

# Energy Transition in the Building Sector: Attracting Women Professionals

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## **Abstract**

The European Union (EU) is currently navigating its energy transition with the ambitious goal of achieving carbon neutrality by 2050, as outlined in the European Green Deal. Additionally, the EU positions itself as a global leader in both gender equality and labor rights. However, the building sector, crucial to achieve energy efficiency and energy demand reduction targets, faces severe labor shortages and is male-dominated. Thus, encouraging greater female participation in this sector could not only alleviate labor and skills shortages necessary to achieve the EU's ambitious climate agenda, but also enhance gender equality and empower women economically. This paper analyzes the situation of women in the sector, the barriers they face while also providing best practices and policy recommendations to empower women to have a meaningful contribution to the success of the EU's energy transition.

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# I. Introduction

## The Role of Women in the Sector

Labor shortages are one of the biggest obstacles standing in the way of achieving the European Union's (EU) climate targets. In 2020, the European Green Deal set an ambitious goal of turning the EU climate neutral by 2050. Mid-term targets are also set: cutting European greenhouse gasses emissions by 55% by 2030 (*Pacte Vert Pour L'Europe*, n.d.). The energy transition depends on the expansion of renewable energies, decarbonisation of the industry and improving energy efficiency, necessitating specifically the recruitment of new laborers in the building sector and the re- and upskilling of existing laborers across the economy.

Increasing the number of women in the building sector is crucial to fill growing gaps in the labor market as reflected in recent statistics. For instance, the IEA suggests that the transformation of the sector will require between 1 and 2.5 million new jobs by 2030 (*Clean Technologies Are Driving Job Growth in the Energy Sector, but Skills Shortages Are an Increasing Concern - News - IEA*, n.d.). Furthermore, from 2020 to 2023, job vacancy rates in energy-related sectors doubled (*Shortage of Labour in the Construction Industry*, n.d.) and in the building sector specifically, labor shortages are nearly three times the level registered a decade ago. The job vacancy rate for the construction sector went up to 3.8% in Q1 2023<sup>1</sup> with differences across EU Member States: 8.8% in Czech Republic, 6.7% in Germany, and only 1.6% in Finland and 0.7% in Spain (Statistics | Eurostat, n.d.). Labor shortages can be explained by demographic trends, the influence of skills shortages and mismatches, the creation of new jobs that demand additional skills, changes in immigration patterns, and low participation of specific population groups.

The energy transition drives rapid technological changes, impacting both low-skilled and high-skilled jobs in sectors like energy supply and manufacturing. Addressing technical skill gaps requires ongoing on-the-job training for sector workers. However, as of 2022, only 14% of energy supply workers and 10% of manufacturing workers participated in training programs, well below the European Pillar of Social Rights Action Plan's goal of 60% participation by 2030 (*The European Pillar of Social Rights Action Plan - Employment, Social Affairs & Inclusion - European Commission*, n.d.). Women's representation in the sector is particularly low, with female apprentices averaging just 1% to 2% (*Shortage of Labour in the Construction Industry*, n.d.)

Historically, the construction sector has been male-dominated. Due to the increasing presence of young women in higher education programs, professions are becoming increasingly gender-diversified, however, to varying degrees between sectors and EU Member States. Approximately 9% of

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<sup>1</sup> In the European Union with 27 countries from 2020.

construction workers in Europe are women. Nevertheless, the sector remains gender-segregated with women especially present in administrative and office activities. The number of women engaged in active construction site work is even lower, here they represent less than 2% of workers (*About - Females in Construction*, 2022). Women constitute one of the demographic groups with lower participation in labor markets among lower-educated people, people with migrant backgrounds, older and young people, and people with disabilities. Thus, it is key to fully make use of the potential of women fostering transitions across sectors towards those in high demand such as the building sector .

The EU is aware of this issue and aims to close gender gaps in the labor market. The EU's Gender Equality Strategy 2020-2025 aims to challenge gender stereotypes, achieve equal participation across different sectors of the economy and address the gender pay gap. Furthermore, The Council Decision (EU) 2018/1215 of 15 July 2018, provides guidelines for employment policies of Member States. More precisely, Guideline 6 states that "Member States should ensure gender equality and increase labor market participation of women, including through ensuring equal opportunities and career progression and eliminating barriers to participation" (*Decision 2018/1215 - Guidelines for the Employment Policies of the Member States - EU Monitor*, n.d.).

Additionally, the European Pillar of Social Rights outlines several principles to foster equitable, inclusive and effective labor markets and social welfare systems. Among these principles are Principle 1, which emphasizes the right to accessible and comprehensive education, training, and lifelong learning, and Principle 4, which underscores the importance of actively assisting individuals in finding employment. The Work-life Balance Initiative also addresses the work-life balance challenges faced by working parents (*Work-life Balance*, n.d.). This is particularly relevant for women, as they typically carry out most domestic labor and caring responsibilities, including childcare. Achieving gender equality in labor markets and filling labor shortages in the building sector to meet carbon neutrality by 2050 are, *de facto*, interdependent goals.

The EU has partly attempted to align the two dimensions of gender equality and skill shortages. In September 2022, Ursula von der Leyen, the President of the European Commission between 2019-2024, announced that 2023 would be the Year of Skills and launched the Pact for Skills in Construction Initiative. In cooperation with social partners working with small and medium enterprises (SMEs)<sup>2</sup>, it sets out the target of upskilling and reskilling at least 25% of the overall construction industry workforce in the next 5 years (2022-2027). This is about approximately 3 million workers (*Construction*, n.d.). The Pact for Skills also features a dimension of attracting young people, especially young women, in the sector. Moreover, in 2020, the European Commission proposes 11 Thematic Objectives to achieve

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<sup>2</sup>the European Builders Confederation (EBC), the European Construction Industry Federation (FIEC) and the European Federation of Building and Woodworkers (EFBWW)

“smart growth”: objective 8 “Promotion of Employment” raises the importance to tackle women participation in the labor force and gender discrimination while Objective 9 deals with “Social Inclusion and Fight against all forms of Discrimination”. This includes the fight against gender stereotypes at work and in the educational system to increase female employment rate and reduce wage gap as well as the vertical and horizontal glass ceiling (Begg et al., 2010). Hence, creating gender equality in the building sector is in line with EU legislation and should be a clear policy goal of all Member States to improve smart economic growth and achieve equality and climate targets.

In line with the Green Deal, the European Commission adopted several legislatures emphasizing energy savings and efficiency through the renovation of buildings. The 2020 Renovation Wave Strategy sets out to double the annual energy renovation rate by 2030 (*Renovation Wave*, n.d.). Here, the focus lies on addressing energy poverty, public buildings renovation and decarbonization of heating and cooling systems to cut emissions. This generates green employment within the construction, building, and energy sectors, even more since the revision of the Energy Efficiency Directive in 2023 and the elevation of EU’s energy efficiency objective: EU’s energy consumption should not surpass 992.5 Mtoe<sup>3</sup> for primary energy and 763 Mtoe for final energy (*Energy Efficiency Directive*, n.d.). Therefore, the cursor is pointing towards energy savings through building renovation. In fact, the European Commission has adopted a specific legislature for the purpose: the Energy Performance of Building Directive, currently under revision (*Energy Efficiency Directive*, n.d.). The aim is to modernize buildings and integrated systems (cooling, heating, ventilation, electric vehicle charging, and renewable energy). Lowest energy efficiency buildings are targeted in the context of progressive introduction of new zero-emission buildings standards.

The EU emphasizes the role of the building sector to accelerate the energy transition. In fact, buildings are responsible for 40% of the EU's energy consumption, which represents 36% of EU’s greenhouse gasses emissions and making it the largest energy consumer. Within the EU, 85% of existing buildings were built before the 2000s, of which 75% present poor energy performances. The renovation of existing buildings would decrease EU’s energy consumption by 5 to 6% (and thus CO<sub>2</sub> emissions to fall by 5%). Thus, the building sector has a large potential for energy savings (*In Focus: Energy Efficiency in Buildings*, 2020). To achieve net-zero emissions by 2050, the European energy transition focuses on the renovation of these buildings rather than on the construction of new ones. Buildings’ renovation involve less purely structural work, but more technical skills. Thus, there is a heightened demand for construction workers proficient in sustainable building practices. Addressing gender disparities in construction is therefore imperative to harness the full potential of the workforce and effectively tackle the challenges posed by the need for renovation and energy efficiency targets as well as the broader energy transition goals in Europe. **Hence, the research question addressed in this**

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<sup>3</sup> millions of tons of oil equivalent

**report - how to eliminate barriers encountered by women in the construction field to attract their participation in the sector - is of great importance.**

## **Scope of the Paper**

While they are synonymous in their dictionary definitions, “construction” and “building” hold different meanings in the professional space. Throughout this paper, these terms will be used in line with the connotations they have in this space. “Construction” refers to any project in the field whereas “building” refers specifically to the construction of a building. The construction sector can be divided into three main types of structures: buildings (residential and non-residential), infrastructures (or “heavy civil”, “heavy engineering” including large public works, roads, bridges, highways, etc.), and industrial structures (energy installations). Thus, the building sector is a crucial component of the construction industry and encompasses the activities related to design, construction, maintenance, and renovations of residential, commercial, and industrial buildings. Therefore, it involves a wide range of professions and trades including architects, engineers, construction workers, plumbers, electricians, and other stakeholders responsible for the development and management of built environments.

The European energy transition focuses heavily on renovation of buildings and the integrated energy systems in order to make existing buildings energy efficient rather than demolishing and building new structures. Therefore, this paper focuses on the women labor force in the building sector and more specifically those performing jobs necessary for renovation work. This concerns a wide range of professions, including, but not limited to: carpenter, mason, tiler, cabinetmaker, roofer, roof technician, plumber, heating engineer, painter, plasterer, piper, and more (see Annex 1). This paper looks at three overarching categories of women: (1) women who already work in the sector, (2) young women between 16 and 20 years of age who are considering career paths and higher education programs, and (3) women already pursuing a career in the building sector, for example, those enrolled in construction training programs to carry out these jobs.

## **Methodology**

To address the research question, “How can barriers be overcome to attract more women to energy transition jobs within the building sector?”, this paper will review relevant literature as well as conduct qualitative analysis with the results from surveys that contained five questions (see Annex 3) and interviews (see Annex 4) with various stakeholders. These include female professionals in the building sector, vocational education and training institutions, companies active in the building sector and professional associations from different EU countries. Furthermore, the research includes an



analysis (see Annex 2) of the mentioned stakeholders' strategies and outreach programmes for increasing female participation in the building sector.

## **II. Barriers Women Face in the Building Sector**

Women encounter numerous barriers along their career paths in the building sector. The subsequent section of the report delves into these obstacles across the trajectory of women in the industry: from initial career selection, to entry into the sector, to receiving education, and finally to sustained participation in the labor force and advancement within the building sector.

### **1. Barriers to Entering Education in the Building Sector**

#### **a. Stereotypes from a Young Age**

Stereotypes, particularly those pertaining to the perception that the building sector and related professions are fields perceived as masculine, deter girls and women from even contemplating a career in the field. These beliefs develop through socialization and the gender stereotypes that girls and boys are confronted with from an early age (BPB, 2023). Both parents and educational professionals often hold subconscious gender-stereotypical beliefs, meaning certain assumptions are made about which characteristics, competencies, or behaviors are appropriate for each gender (BPB,2023). Science, Technology, Engineering and Mathematics (STEM) fields are often perceived as masculine due to historical and cultural factors. Throughout history, these fields have been predominantly male-dominated, with men traditionally occupying positions of authority and expertise in scientific and technological fields. Additionally, societal stereotypes and media portrayals often depict individuals in STEM professions as male, contributing to the perception that these fields are more suited to men. This historical and cultural bias has led to the association of STEM with masculinity, making it more challenging for women and girls to envision themselves pursuing careers in these areas. As a result of such gender-stereotypical beliefs, both parents and educational professionals tend to assess boys in STEM as performing better than girls (BPB,2023). This perpetuates the cycle of gender bias, further reinforced by societal perceptions of STEM as inherently masculine domains. Due to these gender-stereotypical beliefs, boys and girls are also differently encouraged in the areas of technology, mathematics, and natural sciences from an early age (BPB, 2023). Thus, when it comes to choosing a career path, the building sector is not a consideration for many girls.

Stereotypes and beliefs held by families can also prevent girls and women from accessing education and training programs related to the sector. Even if a girl or young woman is interested in joining the sector, parents, or other family members might discourage them from this career choice. Stereotypes could include the assumption that women are not physically fit to perform the demanding

labor or that the typical laborers in the building sector is male because it reinforces the stereotype that women do not belong in that environment. Even when entering or switching to a career in the building sector, women's choices might still be questioned by people in their lives. One interviewed female professional in the sector expressed that her parents did not understand her career choice when choosing a career as an architect and civil engineer on construction sites. While her friends admired her courage, they were nonetheless surprised by her choice. She recalled receiving questions such as "Why do you want to work on construction sites when you have a civil engineering and an architecture degree?". Working in building trades is still perceived as a last resort, commonly associated with young boys who may not have excelled academically, thus becoming the default option. Consequently, young women may fear the judgment of their parents and peers if they consider pursuing careers in these fields.

### **b. Perception of the Sector**

Despite its vital role in the energy efficiency transition and the economy (Rameezdeen n.d.), the building sector continues to grapple with an image problem that affects its attractiveness to potential employees, particularly women (see Annex 3.A.). The construction sector is often associated with perceptions of high expenses, subpar quality, disorganized work environments, and a history of poor health and safety standards (Ball, 1988 cited in Rameezdeen n.d.). It is commonly viewed as tedious, dirty, lacking technical expertise, and devoid of professionalism, while also being considered hazardous, subject to economic cycles, and characterized by challenging working conditions (Reid, 1995 cited in Rameezdeen n.d.). Notably, the role of these perceptions in career decisions is pivotal, emphasizing that altering gender dynamics is essential for effecting change (Gale 1994 cited in Rameezdeen n.d.). These perceptions are perpetuated by media representations, cultural narratives, and societal attitudes that reinforce traditional gender roles and devalue the contributions of women in construction.

The digital revolution might help to alleviate some of these prejudices. Several reports as well as one interviewee attested the potential of technological advances to make construction sites safer and level the playing field for men and women. This progress also helps to break stereotypes. While men tend to be socialized not to ask for a helping hand but to accomplish tough tasks on their own, digital products can alleviate this pressure. One of the interviewees from Constructys confirmed that many construction workers injure themselves but do not report this injury to their boss nor to the occupational health physician because of the gendered-socialization to be perceived as "manly" or "masculine" and the pressure to push through the project. This also leads to worsening injuries and diseases that were previously treatable but eventually make workers unfit to work when consistently left untreated. The interviewee shared that their company equipped their teams with drones to avoid going on rooftops during the situation analysis phase of a renovation project, which previously was dangerous if the

rooftops are at risk of collapse. Thus, the increased use of technology can reduce the pressure of workers to risk their physical health and safety for the sake of a project and could help integrate more women into the sector as the perceived risk of danger decreases. However, such technology is costly and, at the moment, can mostly only be afforded by large construction companies and rarely by SMEs which carry out most of the work in the sector.

### **c. Information on Education and Career Pathways in the Building Sector**

A further barrier can lie in the unavailability of information on career opportunities in the building industry. This information barrier often stems from the schools, companies, vocational and educational institutions not communicating the opportunities in the building sector effectively to girls and women. While some major construction groups and VET centers have developed strategies to reach out to women, this is still not implemented consistently across the sector and across the EU's member states. Furthermore, existing communication remains insufficient considering that female participation in the sector rose by a mere 2% from 2010 to 2022 (EIB, see Annex 4.B.). In particular, if communication strategies and recruitment efforts of relevant institutions or companies predominantly target men or fail to clearly convey that a career in the building sector is equally open to girls and women, prospective female entrants may struggle to recognize and envision themselves pursuing this career path. Moreover, as mentioned by the interviewee from Constructys, a French construction skill operator (see Annex 4.E.), there is a lack of information from guidance counselors and teachers at school. They do not consistently present building careers as a likely pathway for students, neither for young women nor men. As mentioned by our interviewee from CCCA-BTP, young men choose construction works because they already have a family member working in the sector since SMEs are often run by families (Martini, 2016).

While there has been a shift towards including more women in communication campaigns, gaps remain. The analysis of over 50 different providers of vocational education, associations as well as companies in the building sector showed that there are initiatives out there to portray women as part of the sector in for instance recruitment images (Annex 2). Nevertheless, huge room for improvement remains in the gender-neutral language or in offers and outreach programs particularly targeted towards girls. For instance, in Germany and France, many VET centers and companies still use the masculine noun for describing the professions in the building sector, perpetuating the stereotype that only men can do such jobs. Furthermore, website sections or information talking about the role of women in specific jobs or testimonials are still scarce. The analysis of associations in the sector showed that these lacked particularly behind in promoting gender equality in the sector despite many declaring their commitment to “promote the integration of young people into the sector” (CPNEF) or to “attract new workers to the

sector in order to boost the competitiveness of companies” (Fundación Laboral de la Construcción). The analysis also showed that negative practices like only providing images of men or using language that describes traditionally masculine attributes such as “strong”, are still commonly used across VET centers, associations and companies. This reproduction of stereotypes in communication materials could hinder the self-identification of women with a potential job in the building sector. Thus, information availability and content matters to attract women into the sector and needs to be improved to promote gender equality. This was also confirmed by one of the interviewees: While there are several figures of successful women in the sector they lack visibility. As a result, many young women are steered away from pursuing education and training in building sector-related disciplines, perpetuating the gender disparity within the sector.

## **2. Barriers to Education in the Building Sector**

### **a. Cost of Education**

In many EU Member States, vocational education is offered free of charge, but there are still expenses that students might encounter. Even though some countries provide tuition-free vocational education, students may still need to cover costs related to materials, equipment, transportation or other program fees (CEDEFOP). Since the Covid-19 pandemic, more and more women are pursuing a professional reconversion from intellectual jobs to manual ones. One of the interviewees from *Les Compagnons du Tour de France* perceived that it is the case of an increasing share of adult women enrolled in their programs. According to him, women want to achieve more liberty, independence, and creativity in their job, they want to feel they can create concrete things by themselves, particularly women aged between 25 and 35 years old. If these women also have child caring responsibilities, they will need to have a sufficient and stable remuneration as well as a more flexible educational program and work schedule to participate in the building sector if they do not have a supportive partner. Considering that in many EU countries, apprenticeship remuneration falls below the minimum wage, mothers or carers could face difficulties in following such programs (CEDEFOP).

### **b. Discriminatory Experiences in Education**

Women might also experience discrimination or unpleasant experiences during their education. This became evident in the Women Can Build initiative that targeted the development of competence in gender equality in all stakeholders, from teachers and VET schools and centers to construction companies. The key elements identified by this project to achieve success in increasing the inclusion of women in the construction sector are education, awareness-raising and awareness of the actors involved

(companies). According to the surveys the Initiative conducted, 80% of the trainers do not have specific strategies to integrate female apprentices in their construction programs. In fact, seven out of ten trainers believe they do not need to adopt appropriate tools to deal with inappropriate behavior of their male apprentices towards female ones. The respondents' statements highlight a strong need of adopting specific training of trainers to gender mainstream practices and their sensibilization to women discrimination in the sector. Indeed, the majority of the trainers in VET construction sectors do not seem to be aware of the situation. Nevertheless, the 30% remaining stated wanting to have accompanying measures to get the tools to better deal with female apprentices through specific training, the provision of good practices and experience sharing in terms of gender equality.

### **3. Barriers to Entering the Labor Force and Building a Career in the Building Sector**

#### **a. Working Conditions**

Overall, stereotypes surrounding gender roles and capabilities often persist when women are part of the building sector, leading to biases in hiring, promotion, and workplace interactions. Women in the building sector frequently encounter gender-based discrimination, harassment, and exclusion from decision-making processes. For instance, a study involving 63 tradeswomen revealed that the presence of women in predominantly male-dominated occupations is perceived as a dual threat by men. Firstly, it challenges perceptions of these professions as inherently masculine. Secondly, it disrupts established gender norms that perpetuate the sexual subordination of women. To counter these threats, male colleagues often employ strategies such as labeling tradeswomen as lesbians, thereby questioning their femininity, and sexualizing both heterosexual and homosexual tradeswomen as a means of maintaining traditional gender hierarchies (Denissen, A. M., & Saguy, A. C 2013).

Moreover, internalizing such stereotypes can lead women in the sector to think that they are not capable of the job or that they do not fit in. One interviewed female professional mentioned that she always feels like she needs to prove to male subcontractors with whom she works on site that she is capable of doing the job with them. She stated that she feels their regard for her as: "who is this girl who doesn't know anything about the work?" (Annex 4.A.). However, once she has demonstrated her capabilities and "has proven herself", their regards change and she expressed that she is fully accepted by her colleagues. Another interviewee also related some testimonies from women in the construction/renovation sites. According to them, it can be very difficult for the first women joining construction teams precisely because they need to prove themselves more than new male workers need to. This period can be psychologically difficult to handle for women who might quit because of this pressurizing work atmosphere (Annex 4.E.).

In addition to the perpetuation of traditional gender roles and biases in the construction industry, women face additional challenges related to physical demands and family responsibilities. The physically demanding nature of construction work can be particularly daunting for women (Annex 4.B.). For instance, one interviewee expressed that for her it seemed more difficult for women than for men to imagine working in a physically demanding job for an entire professional life, especially after having children or menopause, making women leave the sector after a while. On the other hand, this idea that women cannot pursue construction works their entire life should no longer be relevant.

#### **b. Gender Segregation from Spatial Distance**

Due to the dispersed and temporary nature of building renovation works, employees in the building industry are often required to move between various project sites distant from their homes under an irregular schedule. This workplace irregularity has created additional barriers especially for women employees, namely spatial segregation. Spatial segregation refers to the physical separation of women from workplace amenities, support systems, and opportunities due to the dispersed nature of project sites, often located far from their homes.

Commuting to these remote locations can be arduous, with inadequate transportation options often exacerbating the difficulty of accessing sites. Once on-site, women encounter further obstacles due to the lack of gender-specific facilities. The absence of amenities such as toilets, changing rooms, or rest areas tailored to women's needs can impact their health, hygiene, and overall comfort during long work hours. Indeed, the interviewees from CCCA-BTP and Constructys stated that some construction enterprises did not have specific toilets nor locker rooms for women. Additionally, the social isolation experienced on remote project sites can hinder professional development opportunities, as women may have limited access to networking or mentorship programs. This isolation can also affect their work-life balance, as the extended periods spent away from home strain personal relationships and make attending to family obligations more challenging (see Annex 4.A.).

The absence of nearby support systems compounds these challenges, leaving women to navigate work and personal responsibilities with limited assistance. Childcare facilities and family support networks are often lacking, forcing women to make difficult choices between their careers and caregiving duties if there is no burden sharing with their partner. Furthermore, cultural and societal norms may discourage women from pursuing careers in the building industry or working in remote locations, perpetuating gender disparities within the sector.

Work-life balance is more and more important not only for women who have most of the time childcare responsibilities. Some construction enterprises are facing difficulties to hire workers because men are more and more concerned by this spatial parameter. There are more unwilling to go far from

home for multiple days or weeks. As mentioned by the regional director of Constructys Bretagne, men are more and more reluctant to be far from their home and family, they want to have extra activities after work. Some construction enterprises Constructys accompany have changed their strategy to respond to this problematic: henceforth, they accept only construction/renovation projects in a certain perimeter.

### c. Low Wages in the Building Sector

Low wages within the building sector negatively affects its attractiveness. One phase of the Erasmus+ Women Can Build Initiative included a survey targeting VET centers' staff and students to identify their expectations and beliefs regarding the building sector. According to survey respondents, young people are discouraged to work in the sector especially because of low wages and the lack of job stability and possibility to advance their career.

Moreover, building works are not very well paid for the amount of hours and the physical conditions demanded. In France in 2022, skilled workers in the building industry will earn between 1,589.47 EUR and 1,713.1 EUR per month for 44 hours of work per week on average. In Portugal in 2019, the average salary of a skilled construction worker was 656 EUR per month for 40 hours of work when the minimum salary was 600 EUR per month. In Germany in 2023, a construction worker with experience will be paid between 14.9 and 24.91 EUR per hour depending on the region of the country 38 to 41 hours of work per week (*Construction Workers - Wages and Rights in Europe*, n.d.).

## III. Actions Taken

Across the EU's Member States, different approaches and campaigns have been developed to attract women to the building sector. The following section will present approaches, actions and best practices to improve gender equality in the building sector taken by European VET centers, enterprises and associations.

### 1. Communication Campaigns and Outreach Programmes to Recruit Women

A major part in recruiting women into the building sector is the outreach programmes and communication campaigns of vocational education institutions and private enterprises. Different types of programmes are Open Days at companies or schools, offering Girls' Day Initiative, collaborating with unemployment services, as well as having outreach events such as talks or meetings with professionals in the field. Examples of different outreach programmes are for instance laid out in the Women can Build Initiative by the EU. As part of the initiative, different vocational education



institutions offered one week course trying out trades in the construction sector for female secondary school students, presenting different professions in construction to young women, introducing unemployed women to jobs in the field of energy efficiency through laboratory practice (Women Can Build). This proved effective in changing perceptions of the sector and making women consider it as a viable career choice. Another project “Exception'ELLE” from Les Compagnons du Tour de France has attracted more than 500 women from all ages and between 40 and 50 of them have participated in an immersive workshop. From one day to one week, women discovered a construction work of their choice in female teams. Moreover, communication campaigns featuring female testimonials in the building sector is another common approach taken by VET institutions or associations. These feature women talking about their work and life in the building sector or simply feature women on images. Such campaigns can serve as inspirations for other women (e.g. Fundación Laboral de la Construcción).

For some years now, large European construction groups and VET centers have adapted their communication campaigns to attract more women in their enterprises and programs. Indeed, large construction companies, such as Engie Construction, Eiffage Construction, and Vinci Construction among others, have integrated the inclusion of women for several years now and it seems to have worked. More and more women occupy jobs of responsibilities : architects, engineers, project managers, building inspectors. 3 out of the 10 largest European construction companies have launched internal and/or advocacy campaigns to promote women participation in the construction industry. For instance, the Dutch company BAM participated in “The People Like Me in Construction” program for girls in the critical age for career decisions to explore construction roles and provide tips for teachers and STEM ambassadors on how to help girls explore the industry (*Koninklijke BAM Groep / Royal BAM Group*, 2017).

In terms of recruitment, gender-neutral and gender-inclusive language and wordings have been adopted by some large companies and SMEs in EU countries (see Annex 2). The analysis of building-related job postings on company websites and recruitment platforms, showed that some companies have followed the EU Gender Equality Directive by ensuring their employment advertisements to be gender-neutral (EuroDev., 2023). Specifically, in countries that use gendered nouns, it is observed that the job/position titles are complemented by supplementary indications that are gender-inclusive. For example, for technical positions such as field technician, carpenter, plumber, and welder, parentheses (M/F) are included alongside the job title, indicating the position caters toward both female and male applicants.

## **2. Improvement of the Attractiveness of Construction Training Programs and Education**



To enhance the appeal of construction training programs and education, innovative approaches have emerged across Europe, catering to the diverse needs of professionals seeking to advance their skills. For instance, some universities across Europe have implemented flexible and short-term courses tailored to the needs of working professionals, including courses tailored towards women who are seeking to upskill or re-skill in construction-related disciplines. These courses often incorporate hands-on training, practical skills development, and industry-relevant certifications, making them particularly attractive to individuals looking to transition into roles demanded by the energy transition and the growing need for laborers skilled in energy efficiency renovations. *Les Compagnons du Tour de France*, as well as other European VET centers, propose modular training courses from 1 day to 2,000 hours of training in all their formations (see Annex 4.C.). Overall, these innovative initiatives, alongside the dynamic evolution of construction training and education programs across Europe, underscore a concerted effort to meet the demands of a rapidly transforming industry while fostering inclusivity and diversity within its workforce.

### **3. Increase Gender Sensibility in Educational Material**

In 2013, the European Council underscored the importance of gender training in mitigating gender disparities, as outlined in their conclusions on the effectiveness of institutional mechanisms for the advancement of women and gender equality. Adopted in Brussels in December 2013, these conclusions urged Member States to develop gender mainstreaming tools and methods across all sectors and levels. The Women Can Build, an Erasmus+ project spanning from 2017 to 2020, aimed to catalyze a paradigm shift within the sector by fostering an environment conducive to attracting women (Women Can Build n.d.). As part of the Women Can Build project, efforts were made to promote equality in teaching practices. This involved the creation of online modules, guidance materials, and resources, as well as staff orientation sessions, knowledge-sharing networks, and training events. These resources were specifically designed to assist VET teachers in challenging the entrenched inequalities within the construction sector. Another EU initiative is the Build Up Skills initiative, originally launched under the Intelligent Energy Europe (IEE) program and now overseen by CINEA, seeks to bolster the ranks of building professionals across Europe (European Commission n.d.). Through a portfolio of 90 projects, including tailored national endeavors, this initiative aims to address skills shortages and meet the evolving demands of Member States' construction sectors. Through these initiatives, educators could learn strategies to avoid perpetuating gender stereotypes and biases, earning recognition as "Gender Equality Trainers." Additionally, *Les Compagnons du Tour de France* have developed different tools to sensitize trainers to sexism and gender discrimination due to virtual reality and films showing specific situations illustrating injustices towards women (see Annex 4.C.). These sessions are followed by discussions, a performative way to offer a welcoming and safe environment for studying.

#### **4. Actions Taken by Governments**

Actions taken by governments vary significantly between Member States. The following outline some of the best practices taken by Member States to increase the number of women working in the building sector. For instance, to increase the attractiveness of VET centers, the Swedish Government has taken several initiatives (Government Offices of Sweden 2024). With social partners, they increased their investments in national and international competitions such as World Skills and Euroskills to bring construction works to light. They also included additional courses leading to specific eligibility for university studies to reduce the risk of insecure young people opting out of VET in favor of those preparing the university responding to young people's concerns. Moreover, Sweden also has gender equal parental leave policies that help address the barrier that is childcare responsibilities (Government Offices of Sweden 2024). Another example would be Germany's firmly established dual education system that combines vocational training with practical work experiences (Federal Ministry of Education and Research n.d.). This proactive strategy addresses numerous barriers faced by women, including limited access to education and training opportunities, early exposure to the sector and high costs of education as a salary is made throughout for the practical work that is carried out. Additionally, France has implemented a range of gender-responsive market policies that improve work-life balance (European Parliament 2015). This includes flexible work arrangements and making childcare (crèche) publically available and subsidized extensively. Member States, such as Slovakia (for Women in Science 2021), have also been seen giving grants to empower young women and girls to choose STEM as a career. The Equality Act in Finland is another example of a best practice that obliges educational institutions to have equal opportunities for education and training (Finnish Institute for Health and Welfare 2023). In conclusion, the efforts undertaken by various Member States to increase the participation of women in the building sector exemplify proactive strategies aimed at overcoming multifaceted barriers. By implementing targeted measures and fostering a supportive environment, these measures pave the way for greater gender diversity and inclusivity within the building sector, ultimately contributing to its sustainability and resilience in the face of evolving societal needs.

#### **5. Actions Taken by the Building Industry**

Private companies from major firms to SMEs play an important role in attracting more women into the building sector. So far, some of them have taken different steps to increase gender equality in their workforce.

##### **a. Major Firms that Offer Training Programs**

4 out of the 10 biggest construction companies in the EU have offered female only vocational training programs or traineeships. For example, Skanska has launched a carpenter apprenticeship program for women (Mettälä, 2019). The program provides paid vocational training for three years, leading to professional certification as a carpenter and then regular employment with the company.

**b. Major Firms Offering Flexible Working Conditions**

Companies have taken various steps to narrow the gender gap in the building sector, ranging from employment quotas to flexible work arrangements. 4 out of the 10 companies have mentioned flexible working arrangements in their strategies. Specifically, Skanska pledges to promote flexible working and work-life balance in the workplace, while acknowledging that achieving flexible working is a challenge to the firm and the entire construction industry, as the work is centered on projects located on various individual sites (Mettälä, 2019).

**c. Major Firms Providing Better Workplace Conditions for Women**

Among other measures taken by the companies, BAM has taken actions to address workplace discrimination by making the working environment more inclusive. The company has rolled out a range of work clothing specifically designed for women, following trials on a number of its sites (*Koninklijke BAM Groep / Royal BAM Group*, 2017). In addition, after carrying out research into female site welfare facilities, BAM also started to provide plastic free sanitary products to help provide better workplace environments for women in construction (*Koninklijke BAM Groep / Royal BAM Group*, 2022).

## **IV. Policy Recommendations**

To improve the participation of women in trades in the building sector, the recommendations listed below include recommendations for VET centers, private companies, associations as well as governments and European institutions and agencies such as the CINEA and the CEDEFOP.

**1. Policy Recommendations for Large Construction Companies**

**a. Enhance Outreach Programs and Recruitment**

To engage young girls in building sector careers, targeted outreach programs are crucial. This entails partnerships with schools and VET centers to organize workshops, site visits, and career fairs

showcasing diverse opportunities for women. Collaborating with female role models and industry ambassadors can inspire girls, while mentorship offers guidance in navigating construction careers. Job offers should use gender-neutral language and highlight women's involvement in the sector through informational campaigns, videos, and website sections breaking stereotypes. This applies particularly to large construction groups with the necessary capacities to implement such programs.

**b. Improve Working Conditions and Work-life Balance**

This should go from implementing adequate facilities and equipment designed to meet women's needs to the provision of cleans and safe restroom facilities, providing personal protective equipment that fits female bodies. Using their leverage of scale, large construction companies should collaborate with their providers to develop and roll out female-specific personal protective equipment which could further become available in the wholesale and retail market. Moreover, private companies can provide more flexible working hours and also improve their support with childcare provision or financial aid.

**c. Support SMEs in Gender Equality Efforts**

Large construction companies should extend their commitment to gender inclusion throughout the entire workforce chain and in particular to subcontracted SMEs. Since the SMEs they subcontract are more constrained financially and technically, large firms should initiate change among SMEs they work with to attract more women in such occupations. A first step is to sensitize SMEs' chiefs to gender discrimination in recruitment processes and in their perception of women capabilities in construction sites.

**2. Policy Recommendations for SMEs**

**a. Enhance Outreach Programs and Recruitment**

While recognising the constraints faced by SMEs in comparison to large construction firms, SMEs still need to improve their outreach programs and recruitment to appeal to more women. Easy steps such as using gender-neutral language in recruitment processes, or using techniques such as not requesting gender information or images to avoid discriminatory practices are a great first step. Collaborating with local VET centers or schools could also improve the visibility of the company to potential female employers. Aspects such as performance indicators on ESG could further improve the commitment to climate targets and gender equality.

**b. Improve Working Conditions and Creation of a Female Friendly Workplace**

Moreover, SMEs can provide more flexible working hours and also improve their support with childcare. As mentioned by one interviewee from Constructys, more and more SMEs changed their strategy and operate renovation projects in close proximity to ensure workers can go back home at the end of the day. This change could be spread around all SMEs to ensure better work-life balance.

**c. Connect with other SMEs or Large Construction Companies to Exchange Information**

Connecting with other SMEs through professional associations or large construction companies could help SMEs to pool their resources and experience in reaching out to potential female employees e.g. through joint information material and sessions or outreach programs such as Girls Days. In associations, SMEs could also share their struggles related to skill shortages or digitalisation needs to exchange ideas and solutions.

**3. Policy Recommendations for VET Centers**

**a. Reform VET Centers Programs**

The question of the physical longevity in building trade works and the limited possibility of professional reconversion has been discussed earlier in this paper. Therefore, VET centers and universities should put in place dual programs with a manual component and an “intellectual one” as dual licenses proposed in many European universities and schools. This way, it would reassure young women as well as men in pursuing such educational programs and professional pathways. When young people aged 18 need to design their academic career, most of the time, the possibility of following a construction program does not enter the field of possibilities. Providing such dual training programs would lead to the development of more collaboration with other education paths and thus increase the visibility of construction VET centers. These programs should specifically target female participants and break the stereotypes of men dominating STEM fields.

As described earlier, the shift from solely physical work towards jobs requiring more technical and digital skills necessitates VET centers to emphasize this kind of skills and thus more theoretical learning. Dual programs (in-person construction training and digital courses) have the potential to foster

gender equality by offering inclusive learning environments and tailored opportunities for both male and female students. By incorporating digital skills training into these programs, they not only equip learners with essential competencies for the building sector workforce but also break down traditional gender stereotypes associated with certain fields and allow labor mobility.

**b. Increase flexibility in VET Training**

In line with the goal of the EU to have 60% of all adults participating in training every year by 2030 VET centers should scale the opportunity for flexible learning such as short-term courses for green skills and other skills necessary for the energy transition in the building sector (European Commission Skills and Equality). As one interviewee from the EIB expressed, currently the willingness and opportunity to participate in lifelong learning or upskilling courses is limited across the EU. Hence, VET centers should step up to play a crucial role in this endeavor and focus on providing such opportunities. Through these programs they could also target women and encourage them to participate in reskilling programs that qualifies them to enter the building sector or to play a more prominent role in it. One could think about the modular courses from one day to two thousand hours provided by *Les Compagnons du Tour de France* which makes it easier for workers to attend such formations.

**c. Increase Awareness in a More Efficient Way**

To increase awareness and attract more girls to vocational education centers, it's crucial to engage them in a more targeted and effective manner. Rather than simply raising awareness about the building sector in general, efforts should focus on highlighting specific trades that are both accessible and integral to the energy transition. This includes professions such as insulation specialists, electricians, HVAC technicians, and renewable energy technicians.

One effective approach is to collaborate closely with schools to reach young girls at an early age. By partnering with educational institutions, vocational education centers can organize interactive sessions and workshops that introduce girls to hands-on STEM activities related to these trades. It's essential to capture their interest early on to prevent them from losing interest in STEM subjects as they progress through their education.

**4. Policy Recommendations for Associations**

Professional associations within the building sector are pivotal hubs for fostering collaboration among companies, educators, and industry professionals, making them influential agents for driving

change and promoting inclusivity. Given their central role, these associations possess the capacity to disseminate knowledge and champion best practices aimed at attracting more women to the sector. Moreover, they themselves often describe their mission as promoting “the integration of young people into the sector”, “sharing objectives and methods with the various member bodies” (CPNF, n. d.) or “the employability and professionalization of construction professionals and attracting new workers to the sector to enhance the competitiveness of companies” (Fundación Laboral de la Construcción, n. d.).

**a. Gender Focal Points**

Associations should establish a dedicated gender focal point within the association tasked with analyzing and monitoring the implementation of policies aimed at enhancing gender equality within the industry. This individual or team would be responsible for tracking progress, identifying challenges, and recommending targeted interventions to promote inclusivity to different stakeholders.

**b. Inform Stakeholders**

Associations should develop a dedicated section on the association's website that focuses on the role of women in the sector. This section should highlight pertinent issues faced by women in construction, showcase success stories, and offer resources and solutions to address gender disparities. By providing a centralized platform for information and support, the association can raise awareness and empower women to pursue rewarding careers in the field.

**c. Spread Awareness through Events**

Associations should organize regular meetings, seminars, or workshops dedicated to discussing gender equality in the construction sector. These events should provide a platform for industry stakeholders to share insights, exchange ideas, and collaborate on strategies to promote inclusivity and diversity. These should specifically include SMEs so they can learn about best practices and the benefit of attracting more women. These exchanges could also take place across the EU to facilitate exchanges between different countries. Doing so, associations can catalyze meaningful change and drive collective action towards gender equality in the building sector.

**5. Policy Recommendations for Governments**

**a. Universal Childcare and Economic Empowerment Initiatives**

Implementing measures to provide universal childcare and promote economic empowerment for women is crucial to alleviate the caregiving burden on women, enabling them to pursue career opportunities in the construction sector. Additionally, economic empowerment initiatives such as access to training programs, entrepreneurship support, and financial incentives can facilitate greater participation of women in the workforce, including within traditionally male-dominated industries like the building sector.

**b. Close the Gender Gap in STEM Education**

Governments should focus on improving STEM education and addressing the gender gap in these subjects. By investing in initiatives to encourage girls' interest and performance in STEM fields from an early age, governments can help overcome stereotypes and barriers that deter women from pursuing careers in construction-related STEM disciplines. This can include funding for STEM education programs in schools, scholarships or grants for young women and girls pursuing STEM degrees at university, mentorship opportunities, and initiatives to promote female role models in STEM fields, for instance through open days at STEM firms.

**6. Policy Recommendations for EU Organizations and Agencies**

**a. Sustain Support for Gender-Transformative Projects in the Building Sector**

CINEA and CEDEFOP should continue their commitment to funding and facilitating gender-transformative projects within the building sector. By allocating resources and grants to initiatives that promote gender equality and diversity, these organizations can drive meaningful change and foster inclusive practices across the sector.

**b. Establish Reporting and Program Requirements for Member States**

CINEA and CEDEFOP can play a pivotal role in advancing gender equality by setting clear reporting and program requirements for Member States. This includes mandating Member States to collect and report data on gender representation and participation in the building sector. Additionally, program requirements should increase the integration of gender mainstreaming principles into vocational education and training programs, ensuring that gender equality considerations are embedded into all initiatives.

**c. Facilitate Knowledge Sharing of Best Practices and Recommendations**



CEDEFOP should serve as a knowledge hub, facilitating the exchange of best practices and recommendations among stakeholders in the building sector. By organizing workshops, webinars, and conferences, CEDEFOP can provide platforms to share insights and lessons learned. Additionally, developing resources such as toolkits and guidelines can help disseminate best practices and practical recommendations for promoting gender equality in the building sector.

## V. Conclusion

In conclusion, addressing labor shortages in the context of the EU's climate goals highlights the need to fully utilize the workforce. Gender disparities in the building sector, especially in roles crucial for energy-efficient practices, must be tackled for both equality and practicality. While EU initiatives like the Gender Equality Strategy 2020-2025 and the Pact for Skills in Construction show commitment, more action is necessary. This includes improving access to education, training, and career advancement for women, challenging stereotypes, and ensuring work-life balance. Recognizing women's diverse roles in construction is vital for effective policies. The paper has outlined tailored strategies that are required to support women already in the workforce, those considering careers, and those in training programs. As the paper has demonstrated, achieving gender equality in the building sector is not just about fairness but is essential for meeting climate goals and fostering sustainable development. By breaking down barriers and embracing inclusivity, the building sector can drive positive change towards meeting the EU's climate and social goals.

## VI. Annex

### Annex 1: List of labor-force jobs considered

Carpenter, mason, tiler, cabinetmaker, roofer, roof technician, plumber, heating engineer, painter, plasterer, piper, electrician, sheet metal worker, bricklayer, ceiling fixer, insulation, drywall finisher, plumber, plasterer, brick mason.

### Annex 2: Analysis of communication tools developed by different structures within the building sector. (EXCEL)

To see what actions have been implemented by the different stakeholders (large companies, SMEs, associations and VET centers), we analyzed the websites of over 50 institutions. For this, we analyzed their outreach campaign, their recruitment and job descriptions, the use of female nouns or gender indicators as well as if they have specific information on women in the sector.

#### Analysis of the communication of stakeholders in the building sector (April 2024)

Type of organization	Company / Institution	Women in Pictures	Specific offer/section for women	Female Noun included in Job Offer	F / W included in job offer	Other observation
Association	Das Deutsche Baugewerbe	Yes but limited	No	No	Yes	
Association	Bayerische Bauwirtschaft (Wir Machen Das, Germany)	Yes	No	No	Yes	Very male centred
Association	Fundación Laboral de la Construcción (Spain)	Yes but limited	Yes, some role model interviews "This is my story" campaign, projects to increase women participation	Not applicable	Yes	In general, no specific section / responsible person for questions of gender equality, most members are men
Association	CPNED (France)	No pictures	No, also no specific study on the position of women in the sector and their needs	Not applicable	Yes	
Association	The Advisory Board for Education and Training for the Building and Construction	Yes some picture of women but also very male dominated videos	No	Not applicable	Not applicable	

	Industry (Denemark)					
Association	The Danish Construction Association	Yes	No	Not applicable	Not applicable	
Association	Polish Association of Construction Industry Employers	Yes but limited	No, a programme for connecting young leaders in the industry but no specific mention of the role of women in the sector	Not applicable	Not applicable	
Association	National Federation of Hungarian Building Contractors	Yes but limited	No, promotional animated videos only include men and there is no specific mention of the role of women in the sector	Not applicable	Not applicable	
Association	Romanian Employers' Federation of Construction (FPSC)	No	No	Not applicable	Not applicable	
Association	Slovak Association of Construction Entrepreneurs (ZSPS)	No	Despite listing EU project such as REPowerEU and Renovation Wave, nothing on gender	Not applicable	Not applicable	
Association	Bulgarian Construction Chamber (BCC)	No	Despite listing EU projects such as BUILD UP Skills or digitization, nothing on gender	Not applicable	Not applicable	
Association	Portuguese Construction Industry Confederation (CPCI)	No	No	Not applicable	Not applicable	
Association	ENFAP ITALIA	Yes	No	Not applicable	Not applicable	
Association	Build Europe	No	No	Not applicable	Not applicable	
Association	European Construction Industry Federation.	Yes	Does list Pact for Skills and VET4LEC to increase women in the sector, but no specific information for	Not applicable	Not applicable	

			members on how to do this			
Construction Company	BAM Group	Yes	Yes	N/A in english		Extensive diversity & inclusion programme
Construction Company	Balfour Beatty	Yes	No	N/A in english		
Construction Company	Strabag	Yes	No	N/A in english		
Construction Company	Skanska	Yes	Yes	N/A in english		Extensive diversity & inclusion programme
Construction Company	Hochtief	Yes	Yes	N/A in english		
Construction Company	Acciona	No people, just buildings	Yes	N/A in english		
Construction Company	ACS Group	Yes	Yes	N/A in english		
Construction Company	Eiffage	Yes	Yes	N/A in english		
Construction Company	Bouygues Construction	Yes	No	N/A in english		
Construction Company	Vinci	Yes	No	N/A in english		
Building SME	Builder Renovation (France)	No	No	Not applicable	Not applicable	
Building SME	Co'Building (France)	No people	No	Not applicable	Not applicable	
Building SME	COMMODO-Haus GmbH (Austria)	Yes	No	Not applicable	Not applicable	
Building SME	Eestihouse (Estonia)	No people	No	Not applicable	Not applicable	
Building SME	CMB Housing Solutions (Latvia)	No people	No	Not applicable	Not applicable	
Building SME	Standing constructions (France)	No people	No	Not applicable	Not applicable	
Building SME	SRK Groupe (France)	No people	No	Not applicable	Not applicable	
Building SME	ecoworks (Germany)	Yes	No	No	Yes	
Building SME	Radman's Building Services (Croatia)	No People	No	Not applicable	Not applicable	
Building SME	Eco Tiny House (Romania)	Yes	No	Not applicable	Not applicable	Many female managers & technical interns

Vocational education institution	Anpacken Machen (Berlin based vocational education information and jobs offers)	No, mostly "strong men"	No	No, male one used	Yes	
Vocational education institution	Bildungszentren des Baugewerbes e.V. (a German based provider of vocational education)	Yes	Yes, participated in EU Women Can Built	Yes in overview but not on the detailed description	Yes	also offering try out sessions for young students
University	University of Applied Sciences in Cologne, Architecture and Building Degrees (Germany)	Yes	Yes, information event targeting women for the building sector	Yes	Yes	
Vocational education institution	CICCOPN (Maia, Portugal)	Yes	No	Yes		
Vocational education institution	ISEG (France)	Yes	Yes			
Vocational education institution	IFAPME (Belgium)	Not a lot of picture with people working	No	No	Yes	
Vocational education institution	Les Compagnons du Tour de France (France)	Yes	No specific section in their website, but they organize several open-doors and workshops specifically for women	No	They do not post job offers	
Construction skill operator	CCCA-BTP (France)	Yes, mainly painting and laying tiles	No	No	They do not post job offers	
Construction skill operator	Constructys (France)	No	No	No	They do not post job offers	
Vocational education institution	Formedil (Italy)	Yes	No	No	They do not post job offers	
Vocational education institution	IEK AKMH (Greece)	No	No	No	They do not post job offers	
Association	CENFIC (Portugal)	Yes	No	No	They do not post job offers	

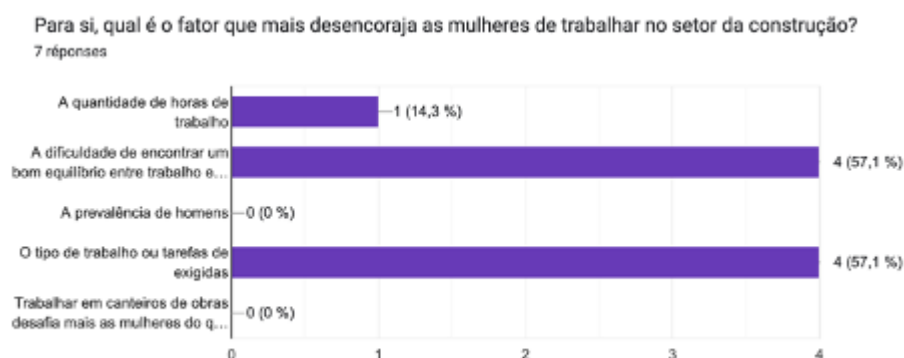
University	TUS (Ireland)	Yes	No	No	They do not post job offers	
Vocational education institution	Sataedu (Finland)	No pictures	No	No	No	
Professional school	SKRANJ (Slovenia)	Yes	No	No	No	
Vocational education institution	Vilnius Builders Training Centre	No pictures	No	No	No	

### Annex 3: Surveys

42.9% of Portuguese respondents are women against 57.1% of men. The share of women respondents from the French survey is even lower: 25% of women and 75% of men.

**Annex 3.A.:** ‘For you, what is the most discouraging factor for women working in the construction sector?’

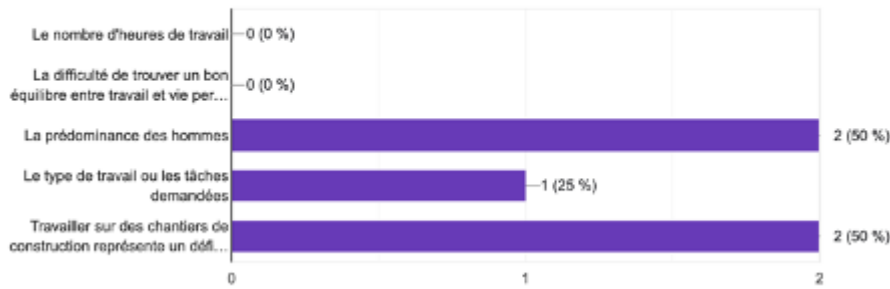
- The number of hours of work
- The difficulty in finding an equilibrium between work and personal life
- Man-predominance in the sector
- The type of work and tasks asked
- Working in construction sites challenges more women than men’



For Portuguese respondents, the difficulty in finding a proper balance between work and private life is the most discouraging factor for women to work in the sector, as much as the type of tasks asked.

Pour vous, quel est le facteur qui décourage le plus les femmes à travailler dans le secteur de la construction ?

4 réponses



Some French respondents have also selected “the type of work or tasks asked” as the most discouraging factor for women to work in the sector. Instead, the majority of respondents have chosen “man predominance” and “working in construction sites is challenging more women than men”.

**Annex 3.B.:** ‘ For you, what is the most discouraging factor for young women working in the construction sector?’

- Trades in the building sector are “man jobs”
- The sector offers limited opportunities for career development
- Young women are concerned about health and security at work
- Young women perceive trades in the sector as “old-fashioned”

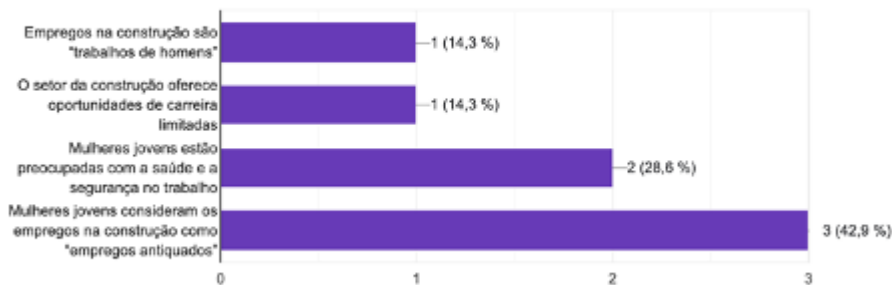
Pour vous, quel est le facteur qui décourage le plus les jeunes femmes à travailler dans le secteur de la construction ?

4 réponses



Para si, qual é o fator que mais desencoraja as jovens de trabalhar no setor da construção?

7 respostas





Overall, respondents have divergent visions concerning the factor discouraging young women to enter the sector.

#### **Annex 4:** Interviews

**Annex 4.A.:** Interview with a female architect and civil engineer from the building sector

**Question 1 :** How did you train to become an architect and construction engineer? Can you tell us about your professional background? How did you get into the world of construction? What factor made you aware of it?

I studied to become a civil engineer and architect because I always liked it, but I never did an internship so I can't sign an architect's plan, but I always preferred it. civil engineer working as an architect.

I worked for 10 years at Engie: 3 years as a calculation engineer in a design office, then 7 years as a nuclear, waste and power plant dismantling project manager where I was responsible for coordinating the technical teams in study. Then I burned out 4 years ago, it was time to redefine my professional project.

Today, I am an entrepreneur. My partner and I started out as a team of two. We are independent architects who offer individuals the design of their construction projects from the study phase, through design, to completion. We intervene in the field, sometimes with the help of subcontractors.

Engineering has always appealed to me. When I was 18 and had to make my choice of higher education, I saw that there was a new course in Brussels so I went there. I always preferred engineering to architecture, I knew that at the end of my studies I was not going to go into an architect's office but rather into engineering.

Concerning my burn out, Engie is a huge structure, the projects concern large structures, it is very heavy in terms of responsibilities and workload. These projects are carried out over too long a time scale, I prefer to work on a small scale as is the case today.

I have been asked on several occasions to talk about my role as a woman in the profession but it is not something that actually bothers me. It never caused me any problems to be in a man's world, I never felt devalued in front of a male colleague.

Perhaps it's now that I'm on the construction site that I'm starting to feel it. When they see me arriving at the construction site, I can see that people are saying to themselves "But who is this girl who doesn't know anything about it?". But once I prove myself, everything goes well. The men who work with us on the construction site are even quite happy, they help me carry things when I need them.

**Question 2: What challenges have you encountered along the way, particularly related to gender barriers in the industry? What are the limits of working in a predominantly male environment when you are a woman?**

Personally, I have never felt any discrimination compared to my male colleagues within Engie because I was a woman. I have not had any feedback from female colleagues on this subject. Moreover, Engie was led by a woman for years. I think that it is really now that I am on the construction site that differences in treatment can take place because I am a woman because “we are not legitimate, we have to prove ourselves”. But the preconceptions that men have when they see me arrive on the site dissipate very quickly. But I work on small construction sites. We do not work on large construction sites with lots of men who whistle at women. I work with people I know, it's a different dynamic.

**Question 3 :** For several years now, and even more so since the European Union set itself a goal of carbon neutrality in 2050, we have observed labor shortages in all Member States. The gap between the skills required for the energy transition and the skills available is growing. It is estimated that between one and two million “green jobs” will be created by 2030.**Do you think that increasing the presence of women in the sustainable construction and renovation sector would make up for this labor shortage?**

I don't think that I know how to do everything on the site because I have physical limitations. At the end of a day of work, I don't feel the same physical fatigue as my partner. As a woman, perhaps I am equal in terms of physical strength to some less fit men, but there is a difference in physical performance between men and women that is felt on the job site. I am lucky to be accompanied by men. But I am convinced that there are a lot of tasks that a woman can do without being considered a small hand. Moreover, my partner and I divided up tasks on the site.

Let's take the example of insulation work which is increasingly in demand for the energy transition, it is not a question of taking on heavy loads. On the contrary, it is rather detailed work that women can do very easily.

And then when I say that I am lucky to be helped by a man, in reality if I was accompanied by a woman on the construction site, that would have done the same. There may only be women on the site and it can work by helping each other with heavy tasks, for example.

I think that the first barrier that women face in entering this world of men comes more from the women themselves. My female entourage is a little in awe of this professional career change that I have made and the fact that I am actively on the construction site. In fact, I spend 70% of my time working on the construction site, between 3 and 4 days a week. For most women, it is a “sacrifice” to do such a physically demanding job, it is very tiring.

**Question 4 :** Have you come across any initiatives to promote gender diversity and the inclusion of women in the construction sector? If so, could you describe these initiatives and their effectiveness?

There were a lot of initiatives taken within Engie to promote the inclusion of women in responsible jobs but none for field jobs. We observe a very strong split between design office and construction site, it is impermeable. On this scale, Engie does not care about the construction site. It's this split that I wanted to remove by creating my company.

I have never been very demanding. "Another thing for women." It doesn't affect me a lot because I never felt the need to prove anything in relation to my gender while working at Engie.

I have seen a lot of administrative specifications and I have never seen anything that encourages the presence of women on construction sites. In all the construction sites that I have visited in my 10-year career at Engie, I have not seen a single woman. The only women I met on construction sites were architects and calculation engineers. There are more and more women responsible for coordinating construction sites. They are on site 1 day/week and manage several sites at the same time. Ultimately, in this world, women are given more responsibilities and that is something I would have liked to do at Engie, manage construction sites. There is no difference in the allocation of responsibilities, it is according to skills and we see that there are a lot of women team leaders. Women manage the social side better, it works better when women are in charge.*laugh*

**Question 5 : In your opinion, how can we make the sector more attractive for young female students?**

There is a huge amount of work to be done on the perception of women in the profession. We have to realize that there is room for women even if it is physically hard. There is a question that I ask myself a little and which could be a barrier for some, it is the question of longevity. I'm 40 years old, I feel good but I don't think I'll be doing this job until I'm 65, I'm pretty sure not, whereas a man can last longer. I think there is a real problem of possible reconversion.

In my case, I don't worry too much about that because I have diplomas but that's not the case for everyone. Will there be technological developments that will allow me to physically last until age 65? I don't know, but that must be a huge barrier for women: the body wears out and there's nothing you can do about it. When you start something when you're 25, you tell yourself that it's for a long time.

But there are changes in mentalities among young women. When I was 25 and I arrived on a construction site, we said to ourselves "come on, we're going to get whistled", we were afraid of the workers but today things are different among young people.

**Question 6 : Finally, how do you see the future of the construction sector in terms of gender diversity as the demand for green energy projects will continue to grow?**

When I started my business, I never asked myself any questions, I didn't say to myself "I'm a woman, will it work on the construction site?". I forced the wall. I had lots of thoughts from those around me, first and foremost from my mother: "What are you doing? You have an engineering degree." I think it's the goodwill of women that also counts. We must convince women that they have added value in the sector. In 20 years, we no longer have the same thoughts about gender, things are changing.

I see a lot of businesses that are born thanks to women who get started. The construction site is not part of the range of professional career choices when you are 18 years old, it does not even cross your mind. My brother-in-law is an electrician and there were certainly no women in his training. We just have to show that this possibility exists. The profession of electrician, for example, is accessible to women. There are no physical constraints and this is the case for many jobs in the sector. I didn't imagine that I could do so much on the field. I saw myself rather responsible for administrative tasks, and in fact I am 70% on site. It is me who puts me barriers while my partner gives me a lot of responsibilities and important tasks on site.

I am more conscientious about many things. As a woman I bring other things. Women can bring added value to the field, we just need to let them know.

**Annex 4.B.:** Interview with an economist from the European Investment Bank

**Question 1: What are the recent trends and issues surrounding the integration of women into the labor market and more specifically into the building sector?**

Looking at the share of women in economic activity, after the covid pandemic, the share of women has only marginally increased, and the construction sector ranks at the bottom for women's participation share. Furthermore, the share of women in the construction sector only grew by 2% between 2011 to 2023. In general, women are much more active in the services sector. Moreover, the construction sector is heavily oriented towards men and very traditional in the training activities provided and it is not as attractive for women as other sectors. Women are also on average better educated by now, and more represented in higher education institutions than men. Another issue is for sure the tight labor market. This development has not just from the pandemic but since the global financial crisis. Looking at the unemployment rate or vacancy rate, there is a growing labour shortage and a lack of skills. Thus, underrepresented groups such as women need to be brought to the labour force. This is exacerbated by the decline in working hours, which especially occurred during the pandemic. This trend has not reversed yet. Since 1995, there's been a huge increase in the female participation rate in the labor market, however, their participation is still lower than for male. The progress has been slower in initially more gender-equal countries. However, the quality of female employment is still not the same. In the EU, the female labor force participation has increased but male participation is still around 5% higher. Especially for women 55+ age increased. Despite the strong increase, the share of part-time employment grew, which also explains the reduced hours. This is a structural issue.

**Question 2: What can be done about this and about the barriers that women face when entering the labor market?**

Full time employment for women with higher and medium education decreases once they have a child. Once a child enters the equation, part-time work among women increases dramatically, while this is not at all the case for men. Thus, the expansion of childcare is vital. Moreover, women are taxed unfairly,

as once you are taxed jointly, giving up the female salary is economically more viable. Another issue is the acknowledgement of foreign qualification e.g. for Ukrainian women.

### **Question 3: What skills are women lacking?**

Due to the Twin Transition (Digital + Environmental, see LinkedIn Green Skills report) some occupations need to be reskilled and upskilled, while new occupations also emerge. Most of these occupations require skills related to STEM backgrounds or managerial and social skills (but more STEM). Women are still lagging behind in STEM skills for instance looking at enrollment of STEM subjects e.g. in university, females are lagging behind. Looking at the PISA result, the EU faces tremendous issues with basic skills such as mathematics, reading, and literacy. A portion of young people are also NEEDs, neither in education nor in employment, around 10% in the EU which is a waste of talents Europe cannot afford at this moment. On the other hand, people already working are not participating in lifelong learning. The (targeted and tailored) availability of such opportunities, e.g. on the job learning as well as the willingness of workers to participate in such training is utterly low.

### **Question 4: In your opinion, what are the main barriers to adopting gender-responsive policies in skilling the labor force, especially in STEM education, and how can they be overcome?**

This is a difficult subject because it touches on the national competencies of the countries. The EU cares about equal opportunities for all wherever they live and who they are. To improve the environment of students, especially considering the PISA results, you need to start at an early age. We need to create a level playing field for children and youth so that everyone is able to pursue his or her career objectives. This is also very related to the universal availability of childcare which will also free up the female workforce.

**Annex 4.C.:** Interview with a regional project leader and founder of the project “Exception’ELLE” at *Les Compagnons du Tour de France* (a French VET center)

**Question 1 :** The Compagnons du Tour de France offer training in the construction and renovation sector, initial training from high school as well as professional training for adults already in the world of work.**Can you tell me a little more about companionship?**

The origins of companionship date back to the 14100s. With the human and industrial revolutions, artisans learned their work through travel and then transmitted their knowledge to their place of origin. This is a way of learning. The Compagnons du tour de France is not the only structure to set up companionship in France. We find the Companions of Duty who are not specialized in training in the construction sector. At the European level, we also find companionship in Germany.

The Compagnons du Tour de France offer CAP, BTS and professional certificates for building trades because these are the original trades of the companionship: wood, roofing and zinc work (roofs),

plasterers and drywallers, preparation of walls, tilers, painters and masons. We have 16 training centers in France, soon 17 where we will find new training: stonemasons and baker/pastry chef.

It's about becoming free through work. You must first validate a diploma within our training courses to then have access to a professional journey through travel which lasts on average 6 years. This can be shorter or longer, it is up to the person in training. 1 year = 1 city/1 training center and 1 specific training. Each year, of the 600 people trained, 500 take a tour of France. Following the Tour de France, the title of companions was awarded to them. During their tour of France, they are housed in a companion headquarters, this is a historic reception house, between September and July, they are fed at the expense of the Compagnons du Tour de France and a company is found for them. The Tour de France is an optional commitment. You can do your training without going on a tour of France afterwards but it is a very rich and professional course and it allows you to broaden your skills by training in other professions in the sector each year. The Tour de France is demanding with a busy schedule.

**Question 2 : In the case of manual trades in construction and sustainable renovation, do you think that training is more professional than field experience? Do you think that women need your training more than men?**

The Tour de France offers significant added value because it involves years of training and experience in the field at the same time. It is a guarantee of autonomy, quality and responsibility. Many young people who have obtained a CAP thanks to our training work in major projects such as the Paris Cathedral thanks to the Tour de France. There is immense room for improvement. Others take part in the competition for the best apprentice in France.

**Question 3 : Are the training courses offered by the Compagnons du Tour de France adapted to the energy transition objectives set at European level? Are they regularly updated to respond to rapid changes in technical skills required by the sector? To what extent do the training courses offered provide training for “green jobs”?**

We offer different training modules:

- 1) Modular training courses from 1 day to 2,000 hours of training on all the professions in which we train.
- 2) New diplomas on eco-construction (straw and wood) at the Grenoble training center.
- 3) Diplomas in energy renovation of buildings. We train project managers in energy renovation of buildings, versatile technicians for optimizing the budgetary envelope of a construction site.
- 4) Our Anglet center works with the Pyrenees National Park on eco-mobility and our eco-campus.

Furthermore, in all our training centers we try to limit our ecological impact. We are aware that our sector is extremely polluting so we try to limit waste in terms of paint because it requires a lot of water, we limit wood waste. When students have to make models, for example, we make sure that they do not glue the concrete blocks so that they can be reused.

**Question 4 :** For several years now, and even more so since the European Union set itself a goal of carbon neutrality in 2050, we have observed labor shortages in all Member States. The gap between the skills required for the energy transition and the skills available is growing. It is estimated that between one and two million “green jobs” will be created by 2030. **Do you think that increasing the presence of women in the sustainable construction sector would make up for this labor shortage?**

Totally! This shortage is undeniable. We talk about it a lot with our partners, all the companies are having difficulty recruiting. But there are a lot of challenges to the integration of women in the sector. They must feel concerned and legitimate in these masculine environments. We must help them to project themselves into the training center, into the company with long hours and physical working conditions. We must make them aware that women = men in the construction sector so that they do not give up and this requires quality information and the creation of a caring framework. I think that the most complex issue is found more within companies, this is where there is the most to be done for the inclusion and respect of women.

**Question 5 :** Do you have figures on the proportion of women and young women who follow your training courses as well as the proportion of women teachers? **If not, have you noticed an increase in the presence of women within your structure and do you think this is a consequence of external or structural factors?**

I do not have precise figures but it is certain that parity does not exist either among the trainers or among the students. At the Grenoble training center, we only have one trainer out of 30 trainers. She is a painting instructor and has become a journeyman through experience; she has not toured France. We cannot put “companion” in the feminine because it is a title.

We do not have many female trainers, they are much more present in general teaching but this is not intentional: we already have difficulty finding male trainers.

We have a female figure: Anne Brugiras. She is a companion of France which is rare for a woman, even more so because she is a master stained glass craftsman. This is a unique profession with only 400 stained glass artisans in France. She is also an ambassador for the Compagnons du Tour de France.

We have more women aged between 25 and 30 than young candidates in our training courses. We also have more older women than young work-study students at open days. We also find more women, especially since the Covid-19 pandemic, in professional retraining sectors. Women want a new life where they are more independent, more free, and do things for themselves. It’s happening slowly, it’s mainly a visual feeling that I have while browsing the teams. Women are especially present in trades that require more creativity and attention to detail, such as carpentry, painting, cabinetmaking and tiling.

Were they originally in construction? Yes and no. Some are in construction but want to change their specialty. Some have burned out in responsible professions. We find many women who leave the world of luxury to come into the construction sector.



**Question 6 :** Can you tell me more about the “Exception’ELLE” project? Is it the first of its kind to see the light of day within your structure? Does it target more young women who are currently defining their higher education and professional projects or **does it already concern women in the industry?**

This is a unique project in Annecy, Lyon and Grenoble. The Nantes federation already offers a specific welcome for women with job discoveries on Wednesdays (“building Wednesdays”) but this is not as extensive as the Exception’ELLE project. We don't want to do reverse sexism so the open days are also accessible to men but they target women. We offer them a workshop immersion. This can range from a day to a week depending on their desire and availability to try a profession of their choice. This applies to all training within the 3 training centers in question.

We chose the name “Exception’ELLE” because women are exceptional in the sector: out of 1.8 million employees in the construction sector, only 14% are women, including only 2% on the construction site.

Our open days attracted more than 300 women, more than 40 of whom took a career immersion course.

Furthermore, I have other ideas for projects to develop for the inclusion of women in the sector, such as board games for example with role-playing scenarios. In the Lyon training center, a photo exhibition was created featuring 30 portraits of women from the building. We have also created a resource booklet for diversity in the sector and in our premises.

**Question 7 :** Have you ever considered setting up single-sex training so that women perhaps feel more comfortable and are not subject to comments from their male counterparts?

Yes (20%) and No (80%).

In a certain context such as workshop immersions for women, non-mixing is perfect because there are few of them and many of them do not dare to go in front of men. But I am convinced that blended learning is the right thing. The women who come to the open days want more men at the round table to get their feedback. Trainers want more girls in training because they have added value. And some women can't stand the difference. In fact, it is positive discrimination to set up single-sex training.

“Mixity makes you intelligent”. We seek equality and not diversity because it is more powerful and beneficial.

Women are studying more and moving towards management positions with lower wages than part-time work on site. The young women who come to train with the Compagnons du Tour de France obtain full-time work, I have not observed any example of part-time work, all find stable employment on site without any particular difficulty.

**Question 8 :** Are Compagnons du Tour de France trainers made aware of discrimination and gender stereotypes so as not to reproduce them during training?



The open days that we organize aim to improve the reception of women by the male figures of the training center. Sexism awareness workshops take place with our augmented reality trainers. They are led by a man who works in a training organization in Lyon (Batisse). He trains in painting professions.

We have also created a series of mini-films that illustrate situations of sexism and discomfort. These viewings are followed by discussions lasting 30 minutes to 1 hour.

It's certainly not very objective but we are in a very caring bubble. Male trainers are more attentive to young girls than female trainers. Trainers even tend to adopt a father figure due to the environment in which we are where everyone knows everyone. We have never encountered a problem at this level in training, apart from episodes of demotivation among young women, which can happen. Often, it is in the workplace that things clash, not in training. We have many testimonials from girls in our training centers who attest to a good training atmosphere.

**Annex 4.D.:** Interview with the Director of Marketing, Development and Strategic Innovation at the CCCA-BTP (a French construction skill operator)

**Question 1 :** The CCCA-BTP is an association responsible for implementing and coordinating the professional training policy for construction professions. Concretely, the role of your structure is to develop training for building trades so that it responds to changes in the sector as part of the energy transition. **Could you tell me more about how you do it? How does the CCCA-BTP participate in the innovation of training for building trades in order to fill labor shortages in the sector and to respond to the challenges of the energy transition?**

It is a joint organization which has been in existence for 82 years and is registered in the labor code. Its mission is to promote the attractiveness of professions and training in construction professions, and contribute to high educational quality to meet the expectations of companies to produce studies (barometers, observatories, sectoral studies). 50 million euros are donated every year to training organizations through calls for projects, in particular to anticipate the major challenges that impact the sector (technological, environmental, societal – feminization of the profession, generational developments). It is a question of translating these changes into the evolution of training. We offer businesses the skills to meet their current and future needs. We always think about the next 10 years because the average training time is 4 years. Anticipate, promote, train and sustain, that's our mission.

**Question 2 :** **Do you think that increasing the presence of women in the construction sector would make up for this labor shortage?**

Of course ! This would make it possible to meet the needs of the sector, and the feminization of the sector has several virtues:

- 1) As the father of 2 daughters, I find this feminization normal and necessary, whatever the sector and well beyond the labor shortage. We must adopt a mixed and global approach to the problems faced.

- 2) The feminization of the sector is necessary to meet the needs of the sector. The renovation sector will require nearly 200-250,000 new entrants in the construction sector in 2030. We went from 3-4% of women in construction apprenticeships in 2007 to 7-8% in 2024: that's very few women .
- 3) The feminization of the sector is even favored by the evolution of technologies. The jobs remain arduous but less and less thanks to robotics, exoskeletons, and the reduction of materials and equipment. Moreover, there is an increasing need for site supervision.

**Question 4 :** Women now occupy nearly a third of jobs in the construction sector but they only represent 2% of employees on construction sites. **Have you implemented policies, measures or projects to increase the presence of women in this type of profession?**

We are partners of the Women Can Build system. To promote women's access to construction professions, we have set up communication campaigns which highlight diversity in the professions, attractiveness campaigns with a non-differentiated approach between men and women, no distinction. Workshops that promote diversity in teams of young students must be highlighted as part of training courses to understand the importance and benefits of diversity. We are campaigning to prevent young women from being confined to wallpapering and painting but also to be made aware of other professions: carpentry, tiling, roofing. We cannot escape the clichés of the artistic side of women which is supposedly more developed than that of men, it is completely absurd. It's like people who think men are better at math than women, it's not true. This is constant work to be carried out with companies. 96% of companies have fewer than 10 employees. 98% of companies have fewer than 20 employees. 80% of SME and VSE business leaders are men. There are old reflexes, "I do as I have always done, I reproduce my father's pattern", it's a vicious circle. Most young people who enter apprenticeships do so because one of their parents is in the industry. Ultimately it's the same for graduates, these are caste phenomena. Large companies tend to hire a lot of women out of desire. There is a bit of positive discrimination.

Current topic: the impact of AI on skills. Why not take advantage of this new revolution to reshuffle the cards. We are all a little new to this, all professions will be affected. Example: idea according to which the craftsman knows how to do his job perfectly but has no sensitivity to customer relationship management, not being tech-savvy. Thanks to AI, it is potentially possible to scan a part with a phone to estimate and prepare a quote. Being a man or a woman changes absolutely nothing, even less with new generations and the technological revolution.

There is a cascade of subcontracting in the sector which prevents women from entering it despite technological revolutions. First of all, there is foreign labor. Small businesses are aware of the realities and need to evolve to survive. They themselves set up consortia adapted to specific situations. These consortia of small businesses allow sharing, which is good for the inclusion of women. There is also the impact of the famous Generation Z and Alpha, the technology to break down these barriers and mental patterns because it is vital for small businesses to adapt. The average age of a business manager in the construction industry is 45, which is changing a lot. In 2030, 50% of the payroll will be made up of Generation Z and Alpha, so there is a need to shake things up and break down these barriers.

**Question 5 :** The CCCA-BTP is responsible for the development of initial professional training. **In your opinion, what are the main barriers to the inclusion of young women in construction training? And what have you put in place to overcome them?**

In my opinion, parents are the first prescribers, there is a generational barrier which is difficult to get around. We are working on this with training and promotional campaigns, skills, and information campaigns. But it is difficult. I think it's effective because we have more than doubled the number of young women in apprenticeships in a few years, mentalities are changing. There are more and more women undergoing professional retraining who are joining training centers. This is an important element to have in mind because it is not sudden but chosen. This is less the case for men, but sometimes women turn to this type of training by default.

**Question 6 :** As an OPCO (skills operator), you support companies in the areas of skills management and training. In several interviews with professionals and trainers in construction training centers, the same observation came up: gender discrimination mainly takes place within companies in the sector (recruitment process, work atmosphere, etc.). **What do you think ? Has the CCCA-BTP adopted an approach to raise awareness of this discrimination among the companies it supports?**

Yes, there is discrimination in businesses. There are not always women's changing rooms or women's toilets. But mentalities are still changing because there is such a lack of labor that they can no longer have the same operating methods. 15 days ago at BTI France, we held a conference with a recruitment flexibility player. They were advised to return candidates' CVs, hide gender and name, and look at experience and skills to avoid cognitive bias.

**Question 7 :** Every 2 years, the CCCA-BTP carries out national surveys including the Apprentice Life Barometer (BVA) and the Business Life Barometer (BVE) in order to collect the feelings and expectations of both training companies and young people in apprenticeships. **Have you noticed any disparities between women and men in your results?**

Effectively. Not so much at the training center level but rather at the company level. There is a certain lack of recognition for apprentices, much more than for apprentices. There is a lack of consideration, devaluation.

**Question 8 :** You are dedicating an increasingly important place to digital with BIM and virtual reality in particular. **Do you think that these digital tools can help with the inclusion of women? If so, can you give me a concrete example of this?**

BIM is a real subject at CCCA-BTP. It's a method, a way of modeling the building in a more original way. No, it does not promote access for women because that is not its objective but the digitalization of the sector does promote it. Digital technology does not differentiate between men and women.

**Question 9 :** You have developed an innovative project, namely the “Health – prevention in construction” project. Knowing that women tend to be more sensitive to issues of health and safety at work, is this project intended to reassure women on these issues?

Yes absolutely because we work on safety and risk prevention because prevention is better than cure. Through technology, the aim is to demystify and reassure people about skeletal disorders. Connected personal protective equipment which makes it possible to very quickly locate an isolated person on the construction site, for example. There is equipment that adapts to body types and uses, it's important.

**Question 10 :** You have developed a network of innovation ambassadors to bring the innovations of the Winlab' laboratory to start-ups, construction companies, and research laboratories. **What is the proportion of female ambassadors?**

40% of the start-ups we support have a woman at their head.

**Annex 4.E.:** Interview the regional director of Constructys (a French construction skill operator)

**Question 1 :** Constructys is the Construction Skills Operator which operates with a multitude of partners in the sector. It is this local network which takes care of the expertise in professional training and professions in the sector. As for Constructys, its mission is to support construction companies in carrying out their training projects to develop the skills of their employees. **Could you tell me more about how you do it? How does Constructys participate in the innovation of training for building trades in order to fill labor shortages in the sector and to respond to the challenges of the energy transition?**

We finance training for the benefit of companies in the construction and materials trading sector and employees through work-study/apprenticeship contracts but also through employee skills development plans. We help our SME members with fewer than 50 employees so that they can better manage their human resources and understand the changing labor market. This is not an easy task because small businesses are the least equipped to face large construction groups.

**Question 2 :** **Do you think that increasing the presence of women in the construction sector would make up for this labor shortage?**

I have been in the sector for 30 years, I know the subject well. The construction and public works branches have launched communication campaigns to encourage women to take an interest in these professions due to labor shortages which are only increasing. For 10/15 years, there have been a lot of things in terms of communication campaigns and territorial actions with Pôle Emploi in particular.

**Question 3 :** Women now occupy nearly a third of jobs in the construction sector but they only represent 2% of employees on construction sites. **Have you implemented policies, measures or projects to increase the presence of women in this type of profession?**

We cannot say that we have done anything on the subject; we let the companies do what they want. Professional organizations have taken this issue head on and do not want Constructys to take charge of it; the promotion of professions is not its responsibility. It is clear that the results of awareness campaigns among women are very modest.

**Question 4 :** Constructys is particularly responsible for financing work-study vocational training. **In your opinion, what are the main barriers to the inclusion of young women in construction training? And what have you put in place to overcome them?**

We remain prisoners of traditional patterns. Construction includes “men’s jobs” even if working conditions have improved. The perception we have of the sector remains physical, we still perceive it as hard work in all weathers. There are several things that are wrong:

- Educational guidance does not easily lead to careers in construction. Teachers still have an image of construction as a manual sector intended for those who failed at school, that it is not a career choice but a default, sudden choice. Many young people, both girls and boys, who chose the sector say that those around them dissuaded them because they had good grades in classes and people therefore did not understand their choice.
- No-tt speech given for girls by guidance counselors in schools
- At the business level, it’s not perfect... We support a large majority of VSEs and SMEs. To accommodate women, working conditions must be improved. We can think of the load port and toilets on construction sites in particular.
- I have had testimonies, feedback from women in the construction professions who say “We encourage women to join the sector, but companies must make more efforts to make us feel good there” . Women represent only 2/3% of employees in production professions in France, they are much more numerous in tertiary professions. The issue of diversity is on the construction site/production part, not in the design office or administrative services for example. Despite all the efforts made, very little progress has been made.

In public works, there is an increase in women occupying the positions of works supervisors but not in construction professions. Women don’t see themselves there. VSEs and SMEs would like to hire women but express fears about the possible reaction of their employees on site, which is purely hypothetical. This is not the case for large groups which have for years implemented a proactive policy with large developed resources.

What emerges from these testimonies that I have received is the working atmosphere that their male counterparts can offer them on the construction site. When you are the first woman to be hired, it is far from easy, the companions on the site can be very harsh. You have to know how to assert yourself and defend yourself. The jokes are often sexist in nature. One woman told me that she quickly made her male counterparts understand that this kind of thinking was not at all okay. It must be a difficult time for these women to have to prove themselves, they are much more demanding of women than of men.

Once this period is over, they say they feel respected and their skills recognized, everything ends up going very well. When there are several women, this does not seem to be a problem.

There is also the problem of traveling to work, you have to leave early, come back late. Unless you have a partner who takes over, it is difficult for women in construction to balance their professional and personal lives. Either the company adapts the hours to reconcile the two, or the woman will withdraw because she cannot do otherwise.

We are seeing a cultural change. More and more men are reluctant or resistant to traveling quite far from the workplace and home. Weekly travel was part of the job. Today, the balance between professional and personal life is important among the younger generations. There is also more balancing in a couple, with children. Job seekers for the construction sector have specific questions regarding the location of construction sites and the travel to be expected. Several companies have completely changed their business strategy. They set a radius of action around the company so that employees can return home during the day. People want to do activities in the evening, etc.

There is always the somewhat physical aspect. A woman who joins a plumbing and heating company must install relatively heavy boilers and will need a partner, so it is more costly in terms of labor for the company. There is a real need to change the work organization.

Exoskeletons are pretty great for lightening the load and it also concerns men, it would benefit everyone, not just women. But it is too expensive for small businesses, although there is a gain because this type of profession often leads to professional incapacity, occupational illnesses, work stoppages. I don't see these exoskeletons anywhere.

**Intervention: Ultimately it is the large groups that have the means to purchase this type of technology but they subcontract the labor which cannot afford to finance this type of equipment.**

Indeed, we have a cascade of subcontracting in the sector. The person who is on the site is an employee of a very small company of 5-6 employees independent of the large group. The problem with subcontracting is that the last in this chain face price problems, they do not have the cash flow to invest in this type of equipment.

**Question 5 : Do you think that women can have added value for the sector apart from compensating for labor shortages?**

Women are more sensitive to health and safety at work and I think that is why they would bring a lot to companies because doctors say that men on construction sites do not say that they are in pain because of the standards of virility. They do not say when they are injured, do not declare sick leave, do not talk to the company doctor about it.

**Intervention: In fact, we say that women need a partner, but so do men.**

Yes, men complain too late. Afterwards, it's professional retraining whereas upstream, things would have been taken care of on time. Women's approach to work is different. When they arrive at companies



there is always something that shocks them: the cleanliness and tidiness of the site. Men tend to be messy, it doesn't bother them that much. While the majority of women are moving towards painting professions. We see in apprenticeship contracts that women almost all the time go for decoration/painting training. We have customer feedback which tells us that when it is a woman who works it is much cleaner, squarer and tidy than when it is a man. This is added value in the eyes of business leaders. When a woman is hired, men become aware of the efforts required. I have seen business leaders who say that hiring women has been beneficial for the entire company because they bring a new way of thinking and have improved working conditions for everyone. Working conditions must not be repulsive for either women or men, especially in the face of growing labor shortages and the change in mentality that is ultimately taking place among men. New generations are concerned about questions of longevity at work, particularly with pension reform. Young people in training see certain employees at 50/55 already broken who will not make it to retirement age, which scares them. You must be able to put in place equipment to take care of employees. If the employee does not have this feeling, he will not stay.

Men are now choosing these construction professions, no longer like a few generations ago who did these professions by default. This sector must meet all their expectations which are increasingly growing with changing mentalities. The sector has remained traditional but needs modernity to keep up with developments.

Exoskeletons are expensive but there are also drones for roofers instead of going to a roof to get an estimate. Many deaths from climbing onto roofs that can collapse. There are technologies that can be applied to the construction sector. Some companies are well equipped but too many others are far from the mark because VSEs and SMEs are disorganized structures.

#### **Annex 4.F.:** Interview with Economist from the European Investment Bank (EIB)

**Interviewee:** [ *Gave a presentation on the EIB* ] Well, let's start. What is the EIB group? So basically the EIB group consists of the European Investment Bank, which was founded in 1958. Through the Treaties of Rome, which has been since that the primary lending of the day of the EU. We've recently been dubbed the climate bank as we are investing a lot into the climate transition of the EU and we have a sister institution or agency within the within a group which is the European Investment Fund, which was established in the early 2000s and has become a specialist provider of risk finance, particularly to small and medium sized enterprises. So they are doing capital projects, supporting startups, and supporting the upskilling of startups. So in the process of actually reaching from a very startup, startup, phase up to up to mid size of these firms, which is usually the most critical part of a company's enterprise process. The EIB is the bank of the European Union. Basically, that's our mission to improve lives in Europe and beyond. So while we are still focusing around 90% of our resources to the EU, we also devote a non-negligible amount of our annual investments to non-EU countries. We are one of the world's largest multilateral lenders by several standards we are actually the largest, so even bigger than the World Bank. Not many people know about this. But in terms of lending. We are bigger than the World Bank. We're a leading provider of climate finance and we are governed by the EU member state. So every EU member states is a member of the governing board of the bank. We are the largest multilateral lender and borrower so we raised our funds on the international capital markets. So the bank

was set up in 1958. By funds provided by the EU member states, and since then, there was only one change when actually, the UK decided to leave the EU that we had some kind of reshuffling of subscribed capital. But we finance ourselves in international capital markets and then pass these federal borrowing conditions on to our clients. So since 1958, we have over 1.5 trillion euros invested in more than almost 15,000 projects over 160 countries. With a crowding through the Bank of 4.9 trillion of overall investment mobilized and so basically that's usually our way of investing by actually investing, taking on the risk tranche of investment and then mobilizing private sector or other private funds to come in. We're headquartered in Luxembourg currently around 4000 staff in addition to bankers and other finance professionals. We also have engineers, economists like myself, social socio environmental experts, and we have currently over 59 offices and representations around the world. In 2023, we financed over 87 billion euros, which was split into around 75 billion by the bank and around 50 billion. And our products usually catalyze investments so each transaction is tailored to the needs of the project. Our funding can arrive and come in different different forms. So if you have loans we offer guaranteed equity investments, and also provide advisory services on a girl and usually the products can be combined or can be blended with other sources of public financing, or also through public and private partnerships. We have policy priority areas to short PPAs and short which is on the one hand innovation digital human capital. This is a thing or like your area your project comes in a bit as well. Sustainable Energy and Natural Resources sustainable cities and regions and SMEs and mid caps. I should say. Last year zhe bulk of funds actually went into the sustainable energy natural resources, not least due to Russia's aggression to the Ukraine, but also a lot of money goes into SMEs and funding of innovation digital capital. We are a responsible bank by all means so we monitor our environmental and social system sustainability of all of our western projects. We appraise human technological natural resources used by the project, certain activities are excluded as they do not fall under ESG criteria. The reported greenhouse gas emissions from all projects within the significant impact. We also monitor reports and implement the reduction of our own environmental footprint and dimensionally we ensure strong governance, transparency and accountability for ourselves and our counterparts. Quick overview of the economics department. So what do we do? We first of all provide research on investment and Investment Finance. So we actually run our own EIB Investment Survey which is an old survey of 1500 firms across the EU and the US. The survey usually brings out results in a couple of papers and in our flagship report, investment report, which is our EIB flagship publication. Which comes out annually and it usually dwells on a specific topic. And we also have thematic reports covering digitalization, green, local infrastructure, cohesion and so on. We provide strategic inputs for operation so for the lending activities of the bank, in terms of providing strategy and inputs to internal planning and program improvement implementation, but also the operational plan and geographical and thematic strategies for instance for cohesion. Last but not least, the country and financial sector which covers country knowledge, so economic policy and operation sovereign risk and trading so we risk all our countries in which we are active twice a year. I'm responsible for the Baltic region. For instance, we monitor our debt sustainability of countries and we have regional growth focused reports for instance, finance in Africa, which also is published once a year. The question is how can you join us? Usually we have it twice a year. It's always not six months. We actually invite students from both bachelor masters, also PhDs to apply for our trade ships in the economics department. So if you or your colleagues would be interested in working for the EIB or working for the European Investment Bank in the economics department, focusing on data and contributing to a variety of our projects. You're more than welcome to apply, usually through the website where the applications are actually advertised. Well, so let me quickly touch upon. I think your project or at least part of your projects, because as I said before, I'm neither an environmental expert when it comes to the construction sector nor am I focusing specifically on the construction sector but



nonetheless, I hope to provide you some with some insights and I was pulling out figures which I find quite interesting looking at the share of woman by economic activity after the financial crisis 2011 between 2023 q3 and what we see is that while the share of woman has only marginally increased, for most of the professions, including construction, construction actually turns out to still remain at the bottom of in terms of women's share economic activity, so between 1120 to 2030, I think the difference is around two percentage points, which is which is not a lot but which is also part of the which was a part of the private sector in a way because women usually tend to be much more active in the services sector. And construction by all means, apart from planning activities, is pretty much a sector that is still heavily oriented towards men, and which is still considered to be compared to others. Very traditional sector both in terms of training activities provided for construction usually is lagging behind all other sectors. So it's just not as attractive as other sectors. For women who tend to BD, on average, also better qualified by now to enter the construction sector. Just as a beginning of what I wanted to show you as well is that of course when we look at different sectors at the change in the sectors across the labor market in the EU. We need to be aware that the European labor market has actually become quite tight. And this is not only a factor that has started with the pandemic, but this is something that has already started in the aftermath of the financial crisis. And as you see, basically since the global financial crisis it is already in the run up to the pandemic labor markets. In the EU, across all indicators. When we look at unemployment rate, non employment rate, also the number of vacancies. It shows an increasing tightness with persistent labor shortages and the EU labor market is still tight. Which can be seen, for instance, labor hoarding, auditing the delivery of an existing ordinance which is still something that is in certain sectors a legacy of the pandemic. We have also seen basically since the financial crisis a strong increase in employment when we look at the figure on the left side so we've actually seen a tremendous increase in employment starting in 2013. We've also seen a computed increase in total hours worked, but that's the interesting part. The hours worked per worker has actually declined. It's a or at least has remained flat and just a small bit since the birth during the pandemic, but since then, ours actually have not recovered and it has seen a secular decline, pervert COVID potential hysteresis effect of the pandemic which is something that can be seen.

**Question 1: Thank you so much. That was really comprehensive and very, very useful still. And we I was wondering if you could tell us a bit more about how the EIB promotes or includes gender equality within their investments or projects. And what does that look like? We understand we said 30 minutes, so do let us know if you need to leave.**

**Interviewee:** That's fine, that's fine. No worries about five to ten minutes more. Yeah, so what EIB does when we actually grant flow, and so we have our ESG criteria, but we also have relatively strict criteria when it comes to gender equality and women's economic empowerment. So we have contract clauses where we can actually go towards innovative companies and or female owned and operated companies. So for instance, borrowers agree in their financial contract to allocate a certain share of EIB funds to final beneficiaries that are supporting equality either with regard to women's entrepreneurship or also women's leadership. And this can also be combined with share of women's employment for instance, or also product services, where women from it proportionally to, to or to tackle a recognized gender gap. So it's a clear mission of ours, I would say that female women economic empowerment and gender gap is actively addressed when providing the low winds to the private sector. So basically, it also depends a bit how we operate, but a large chunk of our loans are close to the private sector. So we cooperated with the private banking sector in a specific country. And they take up the loan share on their books and then they distribute the funds according to the criteria we set in place. These criteria or with

a certain amount of flow or with a certain certain level of percentages, addressing women's economic empowerment and gender balance. Audit women profit proportionally more from the project that is funded.

**Question 2:** So firstly, you mentioned that the year VD mainly used criterias to maybe achieve the ESG, especially women participation criteria so that you know, like to make sure they match this criteria. For your lending. But like, in addition, I wonder what strategies or tools maybe you recommend for those practitioners who policymakers to, to further mainstream gender considerations in addition to the criterias that are used by the EIB?

**Interviewee:** Maybe both, maybe both. From a lending perspective, as I said before, like the criteria they're not set in stone now, they develop over time. And I assume that also these displayed percentages that are currently proposed or required in the contracts today will be changed in the future and also increased in the future. Working together with the private sector, and also the banking sector in a certain country, confirms and we confirm also through monitoring that they adhere to our standards. Of course, it's difficult to micromanage the process because it basically ends up at the balance sheet of private banks and then they hand it out to SMEs. They handed out to their clients basically but, but I assume or I would expect that these criteria will become even better enforced but they will become even stricter than they are than they are today. Like, for instance with when we talk about environmental standards, or projects that are finance related to the climate transition. We're already today, at least 50% of all the funds that that go that are that are that are that are lent out, that are rented out or or have to be in relation to the climate transition. For the others can be done well from an EIB perspective, it's difficult because we basically have our criteria and then it is passed on if these contracts or if the projects are proposed because the projects are proposed to us and then we see whether they fulfill the criteria. Basically, they either do or do not if they do then if the economic appraisal if the due diligence, not only from a financial but also from an economic and social point of view, by the way which also is a stricter criteria than any than any investment bank, because usually a bank, when actually looking at projects that look at whether they're financially viable. If they're not profitable, they're not funded. We take both the financial entity's economic aspects into consideration and the economic aspects of it sometimes balance out the financial aspects. So even if the project is on a mere financial basis, not profitable. If it is profitable from an economic and social point of view, we are still funded and that is already a much, much stricter criteria relative to the economic well being of our clients and the use of European citizens than any other investment bank would have. Because we are an investment bank, but we have policy objectives, and they are aligned with the policy objectives of the EU.

**Question 3:** I have a question regarding your work on skills. I understand you mostly work on this. So I was wondering if you have any insights on the skills that are lacking, especially in the female labor force, and for example, if you look specifically at Green Jobs, what do you think are the biggest skill gaps? I mean, not even for women, but in general where women could come in to fill that gap.

**Interviewee:** We are currently in a period of transition to the environmental and the digital transition to decreased transmission in particular. I mean, I don't know if you're aware of the link to the LinkedIn green skills report. So basically what the green transition does is the green transition, forces skills and forces occupations to be rescaled upskilled. And some of these occupations also face obsolescence over time. And new occupations and new skill search. And most of the skills are related to or most of these occupations are related to skills that require either a STEM background science technology or

managerial social skills. But to a large extent, a STEM background because of these occupations, there's new occupations with the new skills that they do basically upgrade these occupations in terms of quantity and also in terms of requirements. These are patients demands. This is true for reading skills. So basically jobs that already exist, like fleet managers, are so out of the way that need to take sustainability into account. So these skills are already transitioning, and we have a group of new occupations with entirely new skills that are emerging, and the green transition demands upskilling and reskilling. On both of these occupational groups, and for that sort of competencies are needed. And well, I guess you probably know yourself, probably even better than I do, a woman still. Next step skills basically, how would you look at the enrollment numbers into STEM subjects, that universities and the successful graduation particularly off the tertiary cycle of education, females or women still to a considerable extent we have issues when we look at the newest PISA results. We still have tremendous issues with basic skills, reading skills, mathematical skills, science skills, at a very basic level across the EU in some countries, basically 30% of young people are illiterate. Reading skills are essential to take up knowledge. So if you can't read it you don't understand what's written and you basically cannot learn and this is something that needs to be tackled. There are still a large portion of young people, the so-called leader, the leader, neither employment nor it, nor education or training. Or I think on a European wide level we're currently at around 10% If I'm not mistaken which is still considerable, something that is basically a waste of a waste of talent. That is something I'm not sure about. Europe can usually can at the moment afford. But on the other hand, people are already voting or in the middle of their career. We also see tremendous issues of participation in traffic learning activities. So first of all the availability, the targeted availability and the tailored availability to chop me off lifelong learning or on the job training activities is simply not there, either for instance, or which is completely different compared to the US and willingness of workers currently on the job to participate in such training is so utterly low. And this is an issue given a tradition given the changing work environment that the changing job requirements, not only now, but particularly if that was super insightful, actually like building up on this.

**Question 4: What do you think are the biggest barriers in this case, but you already touched on this, but maybe also, what do you see as solutions to this? Like, how do you raise, for example, the availability of these opportunities and also the willingness of workers, but I mean, this is a bit further into a different sector. How do you increase STEM skills among girls?**

**Interviewee:** That's a bit of a sensitive topic because it touches on national competencies of educational programs. And this is something which is a bit hard for me to comment on, I have to admit, because it's not our responsibility in it. It's not the responsibility of the bank, either, to make any recommendations in this regard. But, I think we have. I think we've seen that what he cares about is equal opportunities for wherever, wherever our citizens live in Europe. And if, for instance, very often, not everyone is as fortunate as I would assume, to, to, to be raised in a family environment, for instance, that allows us to pursue our studies. But linking it back to the to the piece or result and also to the to the pockets of basically no qualification at all. I think it starts very much at an early age that we need to create some kind of a level playing field of children and that everyone is able to pursue her or his career objectives or wishes and opportunities and, and this is related very much to the universal the universal availability of childcare, I would say, which is, you know, again, also free up working time for women do not need to juggle, family, household, work life and child carry and so on. So, this all basically systemically is intertwined. It's hard to really pick out one aspect that is important. But there are many that contribute to this. But equality of opportunities across Europe, independent of where people are, is important.



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