



**Map of existing VET programs and resources related to
construction industry and gender equality and
inclusion**



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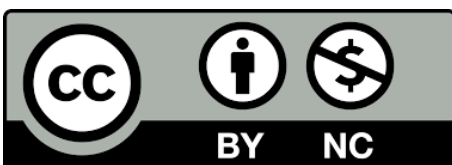
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1. Introduction

This research forms part of the **Women Empowered in Construction (WEC)** project, which addresses the persistent labour shortages and gender imbalances that characterise the construction sector in several EU Member States and the Western Balkans. The project seeks to enhance the responsiveness of vocational education and training (VET) systems by aligning existing programmes with labour-market demands and European qualification frameworks, while simultaneously improving the participation and employability of women in construction.

The rationale for this research derives from the recognition that sustainable reform of VET provision requires a robust empirical foundation. Previous analyses have highlighted pronounced skills mismatches, the underrepresentation of women in both training and employment, and uneven integration of digitalisation and sustainability within construction-related curricula. A systematic examination of current VET programmes across the partner countries is therefore essential to establish a comparative baseline against which future interventions can be designed and evaluated. Such a baseline enables the identification of structural gaps, the assessment of alignment with European competence frameworks, and the evaluation of the extent to which inclusivity and gender equality are addressed in present provision.

This research undertakes a structured mapping of existing VET programmes and resources related to the construction sector. Through a desk-based analysis of institutional, policy, and curricular documents, it investigates programme architecture, learning outcomes, assessment practices, and their correspondence with national and European frameworks. Particular attention is paid to the integration of gender equality, inclusivity, digital competences, and sustainability. The comparative findings not only highlight strengths and limitations within the current landscape but also provide the empirical basis for subsequent work packages, specifically the development of new curricula and digital learning resources. In this way, the research ensures that the project's outputs are firmly anchored in evidence and tailored to the documented needs of the sector.

2. Objectives

The objectives of this research are closely connected to the overarching aims of the WEC project, namely to improve the responsiveness and inclusivity of vocational education and training (VET) provision in the construction sector. At its most fundamental level, the research seeks to identify and systematically map existing VET programmes, resources, and curricula across the participating countries. Establishing such a baseline is a critical first step in understanding the current landscape, as it allows for the comparison of different national systems and highlights the extent to which they are capable of meeting contemporary labour-market demands. By documenting the existing provision in a structured and comparative manner, the study provides the consortium with a factual basis on which further development activities can be built.

A second objective concerns the evaluation of alignment between national VET systems and European frameworks, including ESCO, the European Qualifications Framework (EQF), and sector-specific reference points relevant to construction. This assessment is necessary because the mobility of workers, the comparability of qualifications, and the overall quality of vocational education depend on coherence with these common European instruments. The study therefore aims to measure the degree of compatibility, identify divergences, and highlight areas where national provision may require adjustment in order to achieve greater convergence with European standards.

Another key objective of the research is to examine the extent to which gender equality, inclusion, and diversity are incorporated within the curricula, pedagogical approaches, and outreach practices of VET providers in the construction sector. Given the persistent underrepresentation of women and disadvantaged groups in this field, it is essential to determine whether and how current training initiatives address these challenges. By critically analysing the integration of inclusivity principles, the research contributes to a clearer understanding of the cultural and institutional barriers that continue to limit participation and progression. In addition to identifying gaps, the research also seeks to highlight strengths and innovative practices already present within the partner countries. Particular attention is directed to examples such as modular learning pathways, applied and practice-oriented teaching resources, and dual training models that combine theoretical instruction with workplace-based learning. These approaches have the potential to serve as models of good practice that can be adapted and transferred across different national contexts. By showcasing such examples, the research provides inspiration for future development while also demonstrating that valuable innovations are already emerging within the sector. The research also aims to expose areas in which improvement is required, especially in relation to the integration of digitalisation, sustainability, and gender-sensitive content. As construction rapidly evolves through the adoption of new technologies, green building practices, and more diverse workforces, VET systems must adapt accordingly. Identifying where these elements are absent or insufficiently developed allows the project to propose targeted

solutions that ensure training provision remains relevant to current and future demands.

The overarching objective is to provide a robust foundation for evidence-based policy recommendations and the subsequent development of more inclusive, flexible, and future-oriented VET initiatives. By combining a systematic mapping of existing provision with an assessment of alignment, inclusivity, and innovation, the research equips policymakers, educators, and stakeholders with actionable insights. These insights are intended not only to address persistent skills shortages but also to promote greater social equity within the construction sector, ensuring that women and underrepresented groups are meaningfully included in the opportunities created by its ongoing transformation.

3. Methodology

The methodology applied in this research combines systematic desk-based analysis with targeted qualitative inputs from partner countries. Its design reflects the dual aim of producing a comparable cross-national mapping of vocational education and training (VET) programmes in the construction sector, while also capturing the degree to which gender equality, inclusion, digitalisation, and sustainability are integrated into curricula and resources. The first step involved the identification of relevant institutional sources in each of the seven participating countries (Ireland, Croatia, Lithuania, Montenegro, Germany, Bosnia and Herzegovina, and Albania). Partners collected data from ministries of education, national VET centres, employment bureaus, and publicly available programme documentation. This ensured that the mapping drew upon authoritative and up-to-date information rather than anecdotal or secondary commentary. In parallel, partners conducted a targeted mapping of VET providers and resources, with a minimum of three programmes and three resources per country systematically reviewed. This process generated an evidence base of at least 21 resources and 14 programmes, as stipulated in the project plan. Each item was analysed with reference to its structure, learning outcomes, alignment with national and European frameworks (EQF, ESCO, and sectoral standards), and pedagogical methods. To supplement the desk research, semi-structured interviews were carried out with representatives of VET providers and other relevant institutions across the partner countries. In total, 21 interviews were conducted, providing insights into both the formal aspects of curricula and the lived experiences of educators and administrators. These qualitative inputs added depth to the analysis by highlighting innovative practices, perceived challenges, and contextual barriers to gender inclusion and digitalisation that might not be evident from formal documents alone. The data collection phase was followed by a comparative analysis, where findings from each national context were synthesised into a cross-country overview. This step allowed for the identification of common strengths, divergences, and systemic gaps. Particular attention was paid to the extent of gender-sensitive content, the presence of inclusive teaching practices, and the incorporation of sustainability and digital competences. The analysis was framed to highlight both promising practices that could serve as transferable models and critical deficiencies requiring targeted intervention. Finally, the results were consolidated into a map of existing VET programmes and resources, presented in narrative form within this report. Output ensures accessibility for multiple audiences, ranging from policymakers and educators to learners and practitioners. By combining structured desk research, documentary analysis, and qualitative stakeholder input, this methodology provides a rigorous and replicable approach. It ensures that the findings are grounded in both institutional data and practitioner perspectives, thereby offering a reliable basis for the project's subsequent needs assessment and curriculum development.

4. Data Collection from Institutional Sources

4.1 Ireland

The curriculum mapping of the programmes “Construction Technology with Renewable Energy” and “Construction Site Management” in Ireland illustrates a strong commitment to aligning vocational education with both national (QQI) and European (ESCO) standards. The modular structure is clearly articulated, with comprehensive learning outcomes that balance theoretical knowledge and practical application. Modules such as Renewable Energy Systems, Safety and Health at Work, and Project Feasibility provide learners with technical depth while embedding broader competencies such as communication and digital literacy.

Despite these strengths, several structural and content-related gaps remain evident. Modules focused on renewable energy, while forward-looking, appear to have limited opportunities for direct hands-on engagement with specific technologies, potentially constraining learners’ ability to transfer theoretical understanding into workplace expertise. Similarly, the reliance on directed and self-directed study, particularly in Communication and Safety modules, could be complemented with more robust practice-based tasks. Another gap relates to digital integration: although some modules reference online platforms and software tools, there is little evidence of systematic embedding of digital construction methodologies (e.g., BIM), which are increasingly essential in the industry.

Gender inclusion represents another observed challenge. While the curriculum avoids overtly gendered language, case studies and examples remain largely generic, often omitting representation of women and other underrepresented groups in the construction sector. Renewable energy content, for instance, makes limited reference to gendered perspectives in technology adoption and workforce participation. The Site Management modules, though more inclusive in their team-based framing, would benefit from explicit promotion of gender-sensitive practices and leadership diversity. Without visible role models and tailored outreach, participation by women and minorities in these pathways may remain low.

In terms of alignment, both programmes demonstrate strong compatibility with industry standards and ESCO profiles. Safety and Health modules are directly linked to occupational health and safety frameworks, while Site Management references established ESCO roles such as construction project manager and quantity surveyor. This clear mapping ensures labour market relevance and enhances the employability of graduates. However, the integration of sustainability and digital innovation into ESCO-linked competencies remains partial and could be strengthened.

To further develop these programmes, several recommendations are proposed. First, embed more experiential learning opportunities, such as site visits, industry placements, and renewable energy laboratories, to translate theory into practice. Second, incorporate explicit gender-sensitive materials, case studies, and guest

lecturers from diverse backgrounds to enhance inclusivity. Third, adopt advanced digital tools and methodologies systematically across all modules, preparing learners for the evolving construction landscape. Finally, ensure continuous curriculum review in partnership with industry stakeholders to maintain responsiveness to emerging skills needs.

Overall, Ireland's Construction Technology and Site Management programmes provide a solid framework for equipping learners with industry-relevant skills. By addressing gaps in practice, strengthening gender inclusion, and advancing digital integration, the curricula will not only maintain alignment with ESCO standards but also become more accessible, future-proof, and socially inclusive.

4.2 Croatia

The curriculum mapping of both the “Ceramic Tiler” programme and the “Microqualification: Substrate Preparation for Tiling” demonstrates that these educational pathways are well-aligned with national (CROQF/HKO) and European (ESCO) standards, addressing the current needs of the construction labour market. Both programmes feature a modular structure, with clearly defined learning outcomes that emphasize the integration of theoretical knowledge and practical, work-based learning. This dual approach ensures that learners gain not only the necessary conceptual understanding, but also hands-on experience directly applicable in real working environments. A key strength of both programmes is the robust focus on practical skills, achieved through substantial work-based assignments and real or simulated workplace scenarios. Assessment methods are transparent and varied, relying on a combination of project work, analytic rubrics, and direct observation to verify that learners meet industry-relevant standards. The entry requirements and flexible delivery make the programmes accessible for adults and those seeking professional requalification, supporting lifelong learning and social inclusion. Despite these strengths, both programmes face similar challenges in promoting gender inclusion, as the construction sector continues to attract few women and other underrepresented groups. While gender-neutral language and case studies are included, there is a need to further enhance outreach and showcase diverse role models within course materials. Another area for development is the integration of digital resources and tools, which could further expand access, modernize delivery, and support learners with different needs or in remote locations. Overall, both the “Ceramic Tiler” and “Substrate Preparation for Tiling” programmes provide a solid foundation for personal and professional growth in the construction industry. By strengthening gender inclusion and advancing digitalization, these curricula will become even more relevant, accessible, and future-oriented.

4.3 Lithuania

The Lithuanian VET programmes mapped through VilniusTech illustrate strong institutional capacity and integration with national and European frameworks. The curricula are modular, with measurable learning outcomes that balance academic knowledge and applied skills. Modules cover areas such as construction management, digital design, and engineering fundamentals, ensuring that graduates are equipped with transferable skills relevant to the modern construction labour market.

Gender inclusion presents further challenges. The construction sector in Lithuania remains male-dominated, and while curricula avoid gender-exclusive terminology, few explicit efforts are made to highlight women's participation or create inclusive case studies. This absence risks discouraging female learners and contributes to the persistence of gender imbalances. Integrating diverse role models and gender-sensitive examples would strengthen inclusivity.

Recommendations for future development include embedding transversal competencies (digital collaboration, sustainability awareness, intercultural communication), strengthening industry partnerships for practice-based learning, and integrating explicit gender-sensitive materials. Such changes would modernise the programmes, align them with European priorities for green and digital transitions, and ensure broader inclusivity.

Overall, Lithuania's curricula reflect a forward-looking orientation, but greater focus on gender inclusion, sustainability, and practical exposure will be essential to fully realise their potential within European construction education.

4.4 Montenegro

The vocational education curricula analysed in Montenegro (Podgorica) reveal a system in transition, balancing traditional construction knowledge with incremental alignment to European standards. The programmes are modular, with clear learning outcomes and content descriptions, providing learners with a foundation in material use, workplace safety, and practical skills. References to ESCO occupations and the Montenegrin Qualifications Framework (MQF) support national and international relevance.

Gender inclusion remains limited. Female enrolment in construction education is low, and the programmes do not consistently integrate inclusive teaching practices, case studies, or role models. This perpetuates the perception of construction as a male profession and discourages participation from women and underrepresented groups. Addressing these omissions is critical to broadening the appeal of construction VET in Montenegro.

In terms of compatibility, the curricula show partial alignment with ESCO profil...

Recommendations for future module development include: (1) integrating sustainability and digitalisation across modules; (2) establishing stronger partnerships with local

industry to enhance practice-based learning; (3) embedding gender inclusion systematically in teaching materials and activities; and (4) diversifying assessment to include projects, simulations, and digital portfolios. These changes would modernise the system, improve its inclusivity, and enhance labour market alignment.

In sum, Montenegro's VET programmes demonstrate a solid foundation but require further innovation to align with European policy directions. By addressing gaps in sustainability, digitalisation, and gender inclusion, they will better prepare learners for contemporary construction sector challenges.

4.5 Germany

The vocational education and training programmes mapped in Germany (OM) demonstrate a well-established alignment with European occupational standards (ESCO) and the German Qualifications Framework (DQR). The programmes integrate theoretical knowledge with applied practice through modules focusing on construction technologies, project execution, and safety. Clear learning outcomes and a modular design support learners' progression and employability within a structured pathway that is recognised across ind...

Nonetheless, gaps are observed in the integration of sustainability-related competencies and digital technologies. While traditional construction knowledge is comprehensively covered, less emphasis is placed on emerging areas such as energy efficiency, smart construction tools, and sustainable material use. Similarly, the assessment methods tend to prioritise written and oral testing, while opportunities for innovative, project-based or digital portfolio assessments are less visible.

Gender inclusion presents another area of concern. Although the curriculum generally employs gender-neutral terminology, the representation of female role models or examples is limited. Construction in Germany continues to be male-dominated, and the omission of inclusive case studies or outreach activities risks perpetuating existing disparities. Modules could integrate explicit strategies to highlight women's contributions to engineering and site management, thereby promoting equal participation.

Compatibility with ESCO profiles is strong, particularly in modules referencing construction management, occupational health and safety, and technical drawing. The direct referencing of ESCO codes demonstrates the programme's labour market relevance and international transferability of skills. However, the incorporation of transversal skills such as teamwork, intercultural communication, and digital collaboration would further strengthen employability within a modernised labour market.

Recommendations for future development include embedding sustainability and digitalisation more explicitly into the curriculum, integrating inclusive teaching materials and role models to encourage gender participation, and diversifying assessment approaches to include project portfolios and digital outputs. Such steps would modernise the programmes, align them with EU priorities for green and digital transitions, and improve gender balance.

Overall, Germany's VET programmes provide a solid foundation in traditional construction skills but require innovation and inclusivity to remain future-oriented. By

addressing sustainability, gender equality, and digitalisation, these curricula can continue to serve as robust and internationally aligned pathways for professional development.

4.6 Bosnia and Herzegovina

The vocational curricula analysed in Bosnia and Herzegovina (ZENOS) reveal a structured approach to equipping learners with fundamental construction skills. The programmes are modular, with clear learning outcomes that combine theoretical content and hands-on practice, supported by references to occupational standards. The integration of workplace safety, construction techniques, and material science demonstrates attention to both knowledge and employability.

Gender inclusion continues to represent a systemic challenge. Female participation in construction training is exceptionally low, and current curricula make only limited reference to gender-sensitive approaches. Inclusive teaching materials, role models, and awareness-raising activities are not systematically embedded. Without such strategies, the sector risks reinforcing gender disparities and excluding underrepresented groups from construction careers.

Future module development should focus on embedding sustainability principles, enhancing digital competencies, and integrating structured gender inclusion strategies. Greater collaboration with employers to facilitate work-based training and internships would bridge the gap between classroom and workplace, improving transition outcomes for graduates. The development of role model campaigns and inclusive learning materials could also increase the visibility of women and marginalised groups in construction.

In conclusion, Bosnia and Herzegovina's VET programmes provide a necessary baseline for construction education, but modernisation is required. By addressing sustainability, gender inclusion, and practical exposure, the programmes can enhance their alignment with European labour market trends and better serve learners' diverse needs.

4.7 Albania

The curriculum mapping exercise for Albania (CRCA) highlights important progress in developing vocational education programmes aligned with national and European standards. The programmes under review exhibit a modular structure with defined learning outcomes that ensure learners gain a combination of technical knowledge and applied practice.

However, notable gaps exist in terms of structural and content coverage. Digital competencies and green construction skills remain underdeveloped, leaving graduates potentially underprepared for emerging labour market demands. Practical exposure is frequently constrained by limited resources, reducing opportunities for real-world application of skills. Furthermore, the assessment practices appear heavily oriented towards traditional written testing, without sufficient incorporation of applied or project.

Gender inclusion remains a significant challenge. Construction in Albania continues to experience very low female participation, and this underrepresentation is not

adequately addressed in the current curricula. Modules often lack gender-sensitive language, diverse case studies, or targeted outreach activities to encourage female enrolment. Without systematic integration of inclusion strategies, the programmes risk reproducing existing labour imbalances.

In terms of industry compatibility, the mapping reveals partial alignment with ESCO codes and European occupational standards. While core construction roles are well represented, the absence of stronger links to emerging ESCO occupations in green and digital construction represents a weakness. Enhanced alignment with these roles would improve the international portability of skills and better prepare learners for modern construction workplaces.

Future module development should therefore prioritise three areas: (1) the integration of sustainability and digitalisation into teaching content; (2) the explicit inclusion of gender-sensitive case studies, role models, and outreach initiatives; and (3) the expansion of practical training opportunities through partnerships with industry. Such improvements would ensure that Albania's VET system not only maintains labour market relevance but also fosters inclusive, future-oriented growth.

Overall, while Albania's construction VET programmes establish a sound basis for skills development, they require substantial modernisation to address gender imbalance, sustainability, and digitalisation. Addressing these areas will make the curricula more equitable and aligned with European policy directions.

5. Conclusion

This research establishes a clear, comparative picture of construction-sector VET across seven partner countries and, in doing so, clarifies both what works and what remains underdeveloped. Across contexts, programme modularisation, explicit learning outcomes, and the coupling of classroom instruction with practical training provide a solid baseline of labour-market relevance. Systems that embed structured workplace learning most visibly the dual model demonstrate how curricular design, assessment, and progression routes align to generate job-ready competences. These shared strengths indicate that the foundations for effective provision already exist and can be scaled or transferred with appropriate adaptation. At the same time, the analysis shows that inclusion, digitalisation, and sustainability are not yet integrated with sufficient depth or consistency to meet current European priorities or future sectoral demands. Gender equality most often appears as an intention rather than as a fully developed curricular thread: role models are scarce in course materials, outreach remains limited, and gender-responsive pedagogy is uneven. Digital competences are present, but typically in the form of discrete tools rather than as a transversal capability spanning planning, execution, and evaluation (BIM-enabled workflows, e-portfolios, data-driven site management). Sustainability is likewise partial, with occasional modules on renewable systems but less systematic attention to energy performance, circularity, and climate-resilient construction practices. These gaps collectively constrain the capacity of VET to address skills shortages while advancing social equity and the green/digital transitions.

The comparative perspective points to a pragmatic path forward. First, aligning programme architecture more tightly with European instruments (EQF/ESCO and

relevant sector frameworks) strengthens transparency, mobility, and recognition, especially across EU-Western Balkans pathways. Second, mainstreaming gender equality as a curricular through-line supported by visible female role models, targeted outreach, and assessment that values inclusive teamwork moves provision from compliance to impact. Third, treating digitalisation and sustainability as embedded competencies rather than add-ons will future-proof programmes and make learning authentically reflective of contemporary construction practice. Finally, deepening structured partnerships between providers and employers will stabilise work-based learning and accelerate curriculum updating cycles. Taken together, these documents provide a robust evidence base for the next stages of the project. They inform the forthcoming needs assessment and the design of new curricula and digital resources by specifying where to preserve and scale strengths, where to correct structural deficits, and how to connect national practice to European standards. In this way, the research directly supports the overarching aim: to shape more inclusive, flexible, and future-oriented VET systems that expand opportunities for women and under-represented groups while supplying the construction sector with the skills it needs for a resilient, green, and digitally enabled transition.