

INTEGRATING CIRCULAR ECONOMY INTO STEM EDUCATION: THE CIRCULAR STEM POLICY PAPER

The Consortium of the Circular STEM project has released an EU Policy Paper that brings together the insights, experiences, and tested practices developed during the project's lifetime.

More than a summary, this document is a forward-looking political guideline **designed to support the integration of Circular Economy (CE) principles into STEM (Science, Technology, Engineering, and Mathematics) education within European secondary schools.** It begins from a fundamental premise: the green and digital transitions currently reshaping our society require new skills and mindsets, and schools are the first places where these must be nurtured. Incorporating the concepts of Circular Economy into the teaching of physics, chemistry, mathematics, or technology allows these subjects to become more tangible and relevant, directly connected to the real world and future job markets. It helps students understand how to regenerate resources, reduce waste, and rethink production and consumption. Despite this potential, CE content remains rare in European classrooms, and its absence highlights a significant missed opportunity for education systems striving for sustainability.

The policy paper acknowledges several key barriers that hinder the diffusion of CE in schools. Among these are the rigidity and fragmentation of current curricula, which often prevent teachers from introducing interdisciplinary or sustainability-focused content. Many educators also lack adequate training in circular and green topics, and face a shortage of accessible, ready-to-use teaching materials. The digital divide, gender disparities, and territorial inequalities further limit the ability of certain students and teachers to access high-quality STEM education. Lastly, a persistent disconnect between the educational world and the labor market contributes to the misalignment of teaching content with real-world needs.

In response to these challenges, the Circular STEM policy paper offers strategic recommendations aimed at fostering sustainable and lasting change within education systems. The document calls for stronger support for teachers and school leaders to integrate CE topics into STEM subjects, through professional development and access to quality resources. It stresses the importance of revising curricula to allow space for innovation and project-based learning.

Furthermore, **it encourages greater cooperation between educational institutions, policymakers, and industry stakeholders, with the goal of aligning classroom learning with societal and environmental priorities.**



Throughout the project, the Consortium developed a set of tools designed to help educators embed CE into STEM education.

These include a teacher training course composed of six modules, a digital platform called the Circular STEM Academy featuring interactive content, and a comprehensive toolbox with over 80 educational materials, including practical activities, games, and real-world project ideas. These tools were pilot-tested in Spain and Portugal with both students and teachers. The outcomes were encouraging: learners engaged in projects such as building hydroponic gardens, producing soap from used cooking oil, organizing second-hand markets, and creating infographics focused on eco-design. Feedback from the pilots confirmed that integrating CE into STEM education is not only possible, but also effective in increasing student engagement and raising environmental awareness.

The policy paper concludes with a strong message: Circular STEM is more than just a project; it represents a scalable model for sustainability-oriented education. The resources have been developed, the methods validated, and the societal need is clear. What remains is the political commitment to bring this vision into classrooms across Europe. Change, the document asserts, must begin in the schools and be built in close collaboration with teachers. Only by doing so can we equip younger generations with the skills and attitudes needed to create a circular and sustainable future.

