

## How collaborations and international networks can support green education on a global scale

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### Abstract

Higher Education Institutions (HEIs) are increasingly recognized as key actors in addressing the climate crisis and advancing sustainable development. This paper provides an overview of the role played by international academic collaborations and networks in promoting green education globally. It highlights the interplay between transnational partnerships, academic mobility, and policy-based efforts, particularly within the European and global contexts.

Technologies like Artificial Intelligence (AI) support the delivery of green education through personalized learning paths, sustainability reporting automation, and enhanced international research collaboration.

The European Strategy for Universities (2022) and the European Green Deal position sustainability as a guiding principle in modern higher education. EU programs such as Erasmus+, Horizon Europe, and the European Universities Alliances contribute to sustainability-oriented curricula and innovation frameworks. These align with the EU Council Recommendation on Learning for Environmental Sustainability (2022), promoting systemic changes in educational institutions for green transition.

Globally, SDG 4 (Quality Education) and SDG 13 (Climate Action) form the framework for sustainability education under the UN 2030 Agenda, supported by UNESCO's Greening Education Partnership. International treaties like the Paris Agreement (2015) and Article 6 of the UNFCCC reinforce education's role in climate action. This paper also discusses institutional case studies and remaining challenges such as accreditation gaps, unequal participation, and funding disparities. It offers recommendations for inclusive frameworks that empower HEIs to act as global leaders in sustainability.

*Keywords: Green Education, Internationalization, Higher Education Mobility, EU Sustainability Policy, UN SDGs, Global Partnerships*

**JEL Classification: I23, Q01, F63, O35**

## 1. Introduction

Environmental challenges like global warming, biodiversity loss, and pollution demand transformative shifts in how societies function, produce, and learn. Sustainability has become a foundational concept in education. HEIs are pivotal in producing knowledge, promoting awareness, and shaping sustainable practices.

HEIs not only generate knowledge but also foster innovation and community engagement. Their teaching, research, and outreach capabilities enable the development of sustainability-focused competencies. For HEIs to fulfill this mission, structural and pedagogical changes are necessary—especially in how sustainability is integrated across disciplines and countries.

Internationalization plays a crucial role in this transformation. Through partnerships, staff and student mobility, digital collaboration, and transnational joint degrees, HEIs share best practices and contextual insights, enabling collective responses to global sustainability challenges.

Policy institutions such as the European Union, the UN, and UNESCO reinforce the role of cooperation in green education. Initiatives like the European Green Deal, the European Strategy for Universities, and the UN 2030 Agenda have provided frameworks that align educational systems with sustainability goals.

This paper explores how international networks and institutional collaborations, supported by programs like Erasmus+, Horizon Europe, and UNESCO's Greening Education Partnership, enhance global green education. It identifies their contributions to curriculum development, competence building, and institutional capacity while addressing equity, alignment, and long-term sustainability.

## 2. Policy and Institutional Context

### 2.1. European Policy Frameworks

The European Green Deal (2019) outlines the EU's ambition to become the first climate-neutral continent by 2050. Education is seen as central to this transformation. The European Strategy for Universities (2022) calls for stronger roles for universities in green and digital transitions through cross-border collaboration and sustainability integration in curricula and operations.

The Erasmus+ Programme (2021–2027) provides resources for sustainability-focused capacity building, mobility, and institutional partnerships. Horizon Europe funds collaborative research tackling sustainability challenges. The European Universities Initiative supports alliances like CIVIS and EPICUR, which promote joint degrees and cross-border learning on real-world sustainability problems.

The Council Recommendation on Learning for Environmental Sustainability (2022) further urges EU member states to embed sustainability across all education levels and strengthen partnerships between HEIs, civil society, and industry.

### 2.2. Global Frameworks and Treaties

Internationally, the UN's 2030 Agenda and the SDGs—especially SDG 4 and SDG 13—establish a shared framework for sustainability education. Target 4.7 emphasizes

equipping all learners with the knowledge and skills for sustainable development, including global citizenship and climate literacy.

UNESCO's Greening Education Partnership promotes a climate-ready curriculum, training, and policy environment by 2030. The Paris Agreement (2015) and Article 6 of the UNFCCC recognize education and awareness as essential components of climate action.

The Bologna Process and the European Higher Education Area (EHEA) ensure compatibility in academic standards, enabling joint sustainability programs and cross-border recognition of qualifications.

### **3. The Role of International Collaboration in Green Education**

International collaboration enables HEIs to address sustainability challenges that transcend borders. Through shared programs, mobility, and digital platforms, institutions can co-create knowledge, enhance skills, and improve global competence.

#### **3.1. Curriculum Co-Creation Across Borders**

Joint curricula embed sustainability principles while integrating diverse academic traditions. Programs developed under the European Universities Initiative, like CIVIS, offer co-taught modules on topics like sustainable urban development and circular economy. Students benefit from exposure to multiple national contexts while engaging with unified learning outcomes and assessments.

These programs also strengthen interdisciplinarity, merging perspectives from environmental science, social justice, law, and technology. Collaborative design ensures relevance to both regional and global sustainability goals, and credit recognition across institutions supports academic mobility.

#### **3.2. Mobility as a Driver of Sustainability Skills**

Mobility fosters cultural awareness, systems thinking, and adaptive learning—skills essential to sustainability leadership. Erasmus+ offers green-focused mobility, including exchanges on climate resilience, environmental entrepreneurship, and renewable energy.

Faculty mobility supports innovation in teaching, joint supervision, and international research. Summer schools and joint modules expand transnational learning opportunities. Virtual and blended mobility has grown since the COVID-19 pandemic, offering inclusive models for students facing financial or logistical barriers.

#### **3.3. Digital Platforms and Open Educational Resources**

Technology expands the reach of green education. Platforms like Moodle, OpenEdX, and EU-funded virtual campuses host collaborative modules and research. Tools like AI-powered tutors and chatbots enhance access and personalization, particularly in remote or underserved areas.

Open Educational Resources (OERs) provide high-quality sustainability content—from toolkits to simulations—accessible worldwide. Portals like UNESCO's Open Learning Platform and Germany's Green Learning Portal democratize sustainability education.

Digital platforms also support research and innovation. Horizon Europe projects use shared tools for co-authoring, stakeholder engagement, and sustainability data tracking. These approaches reduce emissions linked to travel and promote ethical, inclusive education.

## 4. Case Studies

### Case Study 1: MESPOM Joint Master's

MESPOM is a joint Erasmus Mundus Master's in Environmental Sciences, Policy and Management. It involves institutions in Hungary, the UK, Sweden, Greece, and the US. Students rotate among institutions, participating in fieldwork, interdisciplinary courses, and research.

The program prepares graduates for roles in international organizations, NGOs, and policy institutions by combining scientific, policy, and management expertise.

### Case Study 2: ClimEd – Capacity Building in Ukraine

ClimEd, led by the University of Helsinki, supports Ukrainian HEIs in modernizing climate education. It delivers digital learning content, faculty training, and cross-disciplinary curriculum reform, enhancing Ukraine's alignment with EU sustainability goals.

### Case Study 3: EUSTEPs – Virtual Exchange

The EUSTEPs project connects universities in Greece, Italy, Portugal, and Germany. It developed an online module on ecological footprint and sustainability practices. Students work in virtual teams to address regional sustainability challenges. The project also explores AI-based analytics to evaluate learning impact and engagement.

## 5. Barriers and Challenges

Despite progress, international green education faces persistent barriers.

### 5.1. Policy Misalignment and Institutional Fragmentation

Differences in accreditation, quality assurance, and academic calendars complicate joint program delivery and recognition. Diverse pedagogical philosophies and assessment models further challenge harmonization.

### 5.2. Access Inequality and Regional Imbalances

Underfunded institutions—particularly in the Global South—often lack capacity for international projects. These institutions may face difficulties in proposal development, reporting, and infrastructure access.

Many Erasmus+ and Horizon Europe partnerships remain Eurocentric, limiting inclusion of global perspectives and experiences.

### 5.3. Digital Divide

Lack of connectivity, digital literacy, and accessible platforms limit participation in virtual collaboration. Educators and students in rural or underserved areas often cannot fully engage in online learning.

### 5.4 Project-Based Culture

Short-term project funding limits sustainability. Many pilot initiatives lack institutional buy-in or continuation strategies. Without integration into curricula and policy, impact remains limited.

## 6. Strategic Recommendations

To realize the full potential of international collaboration in green education, HEIs, policymakers, and funders should adopt long-term, inclusive strategies.

### 6.1. Embed Sustainability into Internationalization Strategies

Universities should align global partnerships with sustainability objectives. Sustainability themes should be prioritized in mobility calls, research agendas, and global visibility strategies.

### 6.2. Ensure Equitable Access Through Targeted Support

International programs should allocate funding and capacity-building resources to underrepresented institutions. Virtual, blended, and short-term mobility should be expanded to accommodate diverse learners.

“Twinning” models—pairing resource-rich institutions with emerging ones—can promote mutual growth and equitable capacity building.

### 6.3. Foster Institutional Ownership and Long-Term Integration

Green curricula developed in international projects should be formally embedded in degree programs. Faculty engagement should be recognized in promotion and evaluation. Dedicated units should monitor the long-term impact of sustainability efforts.

Strategic plans, governance frameworks, and quality assurance mechanisms must explicitly include sustainability and internationalization.

### 6.4. Encourage Multi-Stakeholder Partnerships

Sustainability education benefits from partnerships beyond academia. Collaboration with local governments, NGOs, and green industries brings real-world relevance, policy engagement, and innovation.

Funding schemes should encourage consortia that include civil society, public institutions, and the private sector.

### 6.5. Promote Policy Coherence Across Borders

Joint degrees, microcredentials, and learning outcomes should be recognized across systems. National policies must align with global frameworks such as the UNESCO Greening Education Partnership and the EU’s GreenComp (Sustainability Competence Framework).

Simplifying administrative processes for international collaborations can improve access and implementation.

### 6.6. Leverage Artificial Intelligence for Scalable Impact

AI can support personalized learning, multilingual access, and sustainability data monitoring. It also facilitates collaboration in research and teaching across geographies. Ethical use, privacy safeguards, and digital inclusion are essential for responsible deployment.

## 7. Conclusion

As climate challenges intensify, education must equip learners with the tools to understand and address environmental crises. HEIs, through meaningful international collaboration, are uniquely positioned to foster sustainability knowledge, skills, and values.

This paper has examined how global cooperation—in the form of policy alignment, curriculum co-creation, mobility, and digital innovation—strengthens green education. It presented concrete examples of collaborative programs and addressed key barriers to impact.

The transformation of green education requires going beyond fragmented, project-based efforts. It calls for systemic, inclusive, and future-oriented strategies. If HEIs embed sustainability into their core missions and partnerships, they can lead the transition to a just and resilient global future.

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