

Greening learning in disaster-prone HEIs: a teaching-led pathway to eco-tourism futures in developing regions

Daisy Lily Moscare Balanquit

Abstract

Purpose – This trend paper argues that in disaster-prone regions of developing countries, teaching-led greening, rather than facilities-focused greening alone, has emerged as a future-shaping mechanism for eco-tourism systems. By embedding sustainability competencies, local knowledge and dynamic capabilities into curricula, disaster-exposed Higher Education Institutions (HEIs) can catalyze resilient, low-impact, and inclusive destination development.

Design/methodology/approach – The paper synthesizes emerging practices in education for sustainable development (ESD), dynamic capabilities theory and tourism futures research to examine how institutionalized teaching-led greening operates as a systemic lever linking curriculum design, assessment, governance and stakeholder partnerships to destination resilience.

Findings – Teaching-led greening enables HEIs to build a skilled green workforce, diffuse sustainability standards across tourism value chains, support transparent assessment and certification and strengthen community-based livelihoods, contributing to visitor trust, extended stays and climate resilience.

Research limitations/implications – Calls for comparative, multi-site evaluation of teaching-led greening initiatives and their measurable effects on destination-level tourism and resilience indicators.

Practical implications – Introduces a five-pillar teaching framework and a three-horizon roadmap linking curriculum levers to eco-tourism outcomes, with relevance for HEIs, tourism stakeholders and policymakers in disaster-prone developing regions.

Originality/value – The paper repositions the classroom, not only green infrastructure, as a core site of transformation in eco-tourism futures, framing sustainability as a repeatable, assessable capability rather than episodic advocacy.

Keywords Eco-tourism, Green university, Dynamic capabilities, Disaster-prone regions, Developing countries, ESD, Experiential learning, Living laboratory, Sustainability assessment, Regenerative tourism

Paper type Viewpoint

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Introduction: teaching-led greening as an emerging trend in tourism futures

In the Global South, many HEIs located in flood-, cyclone-, and drought-prone regions face the twin pressures of climate risk and constrained institutional capacity. A discernible shift is underway, from event-based or infrastructure-led greening toward teaching-led greening that embeds sustainability directly into learning outcomes, assessment, and graduate capabilities.

This shift reflects a broader transformation in the relationship between higher education, sustainability, and tourism. As climate shocks intensify and destination vulnerability becomes more visible, tourism futures increasingly depend not only on green facilities or policy compliance, but on human capabilities, local governance practices, and culturally grounded knowledge systems that shape everyday decision-making in destinations.

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Several HEIs now promote green entrepreneurship, ventures that create ecological, social, and economic value, as a national and regional imperative (Schaltegger and Wagner, 2011). For tourism, this trend is particularly consequential. Destination resilience and credibility depend on local skills, transparent standards, and adaptive governance, all of which can be cultivated systematically through education. HEIs are uniquely positioned to shape these futures by training guides, working with destination management companies (DMCs), supporting circular micro-enterprises, and embedding sustainability metrics that influence destination pathways toward 2030–2040. To sustain this shift, HEIs must operationalize the triple bottom line of people, planet, and profit in teaching practice (Elkington, 2018).

Why teaching and not just facilities now leads

In disaster-prone destinations, sustainability increasingly begins in the classroom rather than in physical retrofits. Pedagogical systems can be redesigned, tested, and scaled far more rapidly than infrastructure, allowing HEIs to respond proactively to climate risk, regulatory change, and market volatility. Competencies such as systems thinking, crisis preparedness, low-impact operations, and ethical decision-making are more adaptable when embedded in curricula than when treated as operational afterthoughts.

Global policy signals reinforce this trend. ESD roadmaps emphasize competency development, transparent learning outcomes, and community impact (UNESCO, 2024), while sustainability rankings and assessment tools increasingly pressure HEIs to demonstrate verifiable outcomes rather than symbolic commitments (Findler *et al.*, 2019; Universitas Indonesia, 2024). Recent studies underscore the stakes. A multi-institutional Irish study found weak alignment between tourism curricula and the SDGs, highlighting risks of credibility gaps without explicit competency mapping (Maguire *et al.*, 2024). Similarly, a Spanish university case illustrates how curriculum sequencing and authentic assessment can align sustainability, digital transformation, and responsible tourism practice with industry needs (Fernández-Villarán *et al.*, 2024).

Together, these developments indicate a structural shift, tourism sustainability is moving from infrastructure- and policy-led models toward education- and capability-led pathways that shape future destination trajectories at their roots. To concretize the emerging trend of teaching-led greening without advancing claims of empirical generalization, illustration 1 below is presented as synthetic vignette rather than single institutional case studies. They are constructed by the author to reflect recurring patterns documented in the literature on education for sustainable development, disaster risk reduction, and community-based eco-tourism in the Global South. Their purpose is to illustrate how teaching-led greening operates in practice and not to report primary data.

Illustration 1

Teaching-led greening in a disaster-prone coastal HEI (Southeast Asia)

In a typhoon-exposed coastal province in Southeast Asia, a public HEI embedded disaster risk reduction, traditional coastal resource management, and eco-tourism into its tourism and hospitality curricula. Rather than prioritizing green buildings, the institution redesigned courses to include field-based learning with fisherfolk, mangrove stewards, destination management offices, and local tourism enterprises. Students co-developed low-impact tour protocols, basic evacuation plans for tourism sites, and sustainability checklists for homestays and boat operators. These outputs were co-assessed by faculty, LGUs, and DMCs, resulting in micro-credentials recognized by local tourism operators. This teaching-led approach strengthened graduate employability while diffusing culturally grounded sustainability practices across the destination value chain.

The durability of teaching-led greening depends on dynamic capabilities, an institution's capacity to sense, seize, and reconfigure in response to environmental, market, and policy change (Teece, 2018). Through sensing, HEIs identify local hazards, cultural assets, indigenous ecological knowledge, and destination risks. In disaster-prone regions, this includes recognizing the role of

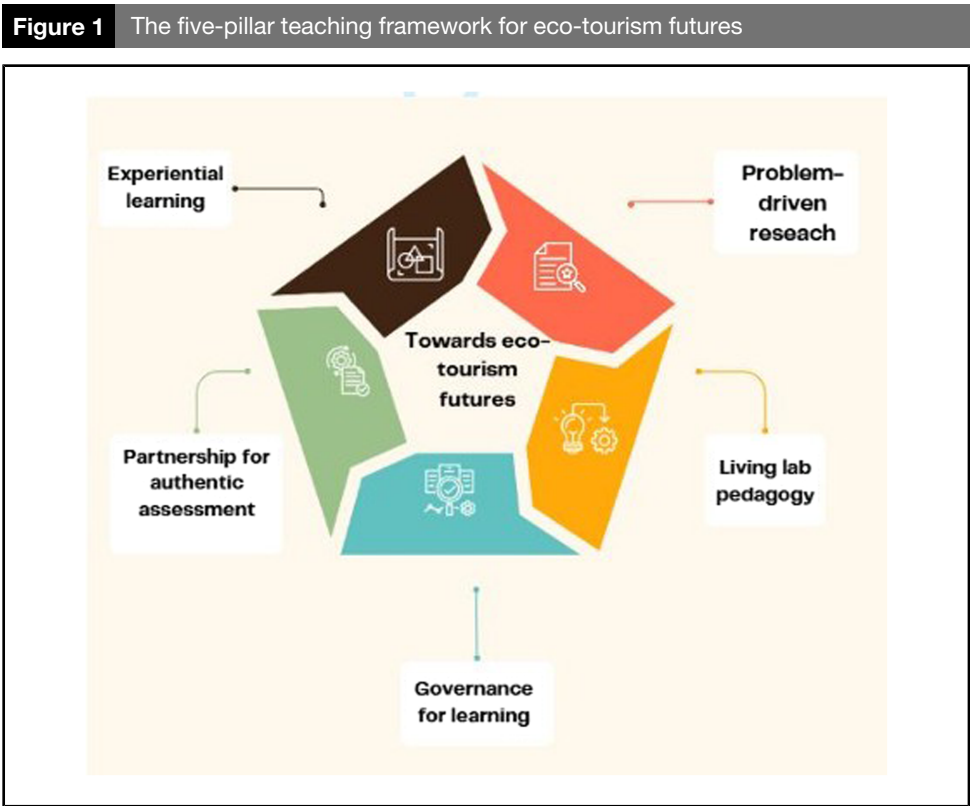
traditional ecological knowledge in land use, coastal management, and community resilience. Seizing follows as HEIs mobilize incubators, micro-grants, revised curricula, and partnerships with LGUs, DMCs, disaster management centers, and NGOs to translate learning into practice. Reconfiguring ensures continuity through curriculum renewal, cross-disciplinary coordination, and resource reallocation. In this way, dynamic capabilities transform sustainability education into a repeatable system that continually supplies destinations with adaptive skills, governance tools, and locally embedded innovation (Buzzao and Rizzi, 2020).

Assessment as infrastructure for accountable and realistic greening

For teaching-led greening to endure, assessment must function as future infrastructure, a mechanism for learning, integrity, and accountability. Frameworks such as the Sustainability Assessment Questionnaire, UI GreenMetric, and UNESCO’s SET4HEI translate sustainability goals into measurable indicators linking learning to destination-relevant outcomes (University Leaders for a Sustainable Future, 1999; Universitas Indonesia, 2024; UNESCO, 2024). However, HEIs in developing regions face real constraints like limited funding, faculty workload pressures, and uneven infrastructure. Without acknowledging these conditions, teaching-led greening risks appearing idealized. Adaptive responses include phased curriculum integration, shared facilities with local partners, pairing faculty with industry mentors, and low-cost living labs embedded in existing community systems. By aligning assessment with realistic capacity-building pathways, HEIs can sustain credibility while navigating structural limitations.

A five-pillar teaching framework for eco-tourism futures

Building on assessment as adaptive infrastructure, the Five-Pillar Teaching Framework shown in Figure 1 positions education itself as a dynamic capability. Experiential learning immerses



students in real contexts – farms, heritage sites, coastal villages, where they co-design low-impact tourism solutions. In many Global South contexts, this includes integrating indigenous practices in resource stewardship and disaster preparedness into formal learning activities.

Problem-driven research aligns theses and capstones with destination challenges such as carrying capacity, food safety, and renewable energy. Living-lab pedagogy transforms campuses into replicable testbeds. Governance for learning institutionalizes progress through councils and KPIs. Partnerships for authentic assessment explicitly involve DMCs, tourism enterprises, disaster management offices, and accreditation bodies, strengthening graduate employability and industry relevance.

Three horizons to 2040 - from teaching innovation to tourism futures

The three-horizon roadmap presented in [Table 1](#) outlines how HEIs can evolve from isolated initiatives to institutionalized and regenerative eco-tourism systems. Unlike policy- or infrastructure-led approaches, this pathway reshapes tourism futures by embedding adaptive capacity in people, organizations, and local value chains. The roadmap translates teaching-led greening into phased, realistic action aligned with institutional capacity and regional partnerships.

Research agenda

Future research should examine how teaching-led greening influences destination outcomes, particularly through micro-credentials for guides, MSMEs, and DMCs. Comparative cases from disaster-prone regions in Southeast Asia, the Pacific, or Latin America – where HEIs already integrate sustainability, disaster preparedness, and indigenous knowledge into tourism education, would further strengthen empirical grounding.

Table 1 Practical roadmap for HEIs toward sustainable and regenerative eco-tourism systems		
<i>Horizon/Timeline</i>	<i>Focus area</i>	<i>Key actions and milestones</i>
Year 1–2 Quick Wins	Foundation and Alignment	■ Map curricula to ESD principles ■ Organize a Green Entrepreneurship Council ■ Conduct program audits for sustainability integration ■ Identify and implement quick-win initiatives
Year 2–5 Pilots to Pathways	Innovation, Application, Governance, and Measurement	■ Establish incubators for circular ventures ■ Launch pilot projects in waste, water, and energy management ■ Deploy carrying-capacity tools for eco-tourism sites ■ Expand campus and community living labs ■ Publish the first public sustainability report
Year 5+ Institutionalization and Scaling	Governance, Measurement, and System Integration	■ Tie budget allocations to learning KPIs and sustainability metrics ■ Create an inter-HEI tourism innovation network ■ Implement operator certification aligned with program rubrics ■ Develop destination-level carbon and waste accounts ■ Host annual regional sustainability showcase

Conclusion

In disaster-prone developing regions, the classroom is increasingly the fastest-moving lever of change. When HEIs institutionalize teaching-led greening, through experiential learning, problem-driven research, living labs, governance for learning, and authentic partnerships, they build the dynamic capabilities needed to navigate climate risk and tourism uncertainty (Teece, 2018; UNESCO, 2024). This trend reshapes tourism futures not by retrofitting destinations, but by preconfiguring the skills, values, and governance practices that future operators, planners, and entrepreneurs carry into the field. In doing so, teaching-led greening offers a credible, inclusive, and adaptive pathway for regenerative eco-tourism in developing regions.

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