

# Enabling sustainability through competencies in higher education: the Circular Economy Transition Manager

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## Abstract

*The transition toward sustainability requires not only ambitious policies and strategies, but also professionals capable of translating sustainability objectives into concrete organizational practices. This paper examines the role of higher education in addressing competence gaps generated by transformations of work in the transition toward a circular economy. Focusing on hybrid professional roles operating across strategic, organizational, and operational levels, the analysis considers the CETM as an illustrative case within the furniture sector. Through the development and validation of a competency framework, using an ongoing European initiative as an observational context, the study shows how universities can translate emerging transition needs into structured learning pathways. The findings highlight the role of higher education as an enabling infrastructure for sustainability transitions, supporting the consolidation of new professional roles and contributing to the objectives of SDG 4 (Quality Education).*

**Keywords:** Sustainability Transitions; Competence Gaps; Hybrid Professional Roles; Circular Economy;

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## 1. Introduction

Contemporary sustainability challenges are increasingly understood as systemic problems characterized by strong interdependencies across environmental, social, and economic dimensions (Markard et al., 2020). While the Sustainable Development Goals (SDGs) provide a global reference for guiding transformation processes (Chankseliani & McCowan, 2021), progress in their implementation remains limited due to difficulties in translating strategic objectives into effective operational practices. This gap highlights both the complexity of sustainability transitions and the limits of traditional decision-making approaches, emphasizing

the need for professional profiles capable of bridging strategic vision and operational practice (Allen et al., 2021).

Sustainability transitions directly reshape professional practices, which represent the level at which transformation processes become operational (Moilanen & Alasoini, 2023).

This contribution examines the role of higher education in supporting SDG 4 as an enabling lever for the achievement of other SDGs (Chankseliani & McCowan, 2021), focusing on how sustainability challenges reshape work practices and generate competence gaps, and on how higher education can foster professional profiles capable of bridging strategic vision and operational practice.

In particular, the analysis focuses on the Circular Economy Transition Manager (CETM) as an emerging professional role responding to the gap between sustainability policies and operational capacities in the furniture sector. This research has been developed under the European initiative CirCLER, funded under the Erasmus+ programme, as an observational context to discuss how higher education can enable such processes in the furniture sector. Within the European Green Deal and the Sustainable Products Initiative, the furniture sector is identified as the second priority product group for its high potential to reduce lifecycle environmental impacts, making it a relevant context to investigate competence needs for circular transitions (JRC, 2021).

## **2. The influence of Higher Education on sustainability transitions**

### **2.1. Work practices as a key level for implementing sustainability strategies**

Transitions toward sustainability-oriented models reshape work organization and professional practices, requiring adjustments in processes, responsibilities, and competences (Markard et al., 2020). Circular economy (CE) principles are operationalized through everyday activities and roles, influencing the adoption of sustainable solutions and the evolution of professional configurations (Moilanen & Alasoini, 2023). However, in many organizations sustainability strategies remain limited to environmental management approaches, without a deeper transformation of routines and decision-making processes.

Sustainability implementation does not occur spontaneously but depends on the action of individuals capable of acting as mediators between strategic objectives and operational practices. As shown by Ivory and MacKay (2020), micro-strategies and initiatives situated at the individual level often enable the integration of sustainability within organizational contexts, revealing competence gaps that go beyond technical skills and include coordination, interpretation, and complexity management abilities (Allen et al., 2021).

The development of such competences is also strategically relevant to the achievement of the SDGs, as the ability to accelerate transition processes depends on the availability of profiles

capable of operating across different levels. These roles belong to what has been defined as a “new generation and category of sustainability professionals” (Stafford-Smith et al., 2017).

## **2.2. Higher education as an enabling infrastructure for sustainability transitions**

Higher education (HE) institutions are increasingly recognized as strategic actors in sustainability transitions, moving from simple knowledge providers to *institutional infrastructures* (Chankseliani & McCowan, 2021). These institutions act as a *competence infrastructure* that bridges specialized knowledge and applied contexts, making knowledge operational and supporting the transformation of socio-economic practices (Allen et al., 2021; Purcell et al., 2019).

For HE to function effectively as an infrastructure, it is crucial that intended learning outcomes (LOs) are systematically aligned with sustainability attributes, moving beyond “ad-hoc” integrations that often lack a holistic view (Kioupi & Voulvoulis, 2020). Such an infrastructure requires an evolution towards “transdisciplinary” models that integrate academia, industry, and civil society on an equal basis (Ashida, 2023).

Overall, these perspectives position HE as a key context for supporting and legitimizing emerging professional roles capable of operating across strategic, organizational, and operational levels. This theoretical framework provides the basis for analyzing how specific HE contexts can contribute to the development of professional profiles able to address competence gaps and support transitions toward circular economy models.

## **3. Defining a new professional role for sustainability transitions**

### **3.1. CirCLER European project context**

CirCLER was developed as an Erasmus+ project through a multi-actor partnership involving higher education institutions, research entities, sectoral associations, and companies from the furniture sector. Within this configuration, universities played a central role in coordinating and integrating scientific, educational, and professional contributions, bringing together academic knowledge with inputs from the productive and institutional context. (CirCLER Project, 2024)

Within the CirCLER project, the CETM was explicitly conceived and structured as an emerging professional figure, making it possible to formalize a set of practices, responsibilities, and competences that, while present in transition processes, had not previously been attributable to a defined professional profile. This operation responds to a shortage explicitly recognized at the EU furniture sector level, as “the sector lacks the occupational profile of the CETM and the related necessary training” (CirCLER Project, 2024).

### **3.2. The CETM professional role**

As discussed in Section 2, transitions toward CE models directly affect work and organizational practices. On this basis, the CirCLER project has focused on the formation of the CETMCETM figure as a professional profile designed to support and guide organizations through CE transition processes in the furniture sector (CirCLER Project, 2024).

According to the definition developed within the CirCLER project's Competency Framework, "Furniture sector CETMs are responsible for leading the transition of sector companies towards more circular practices and business models along their whole value chain and ensuring their sustainability [...]" (CirCLER Consortium, 2024).

The definition of CETM is designed for potential formal recognition within the ESCO (European Skills, Competences, and Occupations) database to strengthen its institutional legitimacy (CirCLER Consortium, 2024), aligning with a broader trend of formalizing circular economy roles, such as the Italian UNI/PdR 184:2025 reference practice (UNI, 2025).

Accordingly, the CETM is figure is positioned as a professional role that cannot be reduced to either a purely technical or managerial profile, but rather operates across strategic and operational levels to support the implementation of CE transition processes.

## **4. Developing of the CETM role for sustainability transitions**

The CETM was conceptualized as a structured response to competence gaps at the intersection of sustainability transitions and circular economy implementation in the furniture sector. The profile consolidates fragmented transition-related functions into a coherent professional role capable of guiding companies toward circular models across the value chain, monitoring production processes (materials, waste, energy), and promoting voluntary standards.

The development of the Competency Framework followed a four-phase methodology led by technical and higher education partners (CirCLER Consortium, 2024).

A competency framework is an integrated set of knowledge, skills, and attitudes that supports effective problem solving and provides a basis for developing curricula and methodologies for circular product-service systems (Sumter et al., 2021).

### **4.1. Methodology for the development of the Competency Framework**

In the second phase, the identified competences were integrated into the definition of a professional profile specific to the furniture sector, the Circular Economy Transition Manager (CETM). The framework was structured into six macro-competence areas.

In the third phase, the framework was quantitatively validated through a survey involving 153 experts from different fields: circular economy specialists (39%), VET and higher education

professionals (28%), furniture manufacturers (13%), and other consultants (20%). Competences were assessed on a 0–10 scale according to three dimensions: strategic importance for circular transition processes, current educational provision to identify competence gaps, and proficiency levels, evaluated only by furniture manufacturers as representatives of industry practice.

In the fourth phase, the framework was validated through an online workshop with 37 experts from consortium partners and external professional networks, ensuring a multidisciplinary perspective. Using Mentimeter, participants confirmed the relevance of the macro-competence areas, with an average score of 9.1/10. Qualitative feedback highlighted operational aspects such as reverse logistics for bulky furniture and digital tools for material traceability. The process concluded with the finalization of the framework (AMBIT, 2024).

#### **4.2. Framework structure and validation results**

The CETM Competency Framework integrates six macro-competency areas: Values Thinking, Interpersonal Thinking, Systems Thinking, Strategic Thinking, Operational

Thinking, and Futures Thinking, designed to enable managers to lead circular transition processes (CirCLER Consortium, 2024). These macro-competencies were calibrated to address the specific challenges of the furniture sector and reflect the combination of strategic, technical, and relational capabilities required for circular transitions:

- Values Thinking promotes a sustainability-oriented mindset and supports the integration of ethical values into decision-making.
- Strategic Thinking translates circular visions into actionable plans aligned with EU sustainability regulations.
- Operational Thinking focuses on applying circular design principles, including material selection and design for durability, repair, and reuse.
- Systems Thinking supports understanding complex interdependencies through approaches such as Life Cycle Assessment (LCA).
- Interpersonal Thinking enables collaboration across organizations and supply chains, facilitating transition processes.
- Futures Thinking strengthens the ability to anticipate long-term scenarios and align business models with sustainability transitions. (AMBIT, 2024)

Validation results confirmed the high strategic importance of all competence areas. However, the findings reveal a mismatch between their perceived relevance and current educational provision (AMBIT, 2024). As illustrated in Table 1, training is rated as insufficient across all categories, with the most pronounced gaps occurring in Futures Thinking (specifically the sub-competence of “Futures Literacy”) and Systems Thinking. These findings reveal a competence

gap hindering circular practices and highlight the need for higher education to bridge strategy and professional practice (Purcell et al., 2019).

**Table 1. CETM Competency Framework Validation Data. Source: adapted from AMBIT (2024).**

| Macro-Competency Area  | Importance<br>(Scale 0-10) | Current Training<br>Offer (Scale 0-10) |
|------------------------|----------------------------|----------------------------------------|
| Values Thinking        | 8.44                       | 4.68                                   |
| Interpersonal Thinking | 8.70                       | 4.95                                   |
| System Thinking        | 8.91                       | 4.53                                   |
| Strategic Thinking     | 8.76                       | 5.29                                   |
| Operational Thinking   | 8.95                       | 5.21                                   |
| Futures Thinking       | 8.56                       | 4.24*                                  |

*\*Note: Within the Futures Thinking area, the specific sub-competence of "Futures Literacy" received the overall lowest score of 3.78.*

Overall, the systematization and validation of the CETM Competency Framework demonstrate the role of higher education as an enabling infrastructure for sustainability transitions. By integrating scientific knowledge with sectoral needs, higher education contributes to transforming fragmented transition-related practices into a coherent and transferable professional profile. In this sense, the CETM emerges as a hybrid role capable of supporting the translation of sustainability strategies into organizational and operational practices.

#### **4.3. Bridging the Gap: Curricular Development and Sectoral Integration**

To address the competence gaps identified in the validation phase, the CirCLER project uses the framework to develop a Joint Curriculum (EQF 4–6) and an online training toolkit, with focus on Futures Thinking, identified as the main educational deficit (low training offer 3.78/10; proficiency 4.70/10). This area is critical due to the need to manage uncertainty and anticipate long-term transformations in the furniture sector, characterized by long product lifecycles.

The implementation strategy is based on three pillars: practical tools and KPIs adapted to SME constraints; integration of technical and interpersonal competences to support organisational change (e.g. reverse logistics and digital traceability); and alignment with the ESCO framework to ensure European recognition and transferability of the CETM profile. CirCLER thus translates competence gaps into structured learning outcomes supporting the circular transition of the furniture sector. (AMBIT, 2024)

## 5. Conclusion

This contribution has examined the role of HE in supporting sustainability transitions through the enabling and formalization of new professional profiles. Building on the analysis of competence gaps generated by transformations of work in CE processes, the paper shows that such transitions require professional roles capable of translating sustainability objectives into concrete organizational practices.

The CETM role emerges as a structured response to these needs, configuring itself as a hybrid and mediating figure capable of coordinating actors, translating strategies into operational actions, and supporting the implementation of CE principles within organizations. This specific role has been theorized and validated through the research processes inherent to the CirCLER European project on the CE transition for the furniture sector.

While focusing on the specific context of the CirCLER project and the furniture sector, the implications of this work extend beyond sectoral boundaries. The CETM can be interpreted as an indicator of a broader transformation in the professional profiles required by sustainability transitions, pointing to the need for further comparative research on how higher education can support the emergence of similar roles in other sectors and territorial contexts.

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