ORIGINAL ARTICLE

Mindfulness and sustainability at the crossroads: towards mindfulness curricula for human and planetary wellbeing and transformation

Christine Wamsler[1] · Liane Stephan[2] · Margaret Fletcher[3] · Jamie Bristow[4,5,6]

Abstract

In light of the escalating global polycrisis—a convergence of environmental, social, and mental health crises—this paper explores the potential of mindfulness-based approaches for fostering human and planetary wellbeing and sustainability. We specifically investigate the linkages between Mindfulness-Based Stress Reduction (MBSR) and sustainability, and how they can be strengthened to support transformative education. Drawing on interviews with key informants and in-depth case studies of innovative courses, we assess historical connections and current developments, as well as the needs, gaps, and opportunities for adapting existing approaches to sustainability contexts. What is the curriculum of the present moment, in a situation where the whole world has become the hospital? Based on our findings, we identify possibilities and principles for modifying, expanding, upscaling, and transforming mindfulness-based practices, interventions, and curricula—offering pathways that other training institutions can draw on. We synthesize our results into a "taxonomy of mindfulness-sustainability integration," outlining key features and ethical considerations at different levels. Finally, we caution against protocolizing mindfulness and instead emphasize its non-instrumental dimensions—embodiment, emergence, and relationality—for finding a path of hope, joyful engagement, and meaningful transformation towards sustainability that is grounded in the inextricable connection between our inner lives and the living planet.

Keywords Mindfulness-based sustainable transformation · EcoAwareness · Inner development goals · Inner transformation · Existential sustainability · Mindsets · Climate change · Behavior change · Culture change · System change

Introduction

We are in the midst of a global polycrisis—a convergence of multiple, interconnected crises that amplify each other, creating a predicament that is increasingly difficult to manage or resolve. We are facing an escalating ecological catastrophe, intertwined with a global mental health crisis, rising poverty, and political turmoil (IPCC 2022a, b; WHO 2021).

Recent reports on development, health, biodiversity, and climate are unequivocal: time is running out for solutions of the scale and depth necessary to avoid systemic collapse (e.g., IPCC 2022a, b; IPBES 2024). Yet current mainstream approaches have largely failed to catalyze the needed transformation. This failure stems in part from a tendency to treat sustainability challenges as purely external threats (Bentz et al 2022; Leichenko and O'Brien 2021). As a result, most large-scale climate and sustainability efforts have focused on technical fixes to physical problems, since the framing of problems determines the kinds of responses we pursue. Furthermore, mainstream approaches are often underpinned by the so-called knowledge deficit model (Suldovsky 2017; Blake 1999), which assumes that providing more information will naturally lead to behavioral change. This model reflects the belief that cognitive understanding alone is sufficient to drive transformation. However, scientific evidence increasingly shows that genuine change requires integrated

✉ Christine Wamsler
christine.wamsler@lucsus.lu.se

1 Lund University Centre for Sustainability Studies (LUCSUS), Lund, Sweden

2 Inner Green Deal, Cologne, Germany

3 The MBSR & EcoAwareness Project, New Hampshire, USA

4 Reweaving Project, Cambridge, MA, USA

5 Inner Development Goals, Stockholm, Sweden

6 Life Itself Sensemaking Studio, Bergerac, France

Springer

approaches that also engage emotional, embodied, relational, and ethical dimensions to translate knowledge into meaningful, impactful action (Ives et al. 2023). Consequently, while professional and technological capacities have advanced exponentially, our individual and collective ability to use these capacities wisely has not.

Growing voices from sustainability, psychology, ecofeminism, education and other fields thus warn that neglecting the human inner dimensions of change leaves theories of transformation incomplete, helping to explain the persistent failure of policies to deliver an adequate response (Chinsya 2024; Ives et al. 2023; Scott et al. 2021; Tam 2025; Wamsler et al. 2020, 2021; Woiwode et al. 2021). Recent theoretical and empirical research highlights the need to integrate external solutions with inner transformation processes[1]—an approach now also emphasized in the latest reports of the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) (IPCC 2022a, b; IPBES 2024).

Understanding the roots of today's polycrisis points to the cultural narratives underlying modern societies. Scholars and practitioners increasingly identify a dominant social paradigm of separation or alienation as a key driver of today's interconnected crises (Eisenstein 2013; Göpel 2016; Wamsler and Bristow 2022). This paradigm assumes that human thinking minds are distinct from feelings and bodies, that people are separate from one another, that some are superior to others, and that humanity is separate and superior to the natural world (Scott et al. 2021). In modern societies, many people are increasingly unconscious of their emotions, bodily sensations, and deeper values, influenced by factors such as trauma, denial, digital distractions, and pervasive busyness. As a result, individual behavior is often driven by fear- or incentive-based motivations rather than by social, affiliative, or caring ones. Modern societies dominated by consumption, power, and achievement increasingly marginalize values of care, connection, and affiliation. To make matters worse, these disconnections—from self, others, and nature—mutually reinforce each other, and disconnection from our environment mirrors and reinforces disconnection from ourselves (Hawken 2021; Wamsler and Bristow 2022). For instance, diminished body awareness impairs empathy, weakens social identity, and undermines a sense of meaning and belonging (Bristow et al. 2022; Scott et al. 2021). Today's polycrisis is therefore also described as a crisis of perception or meaning, intrinsically linked to what has been called an epidemic of loneliness (Clarke and Mcphie 2014; Mastropietro and Vervaeke 2020; OSG 2023).

Despite the illusion of ever-greater connectivity, what is increasingly lacking in modern societies is a felt sense of connection—an embodied understanding and feeling of connection, and the individual and collective beliefs, values, worldviews and intrinsic capacities that sustain it (Wamsler et al. 2021). We are fundamentally embedded in a complex web of interdependency, biologically,[2] socially, and ecologically. The failure to acknowledge and embody the wholeness of life thus underpins today's polycrisis, alongside related factors such as stress, anxiety, depression, loneliness, denial and disempowerment. Addressing these challenges thus requires widespread pathways that reconnect with an experience of here and of us—reconnecting people to themselves, each other, and the living world.

Tracing the roots of the sustainability crisis to this culturally entrenched story of separation highlights the potential role of mindfulness. Mindfulness entails cultivating awareness of how we relate to ourselves, others, and the world in reflective, meaningful, and responsible ways (Kabat-Zin 2005a, 2005b, 2013). In fact, research shows that mindfulness can influence all aspects of the mind-sustainability nexus: how the mind is impacted by sustainability crises, how we respond to them, and the root causes that perpetuate them (Wamsler and Bristow 2022). Accordingly, also the latest IPCC and IPBES reports reference meditation and mindfulness as a potential lever for transformative change (IPCC 2022a, b; IPBES 2024).

At the same time, research on mindfulness and sustainability across individual, collective, and systemic levels remains scarce and fragmented. While there is growing evidence linking mindfulness to pro-environmental and prosocial engagement, and to broader benefits for health, functioning, and relationships (Barrett et al. 2024; Geiger et al. 2019; Frank et al. 2019; Iniesta-Bonillo et al. 2025; Thiermann and Sheate 2022; Wamsler et al. 2018), "it cannot be assumed that interventions for internal personal development will automatically or quickly translate into sustainability, climate advocacy, and action on a broader scale" (Wamsler et al. 2021:8). Instead, it is crucial to explore how related approaches can be mainstreamed and intentionally oriented toward sustainability (ibid). Critical analyses and

---

[1] The terms "inner transformation" and "inner transition" are used interchangeably to describe this field. Other terms used include, for instance, "existential sustainability" and "existential resilience."

[2] Neuroscience supports this deeply relational view: our brains are wired for connection. The same neural systems that support survival also engage when we think about others, form social bonds, and experience empathy. Social networks in the brain, like the default mode network, activate when we're not focused on specific tasks, suggesting that social cognition is our brain's default setting. This intrinsic social wiring connects us not only to other humans, but also to the natural world that sustains us (Baek and Parkinson 2022).

empirical studies are urgently needed to better understand and strengthen these linkages.

Against this background, the purpose of this study is to expand knowledge on the potential of mindfulness-based approaches to address today's polycrisis. Drawing on in-depth case studies of new, innovative and pioneering courses that link mindfulness and sustainability, as well as interviews with key informants, we assess historical linkages, current developments, needs and gaps, as well as how existing approaches can best be expanded and adapted to the context of sustainability.

Following an outline of the study's conceptual framing, definitions, and methodology (Sects. "Conceptual framing and definitions" and "Methodology"), we present our findings (Sect. "Results") and discuss key learnings and principles for future initiatives that training institutions and educators could follow or learn from (Sect. "Discussion and conclusions").

Conceptual framing and definitions

Mindfulness is the natural capacity to intentionally focus attention on the present moment, both internally and externally, with an attitude of openness, curiosity, and care (Bristow et al. 2022). It is intrinsically linked to the development of compassion—the inner capacity and motivation to engage with and be moved by suffering, coupled with a will to help (ibid).

Both mindfulness and compassion are innate and trainable capacities that can strengthen the cognitive and emotional foundations of connection. By enabling inner and outer (re)connection, they can potentially foster greater resilience and engagement, catalyzing the habit changes and decisive actions needed to address global sustainability crises (ibid).

A typical mindfulness course spans 6–12 weeks, including formal and informal practice instructions, educational content, and teacher-led inquiry into participant experiences to facilitate embodied learning. Informal practice involves cultivating moment-to-moment mindfulness in everyday activities. The components of mindfulness courses vary, but those grounded in academic evidence generally share core elements (Langer 2000).

Mindfulness-based approaches are supported by over 20,000 peer-reviewed academic articles examining their benefits, drawbacks, and scalability, whereas many other popular inner development practices lack scientific assessment (Bristow et al. 2022). Most research focuses on the eight-week Mindfulness-Based Stress Reduction (MBSR) course, developed by Kabat-Zinn in the late 1970s, and its adaptations like Mindfulness-Based Cognitive Therapy (MBCT) (Kabat-Zinn 2013; Segal et al. 2013). Initially

designed to introduce mindfulness training into outpatient medicine to help patients develop interior resources for dealing with stress, pain, and chronic illness as a complement to their medical treatments, MBSR has now been widely used for over four decades to treat a wide range of conditions, such as depression, anxiety, cancer, and hypertension (Goldberg et al. 2022). Some pioneers in the field have developed frameworks for defining Mindfulness-Based Intervetions (MBIs), with fixed core characteristics that can be adapted depending on the application (McCown et al. 2010). These have, however, not been designed for the sustainability context.

Since 2016, there has been growing scientific evidence for the importance of mindfulness for sustainability across scales (e.g., Barrett et al. 2024; Burger et al. 2024; Frank et al. 2019; Gash and Maier 2024; Geiger et al. 2019; Iniesta-Bonillo et al. 2025; Wamsler et al. 2018; Wamsler et al. 2018). A recent policy report reviewed evidence from 25 interviews with policymakers, an online survey of experts, and over 10,000 peer-reviewed articles documenting the broader benefits of mindfulness-based interventions for individual health, functioning, and relationships, underscoring mindfulness' potential role for sustainability (Bristow et al. 2022). Furthermore, the first systematic review of literature examining the links between inner and outer transformation highlights mindfulness and compassion as key factors in supporting related capacities and processes (Wamsler et al. 2021). These findings have been further supported by recent empirical work, UNESCO, UNDP, IPCC, and IPBES reports, offering a foundation for our study, and a more nuanced debate on how to intervene in this critical area.

Methodology

This article presents an exploratory, reflexive case study (Burns 2007; cf. Glassman and Erdem 2014) of pioneering courses that link mindfulness and sustainability, which were selected as a case due to their exemplary and trailblazing nature in this emerging field. It critically examines the potential for adapting mindfulness programs (e.g., MBSR or MBCT) and professional training for change-makers and sustainability experts to integrate inner and outer transformation, advancing progress towards the Sustainable Development Goals (SDGs). Specifically, it systematizes past and current developments, qualitative impacts, and key learnings from two innovative courses:

- The *Mindfulness-Based Sustainable Transformation (ST)* teacher training program, developed by the non-profit inner green deal, comprising eight online modules supported by a social learning platform and mobile app, and is designed to integrate inner development and the Inner

Development Goals (IDGs) with cultural and systemic transformation. For details, see Suppl. Material 1.1–1.2).

- The *MBSR & EcoAwareness (EA)* workshop series, designed for mindfulness teachers by the MBSR & EcoAwareness project, consisting of six online sessions aimed at integrating EcoAwareness into MBSR teaching. For details, see Suppl. Material 1.3–1.4).

These courses are part of an emerging movement and community of individuals and organizations seeking new ways to link mindfulness with sustainability to drive societal transformation.

The research process involved several overlapping phases:

- Gaining an understanding of historical developments, current gaps, and needs (see Sects. "Historical linkages" and "A world in crisis: Recent developments, gaps and needs").
- Piloting the training programs for adapting mindfulness-based methods and curricula to sustainability (details in Suppl. Information 1).
- Assessing and validating outcomes (see Sect. "Required adaptations for a world in crisis").
- Identifying cross-case learnings and principles to inform the modification, expansion, scaling, and transformation of mindfulness-based practices and curricula (see Sect. "Discussion and conclusions").

Qualitative data were collected through pre- and post-course interviews and in-class group discussions to explore the relevance and potential of adapting mindfulness-based methods and courses for personal, behavioral, cultural, and systemic transformation. The ST program included 31 participants and 4 facilitators; the EA training included 16 participants and 3 facilitators.

All teachers involved in the two programs had prior experience with MBSR or other mindfulness-based courses (e.g., MBCT, CBCT). Additionally, about one fifth of the participants also had education in sustainability-related fields (e.g., climate coaching). See Supplementary Materials 1–2 for trainer and participant details.

At the start of the courses, participants were asked to share their reasons for enrolling, including any perceived developments, gaps and needs. At the end, they were asked about any (potential) changes in their teaching practices and curricula, as well as what aspects of the courses were helpful or unhelpful. See Supplementary Materials 1–2 for interview guides.

Facilitator meetings and two key informant interviews provided additional insights into potential adaptations and the historical development of MBSR. One of the key informants, Jon Kabat-Zinn, consented to be named; citations in "Results" reflect this.

All interviews, meetings, and online sessions were recorded and transcribed for analysis. Thematic analysis (Braun and Clarke 2006; Corbin and Strauss 2008; Nowell et al. 2017) was used to analyze the data, following these steps: (1) familiarization with the data; (2) open coding to generate initial themes; (3) systematically categorizing content into themes and patterns; (4) reviewing themes; and (5) refining themes and patterns through axial and selective coding. Coding continued until saturation was reached, meaning that no new, significant themes and patterns emerged.

Observations during online sessions, course materials, and public presentations of the courses and related discussions were used to challenge and refine the outcomes. The resulting themes and patterns are reflected in the headings, subheadings, and bullet-point lists presented in the "Results" section. Finally, course evaluations and relevant literature informed the discussion of outcomes and the development of theory.

Results

Historical linkages

In alignment with the research aims, we explored the linkages between sustainability and MBSR, assessing its historical development, content, and objectives to examine how mindfulness-based approaches can nurture sustainable mindsets, behaviors, and systems. The following key patterns emerged:

- Focus on individual well-being: In Western societies, MBSR and mindfulness-based education initially focused on individual well-being, with a public health orientation (rather than on collective or planetary sustainability).
- Removal of sustainability-related content: As mindfulness was popularized in the Western context, issues related to global stress, consumption, and mindfulness ethics were increasingly omitted, diminishing its relevance to sustainability.
- Strategic contextual adaptation: These changes were crucial at the time to enhance accessibility and practical implementation.
- Long-term impact on sustainability: Despite these developments, sustained deep engagement with mindfulness can gradually foster sustainability across scales.
- Evolutionary nature of MBSR: Although MBSR has been applied within a defined context and a strict framework to ensure quality and research validity, it was always intended to evolve in response to changing societal challenges.

In 1979, Kabat-Zinn founded MBSR to help individuals improve their health by fostering awareness of the mind, body, and world through mainstream (secular) mindfulness practices.[3] Designed with a public health orientation, the program encouraged active participation in one's own well-being, complementing traditional medical treatments. Kabat-Zinn envisioned that MBSR would move the health "bell curve" of society toward greater well-being through mindfulness, expanding its impact on a population level. "It was meant to be a proof of concept. If we could do it in one hospital, we could do it in any hospital."

While the escalating challenges of the late twentieth and twenty-first centuries were not yet fully recognized in 1979, the original MBSR curriculum already included two sessions directly linked to sustainability. In fact, "in the old days (1979–1982), MBSR was ten classes, not eight: the eighth class was about 'food and diet', the ninth on 'world stress,' as per those chapters in *Full Catastrophe Living*." The diet class covered both food and the "ideas diet," referring to the mental intake one consumes, which influences individuals' approaches to their physical and mental health. The world stress session addressed global issues such as war, pollution, and the interconnectedness of all life on Earth, emphasizing the importance of caring for the planet.

After 2 years, it was decided to eliminate these two sessions for a number of strategic reasons having to do with maximizing retention of participants in this novel outpatient program in the form of a course, as well as with the vagaries of the hospital calendar and American holidays. Instead, a more focused eight-week program was implemented, with an all-day session added in week six. These changes inevitably reduced the program's explicit advocacy of sustainability and the intrinsic, universal virtues and values associated with it.

While this shorter format was deemed necessary to optimize multiple practical factors within the hospital setting at that time, research indicates that even the eight-week MBSR curriculum can positively influence sustainability through the lifestyle and consumption changes that participants often make following the program. The hope is that people's "lives will have been changed enough to relate to the inner and outer worlds entirely differently for the rest of their lives" (Kabat-Zinn).

At the same time, MBSR was always intended to be sensitive to and relevant to the present moment, to be "au currant" and "very much in touch with the major health challenges of the era in which it is being offered" (Kabat-Zinn).

Consequently, the MBSR of 2024 cannot and should not be the same as the MBSR of 1979. MBSR was never meant to be an invariant curriculum. "It was always meant to have an evolutionary life of its own, so that over time, it responds with the same overall framework—grounded in training in mindfulness meditation practices—while recognizing and finding appropriate ways to engage with the most important new challenges to individual, societal, national, and global health and wellbeing that the world is facing" (Kabat-Zinn).

A world in crisis: recent developments, gaps and needs

In line with our research purpose and aims, we explored the relevance of mindfulness and MBSR in today's context by examining current developments, gaps, and emerging needs. The identified aspects were categorized under the themes of global pressures and needs (Sect. "Global pressures and associated needs"), as well as new demands from course participants and teachers (Sects. "Demands of (past and future) course participants" and "Demands of mindfulness teachers").

Global pressures and associated needs

Several key patterns emerged in relation to global pressures and needs that highlight the urgency for new strategies and approaches:

- Changing local threats: Escalating socio-environmental threats and crises have significantly increased.
- Increasingly interconnected, global crises: The emergence of a polycrisis with common underlying causes demands more holistic responses.
- Exponential technological development: Advances in technology, particularly the internet and social media, are manipulating our attention, fostering polarization, short-term thinking, and rising negativity, loneliness, and a loss of meaning.
- Reduced response capacities: There is a lack of adequate individual, collective, and systemic capacities to address today's crises.
- Growing sustainability awareness: There is a heightened awareness of the interconnection between personal, collective, and planetary well-being, emphasizing the urgent need for integrated approaches that link health, ecological regeneration, and systems change.

Since MBSR's creation in 1979, the global landscape has undergone dramatic changes, particularly due to escalating environmental crises and socio-political tensions. As one key informant notes, "the world is in much more dire condition."

---

[3] Secular, or mainstream mindfulness refers to practices detached from religious or spiritual contexts, focusing instead on mental health, well-being, and self-awareness. It is often taught in clinical, educational, or workplace settings, emphasizing practical benefits without requiring adherence to spiritual or religious beliefs.

In addition to the environmental challenges, we now face a polycrisis—a series of interconnected crises that affect every sector and scale (individual, collective, and systemic). The combined and cascading effects of environmental degradation, economic instability, geopolitical tensions, and public health crises intensify one another, requiring integrated, coordinated solutions.

Moreover, the rapid pace of technological development, including the growth of the internet and social media, has exacerbated these challenges. This technological boom has manipulated our attention, contributing to rising polarization, increasing short-term thinking, loneliness, and a pervasive sense of negativity and loss of meaning.

In response to these challenges, there is a growing recognition of the inseparable link between personal, collective, and planetary well-being. Compared to 1979, "there is much more awareness of the importance of sustainability on multiple levels" (Kabat-Zinn). This awareness emphasizes the urgency of approaches that integrate health, ecological regeneration, and systems change. As one interviewee aptly puts it, "You cannot be healthy in an unhealthy world," and conversely, "The world cannot be healthy if individuals are unwell." Coupled with teachers' growing recognition that today's polycrisis stems from a false sense of separation—from ourselves, others, and nature—the need for more integrated approaches to foster sustainable behaviors, cultures, systems, and structures is increasingly acknowledged.

Demands of (past and future) course participants

In response to the global challenges outlined in Sect. "Global pressures and associated needs", evolving needs from course participants are placing new demands on mindfulness-based teachers and training programs. Related patterns include:

- Support for sustainability-related emotions: The rising eco-anxiety, overwhelm, and helplessness in the face of the polycrisis require mindfulness practices that can address these specific emotions.
- Activist support: Growing demand exists to support those engaged in sustainability work across various scales, without responsibilizing individuals and individualizing solutions.
- Flexibility in practice: People seek more flexible practices that can accommodate time constraints and other cultural pressures (that in part underlie today's crises, to move from current to more sustainable paradigms).
- Diverse practices for (re)connection: There is a growing desire for more nature-based and body-focused practices, including indigenous approaches, to nurture transformative capacities for sustainability.

Today's polycrisis has led to rising eco-anxiety, stress, and burnout. This is particularly evident among sustainability activists, many of whom are experiencing burnout. Mindfulness teachers report a "growing sense of eco-anxiety" and a new wave of "deep stress, anxiety, and depression." One ST participant working with environmental activists notes, "They were all burned out… We were using mindfulness to recalibrate them, re-inspire them, and help them avoid burnout." Teachers from both programs also note the challenge of preventing deeper isolation in today's context: "People get stuck in 'self-ing', and it's a delicate balance to broaden awareness of the planet's crisis without worsening anxiety."

These emotional shifts are said to be influencing the type of participants enrolling in mindfulness courses. Beyond psychological support, participants now seek community support, practices that nurture transformative capacities, and actionable guidance on how inner dimensions intersect with global sustainability issues.

Additionally, societal shifts are driving the need for more flexible and diverse mindfulness practices (see Sect. "Global pressures and associated needs"). With shorter attention spans and constant rushing, participants are less inclined and able to commit to long-term practices. Accordingly, one teacher from the EA program explains that, "People are increasingly using mindfulness apps and podcasts instead of engaging in formal practice." Shorter, more active practices are in high demand, especially among younger generations.

In addition, teachers from both programs report positive feedback when practices are taken outdoors, even in challenging weather conditions. Participants often express excitement over these outdoor sessions, noting that they are "the highlight of their experience". Finally, there is growing appreciation for exercises that foster capacities such as agency, hope, gratitude, joy, and connection, emphasizing the need for practices that can nurture (re)connection.

Demands of mindfulness teachers

As global changes and evolving participant needs shape mindfulness courses, teachers face new challenges and demands. The following key developments and patterns were identified:

- Challenging emotions: Teachers report increased emotional exhaustion in response to the polycrisis.
- Learning mindset: There is a strong desire among teachers for continuous personal growth to enhance their teaching.
- Increasing sustainability interest: Deepened mindfulness practice fuels teachers' interest in contributing to sustainability.

- Eroding relevance of teaching: Teachers express concerns about the timeliness and contextual relevance of their courses.
- Seeking sustainability-specific knowledge: Teachers look for guidance on integrating sustainability into their teaching to support both inner and outer transformation.

Mindfulness teachers are not immune to the stresses of today's polycrisis. Many express personal suffering due to climate change, social inequality, and other global challenges, which can affect their ability to remain grounded. Some seek peer support groups and professional development opportunities to process emotional responses and deepen their understanding. Several teachers share that they are "seeing more and more how anxiety is a product of our culture, related to disconnection and [technological] acceleration."

Teachers from both programs also show a strong desire for personal growth to enhance the quality of their teaching. Lifelong learning is highly valued, with many continually deepening their mindfulness practice and related approaches.

This personal journey often leads to increased awareness of sustainability issues, prompting teachers to explore ways to integrate these into their teaching. Many report an increasing "sense of urgency to do something," while simultaneously struggling with what concrete actions to take.

Most teachers feel their current teaching is outdated and lacks contextual relevance for addressing today's challenges. They recognize the need for new programs and approaches and are increasingly seeking guidance, scientific frameworks, case studies, and best practices for integrating personal, collective, and planetary well-being into their teaching. As one mindfulness teacher shares: "I am not as comfortable as I want to be with talking about this and inviting it in."

At the same time, there is concern about how to balance raising awareness of global issues without evoking guilt or shame among participants. Teachers are asking: "What is the solution for 2025, not 1979, and how could mindfulness be involved?" and "How can we learn from the unusual things about MBSR, which is focusing on what is right with everybody?".

These challenges prompted teachers to enroll in the ST and EA programs. Although highly educated and experienced, many report struggling to integrate ecology and sustainability in their mindfulness teaching. As one ST participant reflects: "I was very aware of the separate tracks, but I hadn't connected the two. It was not until the course that these two came together in a magical way… like something internally was turned on and ignited a sense of agency and action."

Required adaptations for a world in crisis

Based on the analysis of teachers' perspectives, the developments outlined in the previous section reveal two distinct themes or approaches for adapting mindfulness-based practices to more effectively respond to past and present developments, needs, and gaps:

- Incremental approach: Subtle contextualization and adaptation of existing mindfulness practices and pedagogies to avoid harm and enhance their relevance for sustainability.
- Transformative approach: A more radical reorientation and expansion of mindfulness-based curricula aimed at accelerating sustainability across sectors and scales.

The following subsections elaborate on these two approaches. Sect. "Discussion and conclusions" then offers a discussion of potential entry points and pathways for integrating mindfulness and sustainability, along with associated implications and limitations.

Do no harm—incremental contextualization, adaptation and upscaling

The incremental approach involves gradually integrating sustainability-related elements into the MBSR curriculum, ensuring that teaching methods and practices remain relevant and accessible as the context evolves. Key patterns and areas for potential contextualization and adaptation, identified through teacher experiences, include:

- Additional readings and resources: Offering optional materials to spark curiosity, deepen understanding, and inspire action toward broader sustainability.
- Subtle framing adjustments: Small shifts in how courses, modules, practices and instructors are presented to enhance relevance.
- Emphasizing interconnection: Inviting reflections on the connections between personal, collective, and planetary ill-health and well-being.
- Integration of nature elements: Incorporating nature-based approaches and language to strengthen the connection to the natural environment.
- Optional practices: Offering exercises aimed at nurturing transformative capacities.

Many teachers have started considering the introduction of optional readings and poems in their training to inspire deeper engagement with sustainability themes. These resources can be introduced gradually to spark curiosity, deepen understanding, and support action during and after

the program, without overwhelming participants, while encouraging their ongoing exploration of broader issues.

Teachers also indicate that minor adjustments in the presentation of mindfulness courses could significantly enhance participants' perception of their relevance to sustainability. These adjustments may include subtle changes in how the overall program, individual modules, teaching methods, instructors, and practices are framed in relation to collective and planetary well-being and sustainability.

Furthermore, most teachers emphasize the importance of explicitly addressing the interconnectedness of personal, collective, and planetary ill-health and well-being in their teachings. In discussions about stress and its causes, teachers may encourage participants to consider not only personal stressors (e.g., work, relationships) but also larger issues such as climate anxiety, economic instability, and social injustice. Teachers enrolled in the EA program suggest, for instance, inviting reflection with statements like: "As we reflect on stress, we can also consider how broader issues—such as environmental changes or social inequality—influence our individual experience, and vice versa."

In addition, integrating elements of nature into the curriculum—such as conducting certain sessions or practices outdoors—is reported to deepen participants' awareness of their relationship with the natural world. At the same time, several teachers acknowledge the need for clear guidance, as spending time outdoors is becoming less common in many modern cultures (see also Sect. "Global pressures and associated needs" and "Demands of (past and future) course participants").

Teachers are also increasingly considering offering additional optional practices to help participants ground themselves in contemporary challenges, particularly in an era characterized by declining attention spans and a growing need for resilience, agency, and hope to address global issues. These practices can be introduced early, as soon as Week 1, within the broader MBSR framework, allowing participants to engage with them at their own pace. For example, EA participants recommend introducing optional compassion exercises that extend to the more-than-human world, as well as nature-based practices, such as "sit spot" exercises, which have been well received in other contexts.

By gradually adjusting language, integrating nature, and offering additional resources and practices, teachers can preserve the integrity of MBSR while subtly addressing sustainability. Teachers play a crucial role in shaping the narratives that frame participants' experiences. Shifting these narratives—through course descriptions, teaching methods, and embodied practices—is generally seen as essential for supporting broader cultural and systemic change.

However, some teachers also emphasize that the core structure of MBSR is scientifically validated and caution against overloading the curriculum with excessive changes.

As one EA participant notes, "If you try to do everything, you wind up doing nothing and confusing people." A related concern is that introducing too many new concepts, particularly environmental themes, may shift the focus away from mindfulness itself. Introducing concepts such as eco-awareness might divert participants' attention from the experiential foundations of mindfulness toward a more cognitively oriented, analytical engagement. Additionally, some EA participants are hesitant to incorporate environmental language or themes, cautioning that certain metaphors or references might not be universally meaningful or accessible. Such curricular adaptations, therefore, require thoughtful and context-sensitive implementation.

Accelerate transformation—expansion and reorientation

The second identified approach (transformative approach) involves expanding and reorienting mindfulness-based programs to more directly contribute to sustainability across sectors and scales, grounded in the recognition that "you cannot be healthy in an unhealthy world." Analysis of teacher perspectives indicates that this evolution requires equipping teachers to facilitate deeper understanding of the polycrisis and its interconnections with inner life. It also involves creating learning environments, approaches, practices, and guidance that foster holistic insight, emergence, and sustained engagement—enabling participants to move beyond a focus on individual well-being toward empowered participation in cultural and systems change. This includes addressing ethical and equity concerns, such as power dynamics and the need to decolonize existing approaches. Accordingly, the analysis identified the following five interrelated patterns that illustrate how teachers of both programs conceptualized and operationalized this transformative reorientation:

- Broader content and contextual understanding: Integrating science-based knowledge about the current polycrisis, and its interconnections to inner life and mindfulness, to foster contextual awareness and relevance.
- Holistic teaching and learning approach: Complementing mindfulness frameworks and practices with insights from diverse knowledge systems to support a comprehensive, embodied understanding of oneself, others, systems, the current polycrisis, and one's role within it.
- Action-oriented guidance: Providing practical and operational support for mindfulness, wellbeing and transformative engagement at individual, collective, and systemic levels.
- Learning spaces for emergence and community: Creating inclusive learning environments that foster community building, emergence and sustained engagement both during and beyond the program.

- Reintegrating ethical and equity considerations: Explicit (re)integration of ethical and equity issues to ensure quality education, challenge and decolonize prevailing approaches, and refocus on the non-instrumental dimensions of mindfulness.

Teachers emphasize the importance of situating mindfulness within the broader context of the contemporary polycrisis. By introducing systemic crises—such as climate change, biodiversity loss, and social injustice—and their root causes, participants from both programs were encouraged to expand their perspectives beyond individual struggles. This approach fostered a more integrated understanding of the connections between personal well-being and planetary health. One teacher notes that the ST program provided "a much-needed context for understanding stress and anxiety," helping participants recognize how external conditions influence their internal states.

Understanding the polycrisis and its root causes also involved engaging with its historical foundations. Teachers in the EA program invites participants, for instance, to explore the legacies of ethnocentrism, colonialism, extractionism, enslavement, and systemic oppression. These reflections enabled participants to connect present-day injustices with long-standing structural conditions. As one teacher explains, it "softens the heart," fostering empathy and a deeper sense of responsibility. For some, these insights became a central motivation for reorienting their engagement and activism toward earth care and transformation.

Many teachers also emphasize the role of science as an important "door opener," providing a broader understanding, whilst enhancing credibility, and instilling confidence when adapting program content for new audiences. Scientific grounding is regarded as essential for linking mindfulness to systemic change and for articulating how intrinsic human capacities—such as mindfulness, compassion, and interconnection—can contribute to transformation. ST participants share that "The course provided the much-needed scientific basis for understanding today's polycrisis," and that "It inspired to realize that the answer lies in collective action—advocacy and joining forces with others."

Building on this expanded content base, teachers from both courses stress the need for a holistic teaching and learning approach that integrates insights from diverse fields and disciplines. In the ST program, for example, mindfulness is enriched through the inclusion of systems thinking, behavioral science, positive psychology, neuroscience, and Indigenous traditional knowledge and wisdom traditions. These approaches are seen as complementary, offering participants a more comprehensive and embodied understanding of the self, others, and the interconnected social and ecological systems in which they are embedded.

In particular, systems thinking is described as essential for helping participants understand their roles within complex systems and perceive points of leverage for change. Teachers from both courses find that incorporating science-based ecological metaphors—such as the "wood wide web" or the oxygen exchange between humans and plants—deepened participants' experiential learning and connection to the natural world. Nature walks, environmental compassion practices, and gratitude exercises are frequently cited as powerful tools that supported both insight and hope. As one ST participant puts it, these practices provide access to "the hope that lives within us all and serve as a bridge to meaningful engagement."

While a deeper understanding of mindfulness is foundational, teachers note that translating related insights into action also requires clearer and more practical guidance. The ST program incorporates, for instance, action-oriented tools—such as the Handprint Project, grounded in positive psychology—to help participants move from contemplation to identifying their unique contributions. Such tools are described as vital for building participants' confidence in their ability to engage with sustainability challenges. One participant reflects, "Before the course, I didn't know how to move from mindfulness to climate action. Through the Handprint Project, I gained a practical framework that transformed my understanding and enabled me to meaningfully contribute to change in my community."

Teachers emphasize the importance of introducing such action-oriented tools early in the course, rather than as a concluding activity. This approach allows participants to experiment, iterate, and integrate new ways of being, thinking, and acting into their daily lives. ST participants who linked their Handprint Projects to their professional or community work often report ripple effects even before the course concluded, underscoring the transformative potential of well-integrated, practical frameworks.

Another recurring theme in teacher reflections is the centrality of safe, inclusive, and collaborative learning spaces. These spaces are viewed as critical for supporting both individual and collective emergence, which is essential for moving towards more sustainable paradigms. Teachers describe how the structure of the ST course—through small group exercises, dyads, "unlearning" groups, and open dialogue—enabled participants to shift from a focus on "I" to a sense of "we." This shift is experienced as both meaningful and energizing. As one teacher notes, "The shift from 'I' to 'we' was transformative, and being part of a community helped sustain engagement" with the course."

Sustained engagement beyond the formal course structure is also viewed as essential. Teachers highlight the importance of regular practice groups, or community check-ins to maintain momentum, particularly in the face of ongoing societal challenges. As one ST participant shares, "The

course left me eager for more opportunities to connect beyond its duration. Ongoing forums or meet-ups would help sustain the momentum and provide vital support in challenging times."

Finally, teachers from both courses note that their own learning underscored the importance of approaching mindfulness as an ethical and relational practice, rather than as a tool for individual stress reduction. As one person comments, "The ST course showed me that mindfulness isn't just about managing stress—it's about showing up for the world with compassion and integrity, and being mindful of how my actions affect others and the planet." This reorientation is seen as critical for aligning mindfulness with principles of justice, equity, and collective care. By explicitly naming and addressing issues of power, privilege, and systemic harm, teachers can encourage participants to reflect on their responsibilities within broader social and ecological systems. Participants responded to this ethical framing with a deepened sense of mindfulness as a practice of integrity and relational awareness.

Across all thematic areas described above, teachers from both programs consistently highlight a set of core design considerations that require ongoing attention and adaptation depending on the target group. These considerations are seen as crucial for ensuring coherence, inclusivity, and transformative potential within mindfulness-based sustainability programs:

- Striking a meaningful balance between inner and outer dimensions of sustainability—in both content and practice. This includes the thoughtful integration and contextualization of non-Western knowledge systems and contemplative traditions to support sustainability transformation.
- Ensuring clear and experiential linkages between mindfulness practices and sustainability-related content, while offering flexibility in the length and structure of practices to accommodate contemporary needs and capacities.
- Supporting participants in the continuous translation of insights into real-world contexts. This involves addressing individual mindsets, collective behaviors, cultural patterns, and systemic dynamics in an integrated and relational manner.

A central thread woven through all of these considerations is the role of mindfulness as an anchoring and unifying capacity. While its foundational qualities—such as presence, awareness, and compassion—remain essential, teachers emphasize the importance of explicitly articulating how mindfulness extends beyond individual stress reduction and personal wellbeing. When framed as a deeply relational and ethical practice, mindfulness can serve as connective tissue across all dimensions of sustainability and transformation.

Accordingly, mindfulness is also described as supporting the cultivation of transformative capacities—"fostering self-awareness and emotional regulation" (being), "encouraging perspective-taking and critical reflection" (thinking), "deepening empathy and compassion" (relating), "enhancing co-creation and collective intelligence" (collaborating), and "grounding values-based, purposeful engagement" (acting) (cf. IDG 2021). In this light, mindfulness emerges as more than an isolated skill: it is increasingly recognized as a foundational capacity that underpins the personal and collective competencies required to address and transform today's complex global challenges.

At the same time, trainers and teachers from both courses highlight the risk of mindfulness being misused in instrumental ways—where isolated practices are inserted into increasingly popular, "shopping list–like" toolboxes without adequate grounding, integration, or continuity.

Discussion and conclusions

This study explored potential ways of integrating mindfulness and sustainability to enable transformative education and action-taking. The findings reveal diverse, nuanced, and creative pathways through which mindfulness-based approaches can be deepened and extended in response to today's contexts.

From adapting and expanding, to upscaling and transformation

Our findings suggest that mindfulness is not only a scientifically sound intervention in its own right, but also a crucial enabling factor for other transformative interventions related to inner development and sustainability. It supports practices that foster wellbeing and sustainability through awareness, presence, attention regulation, and compassion—capacities that mindfulness embodies (cf. Firth et al., 2019; Wamsler et al., 2021). Regardless of the degree of integration, mindfulness can thus serves as an important, and arguably essential, springboard for transformation.

Creating new programs or adapting existing practices and curricula is not an either-or choice. In fact, our findings highlight the importance of creating diverse offerings, ranging from (i) comprehensive stress reduction that links wellbeing with wider cultural and intergenerational dimensions, to (ii) addressing the particularities of eco-anxiety, related overwhelm and helplessness, and (iii) supporting transformative action by professionals and activists who want to nurture wellbeing and sustainability across levels and scales.

In this context, our results also underscore the need for careful consideration of the scope and structure of related approaches. Teachers must strike a balance between
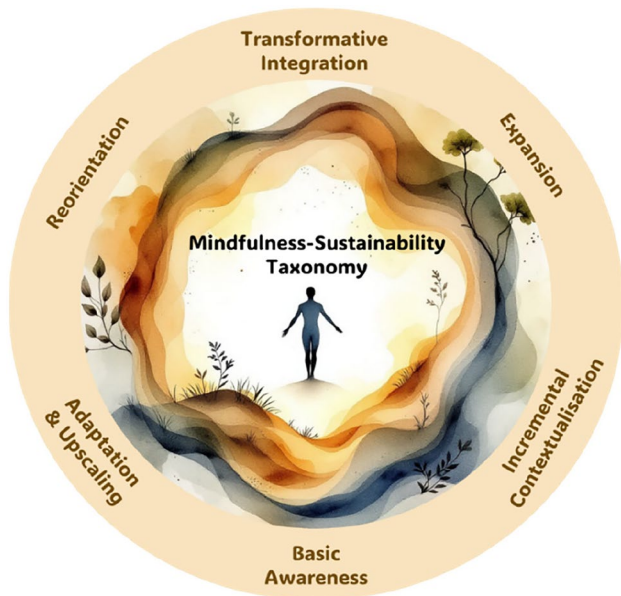
Fig. 1 Simplified illustration of the Mindfulness–Sustainability Taxonomy. The pathways represent diverse, overlapping, and context-specific approaches tailored to different audiences. They do not imply a hierarchy or a linear progression

maintaining the integrity of the foundational mindfulness frameworks, such as MBSR, and integrating broader sustainability concerns without overburdening the original curriculum. At the same time, mindfulness-based sustainability programs must continue to evolve, with adaptations made according to the contextual challenges presented by today's polycrisis, the experience of the teacher, and the needs of the target group (cf., Oman 2025). Our findings align with previous research by Ives et al. (2023), who note that most existing programs still lack coherence in linking mindfulness-based methods to tangible sustainability outcomes, and with Thiermann and Sheate (2022), who emphasize that the potential of mindfulness depends heavily on context, intention, and design.

From protocols and curricula, to criteria, ethics and embodiment

While structured frameworks are essential for guiding new approaches, our findings suggest that mindfulness cannot be reduced to rigid protocols or a checklist of techniques. The evolution of mindfulness-based programs has raised critical considerations about the important distinctions between protocols and curricula, and their deeper pedagogical and ethical implications (cf., Crane et al. 2023). Over-simplifying mindfulness into prescriptive steps or isolated exercises risks diluting its transformative potential. This instrumental approach undermines the experiential and relational nature of mindfulness, which stems from the teacher's embodied presence and insight.

Teachers play a vital role in balancing the formal structure of practices with responsiveness to participants' needs and contemporary challenges. Their lived practice serves as a foundation for cultivating trust, insight, and transformation. Curriculum design must thus move beyond technique to emphasize ethical orientation and relational awareness. Accordingly, educators increasingly emphasize the need to explicitly foreground the ethical foundations of mindfulness to prevent its commodification or misuse (cf., Walsh 2016a, b; Kabat-Zinn 2005b). Especially in the context of global crises such as climate change and social injustice, mindfulness must be grounded in values that go beyond individual stress relief toward systems thinking and responsible engagement (Gash and Maier 2024).

This calls for a reintegration of ethical dimensions often overlooked in Western adaptations. Debates about whether mindfulness should be secular or ethically grounded often miss the point: both positions risk reinforcing dualistic frameworks if ethics are merely overlaid rather than embodied (Walsh 2016a, b; Oman 2025). As highlighted by Walsh (2016a), "the debate between mindfulness proponents and their critics has reached a deadlock… Both parties fail to realize that any ethical framework that reaffirms today's capitalist society will undoubtedly reproduce the same dualities of thought and action". Accordingly, our findings suggest the need for an immanent, non-dual understanding of mindfulness—one that resists commodification and supports transformation across personal, collective and system levels.

Ethical principles, values, and foundational commitments—including lifelong practice, ongoing mentorship, authenticity, wise livelihood, inclusion, and the principle of "do no harm"—should be explicitly acknowledged and implicitly embodied through teaching and supervision. While not codified in existing program curricula, these principles can serve as foundational guidelines to uphold the integrity of mindfulness-based education for sustainability transformation. Reintegrating ethical principles also involves framing mindfulness in ways that resonate with and integrate atheist, spiritual, and religious perspectives. It also requires decolonizing and integrating diverse knowledge systems, including the "reindigenization" of ourselves (Jeedigunta 2025).

Taxonomy of mindfulness-sustainability integration

Based on our findings, we propose a taxonomy of mindfulness–sustainability integration to map how mindfulness-based teachers can extend the boundaries of existing programs while remaining grounded in the core intentions of mindfulness practice. This taxonomy provides a framework for reflecting on what may be done—or avoided—depending

Table 1 Mindfulness–sustainability taxonomy, outlining interrelated and overlapping pathways, cross-cutting patterns, and processes. The framework shows different ways mindfulness training and practice can support sustainability—from shifts in awareness to broad social transformation

Pathways of integration	Definition of integration	Curriculum key aspects	Practice changes	Ethical considerations	Advantages and risks
Basic awareness	Subtle links between mindfulness, wellbeing, and sustainability	Offers optional introductory readings on wellbeing and sustainability	No changes	Encouraging awareness of personal environmental impact	Easy to implement, low risk of overwhelm. Uncontextualized references to sustainability limit depth and impact
Incremental contextualization	Minor modifications to include sustainability language and concepts	Includes adjusted course descriptions and instructions; more earth- and nature-based language	Single-practice changes; nature/earth-themed language (e.g., breathing instructions linked to ecological cycles)	Emphasizes interconnection of personal–planetary wellbeing	Gradual integration reduces resistance and builds engagement. Subtlety limits impact; may alienate some
Adaptation and upscaling	Contextual adaptations to improve sustainability relevance, adding a few elements	Emphasizes interconnection; incorporates nature-based and more flexible practices (e.g, variable length)	Outdoor implementation of selected practices. Adds optional exercises, including nature-based or eco-anxiety practices	Frames sustainability as an embodied, lived concern. Reintroduces ethics, re-infusing mindfulness with precepts like interbeing, non-harming, and service	Deeper reflection and engagement. More resource-intensive, risk of diluting core mindfulness if not applied carefully
Expansion	Deliberate integration of polycrisis-related knowledge and its relationship to inner experience	Integrates relevant interdisciplinary perspectives—such as systems thinking, behavioral science, and positive psychology—for deeper inquiry into interconnection	Practices aimed at fostering transformative capacities (systems thinking, interconnection, hope, compassion, joy, gratitude); nature walks	Reclaims ethical roots. Promotes collective well-being and systemic understanding of suffering; shifts from individual wellbeing to holistic, systemic models that recontextualize suffering and healing within socio-ecological systems	More holistic and interdisciplinary. Demands new curriculum development, risks of overwhelm, complex coordination
Reorientation	Sustainability integration across content and pedagogy	Emphasizes need for collective engagement across sectors; operational guidance and community support. Optional courses for deepening	Adds action-based frameworks (e.g., handprint) and learning spaces; adds practices for deepening transformative capacities and time awareness (e.g., time walks)	Addresses ethics in training and its integration in work contexts; emphasizes community as key to transformation	Comprehensive support for transformative capacities, action, and collective responsibility. Risks of overwhelm and instrumentalization, complex content and coordination
Transformative Integration	Integrative inner–outer transformation across scales by connecting mindsets, behaviors, culture, and systems approaches	Deepens understanding of inner–outer transformation across scales; offers ethical, embodied practices and supports continuous engagemen	Adds frameworks for integrative transformation and institutionalization; practices for ongoing self-reflection on positionality and power; and platforms for continuous follow-up, and communities of practice	Rooted in a justice-oriented ethic of care; emphasizes non-instrumental mindfulness, fosters space for diverse worldviews, avoids commodification, and promotes continuous, meaningful, and integrative action	Enables radical ethical leadership and change agency; requires highly skilled facilitation due to the complexity of education for integrative inner–outer transformation (see Suppl. Material 4)
Cross-cutting considerations	Contextual balance: Align inner–outer focus with the specific context and group needs. Each level is fluid and integrative, offering a stakeholder- and context-specific pathway for integration. Transformational power: Preserve the depth of mindfulness by avoiding its instrumentalization and reduction to a "shopping list" of practices, which dilutes its transformative potential. Support integrative transformation, as appropriate to each level. Facilitator capacities: Each level requires ongoing learning and personal practice to cultivate embodied understanding, as well as the capacity to convey mindfulness with authenticity and effectiveness. Ethical principles: Frame mindfulness in ways that resonate with and integrate atheist, spiritual, and religious perspectives. Decolonize and integrate diverse knowledge systems as appropriate to each level				

on the course aims, context, and target group, spanning from traditional MBSR and MBCT courses to sustainability-focused education. It offers a structured framework for conceptualizing how mindfulness can evolve to support sustainability across multiple levels of transformation.

The taxonomy spans foundational shifts in awareness and understanding, the expansion of existing practices and their upscaling, the development of new curricula, and the reorientation of these approaches for broader societal impact and embodied transformation across sectors and scales. Accordingly, the six *interrelated pathways* identified are: (1) basic awareness; (2) incremental contextualization; (3) adaptation and upscaling; (4) expansion; (5) reorientation; and (6) transformative integration (Fig. 1). These pathways are accompanied by *cross-cutting aspects and processes* concerning their (1) Contextual Balance, (2) Transformational Power, (3) Facilitator Capacity, and (4) Ethical Principles.

The taxonomy, including the six pathways and cross-cutting processes, is presented in detail in Table 1. Importantly, the pathways do not suggest a linear progression or hierarchy, but rather offer a multi-dimensional map of possibilities. Teachers may engage at different entry points depending on their context, readiness, and community (see also Supplementary Material 4).

Limitations and clarifications

This research offers valuable insights into the integration of mindfulness and sustainability in education. It aligns with principles of transformative education and integrative inner–outer processes, and advocates for a post-conventional mindfulness that is relational, participatory, and engaged (O'Sullivan 1999; Sterling 2001; van Gordon et al. 2019; Vago and Silbersweig 2012; Wamsler et al. 2024, see Suppl. Material 5). It also acknowledges tensions echoed in earlier critiques—such as navigating institutional constraints, balancing psychological wellbeing with complexity, and discerning how to invite action without being prescriptive or instrumental. There is an ongoing risk of mindfulness becoming overly individualistic or co-opted by neoliberal norms (Purser 2019; Hyland 2017). The proposed taxonomy seeks to engage critically and creatively with these challenges, preserving the integrity of mindfulness as a pathway to hope, joyful engagement, and meaningful transformation toward sustainability. Rather than opposing policy or practical solutions, it advocates for a synthesis of inner (individual and collective) and outer (behavioral and systemic) dimensions.

In this context, our results also highlight the need for intensified cross-disciplinary dialogue and education across fields that explore mindfulness or self-construal as pathways to fostering connectedness and sustainability. The degrowth movement (e.g., Brossmann and Islar 2020), ecofeminist and decolonial approaches (e.g., Chinsya 2024; Yellow Bird 2013), cultural psychology (e.g., Tam 2025), and indigenous knowledge systems (e.g., Jessen et al. 2022; UNDP 2024) offer approaches for both understanding and transforming individually and culturally shaped beliefs about the self, others, nature, progress and wellbeing. These approaches also emphasize place-based, experiential, and intergenerational modes of teaching and meaning-making, which can inform the pathways of mindfulness–sustainability integration identified in our study.

Concluding remarks

In an age of divisive politics and constant distraction, mindfulness can be a vital antidote to hate narratives and us-versus-them mindsets. It can help us to stay connected with the wider whole and the longer term, and act accordingly. While global crises can fuel despair, our findings suggest that transformation is possible—from despondency toward hope and sustained engagement. They illustrate how such change can be enacted, positioning mindfulness-based education as a powerful catalyst for transformation, expanding current approaches to meet urgent needs while addressing the root causes of today's polycrisis. It is a call to reclaim the foundational purpose and evolutionary, transformative potential of mindfulness. At the same time, we caution against tendencies to reduce mindfulness to rigid protocols or isolated, one-off exercises, instead emphasizing its non-instrumental dimensions—such as embodiment, emergence, and ethical awareness—grounded in the inseparability of inner life and planetary wellbeing.

Declarations

Conflict of interest The authors declare no known competing financial interests or personal relationships that could have influenced the work reported in this paper. The first author conducted the study as an independent researcher. The study is participatory and transdisciplinary in nature and thus involved co-authors affiliated with the assessed training programs, which are offered by non-profit organizations. However, these co-authors were not involved in the study design or data analyses. The related data are exclusively accessible to the first author, ensuring the study's integrity and objectivity.

References

Baek EC, Parkinson C (2022) Shared understanding and social connection: integrating approaches from social psychology, social network analysis, and neuroscience. Soc Personal Psychol Compass 16(11):e12710. https://doi.org/10.1111/spc3.12710

Barrett B, Walters S, Checovich MM et al (2024) Mindful eco-wellness: steps toward personal and planetary health. Glob Adv Integr Med Health. https://doi.org/10.1177/27536130241235922

Bentz J, O'Brien K, Scoville-Simonds M (2022) Beyond "blah blah blah": exploring the "how" of transformation. Sustain Sci 17:497–506. https://doi.org/10.1007/s11625-022-01123-0

Blake J (1999) Overcoming the 'value–action gap' in environmental policy: tensions between national policy and local experience. Loc Environ 4(3):257–278. https://doi.org/10.1080/13549839908725599

Braun V, Clarke V (2006) Using thematic analysis in psychology. Qual Res Psychol 3:77–101. https://doi.org/10.1191/1478088706qp063oa

Bristow J, Bell R, Wamsler C (2022) Reconnection: meeting the climate crisis inside out. Research and policy report. The Mindfulness Initiative and LUCSUS. www.themindfulnessinitiative.org/reconnection

Brossmann J, Islar M (2020) Living degrowth? Investigating degrowth practices through performative methods. Sustain Sci 15:917–930. https://doi.org/10.1007/s11625-019-00756-y

Burger T, Potgieter JC, Nell W (2024) Methods and environmental conditions typical of nature-based mindfulness practice: a scoping review. Mindfulness 15(7):1621–1637. https://doi.org/10.1007/s12671-024-02393-8

Burns D (2007) Systemic action research: a strategy for whole system change. Bristol University Press, Bristol

Chinsya BAD (2024) Women and nature: an ecofeminist study of environmental conservation sustainability. An-Nisa J Gender Stud 17(2):165–180. https://doi.org/10.35719/annisa.v17i2.309

Clarke DAG, Mcphie J (2014) Becoming animate in education: immanent materiality and outdoor learning for sustainability. J Adventure Educ Outdoor Learn 14(3):198–216. https://doi.org/10.1080/14729679.2014.919866

Corbin J, Strauss A (2008) Basics of qualitative research: techniques and procedures for developing grounded theory, 3rd edn. Sage Publications, Thousand Oaks

Crane RS, Callen-Davies R, Francis A et al (2023) Mindfulness-based stress reduction for our time: a curriculum that is up to the task. Glob Adv Integr Med Health. https://doi.org/10.1177/27536130231162604

Eisenstein C (2013) The ascent of humanity: civilization and the human sense of self. Turabian, Chicago

Firth J, Torous J, Stubbs B et al (2019) The "online brain": how the Internet may be changing our cognition. World Psychiatry 18(2):119–129. https://doi.org/10.1002/wps.20617

Frank P, Sundermann A, Fischer D (2019) How mindfulness training cultivates introspection and competence development for sustainable consumption. Int J Sustain High Educ 20(6):1002–1021. https://doi.org/10.1108/IJSHE-12-2018-0239

Gash SC, Maier KJ (2024) Mindfulness and our changing climate: there's no place like home. J Environ Stud Sci 14:814–819. https://doi.org/10.1007/s13412-024-00982-6

Geiger SM, Fischer D, Schrader U, Grossman P (2019) Meditating for the planet: effects of a mindfulness-based intervention on sustainable consumption behaviors. Environ Behav 52(9):1012–1042. https://doi.org/10.1177/0013916519880897

Glassman M, Erdem G (2014) Participatory action research and its meanings: vivencia, praxis, conscientization. Adult Educ Q 64:206–221. https://doi.org/10.1177/0741713614523667

Goldberg SB, Riordan KM, Sun S, Davidson RJ (2022) The empirical status of mindfulness-based interventions: a systematic review of 44 meta-analyses of randomized controlled trials. Perspect Psychol Sci 17(1):108–130. https://doi.org/10.1177/1745691620968771

Göpel M (2016) The great mindshift: how a new economic paradigm and sustainability transformations go hand in hand. Springer Nature, Berlin

Hawken P (2021) Regeneration: ending the climate crisis in one generation. Penguin Books, London

Hyland T (2017) McDonaldizing spirituality: mindfulness, education, and consumerism. J Transform Educ 15(4):334–356. https://doi.org/10.1177/154134461769697

IDG (2021) Inner development goals (IDG): background, method and the IDG framework. https://static1.squarespace.com/static/600d80b3387b98582a60354a/t/640605519559993bd30bc15f/1678116201110/IDG_Report_Full.pdf. Accessed 23 May 2024

Iniesta-Bonillo MA, Pompeu-Queiros A, Capobianco Uriarte MM, Alves H (2025) Mindfulness and consumer behavior: a bibliometric analysis of themes and trends over 20 years. Humanit Soc Sci Commun 12:93. https://doi.org/10.1057/s41599-025-04367-0

IPBES (2024) Thematic assessment report on the underlying causes of biodiversity loss and the determinants of transformative change and options for achieving the 2050 vision for biodiversity of the intergovernmental science-policy platform on biodiversity and ecosystem services (transformative change assessment). O'Brien K, Garibaldi L, Agrawal A (eds). IPBES secretariat, Bonn. https://doi.org/10.5281/zenodo.11382215

IPCC (2022a) Climate change 2022a: impacts, adaptation, and vulnerability. In: Pörtner H-O, Roberts DC, Tignor M, Poloczanska ES, Mintenbeck K, Alegría A, Craig M, Langsdorf S, Löschke S, Möller V, Okem A, Rama B (eds) Contribution of working group II to the sixth assessment report of the intergovernmental panel on climate change. Cambridge University Press, Cambridge, and New York, p 3056. https://doi.org/10.1017/9781009325844

IPCC (2022b) Climate change 2022b: mitigation of climate change. In: Shukla PR, Skea J, Slade R, Al Khourdajie A, van Diemen R, McCollum D, Pathak M, Some S, Vyas P, Fradera R, Belkacemi M, Hasija A, Lisboa G, Luz S, Malley J (eds) Contribution of working group III to the sixth assessment report of the intergovernmental panel on climate change. Cambridge University Press, Cambridge, and New York. https://doi.org/10.1017/9781009157926.019

Ives CD, Schäpke N, Woiwode C et al (2023) IMAGINE sustainability: integrated inner-outer transformation in research, education and practice. Sustain Sci 18:2777–2786. https://doi.org/10.1007/s11625-023-01368-3

Jeedigunta A (2025) What It really means to reindigenize your life (and what it doesn't). medium. https://medium.com/@aj.jeedigunta/what-it-really-means-to-reindigenize-your-life-and-what-it-doesnt-693d6afdcbe7. Accessed 25 Aug 2025

Jessen T, Ban C, Claxton N, Darimont C (2022) Contributions of indigenous knowledge to ecological and evolutionary understanding. Front Ecol Environ 20(2):93–101. https://doi.org/10.1002/fee.2435

Kabat-Zinn J (2005a) Coming to our senses: healing ourselves and the world through mindfulness. Hachette, New York

Kabat-Zinn (2005b) Ethics and karma. In: Coming to our senses: healing ourselves and the world through mindfulness, pp 102–107. Hachette, New York

Kabat-Zinn J (2013) Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness, Revised. Bantam Books, New York

Langer EJ (2000) Mindful learning. Curr Dir Psychol Sci 9(6):220–223. https://doi.org/10.1111/1467-8721.00099

Leichenko R, O'Brien K (2021) Climate and society: transforming the future, 2nd edn. Wiley, New York

Mastropietro C, Vervaeke J (2020) Diagnosing the current age: a symptomology of the meaning crisis. The side view. https://thesideview.co/journal/diagnosing-the-current-age/. Accessed 13 Mar 2025

McCown D, Riebel D, Micozzi M (2010) Mindfulness: a practical guide for clinicians and educators. Springer, New York

Nowell LS, Norris JM, White DE, Moules NJ (2017) Thematic analysis: striving to meet the trustworthiness criteria. Int J Qual Methods 16(1):1609406917733847. https://doi.org/10.1177/1609406917733847

Oman D (2025) Mindfulness for global public health: critical analysis and agenda. Mindfulness 16:573–612. https://doi.org/10.1007/s12671-023-02089-5

O'Sullivan E (1999) Transformative learning: educational vision for the 21st century. Zed Books, London

OSG (Office of the Surgeon General) (2023) Our epidemic of loneliness and isolation: the U.S. Surgeon General's Advisory on the Healing Effects of Social Connection and Community. US Department of Health and Human Services, Washington (DC)

Purser RE (2019) McMindfulness: how mindfulness became the new capitalist spirituality. Repeater Books, London

Scott B, Amel E, Koger S, Manning C (2021) Psychology for sustainability, 5th edn. Routledge, New York

Segal Z, Williams M, Teasdale J (2013) Mindfulness-based cognitive therapy for depression, 2nd edn. Guilford Press, New York

Sterling S (2001) Sustainable education: re-visioning learning and change. Green Books, Cambridge

Suldovsky B (2017) The information deficit model and climate change communication. Oxford research encyclopedia of climate science. https://doi.org/10.1093/acrefore/9780190228620.001.0001/acrefore-9780190228620-e-301. Accessed 9 May 2025

Tam K-P (2025) Culture and pro-environmental behavior. Curr Opin Psychol 62:101986. https://doi.org/10.1016/j.copsyc.2024.101986

Thiermann UB, Sheate WR (2022) How does mindfulness affect pro-environmental behaviors? A qualitative analysis of the mechanisms of change in a sample of active practitioners. Mindfulness 13:2997–3016. https://doi.org/10.1007/s12671-022-02004-4

UNDP (2024) Indigenous knowledge is crucial in the fight against climate change—here's why. UN Development Program, UN Climate Promise. https://climatepromise.undp.org/news-and-stories/indigenous-knowledge-crucial-fight-against-climate-change-heres-why. Accessed 20 Oct 2024

Vago DR, Silbersweig DA (2012) Self-awareness, self-regulation, and self-transcendence (S-ART): a framework for understanding the neurobiological mechanisms of mindfulness. Front Hum Neurosci 6:296. https://doi.org/10.3389/fnhum.2012.00296

Van Gordon W, Shonin E, Griffiths MD (2019) Mindfulness and the second generation of mindfulness-based interventions. In: Shonin E, Van Gordon W, Singh NN (eds) Mindfulness-based education: bringing mindfulness to schools and other youth settings. Springer, pp 25–41

Walsh Z (2016a) Critical theory and the contemporary discourse on mindfulness. J Int Assoc Buddhist Univ VIII:106–112

Walsh Z (2016b) A meta-critique of mindfulness critiques: from mcmindfulness to critical mindfulness. In: Purser R, Forbes D, Burke A (eds) Handbook of mindfulness: culture, context, and social engagement. Springer, Cham

Wamsler C, Bristow J (2022) At the intersection of mind and climate change: integrating inner dimensions of climate change into policymaking and practice. Clim Change 173(1):1–22. https://doi.org/10.1007/s10584-022-03398-9

Wamsler C, Brossmann J, Hendersson H et al (2018) Mindfulness in sustainability science, practice, and teaching. Sustain Sci 13(1):143–162. https://doi.org/10.1007/s11625-017-0428-2

Wamsler C, Schäpke N, Fraude C, Stasiak D, Bruhn T, Lawrence M, Schroeder H, Mundaca L (2020) Enabling new mindsets and transformative skills for negotiating and activating climate action: lessons from UNFCCC conferences of the parties. Environ Sci Policy 112:227–235. https://doi.org/10.1016/j.envsci.2020.06.005

Wamsler C, Osberg G, Osika W et al (2021) Linking internal and external transformation for sustainability and climate action: towards a new research and policy agenda. Glob Environ Change 71:102373. https://doi.org/10.1016/j.gloenvcha.2021.102373

Wamsler C, Osberg G, Janss J et al (2024) Revolutionising sustainability leadership and education: addressing the human dimension to support flourishing, culture and system transformation. Clim Change 177:4. https://doi.org/10.1007/s10584-023-03636-8

WHO (2021) Climate change and health: vulnerability and adaptation assessment. World Health Organization, Geneva. https://www.who.int/publications/i/item/9789240036383

Woiwode C, Schäpke N, Bina O et al (2021) Inner transformation to sustainability as a deep leverage point: fostering new avenues for change through dialogue and reflection. Sustain Sci 16:841–858. https://doi.org/10.1007/s11625-020-00882-y

Yellow Bird MJ (2013) Neurodecolonization: applying mindfulness research to decolonizing social work. In: Gray M, Coates J, Yellow Bird MJ, Hetherington T (eds) decolonizing social work. Ashgate Publishing, Burlington, pp 293–310