Exploring culture(s) of sustainability at higher education institutions: a systematic review of concepts and pathways

Jorrit Holst, Hilke Fritz, Benjamin Nölting, Daniel J. Lang,
Vanessa-Luisa Löde, Susanne Ober, Oliver Parodi, Thomas Potthast,
Christian Thomas Scheiding, Maike Weynand and
Mandy Singer-Brodowski
(Author affiliations can be found at the end of the article)

Abstract

Purpose – Higher education institutions' (HEIs) responsibility to contribute to safe and just societies is increasingly emphasised, but attempts to advance sustainability at HEIs are often fragmented and little systematic knowledge is available on the interlinkage between (organisational) cultures and sustainability at HEIs. This study aims to contribute to closing this gap and enrich the discussion on culture(s) of sustainability at HEIs.

Design/methodology/approach – To better understand the implicit and hidden facets of organisational changes towards sustainability, the authors systematically review the international literature on culture(s) of sustainability at HEIs. Through concept synthesis, they assess how culture of sustainability is conceptualised, operationalised and what pathways of change are considered.

Findings – In the literature, culture of sustainability at HEIs is commonly understood as a coalescence of norms, attitudes, values and assumptions with sustainability as a normative orientation, which also refers to structures, routines and behaviours at HEIs. Concerning specific HEIs, this study finds a variety of approaches to conceptualise culture(s) of sustainability and a focus on pathways of change. The authors further identify a lack of differentiation between normative and descriptive approaches, challenges in assessing cultures of sustainability and the need for large-scale research on transformation pathways.

Originality/value – Based on the review, the authors develop a refined conceptualisation, differentiating between culture of sustainability as a normative orientation and the description of current cultures that support or hinder sustainability. They argue that culture of sustainability pertains, above all, to the normality and the self-reproducing defaults at HEIs and within the system of science and higher education.

Keywords Culture, Universities, Organisational culture, Higher education institutions, Sustainability / sustainable development, Transformation pathways

Paper type Literature review

1. Introduction: why think about culture(s) of sustainability at HEIs and associated transformation pathways?

Higher education institutions (HEIs) are recurringly described as future laboratories of society (Kohl *et al.*, 2022; Leal Filho *et al.*, 2015) and bear responsibility to contribute to sustainability (Vogt and Weber, 2020). Numerous studies have focused on the integration of sustainability into HEIs (e.g. Barth, 2015; Lozano *et al.*, 2015; Menon and Suresh, 2020), but attempts to foster sustainability to date are often fragmented or shallow, i.e. they only address single areas of action (e.g. teaching, research or management), depend on individual actors or follow a managerial attitude instead of being integrative for the HEI as a whole (Lozano *et al.*, 2015). In this vein, little systematic knowledge is available on the underlying rule systems, values and assumptions and generally the way in which (organisational) culture shapes meanings, communication, routines and learning in the process of sustainability integration at HEIs. An enriched perspective on cultures may help to better understand the implicit, hidden yet highly interconnected elements of organisational change. Although various researchers in higher education policy (e.g. Lozano, 2006; Tilbury, 2013) have called for a "culture of sustainability", there seems to be no consensus to date on (i) how to define culture of sustainability at HEIs, (ii) what specific qualities or characteristics are associated with it and (iii) what pathways exist towards its realisation.

To contribute to the discussion on culture(s) [1] of sustainability at HEIs, we systematically review the way in which cultures of sustainability have been referred to in the international literature on HEIs and propose a refined conceptual understanding that invites debate on the manifold links between sustainability and (organisational) culture at HEIs. To this end, we first provide an overview of the key concepts under consideration, namely, HEIs as specific organisations, culture(s) and sustainability/sustainable development. Subsequently, we present a systematic literature review on sustainability and (organisational) cultures at HEIs, identifying the ways in which cultures of sustainability are described and operationalised as well as interwoven with different pathways for cultural change. In the discussion, we highlight gaps within the current debate, lay out a refined conceptualisation and suggest possible directions for future research. We aim to stimulate debate on the various facets of organisational change that lie beneath the surface of an organisation yet are crucial for a transition of HEIs towards sustainability.

2. Foundations: Higher education institutions, (organisational) culture, sustainability

2.1 Higher education institutions as specific types of organisations

Organisations can be understood as social entities in which their members come together to pursue certain goals. They are designed for the long term and have an internal formal structure with role differentiation to be able to perform as intended (Mayntz, 1965). HEIs as places of systematic knowledge production are "organisations that are weak in action and decision-making" (Krücken, 2012, p. 273; translated by the authors). HEIs are characterised by specific conditions that make the boundaries between the organisation and its environment particularly fluid and permeable. For example, academics are strongly bound to disciplinary epistemic communities (Trowler, 2014), that make HEIs associations of highly specialised experts (professionals). At HEIs, research, teaching and administration are described as loosely coupled (Weick, 1976), giving the subsystems a high degree of autonomy and adaptability (Hüther and Krücken, 2018), which enables the professionals to fulfil their (highly specific) functions yet also makes them more difficult to manage. Moreover, HEIs are situated in various actor networks with varying professional ethics and worldviews. Overall, HEIs may be understood as in constant interaction with the regulatory, incentive and value systems of the organisational environment, both vertically, e.g. with

reference to the multilevel system of science (e.g. higher education and science systems) and horizontally (e.g. disciplinary professional societies). Importantly, the characteristics of HEIs vary greatly (e.g. size, location, subjects). Inside the organisation, the (heterogeneous) members may be considered as the organisational collective, yet also form diverse sub-collectives with differing routines, practices and cultures.

2.2 Culture and organisational culture

The concept of culture is characterised by a great diversity of definitions and theoretical approaches. In general terms, culture can be described as encompassing standardisations, for example in thinking and behaviour, which are valid within collectives and arise in the interplay between the individual and the collective (Hansen, 2011). Such standardisations (conventions) are often not conscious or explicit, but are (re-)produced as the implicit "normality" by individuals within collectives. Culture provides internal cohesion and external demarcation. This cohesion can be found in the common language, shared narratives and worldviews, in the common conventions and social institutions. Culture becomes social reality through interaction with others, which is why the communication of meanings through signs, symbols, actions, language etc. is central (Alvesson, 2013; Hansen, 2011). If culture is understood as an interplay between the collective and the individual, then cultural change also takes place in this interplay; in the process, the collective, along with its jointly anchored institutions (rules, laws, structures), can be viewed as representing the persistent moment and bringing culture over time. Individuals, on the other hand, may be seen as the more volatile element and bring in momentum in processes of cultural change (cf. Hansen, 2011). Organisational culture is described as the meanings that underlie patterns of social action in organisations – giving them purpose and orientation (e.g. Alvesson, 2013). While some authors use a dichotomous approach to describe organisational culture by differentiating between visible and invisible elements of culture (e.g. Kotter and Heskett, 2008, p. 5), many refer to the three-level model proposed by Schein (1985), according to which organisational culture manifests in:

(1) the more easily accessible and visible artefacts (visible and tangible structures and processes as well as observable behaviour) on top;

(2) the less easily recognisable attitudes and espoused values; and

(3) the often unconscious and taken for granted basic assumptions at the deepest level, which are difficult to access.

The concept of organisational culture has been a prominent topic in business management literature for decades (e.g. Akpa *et al.*, 2021). However, due to the differing goals, structures, performance evaluation criteria and change processes, the application of these insights to the context of higher education context requires specific adaptation to the context of HEIs.

2.3 Sustainability and sustainable development

There are numerous and sometimes divergent conceptions of sustainability and sustainable development (cf. Hopwood *et al.*, 2005). Here, we outline a framework widely recognised and used as a basic understanding. The concept of sustainable development is internationally used as a socio-political approach defined by the Brundtland Commission in 1987 as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED – World Commission on Environment and Development, 1987). The definition focuses particularly on the "basic needs of the world's poorest which should have the

overwhelming priority" (ibid.); the justice dimension – inter- and intragenerational – is therefore central, but combined with the well-known limitations of the environment to fulfil such needs. If sustainable development is seen as a process, then a status of sustainability could be considered as an end – realised social and ecological justice. However, as Hjorth and Bagheri (2006) argue, the target of sustainability can be viewed as dynamic and "moving" along with the associated social learning processes, normative judgements and contexts. Sustainability as a target and sustainable development as a process necessarily requires combined empirical information on the state of socio-ecological systems and normative dimensions (epistemic-moral hybrids, cf. Potthast, 2015). As a basis, the preservation of the biosphere and the climate system's functioning in a state which supports prospering (human) life is internationally considered as foundational. Sustainability and sustainable development therefore refer to all fields of social action and needs, including those at HEIs. Given current unsustainability (e.g. failure in achieving the Sustainable Development Goals, SDGs), discussions about sustainability and sustainable development often imply criticism of established practices and structures, as well as emphasis on the need for far-reaching transformations (e.g. Adloff and Neckel, 2019).

2.4 Culture(s) of sustainability at higher education institutions: why a conceptualisation is needed

Synthesising the introduced foundations, the discussions around sustainability at HEIs have yielded key justifications for a focus on culture(s) of sustainability:

- Efforts to integrate sustainability in HEIs appear to be particularly fragmented (McMillin and Dyball, 2009) – possibly against the background of the loose coupling of functional areas. While greening the campus and implementing sustainability in curricula is progressing internationally, there is still a lack of systemic change for the whole organisation (e.g. Wals and Blewitt, 2010). To promote such systemic integration, the whole-institution approach (WIA) (Holst, 2023; McMillin and Dyball, 2009) has been promoted, highlighting the role of organisational cultures.

- Organisational research has long emphasised the role of organisational culture in successful organisational development (Alvesson, 2013; Schein, 1985). It is linked to organisational performance (Akpa et al., 2021) and connected to the organisational capacity for innovations (Büschgens et al., 2013). Though fairly new to the field of HEIs and sustainability, there is a longstanding debate on organisational cultures of sustainability in the literature on organisational management (e.g. Linnenluecke and Griffiths, 2010), which has been reviewed for example for small and medium enterprises (Isensee et al., 2020) or in the context of corporate sustainability (Bertels et al., 2010). Although these findings can certainly provide some insights for managing or reporting about the organisational culture of HEIs, companies and HEIs are very different types of organisations: they follow different organisational aims, they are built on different structures (e.g. HEIs use more self-organisation in terms of their internal decision-making structures; see above) and they are influenced by different values and norms connected to their particular members. For this reason, there is a need for deeper insights of organisational culture around sustainability specifically in HEIs.

- The specific organisational characteristics of HEIs make their "management" a particular challenge, which applies even more for sustainability as a normative guiding principle, with its wide variety of possible understandings and moving targets (Hjorth and Bagheri, 2006).

In general terms, a lack of focus on culture has been described when it comes to sustainability and transformation. This also applies to HEIs, where the evidence base remains vague. While the link between culture and sustainability is thus recurrently pointed to, there is currently no systematic and critical synthesis of the use of the concept of culture of sustainability at HEIs. Against this background we attempt to answer the following research questions (RQs):

RQ1. How is the interrelation between sustainability and organisational culture at HEIs conceptualised in the international scientific literature?

RQ2. How is culture of sustainability at HEIs being operationalised for assessments?

RQ3. Which pathways towards cultures of sustainability at HEIs are described?

3. Methods: systematic literature review (critical concept synthesis)

To provide a synthesis of the current use of the concept of culture of sustainability within the international literature, we conducted a systematic literature review in form of a concept synthesis (Sutton *et al.*, 2019). For this, we combined a systematic sampling following the PRISMA guidelines (Page *et al.*, 2020; Figure 1) with a critical concept synthesis using collaborative qualitative content analysis. We focused on peer-reviewed articles in English and included all types of methodological approaches (conceptual, qualitative, quantitative and mixed methods).
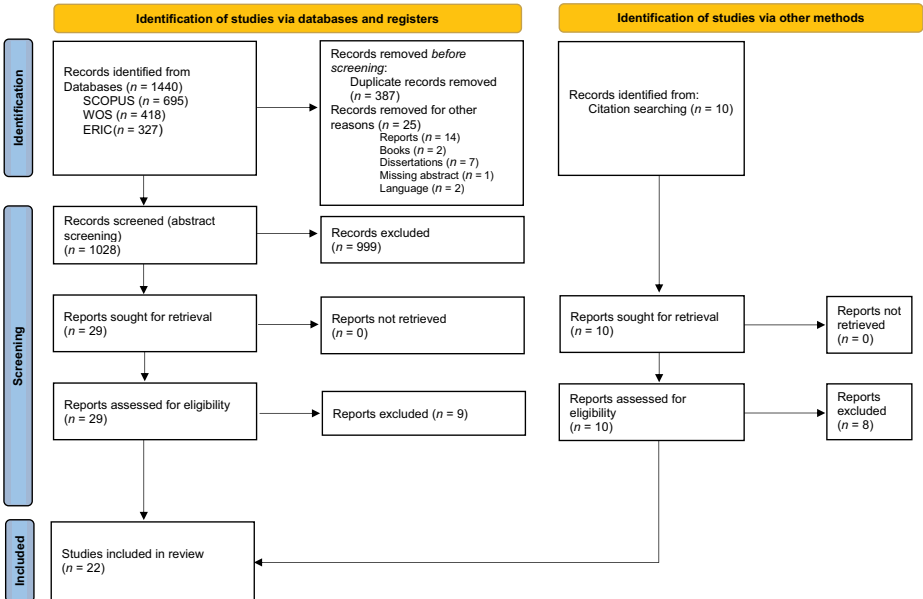
Figure 1. Systematic sampling

Source: PRISMA 2020 flow diagram for new systematic reviews including searches of databases, registers and other sources, Page *et al.* (2020)

We used Web of Science and Scopus as principal databases with a wide coverage and high precision in systematic searching (cf. Gusenbauer and Haddaway, 2020) as well as ERIC (Education Resource Information Center) as a supplementary search system due to its specific relevance in the field. We searched titles, abstracts and keywords as available in the databases with no limitation to the time of publication on the 15th of February 2023 using a combination of the keywords "organization*"/"organisation*", "cultur*", "universit*"/ "higher education*" and "sustainab*" (1,440 records; for details, see Figure 1). For abstract screening, we used the online software Sysrev applying three eligibility criteria:

(1) *Sustainability*: focus on and use of *sustainability/sustainable development* as a normative concept of social-ecological justice (e.g. with reference to concepts such as the SDGs), not solely as "long term".

(2) *HEIs*: focus on sustainability/sustainable development *at HEIs* (main research interest, not just mentioned).

(3) *Organisational culture*: focus on *culture* in the sense of organisational culture (i.e. different from national culture, for example), at least as part of the main research interests/results and not just mentioned in discussion/theory.

We created an instruction manual which includes a written explanation of the inclusion criteria and the screening-process (see Supplementary Material S2). Additionally, we conducted a training for the seven reviewers in which the inclusion criteria and screening-process were explained, open questions were resolved and 20 abstracts were assessed by all reviewers to then jointly discuss all conflicting cases to reach consensus. Every abstract was subsequently assessed by two reviewers. All cases with conflicting ratings (35) were collectively discussed until consensus was reached on the basis of the inclusion criteria (interrater-agreement before discussion of conflicting cases: 97.2%). Of 1,028 screened records, we selected 29 records for full-text screening. As part of the full-text analysis, we again excluded nine records based on the eligibility criteria. Also, we identified 10 potentially relevant records through in-text citations, of which two were eligible. Overall, 22 studies were included in the content analysis. Details on the search string, criteria and the list of articles can be found in the supplementary material.

For concept synthesis, we conducted a collaborative qualitative content analysis (Kuckartz, 2018) to code the content of the studies (including their theoretical approaches, contexts, results and interpretations). For coding, we used a deductive set of main categories focusing at the main concepts, their interwovenness and processes of change (five coders, use of MAXQDA 2023 / 2024). The categories were inductively refined during the coding process. Every record was entirely coded by at least two coders. The following list provides an overview of the relevant main categories corresponding to our research questions:

(1) Understanding of key concepts:
- Sustainability/sustainable development
- Culture/organisational culture
- Organisations/HEIs

(2) Conceptualisation of culture of sustainability at HEIs:
- Relation between key concepts
- Characteristics and operationalisation
- Embeddedness

(3) Processes of change towards a culture of sustainability

To synthesise the coded material, we conducted and recorded eight interpretation sessions on the different subcategories as well as on the overarching synthesis. Each coder developed a synthesis of the key results from the subcategories, which were then individually presented and collaboratively discussed to identify and describe patterns in the material. On this basis, we iteratively developed a shared conceptual synthesis of the material.

4. Results: culture(s) of sustainability at higher education institutions

The debate on culture(s) of sustainability at HEIs is relatively new with earliest assessed publications dated from 2012. The majority of articles (15) were published as of 2018. Most studies originate in the global north, mostly in Europe (Africa: 1; Asia and Middle-East: 5; Europe: 11; North-America: 4, South-America: 1). In terms of types, we found 10 exploratory, four explanatory, four descriptive and four conceptual papers (using the heuristic by Barth and Rieckmann, 2015). Most studies included case studies (11), fewer were cross-case empirical studies (five).

In the following, we first present an abstract understanding of culture of sustainability shared among many of the studies to then systematically describe how organisational culture is referred to and linked to sustainability at HEIs (*RQ1*). We then analyse how culture(s) of sustainability is/are operationalised for assessments (*RQ2*). Finally, we illustrate pathways of cultural change highlighted in the literature (*RQ3*).

4.1 Concepts

At an abstract level, we found that most papers refer to *culture of sustainability at HEIs as a coalescence of often invisible shared norms, attitudes, values and assumptions at and about HEIs with sustainability as a normative orientation. This coalescence also refers to the visible structures, routines and behaviours at HEIs*. When it comes to specific conceptualisations, we saw no consensus on one single way to conceptualise culture(s) of sustainability but a wide variety of approaches. The knowledge basis diverges with respect to the substance and scope of conceptualising the three individual key concepts and their interrelations in the context of culture of sustainability at HEIs. Along with few systematic approaches (e.g. Adams *et al.*, 2018; Bauer *et al.*, 2020; Niedlich *et al.*, 2020), most articles focus on specific aspects of culture and sustainability at HEIs (e.g. Liu, 2012; Roos *et al.*, 2023), draw on case studies (e.g. Alvissar *et al.*, 2018; Ezquerra-Lázaro *et al.*, 2021) and offer specific examples of sustainability measures and/or lack of these at HEIs. Altogether, we see a lack of findings in detail when it comes to systematic characterisations on a level above specific case studies and below abstract conceptual statements. In the following, we trace the connections made between the key concepts in the assessed literature.

Firstly, *HEIs are recurringly described as plural and highly fragmented organisations with decentralised governance structures* (e.g. Ezquerra-Lázaro *et al.*, 2021; Roos *et al.*, 2023), which is relevant for their specific cultures (of sustainability). They are referred to as complex organisations or "complex living system[s]" (Sylvestre *et al.*, 2014, p. 1523) to illustrate their diversity and embeddedness in specific cultural and spatial contexts. Several articles stress the history of specific HEIs (e.g. Dziminska *et al.*, 2020; Sylvestre *et al.*, 2014) and their development in light of external influences. Some studies refer to descriptions of HEIs as "organised anarchies" (Bien and Klußmann, 2022) and loosely coupled systems (Bauer *et al.*, 2020; Bien and Klußmann, 2022 with reference to Weick, 1976). These characteristics are emphasised to be important for specific organisational cultures (Adams *et al.*, 2018; Sylvestre *et al.*, 2014). While organisational culture (like "culture of sustainability") refers to the general concept, various authors stress that cultures at HEIs are to be described as a plural, considering the manifold (sub-)collectives with own assumptions,

values, norms and practices (e.g. Roosa and Mischen, 2022; Sylvestre *et al.*, 2014). The concept of organisational culture is often used with reference to the fields of organisational management (e.g. Bertels *et al.*, 2010; Kotter and Heskett, 2008) and then linked to HEIs, with different depth of references to the above-introduced characteristics of HEIs. Cultures of sustainability are further embedded at different levels: at the micro level individuals bring own assumptions and values to the organisation, at the meso level HEIs are in constant interaction with their local environment and academic communities (Adams *et al.*, 2018; Hoover and Harder, 2015), and at the macro level they are continuously influenced by the culture and rule systems in the science and higher education system and in society around it (e.g. Pereira *et al.*, 2014; Sylvestre *et al.*, 2014).

Secondly, the *relevance and use of sustainability and sustainable development* is mostly introduced and argued for by either referring to political programmes and conventions such as the Brundtland Report, Agenda 21 or the SDGs (e.g. Ramísio *et al.*, 2019; Žalėnienė and Pereira, 2021), or by referring to large-scale unsustainability (e.g. global warming, biodiversity loss), often with reference to scientific concepts and evidence (e.g. Adams *et al.*, 2018; Pereira *et al.*, 2014). In some studies, both perspectives are addressed. We also found a strand of literature that only focuses on ecological aspects (e.g. Liu, 2012), and on "green organisational culture" (Khan and Terason, 2022; Pereira *et al.*, 2014). While some articles do not explicitly specify their conceptual understanding of sustainability (e.g. Roosa and Mischen, 2022), others discuss it in depth referring to several characteristics such as wickedness, complexity, dynamicity, multidimensionality, long-term orientation, processuality, plurality and contestation of values (e.g. Adams *et al.*, 2018; Ezquerra-Lázaro *et al.*, 2021). Altogether, there appears to be little discussion of the struggle between different sustainability concepts or understandings. Instead, normative perspectives are frequently enmeshed with descriptive ones on ongoing processes. Only few articles refer to controversies and contestations around the meaning of sustainability within HEIs (e.g. Bien and Klußmann, 2022) or competing conceptualisations (Hoover and Harder, 2015). In one article, a risk of marginalising divergent perspective is seen when "developing a vision of sustainability as an organising principle for change" (Sylvestre *et al.*, 2014, p. 1536).

The link between sustainability and HEIs is mostly made by referring to their role(s) in society: Various authors stress the responsibility of HEIs to integrate sustainability principles and describe HEIs as think tanks, knowledge producers, educators of future professionals, networkers and innovators (e.g. Ramísio *et al.*, 2019; Žalėnienė and Pereira, 2021). A direct connection between sustainability and culture is, independently from HEIs, drawn in several articles as sustainability itself is described to require fundamental changes in assumptions, values, actions and structures (e.g. Dziminska *et al.*, 2020).

4.2 Operationalisation

The valid and reliable operationalisation and assessment of a culture of sustainability at HEIs remains a considerable challenge. From a methodological point of view, Adams *et al.* (2018) argue that the choice of approaches may vary with regard to direct perceptibility. While quantitative studies offer the advantage of making already salient factors accessible in a more generalisable way, qualitative approaches (e.g. ethnographic research, observations) may contribute to uncovering underlying and hidden aspects of culture for which specific criteria are less obvious (Adams *et al.*, 2018, p. 9).

While we did not find articles which developed a comprehensive operationalisation to assess culture(s) of sustainability, several articles assessed elements of it by focusing either (1) on conceptions and perceptions by stakeholders (e.g. students, academic and non-academic staff; Levy and Marans, 2012; Mohammadi *et al.*, 2023) or (2) on more direct assessments of behavioural, material or structural manifestations of cultures of sustainability (e.g. occurrence of

initiatives and activities, ratio of sustainability-related courses and research, mission statements; Roos *et al.*, 2023; Shuqin *et al.*, 2019). Viewed in terms of the layers proposed by Schein (1985), grasping the conceptions and perceptions of stakeholders can be viewed as attempting to pertain to immaterial values and assumptions while behavioural, material or structural manifestations focus mostly on visible artefacts (or communicated values; Roos *et al.*, 2023). A high prevalence of case-studies was observed while fewer studies attempted to develop cross-organisational knowledge (e.g. Niedlich *et al.*, 2020; Roos *et al.*, 2023).

4.3 Pathways of change

With respect to pathways for cultural change, the articles were coded according to three foci: (1) attributes of pathways, (2) activities and strategies and (3) challenges and barriers for cultural change:

(1) *Attributes*: Characterised by dynamicity, cultural change towards sustainability at HEIs is described in the literature as a continuous process and a "sustainability journey" (Adams *et al.*, 2018; Bauer *et al.*, 2020), in which culture recurrently constitutes and reconstitutes itself through communication and action (Niedlich *et al.*, 2020). In this vein, cultures of sustainability are not only described as outcome, but the process of moving towards a culture of sustainability is also viewed as a co-constituent of change at the material level such as with respect to building, procurement and other fields of action (e.g. Mzangwa, 2019). Associated cultural change is seen as multidimensional including and affecting different status groups with diverse cultures (Adams *et al*, 2018). The thereby implied cultural shifts (Mzangwa, 2019; Verhulst and Lambrechts, 2015) emerge in the context of specific institutional histories (Hoover and Harder, 2015). In this regard, existing structures, networks and power influence inner-institutional dynamics of change processes (e.g. ambiguities, differences in sub-collectives, hidden complexities, conflicts and territorialities). Cultural change towards sustainability is described as a product of the agency of actors (Sylvestre *et al.*, 2014) that requires committed individuals with a sense of responsibility (Hoover and Harder, 2015). At the same time, cultural change is also characterised as nested in further systemic contexts (e. g. laws, funding, incentives, infrastructure), which both influence HEIs (outside-in) and vice versa can be influenced by them (inside-out) (Adams *et al.*, 2018; Pereira *et al.*, 2014). Cultural change is considered to take place at different levels of organisational culture, differentiated in two or three layers (visible/invisible according to Kotter and Heskett (2008) or artefacts/values/basic assumptions according to Schein (1985)) (Verhulst and Lambrechts, 2015). However, many studies focus at changes on the level of artefacts, which are described as more directly amenable than values and underlying assumptions (Adams *et al*., 2018).

(2) *Activities and strategies*: Abstractly, Niedlich *et al.* (2020) describe cultural changes as *processes of continuous reconstitution through recurring interventions between actors and structures* (ref. to Giddens (1984) theory of structuration) that imply double or even triple loop organisational learning (also: Bauer *et al.*, 2020; Hoover and Harder, 2015). Cultural orientations towards organisational learning and a holistic view on sustainability may mutually reinforce each other in a process of change (Niedlich *et al.*, 2020).

More specifically, direct and indirect *communication and communicative interventions* are discussed as critical for this continuous reconstitution (e.g. Verhulst and Lambrechts, 2015; Parnell, 2016). Concerning direct communication,

explicit interaction among stakeholders is important, e.g. through communicating a vision of sustainability (Sylvestre *et al.*, 2014), telling positive stories of change (Hoover and Harder, 2015) or implementing direct interventions. The specificity of communication to different groups underlines the characteristic of cultural plurality (Žalėnienė and Pereira, 2021), which may help to identify and solve tensions stemming from different sustainability conceptions (Sylvestre *et al.*, 2014). In more indirect terms, communication also includes visible aspects of sustainability-related processes, values and assumptions. This may include making sure that attitudes and values of senior HEI members encouraging a culture of sustainability are openly visible (e.g. Hoover and Harder, 2015) and making changes to the physical and virtual presence (e.g. Adams *et al.*, 2018; Ezquerra-Lázaro *et al.*, 2021) as symbols that convey meaning to the organisational community.

In terms of specific strategies and actions, the *continuous alteration of artefacts* (visible structures, rule systems, behaviours) can slowly lead to changes in the shared values, beliefs and assumptions (Adams *et al.*, 2018). Changes in structures may create reinforcing feedback loops with cultural changes (Bauer *et al.*, 2020). Also, structural changes related to incentives, affirmation and reward systems are discussed as particularly promising (e.g. Adams *et al.*, 2018; Ezquerra-Lázaro *et al.*, 2021). In essence, the literature suggests that changes to the visible and experienced structures and rule systems of organisations can, if they are linked to the thinking, feeling and acting of members, lead to cultural changes over time.

Considerable emphasis is put on the role of *organisational collaboration and participation* in its relation to governance modes (e.g. Mohammadi *et al.*, 2023; Žalėnienė and Pereira, 2021). While system-wide policies and the setting of sustainability as a strategic objective are discussed as key factors (e.g. Parnell, 2016; Ramsio *et al.*, 2019), the literature stresses the importance of interlinking bottom-up and top-down processes with dialogic approaches that consider the role of middle management (e.g. Alvissar *et al.*, 2018; Verhulst and Lambrechts, 2015), where sustainability becomes meshed with planning, budget considerations and decision-making (Parnell, 2016).

This connects to a critical overarching condition: The *systematic enhancement of willingness for change*. Cultural changes are usually both triggered and reflected by changes in individuals' default behaviour within the institution (Adams *et al.*, 2018). Enhancing willingness for change therefore means to support committed individuals within the organisation who perceive sustainability as their own, not as someone else's responsibility (Hoover and Harder, 2015), to build capacity through trainings and systemic policies (e.g. on recruitment) (e.g. Ezquerra-Lázaro *et al.*, 2021), to equip officials with sustainability-related competencies (Mzangwa, 2019) and to develop engagement opportunities (Levy and Marans, 2012). Transformations are understood as emotional, social and psychological processes as much as they are operational ones (Adams *et al.*, 2018). This includes the development of individual and collective reflexivity to learn how to deal with conflicting priorities, hidden contradictions and power asymmetries (e.g. Bien and Klußmann, 2022; Hoover and Harder, 2015).

(3) With respect to *challenges and barriers*, the analysed literature mostly does not differentiate between cultural shifts and other general organisational transformations. Aware of these overlaps, key barriers are described to pertain particularly to changes in the systems of norms, attitudes, values and assumptions. Macro-contextual factors like the mindset with which sustainability is approached in performance measurements, policies, funding, administrative action as well as societal macro-culture (e.g. public

perspectives on the roles of science, media) are frequently discussed as barriers (e.g. Pereira *et al.*, 2014; Sylvestre *et al.*, 2014). Incentives that support unsustainability (Adams *et al.*, 2018) and the lack of recognition for actions towards sustainability in the academic reward system (e.g. Alvissar *et al.*, 2018; Verhulst and Lambrechts, 2015) are further pointed to as critical challenges. A strong top-down orientation and a mindset where change is viewed as to be mandated through bureaucracy and regulation are moreover seen to potentially lead to less cultural integration of sustainability (Adams *et al.*, 2018; Alvissar *et al.*, 2018). Also, a strong disciplinary orientation is suggested to be less conducive (e.g. Sylvestre *et al.*, 2014; Verhulst and Lambrechts, 2015). Further barriers include a lack of interest by members of HEIs, lack of support by management and policymakers, active or passive resistance to change, the mindset of viewing sustainability as a threat to academic freedom, ineffective communication and generally low prioritisation of sustainability (Verhulst and Lambrechts, 2015).

5. Discussion

To better understand the implicit and hidden facets of organisational change processes, we examined how the interrelations of sustainability and (organisational) cultures of and at HEIs are described in the international literature. We systematically screened 1,440 abstracts in the nexus of sustainability, culture and HEIs and subsequently conducted a concept synthesis through collaborative content analysis. Analysing the sample from a birds' eye view, the literature on culture(s) of sustainability is fragmented and focuses more on general processes of cultural and/or organisational change than on developing nuanced conceptions of culture of sustainability specific to HEIs. Overall, we find five gaps in the current discourse:

(1) Firstly, while there seems to be a shared understanding on an abstract level, there is a wide *gap in the analysed studies when it comes to conceptualisations* of what specifically constitutes culture of sustainability at HEIs and how it manifests and changes. Apart from the conceptual framework by Adams *et al.* (2018), the cultural orientations discussed by Niedlich *et al.* (2020) and Bauer *et al.* (2020) and the various case-study-based descriptions, the literature largely remains vague in this regard.

(2) Secondly, the literature does *not clearly differentiate between normative target perspectives and specific descriptions of a current status*. Instead, there is often a mix of normatively grounded conceptualisations of the goal of a culture of sustainability and empirical descriptions. While research can generate both normative statements of what ought to be (e.g. in ethics) and systematic empirical knowledge (about how things are), differentiating both without neglecting their interdependencies and connections (cf. Potthast, 2015) may help to clarify the foundation of assumptions, understand the specificities of existing cultures and develop strategies for nurturing cultural change in specific contexts.

(3) Thirdly, we found that *assessing cultures of sustainability, in particular the less visible elements, remains a considerable challenge*. Analyses have focused particularly on conceptions and perceptions of stakeholders (e.g. Levy and Marans, 2012; Ramísio *et al.*, 2019) or on visible behaviours, material or structural manifestations (e.g. Roos *et al.*, 2023; Shuqin *et al.*, 2019). We find a need for developing both suitable quantitative instruments for assessing cultures of sustainability and qualitative studies for systematic in-depth analyses.

(4) Fourthly, we found that possible *pathways towards change are not yet sufficiently understood*. While various studies highlight the importance of changes in values and

assumptions, most of the work on pathways towards change focuses exclusively at artefacts. In line with this, the current literature mostly does not differentiate between general organisational change towards sustainability at HEIs (e.g. in campus, curriculum or governance), and change that is specifically oriented towards developing an organisational culture of sustainability as self-reinforcing normality [e.g. cf. Verhulst and Lambrechts (2015) on challenges for change]. A particular challenge thereby lies in the differentiation between where organisational dynamics occur at the level of artefacts (e.g. projects or initiatives) without changing what is perceived as normal or conventional, pertaining to underlying values and assumptions, and where they more deeply lead to changes in the organisations' culture.

(5) Fifthly, various studies have pointed to the *relevance of specific characteristics of HEIs and their (cultural) contexts* (e.g. Bien and Klußmann, 2022; Dziminska *et al.*, 2020; Sylvestre *et al.*, 2014). This also implies that some of the findings from management literature (e.g. Schein, 1985; Akpa *et al.*, 2021) are only valid and applicable to a limited extent to HEIs and studies that are built solely on management literature may overlook characteristics of HEIs, which are critical to understand the specific cultures at HEIs. This highlights the need for future studies to develop approaches to conceptualising and assessing cultures of sustainability which take into account the very specific characteristics of HEIs.

Against the background of these gaps in the current literature, we propose a refined conceptualisation of culture(s) of sustainability. We build on the shared abstract understanding of *culture of sustainability as the coalescence of shared norms, attitudes, values and assumptions at HEIs with sustainability as normative orientation. This further refers to the structures, routines and behaviours at HEIs*. For further conceptual clarification however, we *suggest to differentiate between culture of sustainability at HEIs as a normative orientation and the description of the current status*, as is laid out in the following:

· As a *normative orientation* (target), culture of sustainability implies that sustainability is fully realised and coalescent within the organisations' culture. Sustainability has become a default setting in thinking and acting and the routines and formal and informal rules promote sustainability in teaching, research, transfer and operations as a matter of course. In using the term coalescence, we highlight the importance of the self-evident, yet often invisible and non-explicit rules, norms, values, assumptions and routines at HEIs, in other words, the self-explanatory or "normal" (Hansen 2011), which is continuously transferred to new organisational members. This does not imply conflict-free spaces, nor that there can only be one homogenous "macro-culture". Instead, cultures of sustainability at specific HEIs are described as plural (e.g. Bien and Klußmann, 2022; Sylvestre *et al.*, 2014), dynamic (e.g. Adams *et al.*, 2018; Niedlich *et al.*, 2020), embedded at the micro, meso and macro level (e.g. Pereira *et al.*, 2014; Hoover and Harder 2015), considering the conceptional characteristics of sustainability (urgency, complexity, multidimensionality, justice-orientation; Adams *et al.*, 2018; Bien and Klußmann, 2022) and are a product of collaborative learning (e.g. Niedlich *et al.*, 2020).

· In terms of the *current status of cultures of (un)sustainability*, it is important to point out that to our knowledge and in consideration of the articles in review, no HEI has fully realised a culture of sustainability as outlined above to date. Instead, sustainability is more or less integrated and fostered or hindered by the current organisational cultures to different degrees (see the case studies in this review, e.g. Alvissar *et al.*, 2018; Ezquerra-Lázaro *et al.*, 2021; Pereira *et al.*, 2014). The specific culture of sustainability is not only

characterised by the features of the respective university (size, subject profile, etc.), but also by national academic traditions, regional characteristics (rural, urban), historical development, disciplinary characteristics and type. HEIs are embedded in society and thus also reflect or reproduce non-sustainable ways of life and economic practices. All of this implies that current cultures at HEIs can be described in terms of their degree of coalescence with the normative orientation of sustainability, which allows for organisation-specific empirical assessments. It is critical to build such an empirically grounded (descriptive) understanding of current patterns of meaning and action and to identify inhibiting and promoting factors for cultural change.

Given the inherent normativity of sustainability, we hold it necessary to make normativity and the contestation around it as transparent as possible when debating culture(s) of sustainability. This links to various questions like: Who has the legitimacy to initiate cultural shifts (e.g. leaders at HEIs, policymakers, administrators, bottom-up initiatives, engaged individuals)? How do the roles of researchers and practitioners overlap in HEIs when researchers get involved in transdisciplinary and transformative research at their own organisations (Deleye, 2024: p. 29)? Where do normative and descriptive perspectives come together, forming epistemic-moral hybrids (cf. Potthast, 2015)? Which kinds of normativity are currently in use (on the hidden curriculum of unsustainability, cf. Wals, 2020)? And what normative orientation is (implicitly) viewed as desirable?

In terms of *methodological limitations*, we focused specifically on culture at HEIs as a specific type of organisation and used respective keywords in our data collection. While we accounted for other articles through extensive citation analysis, the systematic review may have excluded relevant articles which (i) did not use the specific keywords and (ii) were not cited in any of the analysed literature. Furthermore, the study was limited to literature in English, and future research could focus on how cultures of sustainability are conceptualised, operationalised and realised in different languages. Most articles in our sample are from Europe and North America. The importance of approaching cultures of sustainability in a diversity of regional settings is underscored by high context sensitivity and pointed out in various studies (e.g. Hoover and Harder, 2015; Sylvestre *et al.*, 2014).

Considerable *further research* is needed to more specifically describe conceptual characteristics of cultures of sustainability and to gain a more systematic understanding of pathways of cultural change. Future research may further test assumptions made in the literature such as that the continuous alteration of artefacts leads to shifts at deeper levels of culture over time (Adams *et al.*, 2018). Also, research may assess how a culture of sustainability is developed in HEIs in different contexts and focus on the role of embeddedness in societies that reflect or reproduce unsustainable practices and systems. Based on our findings, we also consider it important to give space to the contested meanings of sustainability and their related struggles within academic communities (Sylvestre *et al.*, 2013). Considering the many case studies and conceptual articles, we see a need to conduct larger-scale comparative case analyses and quantitative assessments of cultures (related to sustainability) at HEIs. In combination with in-depth qualitative analyses, this may contribute to a more systematic understanding of organisational cultures that foster or hinder sustainability, as well as of patterns of relevant context factors that allow for the development of a culture of sustainability.

6. Conclusion
The systematic review offers a synthesis of current conceptualisations and operationalisations of culture(s) of sustainability at HEIs as well as descriptions of pathways of change. On this basis, we propose to differentiate between (i) culture(s) of sustainability as normative orientation (*where*

sustainability becomes the self-reproducing normality in the structures, routines, values and shared assumptions at HEIs) and (ii) descriptions of current *specific cultures at HEIs* which foster or hinder sustainability to different degrees. The latter perspective allows for empirical analyses of current cultures as well as influencing factors. The review also suggests that the continuous (re-)constitution of organisational cultures implies that cultural changes are closely linked to changes in the structural environment, in the direct and indirect communication, and could be initiated amongst others through continuous alteration of artefacts, communicative interventions, a focus on organisational participation and the systemic enhancement of willingness for changes. Furthermore, the systematic review illuminated current gaps in the knowledge base with respect to context-specific characteristics as well as operationalisations for systematic assessments, which may help to guide future research. The conceptual refinement makes it easier to discuss and systematically analyse culture(s) of sustainability at HEIs by offering a conceptual guardrail for both targets and descriptions of the current status as well as by highlighting avenues for organisational change. Such enhanced understanding is a prerequisite for making the concept fruitful for higher education policy and practice.

Considering the (cultural) embeddedness of HEIs, the systematic review also shows that notion of culture of sustainability may not only be considered an aim for single HEIs, but – given the pivotal role of the structural environment and communication – for higher education systems with their rules, incentives and underlying assumptions. This includes the thinking and acting in and by governments and ministries, funding bodies, future employers, regional partners as well as media and other relevant societal stakeholders. We thus underscore the relevance of re-evaluating existing rules and incentives within the science and higher education system in terms of whether they currently do and could in the future contribute to sustainability.

Note
[1.] In the following, we refer to "culture of sustainability" (singular with indefinite article) when we address the overall concept. We use "cultures of sustainability" (plural with definite article) when we speak of different cultures at specific HEIs.

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Author affiliations

Jorrit Holst, Department of Education, Freie Universität Berlin, Berlin, Germany, and Leuphana School of Sustainability, Leuphana University of Lüneburg, Lüneburg, Germany

Hilke Fritz and Benjamin Nölting, Department of Landscape, Society and Economy, Eberswalde University for Sustainable Development, Eberswalde, Germany

Daniel J. Lang, Institute for Technology Assessment and Systems Analysis (ITAS), Karlsruhe Institute of Technology, Karlsruhe, Germany

Vanessa-Luisa Löde, Department of Education, Freie Universität Berlin, Berlin, Germany

Susanne Ober and Oliver Parodi, Institute for Technology Assessment and Systems Analysis (ITAS), Karlsruhe Institute of Technology, Karlsruhe, Germany

Thomas Potthast, Ethics Centre (IZEW) and Chair for Ethics, Philosophy and History of the Life Sciences, and Competence Centre for Sustainable Development (KNE), University of Tübingen, Tübingen, Germany

Christian Thomas Scheiding, Centre for Sustainability Management (CSM), Leuphana University of Lüneburg, Lüneburg, Germany

Maike Weynand, Ethics Centre (IZEW) and Competence Centre for Sustainable Development (KNE), University of Tübingen, Tübingen, Germany

Mandy Singer-Brodowski, Institute of Educational Science, University of Regensburg, Regensburg, Germany

Supplementary material
Supplementary material for this article can be found online.

Corresponding author
Jorrit Holst can be contacted at: j.holst@fu-berlin.de