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Planting the seeds of sustainability through education

EU-funded researchers are helping schools and universities put sustainability into practice by giving students and communities the tools to make real environmental change.

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What if schools could do more than teach sustainability? What if they could test it, measure it and experience it in real time? Across Europe, students and teachers have been turning classrooms into small-scale laboratories for environmental change.

Over the past four years, schools and universities in Finland, Portugal, Romania and Spain trialled more than 60 practical interventions, from installing solar panels and monitoring energy use to planting biodiversity gardens and redesigning recycling systems.

At a primary school in Madrid, Spain, pupils and teachers turned sustainability into a hands-on challenge: saving water, cutting waste and reducing CO2 emissions through a lively second-hand clothes “market” at the school. The children even worked out the environmental savings themselves, turning maths into climate action.

Meanwhile in Tampere, Finland, secondary school students took a fresh look at what was on the lunch menu. From organising vegan food tastings to investigating the sustainability of school meals, they explored how small changes, including more vegetarian options, could make a big difference.

These initiatives were part of a wider drive across schools and universities in Europe, delivered through a four-year EU-funded research project called ECF4CLIM, which ended in December 2025.

Building momentum

What made the approach stand out was not just the initiatives themselves, but who designed them. Students, teachers, school leaders and members from the wider educational community (e.g. NGOs, municipalities, regional governments) worked together in “sustainability teams” and committees, creating solutions to

challenges in their own communities.

“We developed an innovative approach that brought together citizen science and participatory research, actively involving students, teachers and the wider education community,” said Ana Prades, Head of the Sociotechnical Research Centre (CISOT) in Barcelona, part of the Spanish National Centre for Energy, Environmental and Technological Research (CIEMAT), who coordinated the work.

These teams and committees are important because they will help sustainability actions to continue well beyond the end of the project, added Dr Marta Almeida, environmental engineer at Instituto Superior Técnico at the Technical University of Lisbon, Portugal.

The aim was not simply to teach climate awareness, but to help educational institutions become places where sustainable thinking and action are part of daily culture. Children and adults alike were challenged to think critically about practical changes in everyday life that could improve sustainability.

Finding time in already packed curricula was not always easy. “The students are really loaded with a tight schedule in upper secondary school,” said Niina Mykrä, a researcher at the Finnish Institute for Educational Research (FIER) at the University of Jyväskylä.

The solution in Tampere was to introduce a “sustainability club” into the school day and award credit for those classes, opening up space for pupils and teachers to discuss new ideas together.

Students enjoyed the freedom to share their ideas, while a sense of teamwork encouraged discussion, creativity and fresh thinking. Rather than simply being told what to do, students and teachers learned side by side, exploring solutions together.

“It was really important for the children to have agency,” said Mykrä.

Backed by research

An important part of the ECF4CLIM work was helping schools measure the environmental effects of their actions. Researchers gave students and staff practical advice on how to track energy use, waste, air quality and carbon footprints.

“We developed tools such as an environmental footprint calculator that allowed schools to evaluate their impacts in different categories,” said Yolanda Lechon, research professor at CIEMAT’s Department of Energy in Madrid, who co-coordinated the initiative.

The research team also provided energy efficiency kits and monitoring devices to measure temperature, humidity, indoor air quality and energy consumption inside school buildings.

For many students, the results were eye-opening. When pupils in Madrid calculated the environmental impact of producing clothing, they were shocked by the amount of water and carbon emissions it takes to produce a single T-shirt, said Lechon.

She believes this kind of hands-on learning can help sustainability feel more immediate and personal. “We felt like we were doing something with students that would help spread the message of sustainability more widely.”

Other activities turned environmental initiatives into games, with students competing to improve recycling rates or reduce waste. Digital tools, games and interactive materials were also developed to support learning.

A framework for lasting change

One of the researchers' main goals was to help schools and universities sustain these efforts long into the future.

To support this, the ECF4CLIM team created a Roadmap to help educational communities become more sustainable in ways that fit their own local needs.

Developed through research, crowdsourcing and real-world testing in participating schools and universities, the Roadmap offers practical tools to help schools identify activities that support sustainability, as well as the barriers that may be holding them back.

It also encourages schools to think beyond isolated environmental projects and instead build a broader culture of sustainability involving students, teachers, school leaders and families.

"The youngest schoolchildren could communicate what they learnt to their families, while the university students can transfer the knowledge from the project to their future jobs," said Almeida.

Beyond the classroom

The Roadmap builds on GreenComp, a European framework developed to help people acquire the knowledge, skills and attitudes needed to think and act sustainably in everyday life.

The ECF4CLIM researchers stress that the initiative was not only about changing individual behaviour.

"It is important to build collective competences, rather than depend just on the individual," Almeida said. "We want to impact schools, but we also need changes to happen at a national level."

The researchers hope the Roadmap will help other schools across Europe replicate and adapt initiatives like student-led sustainability teams, environmental monitoring and practical climate projects in their own communities.

In total, the project involved 13 schools and universities, 10 research partners and around 1 300 participants.

Schools and universities, researchers believe, can play an important role in helping younger generations respond to climate and environmental challenges – not only by providing information, but by giving students confidence that they can shape solutions themselves.

By turning schools and universities into living laboratories for sustainability, ECF4CLIM aimed to plant ideas – and habits – that could keep growing long into the future.

That momentum matters. Engaging younger generations in this way builds support for the European Green Deal among the people who will play a crucial role in turning Europe into a more climate-neutral, competitive economy by 2050.

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More info

- ECF4CLIM (CORDIS)
- ECF4CLIM project website
- GreenComp