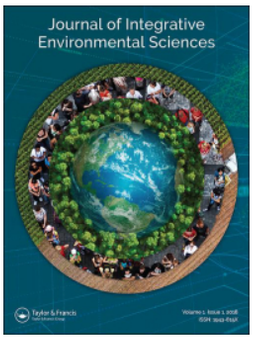

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Seeing the wood for the trees: a heuristic framework to enable the integration of sustainability education in higher education settings

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ABSTRACT

This paper puts forward a conceptual framework to support the dual challenges of strategic and practical integrative action of Education for Sustainable Development (ESD) across Higher Education Institutions (HEIs). There are numerous existing resources and toolkits providing appropriate actions, guidance or approaches to monitor and measure ESD engagement. Our intended distinctive contribution in this paper is to complement these with heuristic ways of thinking that offer clarity on the context and evolution of progress on ESD at an institutional level. Our proposals were developed through structured comparative discussions by ESD practitioners from seven European universities, leading to a consensus view on key contextual influences across a range of environments, embodied in our proposed heuristic metaphors. The resulting proposed framework, built upon a systems-based visual metaphor of a forest ecosystem of HEIs, proposes the use of the dimensions of capacity and commitment, to define an integrative framework with four positional scenarios: "Pockets of Practice", "Emerging Agenda" to "Integrated Impact" and "Off the Agenda". To illustrate its application, it is used to contextualize relevant steps to progress ESD associated with each scenario in the areas of strategy, staff development, formal education and extra-curricular opportunities. We argue that the adoption of such a framework by HEI practitioners could support day-to-day decision-making and strategic planning towards an integrated approach to ESD that engages with all areas of university activity.

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Introduction

Higher education institutions (HEIs) across the globe are increasingly making strong commitments to act on Climate Emergency, the Sustainable Development Goals (SDGs) and other societal agendas such as Equality, Diversity and Inclusion. "Sustainability" and "Sustainable Development" are terms both used by practitioners, often interchangeably,

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to describe the intended positive social, economic and environmental outcomes of addressing challenges associated with the SDGs. Education for Sustainable Development (ESD) can be understood as a "process of creating curriculum structures and subject-relevant content to support and enact sustainable development" (Advance HE & QAA 2021). For organizations to transition towards meaningful transformation and effective delivery of Higher Education for Sustainable Development (HESD), sustainability or a commitment to the SDGs must become embedded at the heart of governance as well as both strategic and operational thinking (SDSN Australia/Pacific 2017).

For actors within HEIs interested in furthering this agenda at their institution, there is an ongoing question of how to achieve this, which might encompass consideration of institutional priorities, strategy, evaluation, staff capacity building, student engagement and more. To meet this need, a wide range of "how-to" guidance is available, offering, for example: an account of the purpose and value of HESD (e.g. Advance HE & QAA 2021); metrics to evaluate progress such as the Times Higher Impact Rankings (THE 2023); lists of actions that can enable progress such as "AISHE" (Roorda 2008); the Sustainability Leadership Scorecard (EAUC 2020b), Climate Action Toolkit (EAUC 2020a) or Sustainability Tracking Assessment and Rating System (STARS 2023); and developmental support from peers such as "Responsible Futures" (SOS-UK 2023). However, such tools typically lack a key dimension, that of enabling HEI actors to characterize *where they are starting from* in terms of the current situation and direction of travel of their institution, and therefore which actions and interventions might have most value in developing HESD within their *specific context*. This contrasts sharply with one of the foundational concepts underlying sustainability, whereby actions are viewed as constantly evolving in response to temporal and physical contexts and the specificities of internal and external environments.

The stance adopted in this paper is one of viewing HESD as an integrative activity, whose scope goes beyond what is delivered in the taught curriculum, to encompass co-curricular activity, the lived experience of university life and the educational role of HEIs in their local community and through stakeholder relationships. An integrative ethos also highlights how teaching supports and is supported by other actions of the institution, such as research, knowledge exchange, environmental management and more. We argue that such holistic implementation can provide a highly effective "ecosystem" context for learning in which students and staff perceive that sustainability commitments are authentic and cross-cutting.

Given this background, our aim in this paper is to propose a heuristic conceptual framework that supports the dual challenges of strategic and practical integrative action for ESD across HEIs. Furthermore, we aim to highlight a framework for conceptualizing key contextual factors as a starting point for engagement with how-to guidance, hereby providing this work's primary contribution.

The heuristic presented is built upon a visual metaphor that is intended to enable a breadth of actors to *"see the wood for the trees"* within the complex ecosystem that is a HEI (and indeed its wider context, locally, nationally and globally). Our integration of a metaphor is intended to enable actors to understand the necessarily complex change more clearly, despite their close involvement with the day-to-day activities of the institution (Audebrand 2010). Conceptual rules-of-thumb can aid and enhance decision-making by actors in uncertain or complex organizational environments, supporting effective "fast and frugal" thinking in day-to-day interactions (Artinger et al. 2014). A systems-based

visual metaphor and associated scenario-based conceptual framework offers actors a chance to conceptually position HEI's evolving support for HESD, complementing some of the detailed analytical approaches already in use in the HE sector. Our scenario framework is structured across two dimensions (capacity and commitment), giving rise to four scenarios: "Pockets of Practice", "Emerging Agenda", "Integrated Impact" and "Off the Agenda". To complement presentation of these broad heuristic frameworks, the paper illustrates interventions to develop ESD which could have strong leverage and impact in particular given contexts.

Frameworks and tools to support HESD

In this section, we discuss the influence of organizational context on developing HESD and how existing how-to and assessment frameworks engage with issues of context.

Organisational context for HESD

The challenge of developing HESD within a particular institution invites analytical approaches that might be applied within any organizational development or change initiative, whether in HE or otherwise. Key general issues highlighted in this literature include structure, culture, leadership, change processes and interaction between an organization's internal and external environment (Capon 2004).

In order to be of value to practitioners, these general issues would benefit from being made more specific to the unique nature of HEIs. The field of Academic Development, which focuses on teaching and learning enhancement in HEIs, could have great value here, as contextual influences on curriculum change are frequently explored. A recent study by Anakin et al. (2018) drew upon 30 interviews with staff from a range of levels at three institutions to explore contextual influences on curriculum change, noting those that either drove forward or inhibited progress. Potentially strong driving forces included leadership, alignment with academic identity, impetus from students and (at times) the quality assurance process. Staff feeling a sense of ownership of change initiatives could help progress, but if it was absent this served as a barrier. While a lack of dedicated resources could hinder change initiatives. Taken together, we can see here some key dimensions affecting curriculum change including top-down influence (leadership, quality assurance, resource availability) and bottom-up engagement by staff and students founded upon what is important to them.

Several studies have also sought to identify contextual influences for HESD in particular, also using the framing of drivers and barriers. For example, Verhulst and Lambrechts (2015) highlight three key barriers to progress as being a lack of awareness of how and why to address ESD; structural barriers to co-operation or innovation in HEIs; and a lack of resources to support progress. In contrast, the commitment of individuals and provision of funding, where available, were key enablers. Indeed, in Fiselierm et al. (2017), examination of the take-up of HESD in the UK, the support of individuals and available funding were highlighted as key enablers, alongside institution-level commitment to the agenda. Furthermore, Weiss et al. (2021) offered a deep analysis of drivers and barriers to ESD based upon review of 133 institutional case studies. This work identified co-ordination of activities, priority setting, a strategic plan for ESD and taking advantage of "windows of

opportunity" as key enablers. The three major barriers highlighted in their work were a lack of interdisciplinary competencies, a lack of vision on how ESD could be addressed and a lack of resources.

Drawing upon these points, we can see a wide range of relevant factors to consider, each of which could be viewed as driving or inhibiting change. However, given their quantity and lack of structure, there is a risk that practitioners struggle to orient themselves easily in terms of the status of their institution's situation, its direction of travel and potential next steps. Indeed, at worst, these factors can offer a decontextualized "laundry list" of issues (Verhulst and Lambrechts 2015) that lack any sense of relationship, hierarchy, or pattern. We would argue, therefore, that a gap remains to articulate context in a more accessible format that nonetheless captures some of the key dimensions highlighted above.

Action in context for HESD

If we accept that there is diagnostic value in broadly defining the context for HESD for a particular institution, then how can actors proceed to develop actions and activities in a way that is sensitive to the context of their institution?

A clear starting point here would be literature on change management in organizations, and indeed Verhulst and Lambrechts (2015) have examined this for the issue of HESD. They argue for the consideration of key issues in change management such as resistance to change, communication processes, organizational culture and the degree of empowerment and involvement in change processes. This echoes recommendations from prior work on the development of HESD (e.g. Harpe and Thomas 2009), which advocates for bottom-up engagement with academic staff as a strategy to both manage resistance and build authentic commitment to ESD. More recently, Anakin et al. (2018) also offered process-oriented guidance, such as identifying key institutional stakeholders and engaging with their priorities as part of a HESD development plan.

In terms of how such insights are made apparent to HEI actors engaged in developing HESD and put into practice, this is frequently through the lens of guidance published by relevant HE support agencies. HEIs frequently draw upon one or more of the many evaluative or developmentally focused frameworks which aim to aid progression of HESD, or which help with implementing sustainability more widely (often including engagement with ESD). Here, we characterize and discuss two broad types of resource: "how-to guidance" which typically introduces and illustrates the agenda; and assessment frameworks, which offer a list of actions/issues to consider and a (usually quantified) measure of progress in relation to them.

A prominent recent example of how-to guidance is the recent report on pursuing HESD in the UK by two influential sector bodies focused on academic development and academic quality (Advance HE & QAA 2021). This guidance aims to influence actors at all levels of HEIs and focuses upon introducing HESD (largely defined as per UNESCO 2017), and proposing educational approaches that develop sustainability competencies through an outcome-based approach to course design. Whilst an integrative approach is put forward and the diversity of contexts for implementing HESD are clearly acknowledged (Advance HE & QAA 2021, p. 6), a clear steer on how to conceptualize organizational context, in the manner we are advocating for here, is not put forward. The Advance

HE and QAA report is a prominent recent example, but we would argue that the same omission also occurs in other influential how-to guidance, such as UNESCO's ESD Learning Objectives guidance (Rieckmann 2017) or the "Getting Started with the SDGs in Universities" report (SDSN Australia/Pacific 2017).

Moving on to Assessment frameworks, many examples exist with global reach and impact such as STARS (2023) and the Times Higher Impact Rankings (THE 2023). These are prominent across the sector as they enable universities to be recognized for their achievements on sustainability, through taking and reporting actions against a range of specified categories or issues. To examine in more depth how such an approach might offer practitioners a chance to contextualize their institution's starting point on ESD, an example of a framework that adopts a highly developmental approach is worth focusing upon.

An example of a developmentally focussed assessment framework is "Responsible Futures" (SOS-UK 2023), which is used by 20+ UK HEIs and Student Unions each year. Responsible Futures claims to be the *"only framework of its kind that maps out the organizational innovation and enhancement required, spanning top-down, middle-out and bottom-up level change, to achieve whole institution engagement with sustainability learning"*. Participating institutions work towards achievement of 45 criteria (e.g. policy and commitment, benchmarking progress, indicators of leadership and strategy), share learning with each other in periodic peer-learning sessions and are evaluated every two years by a student-led audit. Thus, the framework is focussed on holistic HESD, recognizing the differing contexts for institutions – two key principles informing this paper. Responsible Futures offers contextualization opportunities through its developmental process, by enabling colleagues from different institutions to meet regularly and compare priorities, challenges and strategies. Nonetheless, even with a process with these significant strengths, a gap remains around a scenario-driven diagnostic framing element to help staff at institutions to orient themselves and prioritize the range of actions put forward.

In summary, whilst there exists a wide range of valuable guidance, frameworks and evaluations against a list of criteria for HESD, they do not offer an explicit broad-based diagnostic phase which enables practitioners to hold in their minds a sense of the status and context of ESD in their institution at the time of initial engagement or review of progress. This paper now moves on to explore how such a framework could be defined and put into practice to have value for actors in a range of HEI settings.

Research methodology

Our proposals were developed through participation of staff from seven universities in a European Universities Association (EUA) thematic peer group (TPG) project. The validity of our methodology mirrors that of the Delphi method, drawing conclusions from a consensus of experts from different settings. Delphi allows for the structuring of a group communication process in a way that *"the process is effective in allowing a group of individuals to deal with complex problems*" (Linstone and Turoff 1975, p. 3). Further, it seeks to develop a reliable consensus in an expert group through controlled feedback (Gupta and Clarke 1996, p. 186). The Delphi method has been argued to be of significant value when research requires *"educated perspectives on the future"*, particularly for planning and policy analysis (Williamson 2002).

Table 1. Overview of EUA methodology.

Phases	Description of EUA methodology	
Expert selection	Jan.–Feb. 2020 - call for experts across European universities. The selection process was based on individual's experience and interest in the topic of Environmentally Sustainable Teaching and Learning. Results: 1–2 representatives from seven universities, ensuring geographic and gender diversity (total of 11 experts, senior academics and managers)	
Group Administration	One group coordinator, appointed by the EUA, supporting logistical matters and methodological design. One chair, selected from experts' pool (*primus inter pares*), working closely with the EUA coordinator on preparing questions and facilitating group discussion and leading delivery of a final group report.	
Group work	Brainstorming	Actions: EUA group coordinator and the chair designed EUA and shared a set of questions on the subject matter based on existing academic debate (see Appendix 1). Experts were invited to reflect and answer asynchronously using MS Teams platform. Members also asked to provide institutional concept notes on environmental sustainability. One online MS Teams meeting organised to share the expert reflections and prepare the next phase. Results: mapping of institutional experiences and achieving a common conceptual understanding
	Narrowing down	Actions: Identification and classification of ideas from phase one, revision and refining. A second MS Teams meeting identified four challenge areas and three thematic (challenge related) clusters, resulting in three specific research questions. Results: Matrix of challenges and cross-cutting themes and the creation of three expert subgroups based on specific research questions.
	Ranking	Actions: Two MS Teams meeting to seek consensus around the main scenarios within the dynamic process of implementing sustainable teaching and learning and review group work outcomes. Ecosystem metaphor was advanced to visualise the subgroups' results and design a framework. Results: Four scenarios were agreed, focusing on two key factors – degree of institutional commitment and capacity. A heuristic framework was advanced based on expert group outcomes.
External validation of heuristic framework	EUA 2021 Learning and Teaching Forum (18 participants from 11 countries), February 2021. UN Academic Impact online ESD workshop (>300 International participants), January 2022; Advance HE Sustainability Symposium (8 participants, from UK HEIs, March 2022; and ICED2022 conference workshop (23 participants from European HEIs), June 2022.	

Overall approach

Experts are the key actors in the Delphi approach, bringing knowledge, insight, and authority during several rounds of panel meetings, with the final aim of reaching a consensus. This group consensus is believed to represent a stronger decision-making ground than individual judgements (Buckley 1994, p. 163). In our case, a process was followed from 2020 to 2022 using online-only participation, following the structured methodology used by the EUA TPGs (Table 1).

The project ran from March 2020 to February 2021 with core meetings on 29 April, 15 May, 8 September and 20 November 2020, with numerous additional sub-group meetings, all held virtually due to the COVID-19 pandemic. Follow-up external validation of the framework put forward here took place until June 2022.

Phases of activity

There were three main rounds of facilitated expert consultations, aligned to meetings 1, 2 and 3 described in Table 2. This structured step-wise approach mirrors the approach used in Delphi.

The first phase was an initial reflection on basic questions on sustainable teaching and learning conducted through two synchronous MS Teams meetings and a follow-up task. This resulted in developing taxonomies of challenges and thematic clusters to structure further enquiry (Table 2). The second phase (meeting 1 follow-up) then aimed to narrow down ideas and led to the formation of three expert subgroups on three specific issues: (1) How to embed sustainability thinking in learning and teaching in a lasting manner; (2) How to achieve staff engagement with sustainable teaching and learning; and (3) How to achieve student engagement with sustainable teaching and learning.

Membership was based on thematic expertise and/or interest and contributions were evidence-based drawing on institutional experiences. Groups were asked to consider the four Key Challenges and six Thematic Clusters in their thinking. The initial framing of metaphor and conceptual framework put forward in this paper was the outcome of one of these subgroups. Phase three (meetings 2 and 3) aimed to draw consensus on proposed outputs from subgroups. The ecosystem metaphor and four scenarios based on commitment and capacity were agreed and further defined at this meeting and consensus was confirmed at the final meeting in November 2022.

Validation and final review of the conceptual framework

As detailed in Table 1, the framework has subsequently been shared at ESD events with staff from HEIs attending from the UK, Europe and globally. Whilst not conducted as formal evaluation or data collection, this did offer a valuable sense-check with over 300 practitioners from diverse settings. At each workshop, following an introduction to the heuristic framework, an online poll was held to establish which scenario best characterized participants' contextual experience. Follow-on discussions then explored if the framework fitted with practitioners' own understandings. Learnings from this are included in the Findings section below.

Findings – proposed metaphor and conceptual framework

This section summarizes the key findings of our group process, articulating a visual metaphor and heuristic conceptual scenario-based framework of the context for addressing ESD in HEIs.

Visual metaphor – the HEI ecosystem

As stated in the Frameworks and Tools section, there is a collective acknowledgement that HESD cannot be effective where its implementation is solely in the realm of formal academic education activities. Therefore, the development and adoption of a systems-based, visual metaphor was intended to enable representation and engagement by the breadth of necessary actors across the integrated HEI ecosystem with the complexity and systemic

Table 2. Expert questions and data collection process.

EUA TPG Meetings	Questions for experts/Tasks	Summary of findings
Meeting 1 (part 1): April 2020	1) Please draft a concept note on how environmental sustainability is understood and addressed at your institution, with a particular focus on learning and teaching 2) Discuss and agree on a common understanding of the group theme "Environmental sustainability of learning and teaching" and thematic scope.	Key areas identified: • Curriculum design • Student engagement • University policies and strategies • Staff development • Teaching innovation • COVID-19 • Inclusivity.
Meeting 1 (part 2): May 2020)	1) Identify challenges associated with the key areas acknowledged during the preceding meeting 2) Potentially revisit and refine the list of key areas based on the challenges identified, e.g. by narrowing down the list or developing thematic (or challenge) clusters. - Are there challenge clusters, sub-challenges or overarching challenges?	1) Key challenges: • Strategic Approaches • Programme Level • Modular Level • Extra- Curricular 2) Thematic clusters • Scoping/mapping • Good Practice/Innovation • Promotion of Uptake: Mechanisms/policies/processes/training • Student Engagement • Inclusivity • COVID 19
Meeting 1 follow-up task: Summer 2020	1) Discuss one identified key challenge in more detail in pairs and discuss potentially helpful practices (from your own institutions or elsewhere) aiming to address these challenges. 2) Discuss in three sub-groups the practices identified in pairs and elaborate on four scenarios of good ESD practice.	Major findings: • Two key contextual influences of good practice: *Commitment* and *Capacity*. • By characterizing *Commitment* and *Capacity* as "high" or "low," four scenarios were identified, representing common stages in ESD evolution for higher education.
Meeting 2: September 2020	1) Consolidate the group reflection and the consensus around the four scenarios within the dynamic process of implementing sustainable teaching and learning.	Group agreement reached: - Use the ecosystem metaphor to visualise the subgroup's results. Four scenarios consolidated: 1. Pockets of Practice 2. Emerging Agenda 3. Integrated Impact 4. Declining Support.
Meeting 3: November 2020	1) Review good practice and the four scenarios 2) Finalise structure and content of the TPG report.	Final TPG report delivered.

nature of the necessary change (Gwilliam and Peterbauer 2021). Metaphors are widely used in academia, where they are often integral to how students and indeed academics "*. . . act, interact and think about the world*" Audebrand (2010). For example, in strategic management, a field of direct relevance to change initiatives across HEIs, metaphors are often employed to explain concepts. An example would be organizational change being slow when existing systems have strong momentum (akin to "turning around an oil tanker").

However, rather than engaging with the traditional warfare-related metaphors typically applied in the business and management sphere, (which can clearly be critiqued in the context of sustainability) (Audebrand 2010), we sought to develop one based on systems theory. This metaphor expresses the interconnected and evolving nature of all aspects of the context and parts of the HEI system. We took a tree, representing one HEI, as a starting point. This was developed further, reaching a consensus that the HEI sector across the globe can be illustrated by the wider wood or forest metaphor (see Figure 1). While metaphors can, at worse, be considered ineffective rhetorical devices, the expert group agreed that there was benefit in providing the metaphor to support both strategic leaders and wider HEI actors to have a common frame of reference for the complex change project of addressing ESD across an institution.

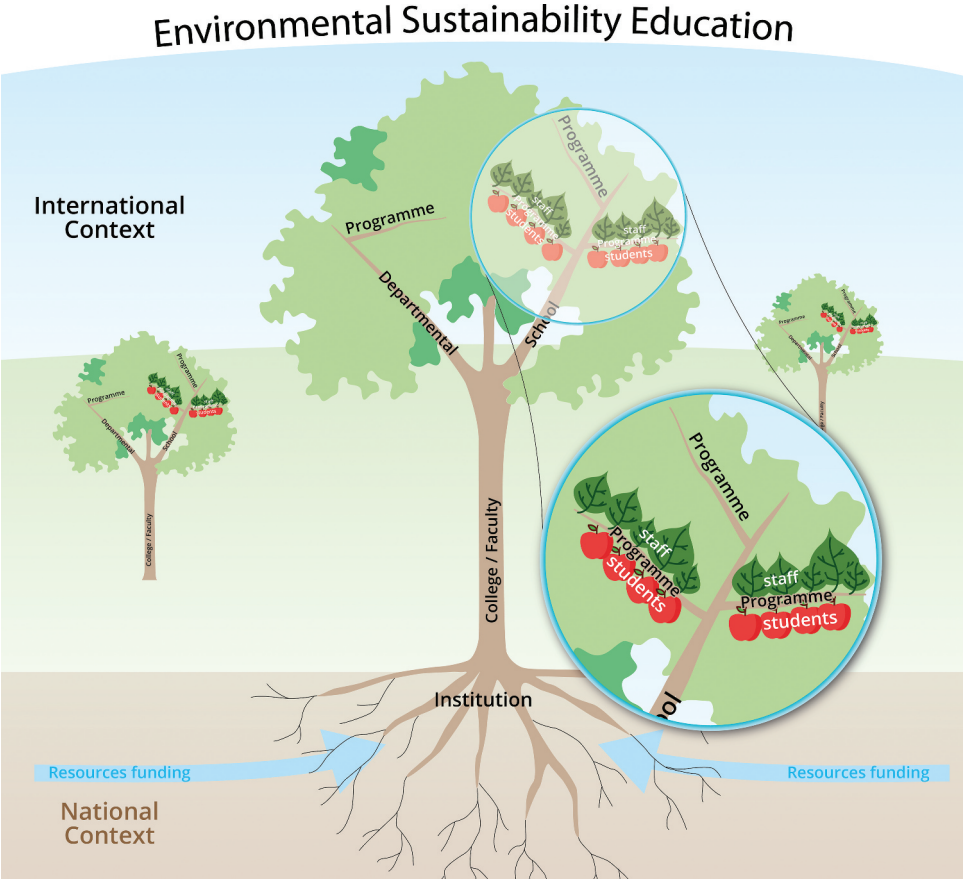

Figure 1. Nurturing the HEI ecosystem – a visual metaphor for HEI networks.

As Figure 1 illustrates, the sky and climate represent the influence of the international and national context on HEIs' activities; the earth and its constituent nutrients illustrate the HEIs' resources. Thus, HEIs can benefit from learning from across the environment, gaining financial and knowledge resources from across the HEI ecosystem; in contrast, in isolation, they cannot flourish. The metaphor can be further developed in many directions. For example, the branching tree captures the hierarchical structure of provision of "nutrients" across a HEI through colleges, faculties, programmes and modules. Also, the notion of students as the "fruits" of HEI trees has potential value, highlighting how they can then provide useful resources back into their own environments (local, national and international) when nourished appropriately on the tree and leaving the tree on graduation.

The HEI ecosystem metaphor was an emergent conclusion from the expert discussions conducted in our project. Subsequent checking against existing frameworks identified one other explicit use of a tree metaphor to further HESD, by Roorda (2014). Roorda's tree metaphor has strong parallels to the one put forward here – with inputs via the roots and through the trunk and branches leading to the outputs of learning. The metaphors differ in terms of a focus on *actors* in our metaphor above (institution, staff, students) in contrast to *actions or processes* by those actors for Roorda (education goals as inputs, benefit to society as the "fruit"). Whilst Roorda's metaphor offers strong practical benefit, highlighting actions to develop ESD associated with part of the tree and its wider context, we would argue that the metaphor presented here also has value by being more generic, being applicable for ESD or any other issue as a conceptual model of HE learning. The existence of a similar contextual model offers good validation that the metaphor has some validity, whilst its spontaneous emergence through our structured group process suggests a degree of resonance for actors in a range of HE settings.

Conceptual framework – four ESD scenarios

Our proposed four-scenario conceptual framework emerged alongside the forest-based visual metaphor. As noted previously, it sought to address the need for practitioners to conceptualize their starting place for addressing ESD, so that appropriate approaches could be put into practice (see Figure 2). As is common practice in management and leadership guidance, our key concepts have been put forward as a heuristic framework (e.g. see Eppler 2000). We aim to summarize the most significant features of the situation being described in a way that is easy to recall and operationalize. This entails a degree of simplification of the description of reality, bringing the intended benefits of ease of recall (in particular, through scenario names that fit with lived experience) and a focus on high-priority actions (encouraging engagement with the key dimensions of building Capacity and Commitment).

Our framework is specified using two key dimensions, Commitment and Capacity. We define Commitment as *"an institution's high-level strategic support for the sustainability agenda, as embodied in, for instance, strategy documents and governance procedures"* (Gwilliam and Peterbauer 2021). This is predominantly a top-down influence, and within the ecosystem metaphor this is heavily influenced by the wider international and national policies and enabling factors. A key indicator of commitment is the degree to which this is articulated within institutional strategic documents and how this is supported by senior staff or managers. Top-down, it can influence sub-strategies, priority setting for individual teams,

Figure 2. Four scenarios within the proposed conceptual framework.

schools. Also, it can provide a rationale for initiatives from motivated individuals and groups to act on ESD, unlocking support and resources from colleagues. Commitment may well be contested in various ways, such as by differing priorities amongst senior leaders, or a new leader's vision being out of alignment with a pre-existing strategy). However, practitioner experience repeatedly highlights its importance and practical value for driving action on sustainability in HEIs (see Sustainability Exchange 2021).

We define Capacity as "the knowledge, skills, motivation, staff and financial resources required to pursue Education for Sustainable Development" Gwilliam and Peterbauer (2021). This reflects the "health" of the tree for engaging with ESD and is predominantly a bottom-up influence reflecting the internal resources within a HEI ecosystem. Our primary focus here is on key stakeholders within an institution (particularly permanent staff) and their capacity to engage with embedding sustainability in education through their roles. This has been acknowledged across the sector as a key issue (e.g. Leal Filho et al. 2021), both through long-standing efforts to deliver Education for Sustainable Development (ESD) and a range of projects focussed specifically on staff development to enable ESD (for example, A Rounder Sense of Purpose (2023)). Capacity is a multi-dimensional issue (Middlemiss and Parrish 2010) encompassing personal attributes (knowledge, skills), organizational dimensions (e.g. formal and informal networks or organizations), infrastructure and the cultural dimension. Capacity is enabled and unlocked through the bridging ties of social capital (Reeves and Mitchell 2016), so that silo-working can be minimized and staff can collaborate with maximum effectiveness. Whilst staff-capacity is a main focus, other key stakeholders including students, wider community partners and HE sector organizations can also boost capacity by, for example, offering off-the-shelf interventions that HEIs can adopt (see Responsible Futures from SOS-UK).

By considering whether Commitment or Capacity are respectively high or low, our framework offers four broad scenarios that a HEI might find itself in (Figure 2). In naming the scenarios, our intention was to use resonant language that would make the scenarios memorable, and which would identify a key pattern or experience that practitioners could identify with. ***"Pockets of Practice"*** echoes terminology familiar to members of the EUA group where sustainable education was being adopted only by individuals or teams with a particular strong motivation or requirement to engage, but often in isolation from each other. ***"Emerging Agenda"*** is intended to highlight a common pattern when strategic commitment has increased, but capacity to implement this still lags behind. ***"Integrated Impact"*** is put forward to capture the scenario where both capacity and commitment are high, meaning that efforts and impacts are strong within and beyond an institution. The term "Integrated" highlights the desirable approach of collaboration across departments, linkages with wider community and alignment of actions with strategy. Finally, ***"Off the Agenda"*** is put forward to capture a scenario where a strategic commitment is weakened even though capacity to take this forward amongst stakeholders remains high.

Although at first glance, the above four scenarios may appear static, our intention was to use them to demonstrate the dynamic and evolving nature of institutional work on sustainability. For example, a potential pattern in the evolution of living systems in a changing environment is for initial growth by pioneer species, followed by an increase in complexity towards a state of high productivity and then possibly (in response to changing conditions) a decline of productivity. This, in its turn, may set the stage for a future cycle of growth and decline in a different, changed environment. This cycle would be reflected by a clockwise transition around the four quadrants from Pockets of Practice, and travel in this direction was a common experience of members of the group, though this had only reached the level of "Integrated Impact" in a few cases.

Similarly, the experience of sustainability becoming "Off the Agenda" due to changing institutional priorities was common amongst EUA members with long-standing experience, reflecting shifting educational strategic foci for HEIs. A common experience was also to skip backwards from Emerging Agenda due to other issues taking priority, something that was experienced by several members of the group due to the COVID pandemic. These transitions highlight the value of identifying key trends, such as whether and how capacity and commitment are increasing/decreasing and responding accordingly. For example, this might lead to a focus on interventions to develop or bolster strategic commitments.

Validation of the conceptual framework

As noted in Table 1, presentation and discussion of the heuristic framework at several ESD conferences was used as a sense-check during various international events. Across these events, 28% of responses identified as "Pockets of Practice", 64% as "Emerging Agenda" and 8% as Integrated Impact. These figures are indicative only, but they do align with the experience of the project team that "Integrated Impact" is still rare and that engaged HEI actors most frequently find themselves in settings with "Pockets of Practice" or an "Emerging Agenda" to address ESD. "Off the Agenda" is rare, which is to expected as capacity is likely to be quickly cut for lower priority areas.

One workshop led to a revision of the name for the "Low Commitment – High Capacity" scenario to "Off the Agenda". This was considered by participants as better reflecting this outcome than our initial term "Declining Support". Otherwise, feedback was supportive of the four-scenario structure across all workshops. One session highlighted the potential applicability of the framework at other levels of organization (particular schools or teams), or more broadly to examine progression of sustainability in HE on a national level.

Appropriate actions in each scenario

A key purpose of our conceptual framework is to enable HEI actors to identify appropriate actions to further ESD in their context. Here we offer an illustration of how this could be done, suggesting high-leverage actions related to each scenario. The actions were identified and agreed through the structured group process described in Table 1. While we do not claim originality for many of these actions, their location within the heuristic framework is the novelty.

We highlight three key phases which our group agreed were of most relevance for practitioners in the transition between the four proposed scenarios:

(1) Moving from Pockets of Practice to Emerging Agenda;
(2) Moving from Emerging Agenda to Integrated Impact;
(3) Maintaining Integrated Impact.

The actions put forward are demonstrated through linkages to published projects where feasible, though in several cases are drawn upon unpublished activities developed by the institutions in the EUA group. In all cases, further information is provided within the preceding EUA report (Gwilliam and Peterbauer 2021).

Pockets of Practice to Emerging Agenda

In this situation, the key requirement was identified as the need to support agenda-setting activity and strengthen the reach of practitioners through developing formal and informal networks, collaborations and dissemination activities (Figure 3).

Some key interventions that can have value at this stage include

- The establishment of communities of practice;
- Support for pilot project;
- Engagement with senior leaders – particularly as strategic documents are developed and finalized.

Emerging Agenda to Integrated Impact

In this situation, the key challenge was identified as capacity-building across the entire institution, so that staff and students are able and empowered to take the agenda forward. This may involve a formal training offer, but also a range of other interventions that motivate engagement. These can include awards to offer recognition, making sustainability part of annual workload planning and more. A key challenge is likely to be translating stated strategic commitments into the resources (staffing and financial) to enable staff and students to take the work forwards.

Some key interventions for this stage include (Figure 4):

- Developing business cases for increased resources;
- Developing training and support packages for students and staff;
- Starting to contribute beyond the university though presenting strongest work at external conferences and events or joining collaborative projects.

Actions required for progress	Strategy and governance	Staff development	Formal education opportunities	Extra-curricular opportunities
From Pockets of Practice to Emerging Agenda	• Making public strategic commitments driven by both internal and external drivers. • Identifying champions for sustainability. • Providing resourcing for initial action.	• Developing a community of practice of engaged staff. • Enhancing academic staff's continuous professional development. • Activating existing channels for educational debate.	• Enhancing and promoting good practice. • Establishing a baseline audit of Education for Sustainable Development.	• Establishing a baseline audit of opportunities for students to engage in extra-curricular activities. • Small grant schemes to enable students to step up to organise activities.

Figure 3. Actions required for progress from Pockets of Practice to Emerging Agenda.

Actions required for progress	Strategy and governance	Staff development	Formal education opportunities	Extra-curricular opportunities
From Emerging Agenda to Integrated Impact	• Monitoring progress and reporting regularly on sustainability performance. • Embedding sustainability in quality assurance processes. • Ensuring continuous commitment.	• Developing a comprehensive strategy for strengthening delivery and uptake of sustainability training. • Widespread staff engagement and adoption of Education for Sustainable Development.	• Incorporating Education for Sustainable Development into all curricular activities. • Enhancing depth of engagement with SDGs.	• Engaging partners and the broader public in research and innovation projects through civic mission and living labs. • Engaging external staff, e.g. those involved with student placements or co-curricular courses, in the sustainability agenda.

Figure 4. Actions required for progress from Pockets of Practice to Emerging Agenda.

Maintaining Integrated Impact (avoiding "Off the Agenda")

This situation aims to capture the challenge of continuing to maintain high-impact activities and engaging fruitfully with pressures from a changing context to avoid reductions in commitment or capacity.

As illustrated in Figure 5, the main activities for this stage include

- Business as usual, embedding ESD and making this is part of formal processes so that progress can be reported and enhanced annually;
- Innovation in delivery, with novel projects run internally and through external collaboration, breaking new ground for the HE sector;
- Continually demonstrating the benefits for students and staff (e.g. through producing case studies or surveys);
- Demonstrating achievement through high performance in external assessments (e.g. the "People and Planet" league in the UK; THE Impact rankings);
- Highlighting alignment with existing and emerging HEI priorities through communications and collaborative projects.

Critical discussion

Having made the case for and illustrated a proposed conceptual framework to aid implementation of HESD, to what extent might this approach offer a valid characterization and have real-world value for practitioners?

In terms of validity, the key dimensions of capacity and commitment could be contrasted to empirical analysis of the key contextual influences on progression of HESD. Here we can initially note some strong overlaps and linkages with issues highlighted in works such as Weiss et al. (2021) – our concept of Commitment (as a top-down influence) aligns well with the motivation from senior staff and articulation in organizational strategy and

Actions required for progress	Strategy and governance	Staff development	Formal education opportunities	Extra-curricular opportunities
Maintaining Integrated Impact and reversing Declining Support	• Monitoring progress and reporting regularly on sustainability performance. • Aligning sustainability with the institution's identity and purpose. • Creating permanent structures enabling Education for Sustainable Development.	• Regularly reviewing relevant staff development opportunities. • Considering Education for Sustainable Development in academic career progression.	• Incorporating Education for Sustainable Development into the curriculum. • Developing resources.	• Renewing external engagements and partnerships. • Enhancing engagement and the institution's civic mission. • Identifying and using living labs.

Figure 5. Actions required for Maintaining Integrated Impact and reversing Off the Agenda.

priorities highlighted above. Capacity (as a bottom-up and middle-out influence) speaks to the knowledge and motivation of individuals and teams and the resourcing of their work. We highlight a progressive aspect also, that is, how contexts evolve over time and can be associated with deeper ESD engagement and impact. Here we are in agreement with a range of frameworks such as the widely used "AISHE" process, advanced by Roorda (2008)for progressing and evaluating ESD, which describes a journey towards a target scenario of an integrated approach. Our framework arguably adds an additional further dimension to the likes of AISHE or tools such as STARS, Responsible Futures and the EAUC Scorecard by making the *dynamics* of contextual change more explicit, moving beyond characterizing *levels* of activity. For example, our framework naturally highlights transition points such as an increase in Capacity following on from increased Commitment, or the challenge of a strategic priority falling Off the Agenda.

A key conceptual risk comes from not naming key issues that practitioners need to be aware of and engage with. For example, "Co-ordination" of activities (Weiss et al. 2021) or cultural change (Verhulst and Lambrechts 2015). Partly, such omissions can be understood as working with overlapping concepts – for example, a key aspect of co-ordination is through increasing the C*apacity* of staff to work across the institution to address ESD; a key aspect of culture relates to motivation and working practices, which we have addressed through C*apacity*. Potentially, a diagnostic tool might address omissions by having a longer list of categories (such as a "spider diagram", covering a range of issues, including culture). Our argument in favour of the Capacity – Commitment matrix put forward is threefold. Firstly, that there is value in parsimony, that is in working with a small number of key concepts to make the framework something that practitioners can easily recall as a "live" way of thinking in their roles, as is commonplace for tools used in business settings (Eppler 2000). Secondly, that exploring interactions between two key dimensions on a two-dimensional map allows for explicit consideration of systems

evolution as the contested concepts of Capacity and Commitment co-evolve, something that is lost if working with a static list of criteria. Finally, as highlighted above, our intention is that the actual process of *how to* develop HESD is something to be overlaid onto our map, meaning that key process-oriented concepts such as communication or empowerment are not intended to be addressed explicitly via this framework.

A further way in which our ecosystem metaphor and conceptual framework may fail in its intended purpose is if it is not adopted in practice by HEI practitioners. As discussed above, there is already considerable guidance available on processes for furthering ESD, whether overcoming barriers, establishing support, or identifying high-leverage actions. Therefore, a key test of the framework will be whether its core concepts are included as context-setting material within such guidance. Our engagement with colleagues via workshops does highlight some resonance and potential for further adoption, with one possible framework use being as a tool to characterize institutions or teams/departments in comparative HESD projects.

Conclusion

In conclusion, the work described here presents a new framework for progress on holistic action across ESD in HEIs that is based on the key factors that influence impact and set the context which influences the work of practitioners, namely commitment and capacity. The potential added value of the proposed framing is through its broad applicability and resonance. It has been developed through engagement with ESD practitioners across wide-ranging contexts in Europe, and it has resonance and use for practitioners in framing their actions at institution or department level.

The paper has argued for an "ecosystems approach" to understanding HESD and this applies to adoption of the framework itself. The latter is put forward as one element, a broad ecosystem way of thinking to focus on key dimensions, systems evolution and associated high-leverage actions. Therefore, it would need to be applied in practice with a range of other frameworks, including criteria-driven accreditations that both drive and validate practice and subject-specific guidance on ESD adoption.

Future work that builds on this framework might explore validation across a much larger cohort of respondents. This could examine the validity of the scenarios and the key driving factors of Commitment and Capacity. Furthermore, there is scope to develop a database of practice related to each scenario, documenting examples of practice that proved effective in each scenario, building further on the actions put forward here.

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Data statement

Data available on request from the authors.

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