion of Development Administrations in a model that empowers women in the twin transition will ensure that the manufacturing-related objectives of development plans are achieved, while also offering opportunities for inclusivity, capacity building, and mainstreaming.

Municipalities

Municipalities are entities that understand the dynamics and needs of communities within their boundaries in a wide variety of dimensions. In this regard, they play a key role in developing strategies and implementing measures related to green production and digitalization, ensuring that the solutions produced are best aligned with local dynamics. For the same reason, they are critical to making the goal of women's empowerment tangible and actionable, as well as to its localization and widespread adoption.

In Türkiye, municipalities offer a variety of digital skills training programs tailored to different social groups, such as youth, adults, retirees, women, and the employed, and to their specific needs. Digital education programs for women are offered free of charge using a hands-on format, and cover a variety of topics. Among the training courses offered in this context are digital literacy, graphic design (e.g., Balçova Municipality, Izmir; Çiğli Municipality, Izmir); social media management, content creation, development of e-commerce skills, digital advertising, brand building, data analysis, target audience strategies, and reporting (e.g., Muratpaşa Municipality, Antalya); the use of artificial intelligence and digital entrepreneurship (e.g., Canik Municipality); and training courses to promote entrepreneurship through the use of e-services (e.g., Kadıköy Municipality, Istanbul).

The Istanbul Metropolitan Municipality's Level Up Project, designed for blue-collar workers, aims to "enable blue-collar workers who are digitally disadvantaged to become more productive, secure, and employable in the digital era." While this project does not specifically target the "twin transition" in the manufacturing industry and production, it serves as an important example of enabling workers to use digital applications in general. However, objectives such as equality and women's empowerment have not been included in these initiatives. These ongoing efforts also provide insight into the potential of municipalities to provide support in this regard.

Municipalities have the potential to serve as local drivers of the twin transition in the manufacturing industry through tools such as skills development, the establishment of green infrastructure, guidance on financing, the promotion of the circular economy, and the development of data management systems. When supported by national policy and EU harmonization frameworks, these tools will provide companies with tangible advantages in terms of both competitiveness and alignment with the global market.

Municipalities, public education centers, Digital Youth Centers, and vocational training courses can tailor their content to industry-specific needs, develop industry-relevant modules (such as energy efficiency, digital maintenance, and data analysis), and provide internships and hands-on training support at factories as part of competency and skills development initiatives. It is important that the content, educational methods, tools, language, and target audience of capacity building initiatives undertaken through public-private partnerships be designed with women's empowerment in mind.

Municipalities can provide technical guidance to manufacturing companies within their coverage on applying and developing projects for grant programs related to the green and digital transition. They can take steps towards anti-discrimination, equality, and women's empowerment in the initiatives and projects to be developed by drawing on relevant expertise. These efforts lay the groundwork for a significant infrastructure that combines the goals of the twin transition and women's empowerment. Women's and equality units of municipalities can play a role in assessing the steps taken and pilot projects implemented under the Green OIZ support program from an equality perspective. They can adopt an approach that integrates perspectives and indicators of inclusivity and equality into the processes of monitoring energy, water, waste, and carbon indicators in the manufacturing industry, as well as collecting production data. They can provide mentoring on accessing equality and inclusivity indicators. They can share and disseminate best practices at

the local level.

In addition, municipalities can adopt an integrated approach to procurement procedures that incorporates both low-carbon and circular economy criteria and women's empowerment, and can publish guidelines for local suppliers. These guidelines will not only serve as a roadmap, but will also be effective in terms of advocacy and awareness-raising.

INDUSTRY ORGANIZATIONS

Organized Industrial Zones

According to statistics from the Union of Organized Industrial Zones, there are 402 OIZs in Türkiye, 280 of which are actively operating. These OIZs are home to approximately 67,000 businesses, accounting for about 45% of Türkiye's industrial production and half of the total industrial workforce with 2.5 million employees.

OIZs are areas where formal employment and decent work opportunities are provided, particularly in the manufacturing industry. Therefore, they hold significant potential for ensuring that women gain access to decent work opportunities as the manufacturing industry undergoes its green and digital transition amid the changes brought about by the Fourth Industrial Revolution.

Companies in OIZs, where the manufacturing industry is particularly concentrated, account for a very significant portion of regional employment. Therefore, any measure taken at the OIZ level has the potential to affect hundreds of companies simultaneously. UNIDO's industrial park guidelines recommend positioning industrial zones as actors that set standards for equality (UNIDO, 2020). Research also shows that companies in OIZs are more advanced than those outside OIZs in terms of women's empowerment, the green transition, and digital transformation (PAL, 2025).

OIZs play a strategic and supportive role in employment and entrepreneurship through policy interventions, such as training and skills development programs, daycare centers, and public transportation options. They can help establish an inclusive and equitable workplace model as a guiding principle. To this end, they can ensure that standards for equitable workplaces are established through the implementation of management, monitoring, and certification systems, and that the financial and technical support needed by workplaces within OIZs to meet these standards is provided.

The UNDP report titled "The Transformation of Organized Industrial Zones in Türkiye" emphasizes that OIZs possess transformative potential not only as structures focused on production and infrastructure, but also in terms of employee well-being, social services, and equality. The report notes that OIZs' efforts to strengthen social infrastructure elements, such as early childhood care and educational services, and to build organizational capacity in this regard will play a critical role in increasing women's participation in the workforce (UNDP, 2023). These findings demonstrate²² that OIZs can develop innovative models as key actors in inclusive and sustainable industrial transformation. As discussed above in the context of areas for improvement in the manufacturing industry, establishing equality management systems for Industrial Zones will reinforce the central role of OIZs in industrial transformation.

Another example is the recent preparations for Türkiye's first women-focused OIZs, carried out through collaboration between representatives of the public sector, universities, and the private sector. Announced by Istinye University, this initiative is based on the idea that OIZs can be designed not only as centers for production and employment, but also as a new generation of industrial ecosystems that support women's entrepreneurship, address the needs of female employees, and that prioritize equality.

²² files.acquia.undp.org/public/migration/tr/UNDP-TR-2023-OSB.pdf

The relevant literature emphasizes that many steps that OIZs can easily implement within their existing structures, examples of which are listed below, will have a critical impact on women's employment (Dedeoğlu 2021; Doymaz 2023; Akyelken 2017; UNIDO, 2021):

- » Incorporating equality goals into OIZ business plans (increasing the number of female employees, equality in management positions, developing strategies, adopting international standards such as C190, etc.);
- » Taking corrective, adaptive, and transformative steps in the areas outlined by mainstreaming programs to ensure the adoption of an equality perspective within their own governance structures, internal operations, the services they provide, and their external affairs;
- » Taking on an advocacy and facilitation role to foster joint efforts and collaborations to empower women within the organizational structures they are affiliated with;
- » Promoting women-friendly practices in businesses, and taking steps to identify and address discriminatory practices;
- » Leading the way and laying the groundwork for solutions through which businesses can collaborate in areas that support women's employment, particularly in care services;
- » Collecting data disaggregated based on women and men on issues such as employment, wages, positions, and promotions to inform concrete steps and needs-based advocacy, and conducting needs assessments to develop services directly tailored to those needs.

Employer Associations

According to data from the Ministry of Labor and Social Security, there are 84 employer associations in Türkiye. There are 26 associations representing various sectors in the manufacturing industry, including wood and paper, metal, textiles, leather, food, and pharmaceuticals. Of the 84 associations, 54 are independent, while 31 operate under one of the three confederations of employer associations active in Türkiye. TİSK is the largest confederation with 20 member employer associations.

The Labor Unions and Collective Bargaining Agreement Law (No. 6356) includes provisions regarding the commitment of employer associations to equality and the use of resources for initiatives that support women's employment. Upholding equality as a fundamental principle serves as an effective mechanism for integrating this approach into advocacy efforts and negotiations.

When employer associations prioritize equality and inclusivity in their own labor relations, they will expand their spheres of influence and broaden their vision related to these issues. Thus, they can expand their spheres of influence by drawing on the collective knowledge of an inclusive experience and the shared wisdom it generates. Examples of existing practices include advocating for the needs of female employees, conducting training and awareness campaigns designed to foster equitable and inclusive labor relations, and developing training and awareness programs specifically addressing the needs of female employees.

As an example of this approach, the #TheFutureWithMe Project, launched by the Cement Industry Employers' Association (CEIS) and the Association for Equality, aims to raise awareness of equality in the cement industry and serves as a best practice. The project scientifically measured the perceptions of equality among cement industry employees through research conducted using neuromarketing methods, a first in Türkiye, and designed training programs to transform the workplace culture based on the findings. As part of the project, awareness campaigns and inclusive leadership training programs were structured for both office personnel and decision-makers. Following the training, "Leaders of Change" are identified within organizations, and equality-focused action plans are developed. This model offers an innovative best practice example that supports the development

of an equitable organizational culture across the entire industry.

International knowledge and experience sharing among employer associations is crucial for the widespread adoption of best practices. In particular, the global nature of green and digital transition processes requires that national steps, in this regard, align with global initiatives. Steps taken by confederations to facilitate cross-national peer-learning processes, or to reflect global associations' recommendations on women's empowerment at the national level are essential. By drawing on Confindustria's experience and technical expertise regarding the adaptation of equality certification or inclusive workplace standards in Türkiye's manufacturing industry, steps can be taken to implement a similar framework within TİSK.

Confindustria, Italian Confederation of Employer Associations

Confindustria is the main employers' association in Italy. It represents companies, advocates on their behalf, conducts research, manages labor relations, and conducts strategic initiatives to improve competitiveness, productivity, and innovation. The members of the confederation consist of large-, medium-, and small-scale companies operating in various industries. These companies operate under Confindustria's sectoral and regional associations, and participate in labor relations mechanisms at the national, regional, and company levels.

Confindustria's responsibilities include shaping workforce regulations, promoting productivity and innovation, boosting competitiveness, supporting skills and capacity development processes, and addressing structural issues such as women's employment in the manufacturing industry. It works in collaboration with ministries of labor, equality, and industry, labor unions, equal opportunities councils, institutions implementing active labor market policies, and civil society organizations.

In the context of the green and digital transition, Confindustria supports the adoption of advanced technologies, digital competencies, and innovation-driven processes to help companies adjust to the evolving industrial ecosystem, and is working in collaboration with education and employment institutions to build the skills of the future.

Viewing women's empowerment and equality as priorities, the confederation aims, through the STEAMiamoci Program, to increase girls' interest in STEM fields, break down stereotypes, and create a nationwide awareness network. Through projects like STEAMiamoci, awareness and interest in young women's participation in STEM fields have grown, and broad-based collaboration with schools, companies, and institutions, along with the establishment of a sustainable monitoring mechanism, has been achieved.

Another initiative related to women's empowerment is the "Minerva Award." The award highlights women's leadership and best practices of companies, while promoting an inclusive organizational culture.

The Equality Certification program aims to reinforce equality policies within companies through KPI-based evaluations and financial incentives. Companies that have received the Equality Certification have achieved measurable improvements in the areas of pay policies, career development, and parental support. This certification program supports companies in strengthening their policies on fair hiring practices, equal pay, career development, and parental support.

The confederation serves as a good example of an organization that incorporates an equality framework through equality committees and collective bargaining committees at both the national and company levels, thereby working to prevent discrimination and increase women's participation.

Italy's Equal Opportunities Act (2006) and the 2021 amendments to the same law (162/2021) form the basis for Confindustria's practices. The Law clearly outlines mechanisms that promote equality in collective bargaining agreements, committees, and certification processes. KPIs, monitoring systems, policy frameworks, and practices that promote equality in the workplace are all part of this structure.

The confederation's goal of empowering women is reflected in the actions, negotiations, and initiatives it undertakes in the following areas:

- » Monitoring equal pay, tracking pay gaps;
- » Developing statistical reports on female employees' positions, education, and career development;
- » Implementing innovative employment policies aimed at increasing women's participation in technology and new professions;
- » Conducting an annual analysis of women's employment in the manufacturing industry, identifying types of contracts and structural barriers;
- » Increasing workforce retention through the widespread adoption of care support services in large-scale companies;
- » Encouraging women's access to non-traditional professions;
- » Establishing mechanisms for protection against discrimination and fostering inclusive labor relations.

Employer Associations have the potential to provide an opportunity for dialogue where issues arising during the transition process are addressed jointly with social partners. Ensuring that the potential impact of the green and digital transition on labor relations and employees takes a fair and positive form, through employee participation in these processes and the equal consideration of the interests and needs of both women and men, presents an opportunity both to steer the manufacturing industry toward an equitable future and to eliminate inequalities. Employer Associations work in close collaboration with OIZs, academia, development agencies, and development administrations.

Their involvement as a stakeholder in the empowerment of women during the manufacturing industry's twin transition process, and the integration of a perspective on equality and women's empowerment into their own operations, could lead to various outcomes, including an increase in the number of member employers, the accumulation of knowledge regarding the need for green and digital transition in companies, serving as a guide for companies in their green and digital transition, and enhancing national and international visibility.

Labor Unions

According to the Official Gazette published on 24 July 2025, 14% of Türkiye's total workforce of 17,326,143 (2,429,527 workers) are union members. Of the 235 labor unions, 104 operate under 7 confederations, while 131 operate independently. 65 of these unions exceeded the 1% threshold, and are now authorized to sign collective bargaining agreements. Approximately one-third of unionized workers are employed in the manufacturing industry. Trade union membership rates in industries that can be classified under the manufacturing industry are below 20%. Rates are particularly low in the textiles, ready-to-wear apparel, and leather (8.55%) and food (13.10%) industries, where women are heavily represented. In both industries, the ratio of women to men among union members is low (1/3 and 1/4, respectively). In the metal industry, which has the highest number of unionized workers, the percentage of women among union members drops to as low as 1 in 7 (Ministry of Labor and Social Security, 2025).

Labor unions are one of the mechanisms that can play a key role in enabling women to voice the challenges they face in the workplace, as well as their demands, needs, and expectations regarding the solutions to these challenges. All of the roles of labor unions, including the protection of legal, social, and professional rights, education, research, and improvement initiatives to enhance working life and working conditions, as well as ensuring workers' democratic participation and fostering an environment of dialogue, can be carried out with a perspective of equality.

The roles embraced by labor unions, which we have seen examples of in Türkiye, include voicing women's demands regarding inequalities in areas such as leadership, participation in decision-making processes, equal pay, and care work; raising awareness of labor rights related to reproductive health, pregnancy and the post-partum period; facilitating the adoption of measures through collective bargaining to address women's needs related to participation and retention in the workforce; and advocating for labor rights, particularly those outlined in ILO conventions. Unions are effective mechanisms for ensuring that equality is upheld as a fundamental principle, and for integrating this approach into advocacy initiatives and negotiations.

Examples of existing practices include advocating for the needs of female employees, conducting training and awareness campaigns designed to foster equitable and inclusive labor relations, and developing training and awareness programs specifically addressing the needs of female employees.

Unions can provide an opportunity for dialogue where issues arising from the twin transition are addressed from the perspective of employees' rights. Ensuring that the potential impact of the green and digital transition on labor relations and employees takes a fair and positive form, through employee participation in these processes and the equal consideration of the interests and needs of both women and men, presents an opportunity both to steer the manufacturing industry toward an equitable future and to eliminate inequalities.

Unions ensure the regulation of labor relations, and are a vital component of social dialogue. They work in collaboration with all relevant entities (such as academia, civil society, and the public sector) to address employer-employee relations.

Mainstreaming equality is as important for labor unions as it is for companies and OIZs. Labor unions should have policy documents that promote equality and the empowerment of women; this approach must be reflected in their bylaws, relevant general assembly resolutions, and collective bargaining agreements. Committees or units that focus on equality and women's empowerment should be established to enable unions to take steps toward equality; measures and temporary special actions aimed at ensuring equal representation in decision-making processes and mechanisms should be implemented; and efforts should be made to build organizational capacity and increase knowledge and awareness regarding equality and women's empowerment (Eroğlu 2025; Eroğlu, 2021).

It is important for unions to prioritize equality and inclusivity in their own labor relations in order to expand their spheres of influence and broaden their vision related to these issues. Thus, they can expand their spheres of influence by drawing on the collective knowledge of an inclusive experience and the shared wisdom it generates.

Labor unions' involvement in the process of empowering women during the twin transition of the manufacturing industry as stakeholders can lead to effects, such as increased union membership; understanding the impacts of the green and digital transition on the workforce; making just transition a priority; enhancing advocacy capacity regarding employees' rights; and ensuring that equality becomes the norm within their own operations and is reflected in policies and practices.

Chambers of Industry and Commerce

Chambers of Industry are organizations that monitor industry trends to address the common needs of manufacturers, facilitate professional operations, and develop policies and strategies to promote the growth of the manufacturing industry, while also generating knowledge and providing guidance.

In Türkiye, chambers of industry are professional organizations with public institutions status under Law No. 5174 on the Union of Chambers and Commodity Exchanges of Türkiye, and Chambers and Commodity Exchanges. Their primary tasks include the following:

- » Meeting the shared needs of manufacturers and facilitating professional operations;
- » Promoting the development of the manufacturing industry and upholding professional discipline and solidarity among members;
- » Developing policies and strategies;
- » Preparing reports on industry trends, production, employment, exports, and digital transition;
- » Providing training, consulting, and guidance to members on technology, productivity, quality, and sustainability;
- » Improving the investment climate and providing infrastructure by collaborating with OIZs.

There are over 180 chambers of industry and commerce in Türkiye. The members of these organizations consist of both manufacturing companies and businesses engaged in trade. There are 12 chambers of industry whose members consist solely of manufacturing companies.²³

The roles of these chambers of industry are closely linked to women's empowerment. Therefore, their work has the potential to create a positive impact in this regard. Carrying out this work from an equality perspective will make significant contributions to the industry's progress towards a more equitable manner.

The relationship between the roles and responsibilities of chambers of industry and women's empowerment can be outlined as follows:

Defined tasks and roles	Potential role in women's empowerment
Meeting the shared needs of manufacturers and facilitating professional operations	Enabling women with limited workforce participation to acquire new skills and join the workforce; increasing the workforce participation of NEETs, the majority of whom are women; thereby creating a qualified workforce and expanding the talent pool Enhancing the inclusive character of professional discipline and solidarity within the context of the mission to develop the manufacturing industry and strengthen professional discipline and solidarity among members, and removing barriers facing the most marginalized groups, such as female employers and female employees
Developing policies and strategies	Incorporating and promoting an approach based on inclusivity and equality; developing policy and strategy papers on issues, such as equality and zero tolerance for workplace violence and harassment; supporting women's participation in the management of chambers of industry through measures such as quotas based on women and men; and encouraging relevant companies to take the lead in this regard

²³ Bkz. tobb.org.tr/OdaveBorsalarDB/Sayfalar/oda--borsa-sorgulama.php

Generating information on issues such as industry trends, production, employment, exports, and digital transition	Creating reports that focuses on the distinct interests and needs of women and men, and identifying barriers to women's participation in the workforce
Providing training, consulting, and guidance on technology, productivity, quality, and sustainability	Taking necessary measures to ensure equal participation and supporting women in areas where they have relatively less access, such as technology and digitalization
Improving the investment climate and providing infrastructure	Ensuring that the infrastructure provided gives equal importance to the needs of both female and male employees (appropriate equipment, transportation options, physical conditions, shared care responsibilities, etc.)
Creating a guiding and encouraging learning resource for registered companies through training and consulting	Developing policies and strategies that include women's employment and empowerment goals

The fact that chambers of industry serve as supportive and guiding bodies for manufacturers, particularly for SMEs, will facilitate the widespread adoption of their inclusive and equitable practices. In this context, chambers of industry are known to undertake concrete initiatives in Türkiye.

Examples from Türkiye: Chambers of Industry and Women's Empowerment Projects				
Project Title	Implementing Entity / Partners	Objective	Main Activities	Outputs / Impact
Experience Sharing Group on Equality	Denizli Chamber of Industry, UN Global Compact Türkiye	To promote equitable policies in the manufacturing industry	Information meetings, sessions on equal pay and women's representation in leadership	High rate of women's employment in textiles and manufacturing
ISO Gender Equality Action Plan	Istanbul Chamber of Industry	To ensure equal opportunities in organizational processes	Data monitoring, support for women in hiring and promotion processes	Implementation of equitable HR policies
Women's Touch in the Manufacturing Industry	TOBB Women Entrepreneurs Board, İŞKUR, OIZs	To increase women's employment, and change perceptions	Education-to-employment links, awareness campaigns	Quality employment for over 33,000 women
Supporting female entrepreneurs	Kahramanmaraş Chamber of Industry and UNDP	To ensure the economic empowerment of women in the post-earthquake recovering process	Support for women entrepreneurs whose businesses were damaged in the earthquake zone	Small financial aid for a large number of women entrepreneurs

Stars of Equality	TOBB Izmir Women Entrepreneurs Board, ESBAS, Izmir Commodity Exchange	To provide new employment opportunities for women who have been out of the workforce for an extended period	Reinforcing the perception of equal opportunity in businesses, employment links	Pilot programs for women's return to the workforce
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The efforts that chambers of industry, which play a significant role in the manufacturing industry, undertake to promote equality and women's empowerment should not be limited to one-off projects. Their strategies and policies must be reviewed through an equality lens, and this approach must be reflected in all plans and practices.

In the context of establishing collaborations at the local and regional levels (such as with OIZs, Development Agencies, and Development Administrations) while maintaining direct contact with companies, chambers of industry should be supported to perform the following functions:

- » Ensuring that the efforts of chambers of industry in Türkiye regarding women's empowerment, support for women entrepreneurs, and equal representation of women in manufacturing are recognized as best practices and widely disseminated;

The **"The Future of Work in Manufacturing Industry: Closing the Skills and Gender Gap (ManuFoW)"** Project, supported by European Union funds and completed in 2024, was implemented to close the skills and representation gaps in Türkiye's manufacturing industry by helping the workforce adapt to new digital skills and addressing inequalities. To facilitate this adaptation process, training was provided over a one-year period in the following six technology domains:

- » Data Analytics and Artificial Intelligence
- » Robotic Systems and Automation
- » Internet of Things and Sensor Technologies
- » Cloud Computing and Big Data
- » Cybersecurity
- » Computer-Aided Design – Computer-Aided Manufacturing (CAD – CAM), Additive Manufacturing

The project included the following initiatives to increase women's visibility in the manufacturing industry, challenge the perception that "manufacturing is a man's job," and contribute to the integration of equality policies into the manufacturing ecosystem:

- » Training programs supporting women's transition from blue-collar jobs to advanced technology specializations
- » Initiatives to empower female managers to take a leadership role in digital transition processes through C-level training
- » Awareness-raising seminars to foster a culture of equality within companies
- » Facilitating women's involvement in digital transition projects at manufacturing companies following the training, and supporting their access to high-paying, future-oriented positions

Source: <https://eurecat.org/en/portfolio-items/manufow/>

- » Mainstreaming the approach to inclusivity and equality within organizational structures; implementing planning and execution processes for analysis, identification, and improvement; incorporating equality and inclusivity into strategic plans; and implementing equitable budgeting practices;

The Istanbul Chamber of Industry's (ICI) Gender Equality Action Plan has been institutionalized as part of ICI's Comprehensive Human Resources Policy. Through this action plan and in accordance with the principles of impartiality, justice, and inclusivity, the chamber is committed to providing its employees with equal rights and opportunities regardless of their language, age, or if they are men or women. The equality approach is addressed under five main headings:

- » Institutionalization of the Action Plan
- » Data Collection and Monitoring Training and Awareness
- » Resources Allocated to Equality Initiatives
- » Work-Life Balance and Organizational Culture
- » Recruitment and Career Development

Source: https://www.iso.org.tr/Sites/1/upload/files/GEP_ISO_TR_EN_0724-12410.pdf

- » Incorporating an approach focused on inclusivity, equality, and women's empowerment into planning and initiatives related to the digital and green transition;

ASO-SEM (Ankara Chamber of Industry Continuing Education Center) incorporates an approach aimed at ensuring women's participation as a qualified workforce in the manufacturing industry and supporting their active role and participation in the digital and green transition into its programs.

A 6-week intensive training program combining theory and hands-on experience in CNC machine operation, automation systems, PLC programming, electrical panel assembly, coordinate measuring systems, and robotic welding is provided to 55 female trainees. Trainees are matched with companies before the start of the training.

Additional support is provided through a cooperation protocol with the Turkish Red Crescent (transportation, meal, daycare support, personal accident insurance, vocational certification, and employment incentives).

Under the program, 64 female trainees were placed in jobs in 2024, and the target for 2025 has been set at placing 400 women.

- » Making policy reforms to ensure that the inclusivity and equality approach is incorporated into Law No. 5174 on the Union of Chambers and Commodity Exchanges of Türkiye and Chambers and Commodity Exchanges, and into the founding statutes and objectives of the chambers of industry.

Türkiye Exporters Assembly

The Türkiye Exporters Assembly (TİM) is the umbrella organization for exporters' associations. It represents 27 industries, 61 Exporters' Associations, and over 150,000 exporters. The Assembly's primary mission is to increase the volume of sustainable foreign trade, develop bilateral commercial, social, and cultural relations with partner countries, and serve as a bridge between the private and public sectors in initiatives aimed at achieving these goals.

The Assembly is a signatory to the WEPs. It undertakes initiatives related to women's entrepreneurship. Under the TIM Academy, sustainability and innovation support programs serve as resources for companies' green and digital transition processes. TIM has developed an Equality Action Plan for the 2024-2027 period. The plan, which references the EU Gender Equality Strategy and CEDAW, identifies six key areas: Capacity building and institutionalization to promote equal opportunities for women and men; hiring and career development; work-life balance; decision-making and leadership; integration of women's and men's distinct interests and needs into research content; and violence against women, sexual harassment, and discrimination. The plan includes the establishment and operation of a Women Exporters Empowerment Committee (KIGK). The committee has been designated as a permanent group responsible for managing the action plan, monitoring its implementation and coordination, and identifying areas for improvement regarding equality.

Priority Area Programs for Women's Empowerment	
TIM WINGS (Women International Networking and Global Sales) Project, 2024	This project aims to boost the competitiveness of women entrepreneurs and attract new companies to the exports sector.
Project to Support Women in Export	Launched for the first time under the TIM WINGS umbrella in collaboration with Turkish Eximbank, İhracatı Geliştirme (İGE) A.Ş., and the Turkish Standards Institute (TSE), the "Project to Support Women in Export" provides TRY 13 billion in financial support to female exporters who hold an entrepreneur's certificate.
Additional Points for Female Exporters in Overseas Market Research Support	Under the Decision on Export Supports issued by the Ministry of Trade, an additional 20 points are added to the support rate provided to companies that meet TSE Standard No. K 645, "Women Entrepreneurs – Basic Definitions and General Rules," in the application of additional points for target countries within the Overseas Market Research Support program.
"Breaking Boundaries in Export" Training Programs	In collaboration with the Türkiye Exporters Assembly and Akbank Transformation Academy, the "Breaking Boundaries in Export" training series is offered to exporters, potential exporters, female and young entrepreneurs.
Programs Related to Sustainability	
ECOTIM	Establishing and managing sustainability infrastructure in companies that are members of the Exporters Associations; building and reinforcing their capabilities; and designing, implementing, and monitoring corporate sustainability systems tailored to each organization's specific goals, structure, and needs
GREENTIM	A digital platform providing access to information and training to raise awareness about the European Green Deal and a sustainable future
TUBITAK Green Innovation Technology Mentoring Program	Designing and implementing corporate sustainability systems tailored to the goals, structures, and needs of SMEs, ensuring traceability, and providing the mentoring services they require
Renewable Energy Technologies (YET) Working Group	Increasing Türkiye's export market share in renewable energy technologies and promoting export growth across industries
Innovation Initiatives	

InovaLIG Program	As Türkiye's first innovation development program, InovaLIG enables companies to measure and improve their innovation capabilities and conduct international benchmarking. "Innovation champions" are recognized with awards at the end of the program.
InoSuit Program	As part of university-industry collaboration, this is a mentoring-based program designed to enhance companies' innovation management capabilities. The program provides companies with structural and process support to enable them to engage in strategic innovation.
InovaTIM	InovaTIM is a network that fosters a culture of innovation and entrepreneurship among university students. The network aims to enhance the skills of students in project development and prototyping.

Business and Professional Organizations

The business world and professional organizations should be viewed as entities that provide the knowledge and experience to guide steps toward the goal of empowering women in the digital and green transition. Partnerships established with these organizations will serve as a catalyst and support mechanism to ensure that ongoing initiatives and investments reach the target audience, address their interests and needs, and generate effective results.

The social impact analysis conducted and the planning recommendations developed under the WE Project highlight the importance of partnerships with civil society organizations in the digitalization and green transition processes. Potential partnerships could be established with private sector organizations such as TUSİAD and TURKONFED; CSOs focused on women's entrepreneurship, such as KAGIDER and ANGIKAD; professional organizations such as TMMOB and IEEE; and organizations working to empower women in the workforce, such as Turkiye, BPW Ankara, BPW Istanbul, and Women in Tech. The table below lists some examples of organizations working on issues related to women in the areas covered by this model, including technology, the manufacturing industry, digitalization, and the green economy:

Civil society organizations working in the field of women's labor: Examples from Türkiye		
Organization / Platform	Focus Areas	Notable Programs
TUMKAD – All Engineer Women Association tumkad.org.tr	Empowerment of women engineers, STEM fields, digital transition	Kutup Yıldırım Mentoring, Digital Transition Commission
KAISDER - Women Employers and Industrialists Association of Türkiye	Women's active participation in economic life and the empowerment of women employers and entrepreneurs	Women's employment, entrepreneurship, and twin transition projects, Certification programs
KEIG – Women's Labor and Employment Initiative www.keig.org	Women's employment, women's labor in OIZs, advocacy	Research and policy development
KEFA – Feminist Academics Working with Women www.kefaweb.org	Women's employment, unionization, care work, women's labor in industry	Research and policy development
Women in Technology Association www.teknolojidekadin.org	Digital transition, artificial intelligence, advanced technology	Mentoring, coding trainings

TOBB Women Entrepreneurs Board www.tobb.org.tr/TOBBKadinGirisimcilerKurulu/Sayfalar/AnaSayfa.php	Women's employment in the manufacturing industry, entrepreneurship	Women's Touch in the Manufacturing Industry Project
BCSD (Business Community and Sustainable Development Association) Türkiye www.skdturkiye.org	Green transition, sustainability, women's employment	The Future of Work and Women's Employment Project
TIKAD – Turkish Businesswomen Association www.tikad.org.tr	Women's leadership, industry, and production	Support for women's cooperatives
KAGIDER – Women Entrepreneurs Association of Türkiye www.kagider.org	Women's entrepreneurship, digitalization	Mentoring and training programs
Turkische www.turki-she.com	Young women's entrepreneurship	Networking, connection building, mentoring

In addition, civil society organizations that do not focus directly on women's employment but undertake initiatives that contribute to this area are also stakeholders that contribute to women's empowerment in the context of digitalization and the green transition. Such organizations can also be viewed as opportunities for collaboration to promote understanding and dissemination of the equality perspective.

Employer Associations: Examples from Türkiye			
Organization / Platform (Full Name)	Main Areas of Activity	Goals	Women's Empowerment Initiatives
Turkish Enterprise and Business Confederation (TÜRKONFED) turkonfed.org	Digital and green transition of SMEs, women's entrepreneurship, sustainable development	To contribute to Türkiye's economic growth, regional development	Women in Business Project: Providing digital transition support to women-owned SMEs through the Digital Transformation Center
Turkish Industry and Business Association (TUSİAD) tusiad.org.tr	Digital transition, alignment with the European Green Deal, rule of law reforms	To boost global competitiveness	Equality Working Group, Women in Business Reports, signatory to the WEPs
Young Business People Association of Türkiye (TUGİAD) tugiad.org.tr	Global networks for young entrepreneurs, digital transition, and exports	To help young businesspeople access global markets	Mentoring and networking events for women entrepreneurs
Independent Industrialists' and Businessmen's Association (MUSİAD) musiad.org.tr	Production and investment in Anatolia, exports, social projects	Local development and employment	Women's entrepreneurship support programs, collaboration with local women's cooperatives

Turkish Industrialists' and Businessmen's Foundation (TÜSİAV) tusiyav.org.tr	University-industry collaboration, digital transition, mentoring	To strengthen the industry through knowledge and technology	Mentoring and STEM trainings for women engineers
Federation of Western Anatolian Industrialists' and Business People's Associations (BASIFED) basifed.org	Regional development, technology and R&D investments	To help the regional business community contribute to national economic goals	Women's entrepreneurship and leadership training, regional women's employment projects

The work of civil society organizations may face limitations in directly advancing the goals of inclusivity, equality, and women's empowerment. It is important to ensure that the agendas of organizations successfully working on women's empowerment and employment include topics such as the green and digital transition in the manufacturing industry, a just transition, women's employment and skills transformation in the manufacturing industry, women's representation in STEM fields, and equitable workplace practices. In efforts to achieve the goal of equality in the twin transition, partnerships should be developed both to draw on the experience of civil society organizations, and to enable them to carry out work in this field.

INDUSTRY-SPECIFIC LEARNING STRUCTURES

Organizations That Provide Learning and Experience for Transition

Centers of excellence focused on the digital and green transition in Türkiye and around the world serve as a support mechanism for companies of various sizes, particularly SMEs, in identifying and developing the skills needed by the manufacturing industry, as well as in acquiring the capabilities necessary for technological renovation and the transition to green production.²⁴

Examples from Türkiye		
Name of the Center	Focus Areas	Services / Purpose
IMES OIZ Center of Excellence	Digital transition, Industry 4.0, Smart Factories	Digital transition seminars for industrial companies, artificial intelligence and machine learning applications
Digital Transformation Center (DDM) – TÜRKONFED	Digitalization in SMEs	Digital maturity analysis, roadmap, training, and mentoring
IHKIB Digital Transformation Center (Model Factory)	Digital transition, Lean transition	Digital maturity assessment, Lean maturity assessment
EULEP Centers of Vocational Excellence Project (TOBB)	Artificial intelligence, virtual reality, social innovation	Digital transition in vocational training, EU-funded training modules
Center of Excellence for Clean Production Technologies	Green transition, carbon/water footprint, clean production	Compliance with the European Green Deal in the manufacturing industry, resource efficiency, on-site consulting

²⁴ Model factories/competence and digital transition centers are "live" training and practice environments where businesses can learn by experiencing Industry 4.0 technologies, lean manufacturing, and operational excellence practices. By combining training, test-bed, incubator, and consulting functions, these centers accelerate companies' digital and lean maturity, and help them establish roadmaps for the green transition (www.modelfabrika.org/)

MEXT	Digital Factory, assessment services, strategy and governance consulting, technology consulting, Competence Development Center	Digital and artificial intelligence maturity assessments, digital transition consulting, lean consulting, digital and green transition training
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Digital transition centers provide expertise in Industry 4.0 and artificial intelligence applications, while also conducting digital maturity analyses and developing roadmaps specifically for SMEs. These centers are also viewed as interface organizations because they serve as an infrastructure for industry-university collaboration during the digital transition process. Model factories, centers of excellence, and competence centers serve as learning factories. One of the key advantages of learning factories is that they provide an immersive and experiential learning environment that can help bridge the gap between theory and practice.²⁵



EXAMPLE OF A MULTI-STAKEHOLDER DIGITAL TRANSITION PROJECT:

DIGITAL TRANSFORMATION CENTER

Launched in 2018 through a collaboration between civil society, the public sector, the business world, and universities, the Digital Transformation Center (DDM) has significant goals targeting SMEs. The project aims to increase SMEs' knowledge and awareness regarding the components, requirements, and benefits of digital transition; analyze their digitalization needs and develop roadmaps; and, in line with these goals, facilitate their access to digital services by matching them with "tech-SMEs," enabling them to benefit from these services with advantages specific to the center.

The DDM Project was developed and implemented as part of the Istanbul Development Agency's (ISTKA) 2018 Innovative and Creative Istanbul Financial Support Program and under the leadership of the Turkish Enterprise and Business Confederation (TÜRKONFED). With contributions from Isbank, the Digital Transformation Center, which began its operations in Beyoğlu as part of the project, had the Istanbul Governor's Office, the All Entrepreneurs and Business Mentors Association, Boğaziçi University, and Endeavor Türkiye among its project partners and participants.

Services were provided at the center, where 120 SMEs were introduced to digital transition processes, under six main categories including business processes, computer technologies, human resources processes, sales and marketing, production, logistics and warehousing. Tailored roadmaps were prepared for SMEs at the center after analyzing their needs across these six categories. DDM organized matching initiatives to bridge the gap between technology supply and demand, thereby helping Tech-SMEs reach the market and boosting their motivation to innovate.

As part of the DDM 2020 project, launched under the leadership of TÜRKONFED in collaboration with Isbank and with BANDWITT as a solution partner, digital

²⁵ LCAMP (2025). Industry 4.0 technology absorption through the collaborative learning factory. Knowledge Innovation Centre. knowledgeinnovation.eu/kic-publication/industry-4-0-technology-absorption-through-the-collaborative-learning-factory/, s. 18.

transition scores and roadmaps were made available to companies across Türkiye, and free one-on-one coaching services were provided to 125 companies from 23 cities.

The 2022 project was also implemented under the leadership of TÜRKONFED, in collaboration with Isbank and with BANDWITT as a solution partner. During this phase, DDM conducted one-on-one meetings with companies to administer a digital transition survey. Based on survey responses, 100 companies for which a digital transition initiation report was compiled were matched with solution partners from the Dijikolay partner pool.

Global Examples		
Center / Program	Focus Areas	Source
Green Data Centers – World Bank & ITU	Reducing the environmental impact of digital infrastructure, green data centers	worldbank.org
IEEE Green Digital Transformation Initiative	Digitalization and climate-friendly technologies	itcc.ieee.org
AdaniConneX Digital & Sustainable Data Centers (India)	Artificial intelligence, IoT, sustainable data center design	datacenterdynamics.com
Siemens Real + Digital Sustainability Program	Twin transition, energy efficiency, circular economy	blogs.sw.siemens.com
MADE Competence Center, Italy	SMEs' adaptation to Industry 4.0 (maturity analyses, technical trainings, simulation)	www.made-cc.eu/en/
PoliHub Innovation District	Support for startups; collaborative projects with universities in engineering, architecture, and industrial design	polihub.it/en/

While projects related to centers of excellence, digital innovation centers, and learning factories, as well as the relevant literature, often address these topics from the perspectives of skills, technical aspects, or behavior, they typically do not include an assessment of inequalities and stereotypes. This can lead to the persistence of existing inequalities or the emergence of new ones. Centers of excellence working in fields such as digitalization and the green transition can play a number of roles to ensure that the transition is just and equitable.

It is observed that the efforts of centers of excellence, in this regard, are generally limited to specific projects. These initiatives are designed specifically to empower women in male-dominated industries; therefore, they address not only the pressures created by the digital and green transition, but also the pressures stemming from the inequalities women face. These initiatives must be supported by strong partnerships and expertise in three areas, digitalization, the green transition, and women's empowerment, to ensure that their outcomes are visible and that timely interventions are made to support their progress and help them achieve their goals; repeated monitoring and evaluation of these goals must be conducted with a focus on both process and outcomes, and the path toward the social impact expected in the long term must be supported by sound practices.

Some of the initiatives carried out in Türkiye are listed in the table below.

Center / Project	Initiatives	Objective
SoGreen Project (World Bank & Ministry of Industry)	Funding for 5,000 women- and youth-led SMEs to adopt green technologies; special grants for women-led cooperatives	Increasing women's access to economic opportunities during the green transition
Green Opportunities Grant Program (Silkroad Development Agency)	Grants for women- and youth-focused green transition projects; support for the circular economy and clean production technologies	Increasing women's employment and entrepreneurial capacity in the green economy
UNDP Türkiye – Economic Growth and Competitiveness Portfolio	Women's entrepreneurship in the organic agriculture, renewable energy, and tourism industries; training in STEM skills and financial support	Increasing women's participation in the green economy in disadvantaged regions
Green Transition Platform	Equality modules in green transition training, policy recommendations that encourage women's participation in decision-making processes	Promoting women's leadership in the green transition process

To increase the number of initiatives mentioned above and to eliminate inequalities during the digital and green transition process, with the goal of empowering women, it is essential that each center of excellence include specialized units, councils, and committees that support these efforts, and that measurable indicators be established to ensure the steps taken, as well as strategic directions and plans, are monitored with a focus on equality.

Another approach regarding interface structures is the need for entities, which can be defined as centers of excellence focused on equality and inclusivity, to accompany the initiatives undertaken in the field of the digital and green transition. In current practice, structures such as centers of excellence/competence or model factories, particularly in the manufacturing industry, generally focus on technical areas. However, since this transition must be oriented toward equality, aim to avoid reproducing inequalities, and involve efforts to empower women in this context, centers of excellence/competence focused on women's empowerment must also play a role within these interface structures. These centers should be more deeply integrated into the ecosystem as partners taking on roles in areas such as training, skills development, mainstreaming initiatives, awareness-raising and knowledge, leadership, mentoring, communication, occupational health and safety, and combating harmful workplace practices. We can benefit from the work of competence centers focused on equality in areas such as the inclusion of expert trainers from entities like model factories and digital learning centers in purple certification programs, the implementation of equality and inclusion measures by businesses working with these centers with the support of centers dedicated to equality, the integration of a women's empowerment perspective into policy design and implementation, and the implementation of workplace equality practices.

Centers of Excellence Working Toward Equality and Women's Empowerment		
Center / Organization	Steps	Objective
Sabancı University SU Gender (Türkiye)	» Equality Program (GEP) » EU Horizon 2020 GEARING-Roles Project » Purple Certificate Program	To mainstream equality in academia, education, and the business world

Women, Peace and Security CoE (USA)	» UNSCR 1325 Framework » Four Pillars: Participation, protection, prevention of violence, equal access » National Action Plans	To enhance women's leadership in conflict resolution and security policies
Global Center for Gender Equality	» Policy design and implementation » Closing data gaps » Leadership programs	Promoting equality in healthcare, agriculture, and development
Johns Hopkins Center for Global Women's Health and Gender Equality	» Equality of Women and Men / GBV Evidence Accelerator » Economic Empowerment Index	Equality initiatives focused on the healthcare sector in line with SDG 5 objectives
FAWE – Forum for African Women Educationalists	» Pedagogical training with an equality approach » STEM programs - » Shaping school infrastructure with a focus on equality	Increasing girls' school attendance and academic achievement
TAYSAD – (Automotive Suppliers Association of Türkiye) Gender Equality Guideline (Türkiye)	» Equality in recruitment and promotion processes » Awareness-raising training	Increasing women's employment in male-dominated industries

Academic/Semi-Academic Units/Centers

The period of change brought about by the Fourth Industrial Revolution is characterized by technological shifts in production methods and tools, while labor relations are creating sociological impacts through the social structure. It is essential to draw on the guidance of academic knowledge to understand all these impacts and ensure that the transition process is managed, effectively monitored, and supported without causing negative effects on the economy, manufacturing, related industries, employees, individuals, and society. This requires support from multidisciplinary research involving experts not only in all technical fields related to the manufacturing industry, but also in fields relevant to society, such as economics, labor economics, and sociology. Therefore, taking steps to establish partnerships with academia is essential for a twin transition model that seeks to ensure inclusivity and the empowerment of women.

Politecnico di Milano is a prime example of Italy's well-established culture of institutional collaboration, supported by national innovation strategies and industrial policy tools. Politecnico's ability to act as both an academic leader and a systemic innovation actor demonstrates how universities can bridge the gap between research, industry, and policy. This model is highly significant for Türkiye in terms of policy alignment and ecosystem development. Politecnico is an academic institution that strives not only to strengthen the perspective of equality within academia, but also to transform the male-dominated culture in STEM fields that support innovation in industry.

Universities are pioneering institutions that play a key role in the empowerment of women in STEM fields, the analysis of the skill sets required for the digital and green transition, policy analysis, and steps to be taken in technology and innovation. The need to establish academia-industry partnerships to achieve the goal of empowering women in the green and digital transition is highlighted in various studies (UNDP, 2025). Among the most important examples of such collaborations are industry transformation centers and innovation centers.

Examples of such collaborations in Türkiye include OzUBEX (Ozyegin University Industry Transformation Center) and METU DTX (METU Digital Transformation and Innovation Center).

These centers were established under the Competitive Sectors Program, which is funded within the framework of financial cooperation between the European Union and Türkiye, and implemented by the Ministry of Industry and Technology. Established in direct collaboration with universities, these centers undertake initiatives aimed at enhancing research and development capacity of companies and the industry, as well as fostering academia-industry collaborations.



ODTÜ • DTX
DİJİTAL DÖNÜŞÜM VE İNOVASYON MERKEZİ

**DTX – METU Digital Transformation and
Innovation Center**

OBJECTIVE: To support the digital transition process by enabling SMEs and other manufacturing enterprises to effectively meet their digital transition needs and by providing a collaborative environment for innovation and development.

ACTIVITIES: Increasing the competitiveness of Türkiye’s manufacturing industry, particularly the machinery and automotive industries, and enhancing its integration into the EU value chain. Building research and development capacity and fostering cooperation between academia and industry to increase the use of digital technologies among SMEs in the manufacturing industry.



OzUBEX
Sanayi Dönüşüm Merkezi

OzUBEKS

OBJECTIVE: To support the digital transition of SMEs and entrepreneurs through technical infrastructure and equipment, as well as training, consulting, and mentoring services.

ÇALIŞMALAR: Assessing the digital maturity levels of SMEs, developing digital transition roadmaps, and designing solutions to industry-specific challenges. Developing a skilled workforce through in-class and comprehensive hands-on training and certification programs on current digital trends and technologies.

These centers are also highly aligned with universities’ ability to establish global partnerships, in line with the global character of change. Given the broad, transnational scope of the scientific approach, it is essential to take steps to deepen collaborations among universities, such as Istanbul Technical University (ITU), Middle East Technical University (METU), and Türkiye’s other leading technical universities, that serve as models of industry-university collaboration. These collaborations can serve as a catalyst for progress in areas such as joint research, STEM initiatives aimed at equality, exchange programs, or collaborative innovation centers that integrate academic expertise with industrial transformation agendas.

FINANCIAL INSTITUTIONS

World Bank's Work in Türkiye

The World Bank, which has been a partner of Türkiye since 1950, is implementing its program in the country with a focus on increasing productivity, creating jobs, improving public services, and building resilience against natural disasters. The 2024-2028 World Bank Group Country Partnership Framework for Türkiye includes three main objectives: Under the “High and Sustainable Productivity Growth” area, the goal is to contribute to the green transition of the manufacturing industry in order to reduce carbon emissions and maintain trade competitiveness. Under the “Inclusive Services and Jobs” area, the goal is to reduce income and other inequalities by improving employment opportunities for women, youth, and vulnerable groups. Finally, under the “Strengthening Resilience to Natural Disasters” area, the framework notes that issues such as natural resource management and the clean energy transition are prioritized.

The Socially Inclusive Green Transition Project, one of the projects the World Bank is implementing in Türkiye, aims to facilitate access to financial resources for over 5,000 micro-, small-, and medium-scale businesses led by women and young people, and to support them in adapting to green technologies, reducing harmful emissions, and building resilience against extreme weather events. The Türkiye Industrial Emissions Reduction Project, meanwhile, facilitates access to long-term financial resources to help the manufacturing industry adapt to green technologies.

EBRD's Practices in Türkiye

The European Bank for Reconstruction and Development (EBRD), which has been operating in Türkiye since 2009, focuses on accelerating the green transition, supporting human capital development, enhancing competitiveness, and improving Türkiye's infrastructure and regional integration. The Bank operates in accordance with the principles of equality and regional inclusivity in its programs and projects.

Once industry-related priorities have been identified, the EBRD can work with public institutions to develop roadmaps and provide financial support for the necessary measures. This ensures that the investment instruments required to bring a project to fruition are in place. Such steps are particularly important in the context of transformation-focused private sector initiatives.

The EBRD serves as a driving force by setting conditions related to key sustainability issues such as equality, inclusivity, and the green economy during the implementation of its lending mechanisms. Key performance indicators (KPIs) defined for industry priorities can be incorporated into the financial packages offered by the EBRD.

An Environmental and Social Due Diligence assessment is mandatory for all EBRD support schemes and EBRD-supported projects.

Launched in 2024 with support from the EBRD, the Türkiye Industrial Decarbonisation Investment Platform (TIDIP) represents a significant step toward the country's net-zero goals. As the world's first platform focused on the manufacturing industry, it aims to reduce carbon emissions by 20 million metric tons per year through EUR 5 billion in investment by 2030. Designed to support investors in emission-intensive industries such as cement and chemicals through low-interest loans to drive emission reductions, the Platform serves as an incentive for smaller businesses as well, typically led by large enterprises and companies with a vision for decarbonization.

Within the framework of the program, KPIs are established based on company-specific analysis, and technical consulting support is provided. The Platform, which addresses the green transition alongside the goal of women's empowerment, supports companies working in alignment with the Paris Agreement to achieve their green transition goals. Companies work towards goals established by considering their own size and best practices from similar organizations, in line with their green transition goals. For example, goals such as increasing the proportion of women are considered in the context of company size, sector, and achievements of other organizations, and relevant targets are set accordingly.

Development and Investment Bank of Türkiye

Established in 1975 as the State Industry and Labor Investment Bank, the Development and Investment Bank aims to contribute to Türkiye's development and growth, and to add value to the national economy through sustainability-focused strategic investments. The Bank operates in the areas of development banking, investment banking, and within the scope of the Development Fund of Türkiye. In line with Türkiye's net-zero emissions targets, the Bank supports investments that generate environmental and social impacts, and assists companies in accessing domestic and international funding sources. Regarding the green and digital transition, the Bank supports projects that serve development goals, such as the transition to a low-carbon economy, combating climate change, mindful production and consumption, and eradicating poverty. The Bank emphasizes that it conducts Environmental and Social Impact Assessments (ESIA) for all loan applications, and analyzes the risks associated with companies and projects individually. In this context, it prioritizes identifying and evaluating the environmental and social impacts that may arise during the development and implementation phases of an investment, as well as implementing measures to mitigate negative impacts. Furthermore, as part of its environmental sustainability goals, the Bank provides financial support for investments in energy production from waste heat, wastewater treatment technologies, and modernization projects, thereby contributing to environmental goals such as reducing fossil fuel consumption and greenhouse gas emissions, and increasing recycling rates.

In the field of development banking, the Bank provides financing for strategic and long-term investments in line with sustainable development priorities, supporting production, employment, and exports through projects in the manufacturing, green energy, tourism, and technology sectors. In this context, the Bank offers loans to support investments in the technology sector, and provides support for the investment financing needs of businesses in areas such as circular economy investments, facility construction and modernization, and energy and resource efficiency, as well as projects focused on women's employment and equal opportunity.

Emphasizing **women's employment and equal opportunity** as key elements of social development, the Bank provides investment loans to increase women's participation in the workforce, thereby encouraging greater representation of women in the business world. The Bank aims to provide women with opportunities to work and advance their careers on equal terms with men through these loans, thereby contributing to equality. Within this context, companies are required to make employment commitments to increase women's employment in projects financed with funds from international organizations, and the number and percentage of female employees are monitored throughout the loan's term.

In Türkiye, national banks are key components of the national and international financial system. They contribute to economic growth and provide the industry with significant financial services and opportunities through industrial loans. They also support industrial transformation

by offering special loan programs for **both digitalization and green investments**, as well as support packages aimed at empowering women.

Within the context of the green transition, national banks offer financial instruments to support companies, particularly SMEs, in achieving their transition goals in key areas such as renewable energy, energy efficiency, recycling, and water and waste management, as well as in priority areas like clean transportation. Examples of such loan mechanisms can be found in the instruments developed by many banks, including Halkbank, Akbank, Odeabank, Isbank, and Deniz Bank. Additionally, there are loan programs such as Deniz Bank's Project Support Loans designed to support the growth of businesses focused on energy efficiency and the production and supply of renewable energy technologies, with the goal of promoting green production ecosystems. Another approach supporting green production is related to the formulation of loan criteria. As seen in Isbank's environmentally-responsible business loan campaign, there are examples where having an environmentally-responsible business structure and relevant certifications is set as an application criterion for loan instruments.²⁶

National banks are becoming part of the financing mechanism for the green economy by playing a role in the distribution of international funds. For example, DenizBank is responsible for distributing support for sustainable energy investments in Türkiye under the Green Economy Financing Facility (GEFF), a financing program developed by the European Bank for Reconstruction and Development (EBRD) to provide financing and technical support for green economy projects²⁷. Similarly, through the Akbank-EBRD partnership, SMEs are supported in their digital transition investments under the DTFF (Digital Transformation Finance Facility).

National banks also sometimes offer loan products specifically for commercial digitalization investments. As seen in Isbank's Digital Transformation Loan program, these loans generally focus on financial instruments covering investments in software, hardware, ERP, e-commerce infrastructure, digital automation systems, and cybersecurity.

Twin transition goals, which address both the green and digital transition together, are also finding a place on the loan financing agenda. For example, under a protocol signed with OSBÜK, Isbank offers twin transition loans to SMEs located in OIZs.

While the steps taken by national banks toward women's empowerment are not limited to loans, nearly all of them are focused on a single area: women's entrepreneurship. Furthermore, support for women's entrepreneurship can be diversified into subcategories such as youth, growing exporters, small business owner women, women entrepreneurs engaged in traditional crafts at risk of disappearing, and women's cooperatives. In addition to loan and financing support, initiatives designed to empower women entrepreneurs through information sharing, awareness-raising, skill development, consulting, networking, and mentoring are also gaining prominence.

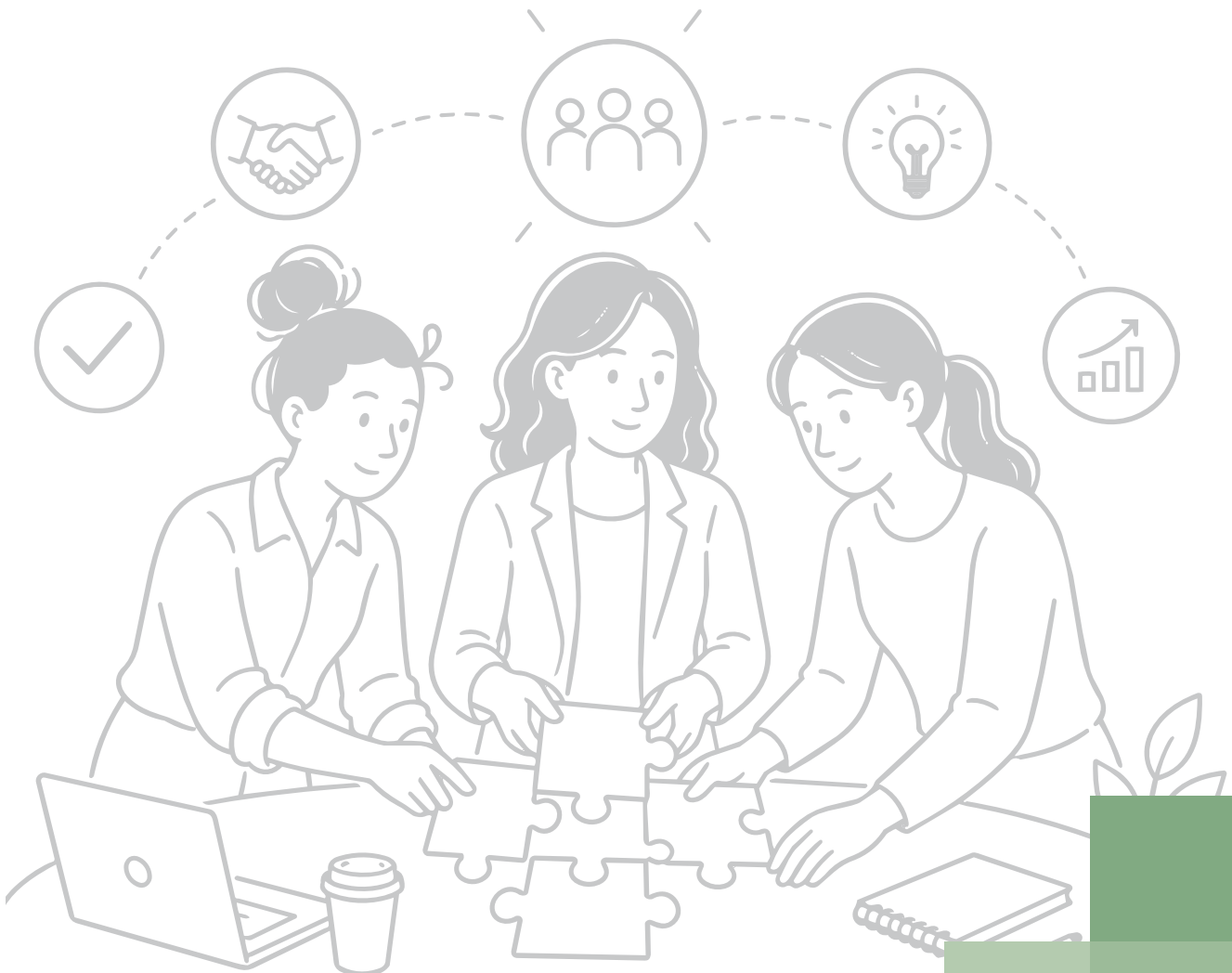
The table below provides examples of some of these initiatives.

Examples of initiatives	Women's empowerment	Environmental and Green Transition support	Digitalization support
Ziraat Bank	» Women Entrepreneurs Support Package » Loans for women farmers, intended to increase the number of women entrepreneurs in the agricultural sector, and to support women's investments and activities in agricultural production	» Environmental Loan Products » Energy Efficiency Investment Loan » Energy Efficiency Working Capital Loan » Renewable Energy Investment Loan » Renewable Energy Working Capital Loan » Wastewater Treatment and Recycling Investment Loan » Wastewater Treatment and Recycling Working Capital Loan » Roof-Top Solar Power Plant, Licensed Solar Power Plant Investment and Working Capital Loans	
Halkbank	» Comprehensive, interest-free loan programs for women entrepreneurs: Women entrepreneurs, growing women exporters, women's cooperatives, zero-interest small business loans, support package for private preschools » The Producing Women Project, launched to support women's entrepreneurship		
Vakıfbank	» Support for women's entrepreneurship		
AKBANK	» Loans for women-owned SMEs » Women-owned SME Package, including financing, training, and mentoring » Entrepreneurial Women Program under the Akbank Transformation Academy » In collaboration with TurkishWIN, the Bin Yaprak Entrepreneurial Mentoring Program, providing mentoring to 100 women entrepreneurs annually	It offers both financing and educational content to support SMEs' green transition processes. (Akbank Transformation Academy)	» In collaboration with the EBRD, it supports SMEs' digital transformation investments » DTFF (Digital Transformation Finance Facility) – Digital Transformation Loan

²⁶ www.isbank.com.tr/kampanyalar/cevreye-duyarli-kredi-kampanyalari?v=ticari

GARANTI BBVA	» In partnership with Boğaziçi University's Lifelong Education Center (BUYEM), the Türkiye Women Entrepreneurs Academy and local training initiatives	» Solar Energy Loan » Sustainability Loan	
ISBANK	» Women Entrepreneurs Support Package	» Financing for renewable energy and energy efficiency projects, solar power plant investments, and "resource efficiency" investments, » Wastewater investment with the Sustainability-Linked Water Loan » Sustainability criteria in loan schemes	» Twin transition loans for SMEs located in OIZs under the protocol signed with OSBÜK
YAPI KREDİ	» Suitable financial instruments to women entrepreneurs/ producers in collaboration with online marketplaces » Guarantee support from IGE under the Women in Export Support Package		
QNB		» Financial Support for Companies' Green Transition » Renewable Energy Production and Use » Energy and Water Efficiency » Reduction of Chemical Use and Mitigation of Environmental Impacts » Circular Economy and Resource-Efficient Production » Waste and Wastewater Management » Packaging, Packing, and Label Use	
Denizbank	» TurWiB – Financing and Advisory Support Program for Women-Owned Businesses, funded by the European Bank for Reconstruction and Development (EBRD) » In collaboration with the Frankfurt School, technical training tailored to specific industries based on needs, and advisory services designed to help women-owned SMEs access expertise, financial and non-financial business development services, and networking opportunities	» Supporting the supply side of energy efficiency and renewable energy technologies » Pursuant to the agreement signed between DenizBank and the European Bank for Reconstruction and Development (EBRD), providing financing for Sustainable Energy and Resource Efficiency investments to be implemented by the public and private sectors under the Türkiye Sustainable Energy Financing Facility (TurSEFF)	

The credit program, implemented twice by Garanti BBVA, establishes a financing support structure in which the interest rate is indexed to the provision of equal opportunities for female and male employees. Thus, unlike the provision of financial resources aimed at supporting women's entrepreneurship, it encourages women's participation in the workforce and promotes creating women-friendly business environments.²⁸ The use and widespread adoption of this approach, particularly in the manufacturing industry and for loan support during the twin transition process through diverse tools at various levels, is among the important roles that financial institutions will play in achieving the goal of women's empowerment.



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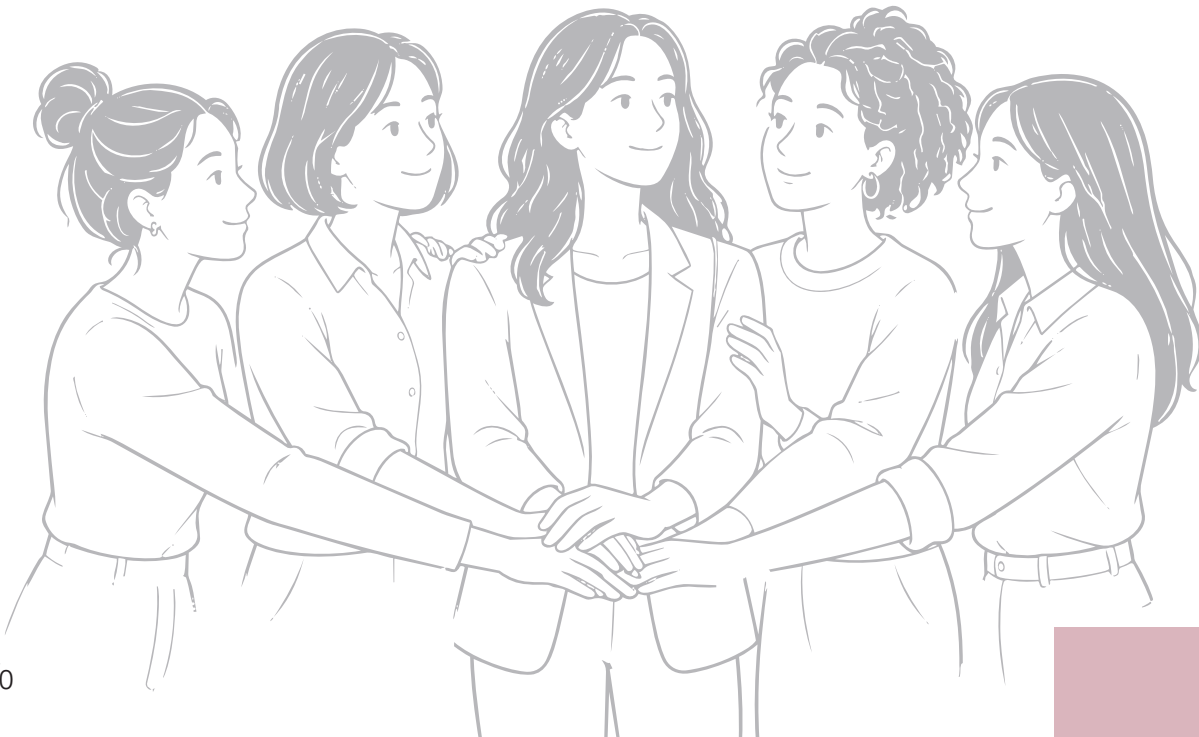
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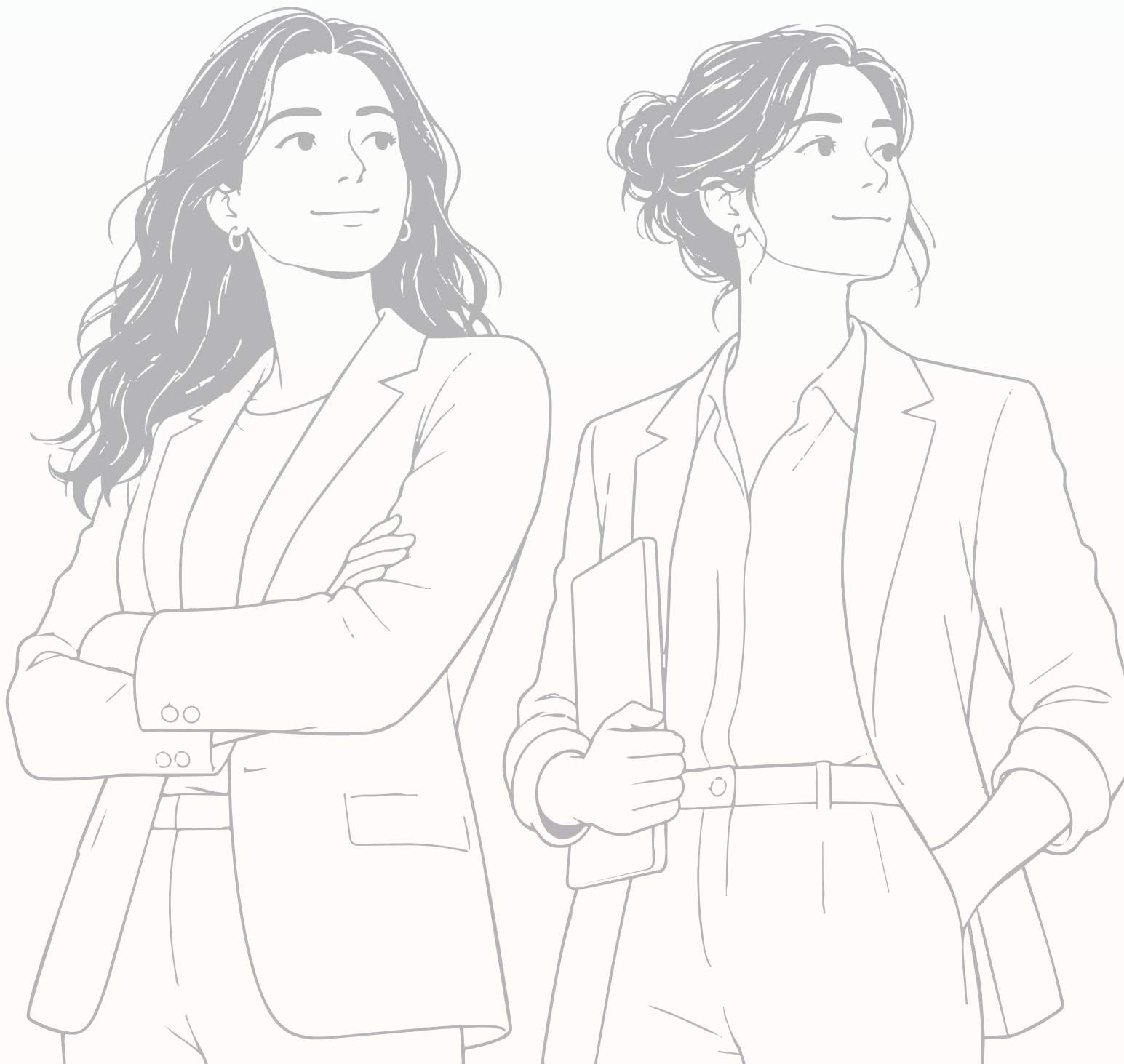
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