Different Eyes on Sustainability: Stakeholder Perspectives in German Higher Education Under the Whole Institution Approach

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This article examines how sustainability is perceived, prioritized, and enacted across status groups and institutional profiles in three higher education institutions (HEIs) in Münster, Germany, using survey data from 1,035 participants and drawing on the Whole Institution Approach (WIA). Results indicate that societal transformation and community engagement are prioritized, while curriculum integration is less developed, highlighting the need to strengthen curricular sustainability integration. Perceptions and priorities vary significantly across HEIs and groups, underlining that achieving a holistic WIA requires considering all perspectives. The findings further show that members of HEIs are more engaged in sustainability activities in their private or community contexts outside the university than within it. Student participation is lowest compared to other status groups, reflecting structural and cultural barriers and emphasizing the importance of enabling students as active agents of change. Inclusive participation, systemic support, innovation, and external collaboration are crucial for HEIs to act as effective sustainability drivers.

Keywords: whole institution approach, sustainability in higher education, institutional differences, status group perspectives

1 Introduction

1.1 Theoretical Background

The demand for a sustainable transformation of higher education is emphasized in international agreements such as the United Nations' Agenda 2030, particularly in Sustainable Development Goal 4 (SDG 4, Quality Education), which underlines the central role of universities as transformative actors in societal sustainability processes (Caeiro et al., 2020). Within this goal, Target 4.7 specifies the commitment to ensure that by 2030 all learners acquire the knowledge and skills needed to promote sustainable development, especially through education for sustainable development and the strengthening of global responsibility (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2017). Higher education institutions (HEIs) thereby

assume a dual role: on the one hand, they equip students with the cognitive, social, and methodological competencies needed to promote sustainability and transform society; on the other hand, they act as role models by embedding sustainable principles in their own structures and processes (Shephard, 2022, p. 45; UNESCO, 2021, pp. 30–34; Wheeler, 2008).

The implementation of institution-wide sustainability strategies, however, often remains fragmented. Many HEIs continue to pursue isolated projects rather than institution-wide strategies. Structural fragmentation, competing priorities, and the absence of systemic approaches limit their transformative capacity (Lozano et al., 2013). Empirical research shows that while teaching and curricula are essential for comprehensive sustainability integration, they alone are insufficient for achieving institution-wide transformative change (van Nguyen et al., 2025).

Beyond curricular content, institutional factors play a crucial role. Studies by Weiss et al. (2021) identify strong leadership, targeted incentives, and systematic institutional integration as key drivers of sustainability. Their meta-study of 133 case studies further emphasizes the importance of engaging both internal and external stakeholders to embed sustainability effectively. Complementing these findings, Ávila et al. (2017) show that insufficient leadership commitment and lack of administrative support often prevent bottom-up initiatives from realizing their full potential.

At the student level, studies by Leal et al. (2024) show that sustainable behaviour is strongly mediated by attitudes rather than knowledge alone, and that practical teaching formats, such as project-based learning, service learning, foster sustainable attitudes and a long-term sense of purpose. In line with this, Holst et al. (2024) demonstrate that institutions that effectively integrate these elements provide stronger learning environments for sustainability and promote motivation and sustainable behaviours beyond the university context.

Against this backdrop, the Whole Institution Approach (WIA)[1] provides a theoretical framework that systematically links these elements and embeds them within the institutional context. Successful WIAs are based on five core principles: coherence, continuous learning, participation, responsibility, and long-term commitment (Holst, 2023). These principles guide actions across governance, curriculum, research, operations, community engagement, capacity building, and communication.

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[1] The WIA is part of a family of holistic frameworks aiming to integrate sustainability into entire educational institutions. It draws inspiration from the Whole-School Approach developed in primary and secondary education, which extends sustainability beyond the classroom to all school operations and governance (UNESCO, 2012, p. 46). This concept has been adapted for higher education as the Whole-of-University Approach, emphasizing sustainability in teaching, research, governance, and campus management (McMillin & Dyball, 2009).

Their interdependence highlights that sustainable transformation can only succeed through the interaction of all institutional elements. Beyond structural changes, WIA is a process-oriented tool requiring stakeholder participation, collaborative knowledge generation, and strategic planning (Christou et al., 2024). Participation across all status groups is crucial to foster shared understanding and coherent transformation (Holst, 2023; Scoones et al., 2020). International bodies such as UNESCO recommend the WIA as a key strategy for realizing transformative education and advancing sustainable development in higher education (Kohl et al., 2022).

In Germany, the HOCH-N[2] model represents a context-specific adaptation. It addresses the structural and governance-specific conditions of German HEIs and consolidates the original six fields of action into five[3] (Schopp et al., 2020; DG HochN, 2025). The WIA principles are reflected in HOCH-N and guide implementation across governance, teaching, research, operations, and community engagement and transfer.

1.2   Description of the Problem and Research Question

Although theoretical frameworks such as the WIA have been widely discussed, empirical evidence on how sustainability measures are perceived, prioritized, and implemented across different institutional actors and HEI types remains limited. Such perceptions and priorities are crucial indicators of both the effectiveness of implementation and the extent to which individual views align with institutional strategies. Previous research has mainly focused on individual aspects, such as curricular innovations, leadership, or barriers to implementation, while systematic comparisons between stakeholder groups – students, faculty, and administrative staff – are still rare, despite their importance for understanding how different perspectives among actor groups shape, support, or potentially hinder the institutionalization of sustainability. Moreover, the scope, direction, and practical implications of potential differences remain underexplored, and systematic empirical evidence is needed to assess how they influence the implementation and alignment of sustainability strategies within HEIs (Schopp et al., 2020; Disterheft et al., 2015).

This study investigates these gaps by examining sustainability engagement and sustainability-related activities across three HEIs in the Münster region: the University of Münster, the University of Applied Sciences Münster (FH Münster) and the Catholic University of Applied Sciences North Rhine-Westphalia (katho). It explores how percep-

[2]DG HochN stands for the German Society for Sustainability in Higher Education (Deutsche Gesellschaft für Nachhaltigkeit an Hochschulen e.V.), an initiative supporting the implementation of sustainability across German HEIs (DG Hoch-N, 2025).

[3]The original six fields of action – governance, teaching and education, research, operations, sustainability reporting, and knowledge transfer (Schopp et al., 2020) – were later refined into five areas by merging sustainability reporting under the umbrella of governance (DG HochN, 2025).

tions, priorities, and commitment to sustainability differ by institution type and status group, providing insights into context-specific dynamics and the practical application of the WIA. Differences are expected, for instance, between larger research-oriented universities and smaller universities of applied sciences with strong social or health profiles, as well as between students, faculty, and staff, who may hold distinct roles and responsibilities in sustainability processes. The research questions guiding this analysis are:

- How do perceptions of the WIA's sustainability dimensions (referring to respondents' views of their own institution) differ across the three HEIs and status groups?

- Which sustainability actions are prioritized, and how do these priorities vary?

- How strong is the commitment to sustainability-related activities among HEI members?

By addressing these questions, the study contributes to a deeper understanding of context-specific dynamics in sustainability integration and supports the theoretical and practical development of the WIA.

2   Methodology

This study is part of the SUNRISE LAB project[4], which follows a sequential mixed-methods design. It draws on survey data from three HEIs in Münster and conceptually builds on the HOCH-N framework. The survey items were developed based on 55 semi-structured interviews with students, staff, and external stakeholders across the participating HEIs. These interviews identified key themes and gaps in institutional sustainability discourses, ensuring that the survey items are both empirically grounded and relevant to the experiences of HEI members.

2.1   Materials and Survey Instruments

Data were collected using a self-developed online questionnaire via the University of Münster's survey platform, evasys. Items primarily used five-point Likert scales and captured sociodemographic data (e.g., HEI affiliation, status group, age, gender). The survey focused on participants' perceptions of sustainability integration within their own HEI in teaching, research, operations, and community engagement, as well as

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[4]SUNRISE LAB is a Federal Ministry for Research, Technology, and Space (BMFTR)-funded project ("Sustainable University – real-world laboratories as drivers of the transformation toward sustainable universities," grant number: 01UN2207; runtime: 01.11.2022 – 31.10.2025). SUNRISE LAB combines research, practical implementation, and evaluation of transformation pathways across at least five individual real-world laboratories.

collaboration within and beyond the HEIs. Participants were also asked to prioritize key sustainability topics and report perceived barriers and support needs.

2.2 Sampling Procedure

The survey targeted all members of three HEIs in Münster: FH Münster[5], University of Münster[6] and katho[7]. All three institutions have adopted sustainability strategies and implemented concrete measures. Data collection took place from October to December 2023 via university-wide emails, informational events, and digital platforms. Participation was voluntary and anonymous, yielding 1,035 completed questionnaires. Response rates ranged from approximately 1.16 % to 2.02 %, which is low but not uncommon for large-scale, institution-wide online surveys. Factors such as voluntary participation, survey timing, and survey length may have influenced participation levels.

Index for Assessing Sustainability

For this study, a sustainability index was developed to systematically capture and quantify the perception and evaluation of sustainability at HEIs in Münster. The index provides a structured tool to assess how sustainability is perceived, prioritized, and integrated within institutional structures. It emphasizes sustainability transformation across four core areas:

- **Curricula and Teaching (CT):** This dimension includes the integration of sustainability topics into courses as well as the empowerment of students as active agents of change. These items reflect the educational role of HEIs in fostering critical thinking, future-oriented competencies, and transformative learning (DG HochN, 2025; Holst, 2023, p. 1020; Rap et al., 2022; Rupnik & Avsec, 2025; Weiss et al., 2021).

- **Research and Transfer (RT):** This dimension addresses research activities that explicitly deal with sustainability issues and the exchange of knowledge with societal actors. The focus is on co-creation, innovation, and science-practice collaboration in the context of global challenges (Demele et al., 2021; DG HochN, 2025; Holst, 2023; Kirst & Schroth, 2022; Nölting et al., 2020).

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[5]FH Münster – University of Applied Sciences, a public institution with over 15,000 students and approximately 1,300 employees across 12 departments, offering more than 100 bachelor's and master's programs in engineering, design, social sciences, and business.

[6]University of Münster – the largest HEI in Münster and one of Germany's largest universities, with around 45,000 students and 5,600 academic staff across 15 faculties.

[7]Catholic University of Applied Sciences North Rhine-Westphalia (katho Münster) – the largest state-recognized, church-sponsored university in Germany, specializing in social and health sciences, with more than 5,300 students across campuses in Aachen, Cologne, Münster, and Paderborn.

- ■ **Community Engagement and Societal Transformation (CE/ST):** This dimension includes societal exchange and knowledge transfer, support for ecologically and socially sustainable startups, and the promotion of diversity, inclusion, and equity. It reflects the university's "Third Mission" and highlights its role in fostering inclusive, community-based transformation by integrating diverse perspectives and supporting sustainable initiatives. (Compagnucci & Spigarelli, 2020; DG HochN, 2025; Duarte, 2023; Jirapong et al., 2021; Nölting, 2024).

- ■ **Operations and Infrastructure (OI):** This dimension captures ecological and organizational aspects of campus operations such as resource use, energy, mobility, and the protection of healthy ecosystems and biodiversity. It also includes elements related to health and nutrition, recognizing their relevance for sustainable campus environments and the well-being of university members. The selected items represent central levers for sustainable infrastructure management and the environmental performance of HEIs (Christou et al., 2024; Clement et al., 2015; DG HochN, 2025; Holst, 2023).

Governance was not operationalized as a separate dimension but systematically integrated across all four areas. This decision reflects the understanding that governance in HEIs is not an isolated field of action, but rather permeates all areas by shaping strategic priorities, participation structures, and decision-making processes throughout the institution (Leal Filho et al., 2019). By embedding governance aspects within each dimension, the study ensures that its transversal influence is adequately captured while maintaining the index's clarity and respondent accessibility.

An iterative process of expert consultation, pre-testing, and statistical validation was applied to refine the items, confirm the dimensional structure, and ensure the instrument's construct validity. The internal consistency of the item clusters was assessed using Cronbach's alpha, with reliability coefficients ranging from 0.70 to 0.90, indicating acceptable to high internal consistency.

Table 1: Indices and Dimensions of Sustainability

Index Dimension	Variables	Cronbach's Alpha	Number of Items
Curricula and Teaching (CT)	Integration of Sustainability in Curricula & Empowering Students	0.80	2
Research and Transfer (RT)	Research in Sustainability & Societal Exchange/Transfer	0.70	2
Community Engagement/Societal Transformation (CE/ST)	Societal Exchange/Transfer, Ecologically and Socially Sustainable Startups & Diversity	0.70	3
Operations and Infrastructure (OI)	Energy and Building & Mobility and Transport & The Protection of Healthy Ecosystems and Biodiversity & Health and Nutrition	0.82	4
Sustainability Index (SI)	Overall Sustainability of the Hei	.90	10

2.3 Methodological Approach to Data Analysis

The focus of the data analysis is on group comparisons to capture differences between HEIs and status groups in the perception of sustainability dimensions and the associated measures. Initially, tests for normality were conducted, which indicated that the data are not normally distributed. As a result, the Kruskal-Wallis test for group comparisons was applied, as it does not require the data to follow a normal distribution (Dodge, 2008; McKight & Najab, 2010). Additionally, Chi-square tests were used for categorical variables to investigate associations between HEIs, status groups, and various dependent variables. Effect sizes were reported using Cramér's V (V).

3 Results

3.1 Sociodemographic Data

The sample consisted of a total of 1,035 participants. The majority of respondents were affiliated with the University of Münster[8]. In terms of position within the HEIs, students represented the largest group[9]. The gender distribution showed that most participants identified as female[10]. Further details on the distribution of status groups within the HEIs can be found in the diagnostic report of the SUNRISE LAB project (Breuckmann et al., 2024).

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[8]University of Münster: 65.8 %, FH Münster: 22.6 %, katho: 11.6 %

[9]Students: 51.6 %, Administrative/Technical/Operational staff (ATO): 18.3 %, Research associates: 18.2 %, Professors: 5.8 %

[10]Female: 59.6 %, Male: 38.1 %, Non-binary: 2.3 %

3.2 Dimensions of Sustainability in HEIs

Four sustainability indices capture respondents' perceptions of various aspects of their HEIs. Among these, Community Engagement and Societal Transformation (CE/ST) received the highest ratings (M = 3.31), while Curricula and Teaching (CT) was rated lowest (M = 2.82) (see Table 2). Overall perceived sustainability (SI) was moderate (M = 3.03).

Table 2: Descriptive Statistics of Sustainability Dimensions

	N	Minimum*	Maximum	Mean	SD
Curricula and Teaching (CT)	833	1	5	2.82	1.01
Research and Transfer (RT)	847	1	5	3.18	.97
Community Engagement/ Societal Transformation (CE/ST)	963	1	5	3.31	.89
Operations and Infrastructure (OI)	998	1	5	2.94	.93
Sustainability Index (SI)	**1016**	**1**	**5**	**3.03**	**.79**

Note: Scale From 1 = Not Sustainable to 5 = Very Sustainable

Significant differences were observed between HEIs: FH Münster scored highest in CT, katho in CE/ST, and overall FH Münster ranked highest in SI. Significant differences between status groups were also evident: students perceived sustainability dimensions at their institution most positively, whereas professors were more critical in their assessments. The detailed results, including mean ranks and statistical indicators, are presented in Table 3.

Table 3: Sustainability Dimensions by HEI and Status Group

Sustainability Dimension/Group	CT		RT		CE/ST		OI		SI	
	Sustainability Dimensions by HEI									
	n	**M**	*n*	**M**	*n*	**M**	*n*	**M**	*n*	**M**
FH Münster	*208*	**472**	*202*	**472**	*221*	**516**	*225*	**515**	*231*	**558**
University of Münster	*521*	**391**	*534*	**410**	*625*	**458**	*658*	**497**	*668*	**488**
Katho	*104*	**439**	*111*	**432**	*117*	**547**	*115*	**482**	*117*	**527**
Kruskal-Wallis-H	*18.591*		*5.926*		*14.515*		*1.078*		*10.317*	
Asymp. Sig.	**<.001****		0.052		**<.001****		0.583		**0.006****	
	Sustainability Dimensions by Status Group									
	n	M	*n*	M	*n*	**M**	*n*	**M**	*n*	**M**
Students	*501*	403.9	*465*	414.6	*509*	**479.9**	*519*	**527.6**	*530*	**525**
Research associates	*151*	363.4	*153*	371.9	*175*	**399.6**	*181*	**408.1**	*184*	**414.7**
Professors	*54*	387.9	*58*	362.9	*59*	**415.8**	*58*	**362.2**	*59*	**407**
Administrative, technical, and Operational Staff	*74*	356.9	*121*	390.8	*163*	**442.6**	*181*	**401.4**	*182*	**428.2**
Kruskal-Wallis-H	*5.742*		*5.99*		*14.322*		*53.936*		*34.925*	
Asymp. Sig.	0.125		0.112		**0.002****		**<.001****		**<.001****	

Note: Asymp. Sig. = Asymptotic Significance, ** = The Differences are Highly Significant

The integration of sustainability topics in teaching showed an overall mean of 2.50 (SD = 1.32), with significant differences between HEIs. FH Münster reported the highest level of integration (M = 3.0, SD = 1.36), followed by the University of Münster (M = 2.4, SD = 1.31) and katho (M = 2.2, SD = 1.0), with the differences being statistically significant (H = 36.75, p < 0.001).

3.3 Prioritization of Sustainability Topics Based on Their Relevance

In the evaluation of sustainability topics[11], *empowering students to think and act sustainably*, as well as *sustainable resource, energy, and building management,* were rated as most important, while areas such as *ecologically and socially sustainable startups* received lower priority. Table 4 provides a detailed overview of the prioritization of sustainability topics by relevance.

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[11] The topics listed in Table 4 were based on the semi-structured interviews (described in Section 2), ensuring coverage of key sustainability priorities relevant to HEIs.
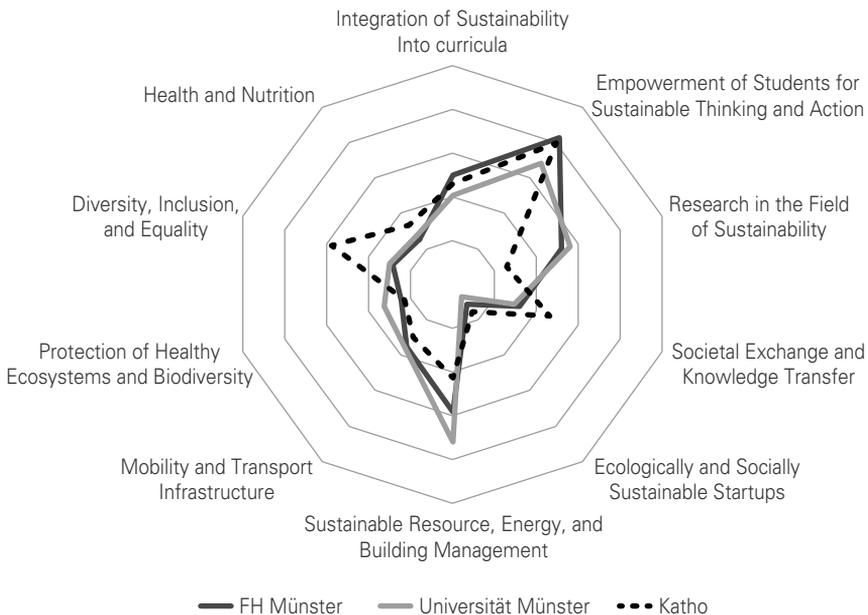
Table 4: Prioritization of Sustainability Topics by Relevance

	N	Total*	%**
Empowering Students to Think and Act Sustainably	680	2388	18,14
Sustainable Resource, Energy, and Building Management	671	2179	16,55
Research in the Field of Sustainability	546	1725	13,10
Integration of Sustainability Into Curricula	457	1416	10,76
Mobility and Transportation Infrastructure	433	1170	8,89
Diversity, Inclusion, and Equality	340	1068	8,11
Societal Exchange/Transfer	403	1038	7,88
Protection of Healthy Ecosystems and Biodiversity	378	979	7,44
Health and Nutrition	368	910	6,91
Ecologically and Socially Sustainable Startups	128	292	2,22

Note: *Respondents could select up to five priorities. The values in the 'Total' column represent the weighted relevance based on the frequency and ranking of the responses. **Percentage of total.

Common focal points and institutional differences are shown in the radar chart (Fig. 1): while the University of Münster emphasizes *sustainable resource, energy, and building management*, katho places greater focus on *diversity, inclusion, and equality*. Additionally, *research and knowledge transfer* were given lower priority at katho compared to the other HEIs.

Figure 1: Prioritization of Sustainability Topics by HEIs

Prioritization of sustainability topics varies significantly across status groups within HEIs (Fig. 2). While administrative, technical, and operational staff (ATO staff) primarily focus on *sustainable resource, energy, and building management* as well as *mobility and transport infrastructure*, professors place greater emphasis on *empowering students for sustainable thinking* and *integrating sustainability into curricula*. Research associates prioritize *societal exchange and knowledge transfer*, whereas students emphasize *diversity, inclusion, and equality* more strongly. The topic of *ecologically and socially sustainable startups* and *Health and Nutrition* is ranked as less relevant by all groups. The detailed results are presented in the next radar chart.

Figure 2: Prioritization of Sustainability Topics by Status Group
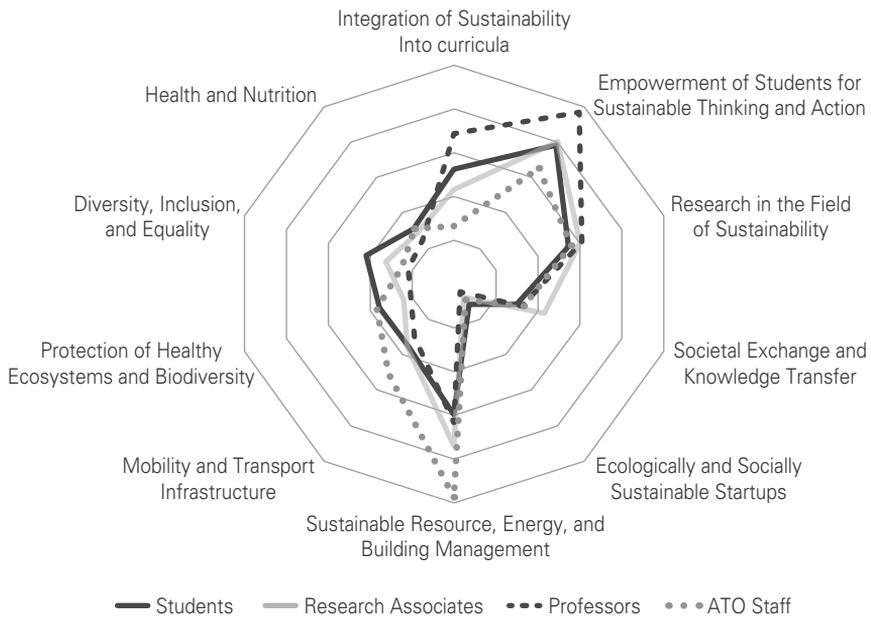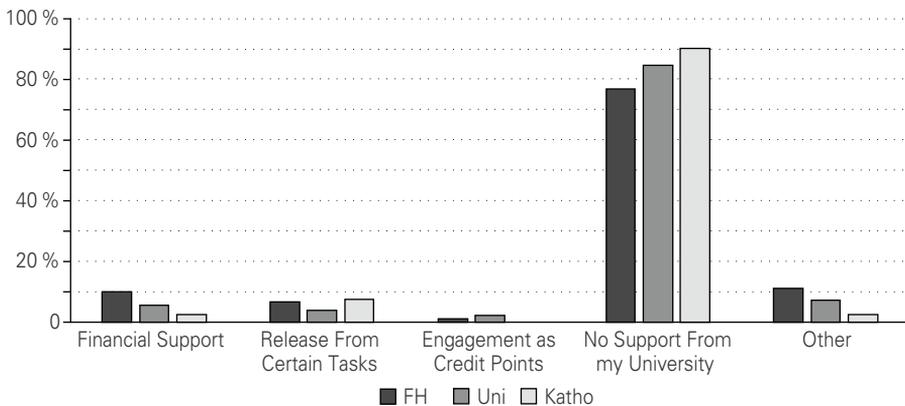

3.4 Engagement for Sustainability

Regarding engagement for sustainability, half of the respondents (n = 520) reported no active involvement, while over one-third (n = 429) engage outside and about one-quarter (n = 226) within their HEIs. Significant differences emerged between status groups, $\chi^2(9) = 126.21$, $p < .001$, $V = 0.38$, indicating a moderate effect size; students were overall less engaged than other groups. By contrast, differences between HEIs were small but significant, $\chi^2(2) = 13.96$, $p = .03$, $V = 0.12$.

Thematically, engagement preferences largely mirrored the overall prioritization of sustainability topics (see Table 4). Three significant institutional differences were found: lower interest in *ecologically and socially sustainable startups* at katho compared to

the University of Münster and FH Münster, $\chi^2(2) = 20.98$, $p < .001$, $V = 0.21$; stronger emphasis on *diversity, inclusion, and equality* at katho, $\chi^2(2) = 9.05$, $p = .011$, $V = 0.14$; and higher prioritization of *sustainable resource, energy, and building management* at the University of Münster, $\chi^2(2) = 10.64$, $p = .005$, $V = 0.15$.

Institutional support was generally perceived as lacking: 83.5 % of respondents received none, while only 6 % reported *financial support* and 4.7 % *release from certain tasks*. Slight differences were observed between HEIs, $\chi^2(2) = 10.68$, $p = .004$, $V = 0.15$, with FH Münster providing comparatively more support. No significant differences were found between status groups, $\chi^2(3) = 4.33$, $p = .23$, $V = 0.098$.

Figure 3: How Does Your HEI Support Your Engagement in Sustainability-Related Activities Efforts?

Regarding the conditions for engagement in sustainability-related activities, 75 % of respondents identified *time flexibility* as the most important factor, followed by opportunities for *exchange and teamwork* (45 %). *Continuous engagement with minimal time effort was* preferred by 41 %. The results from the three HEIs show a high degree of similarity (see Figure 4). No significant differences were found between the HEIs or the status groups.

Figure 4: Conditions for Engagement

Legend: FH (dark), Uni (gray), Katho (light)
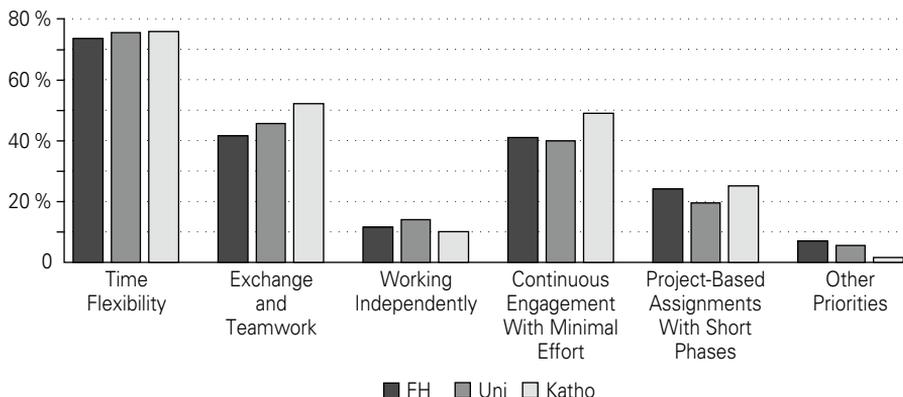
3.5 Sustainability Networks and Stakeholders

When asked which stakeholders are considered particularly relevant for sustainability at the HEI, over half of the respondents identified *Teaching staff* as central actors for sustainability. They were followed by *companies, students, researchers,* and *urban institutions*, each of which were recognized as relevant by more than 40 % of the respondents. *Government institutions* were regarded as important by 39 % of the respondents. However, a noticeable discrepancy exists between the perceived relevance of Actors and the actual collaboration with them (see Fig. 5).

Significant differences between HEIs were found only for the relevance and collaboration with companies, with small effect sizes ($\chi^2(2) = 20.25$, $p < .001$, $V = 0.14$; $\chi^2(2) = 14.53$, $p < .001$, $V = 0.12$). FH Münster reported the highest values in both areas.

**Figure 5:** Relevant and Cooperating Actors for the Three HEIs
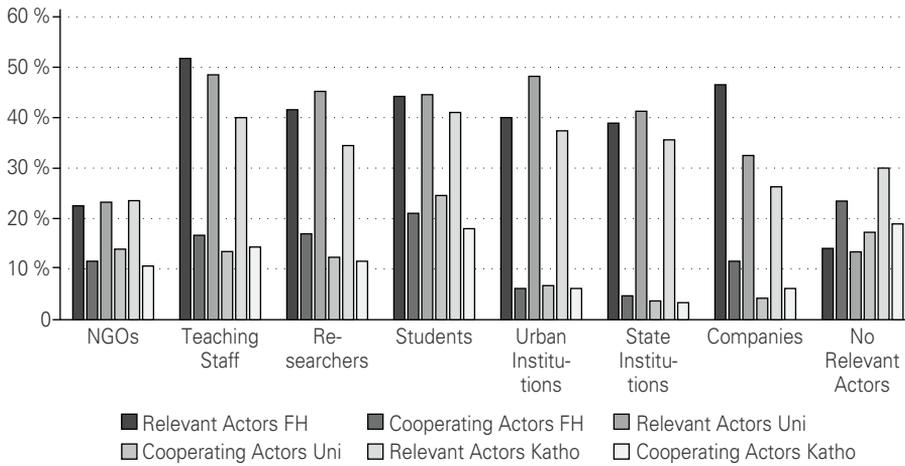
3.6 Key Leverage Areas for Sustainability

When asked which areas offered the greatest leverage to drive sustainable change at their HEIs, respondents most frequently highlighted *changes in governance, operational, and transfer practices* (45.2 %), followed by *collaboration with both internal and external stakeholders* (34.3 %), *changes in personal behaviour or at the workplace* (30.7 %), and *changes in research and teaching practices* (30.3 %). *Curriculum changes* were mentioned by 21.4 %, and *changes in leadership practices* by 16.6 %.

While no significant differences emerged between the three HEIs, notable differences were observed across status groups. *Changes in leadership practices* were rated as significantly more relevant by ATO staff ($\chi^2(3)$ = 38.99, p < .001, v = 0.20), whereas professors placed greater importance on *changes to formal curricula* ($\chi^2(3)$ = 29.53, p < .001, v = 0.18). Research associates rated *changes in governance, operational, and transfer practices* as particularly relevant ($\chi^2(3)$ = 18.63, p < .001, v = 0.14), and students emphasized the importance of *internal and external collaboration* ($\chi^2(3)$ = 23.69, p < .001, v = 0.16). No significant differences were observed *in changes to personal behaviour* across groups.

**Figure 6:** Key Areas of Action for Sustainability by Status Groups
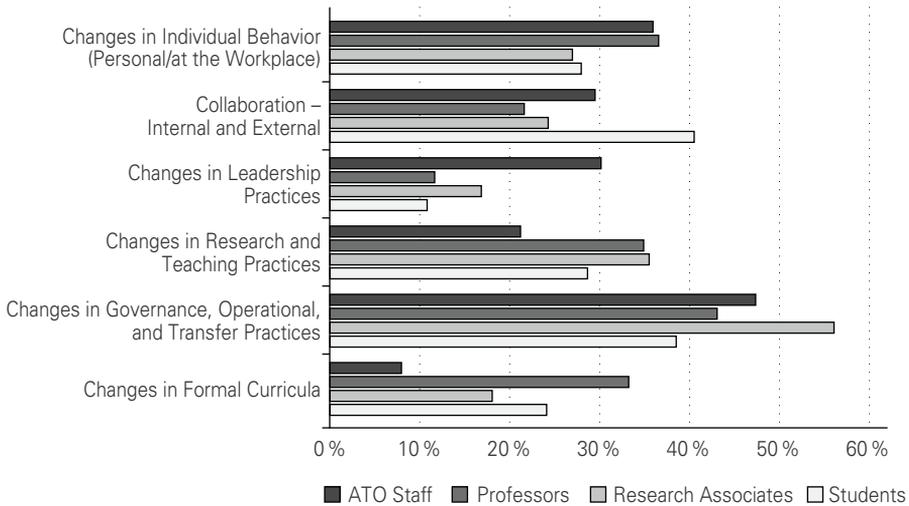
3.7 Key Drivers of Sustainable Change

When asked which measures offer the greatest leverage for driving sustainable change, respondents most frequently identified *sustainable resource, energy, and building management* (50.6 %), followed by the *sustainability strategy for the HEI* (38.8 %). *Increasing the visibility of sustainability activities* (34.4 %) and *sustainability research* (29.3 %) also received strong support, while *elective sustainability modules for all degree programs* were considered relevant by 23.9 % of respondents.

Significant differences emerged across HEIs for several sustainability measures. *Sustainable resource, energy, and building management* showed the largest variation ($\chi^2(2) = 44.61$, $p < .001$, $v = 0.21$), with the University of Münster rating it highest, while FH Münster and katho reported considerably lower values, corresponding to a small to moderate effect size. Differences were also observed in *networking initiatives* ($\chi^2(2) = 23.43$, $p < .001$, $v = 0.15$), where katho stood out with strong agreement and the University of Münster showed lower values. For *mandatory sustainability modules* ($\chi^2(2) = 16.06$, $p < .001$, $v = 0.13$), FH Münster showed comparatively higher support, while katho reported lower agreement. *Sustainability research* also differed significantly ($\chi^2(2) = 12.95$, $p = .002$, $v = 0.112$), with the University of Münster rating this measure particularly high. No significant differences were observed in the remaining areas between HEIs.

Figure 7: Key Drivers of Sustainable Change
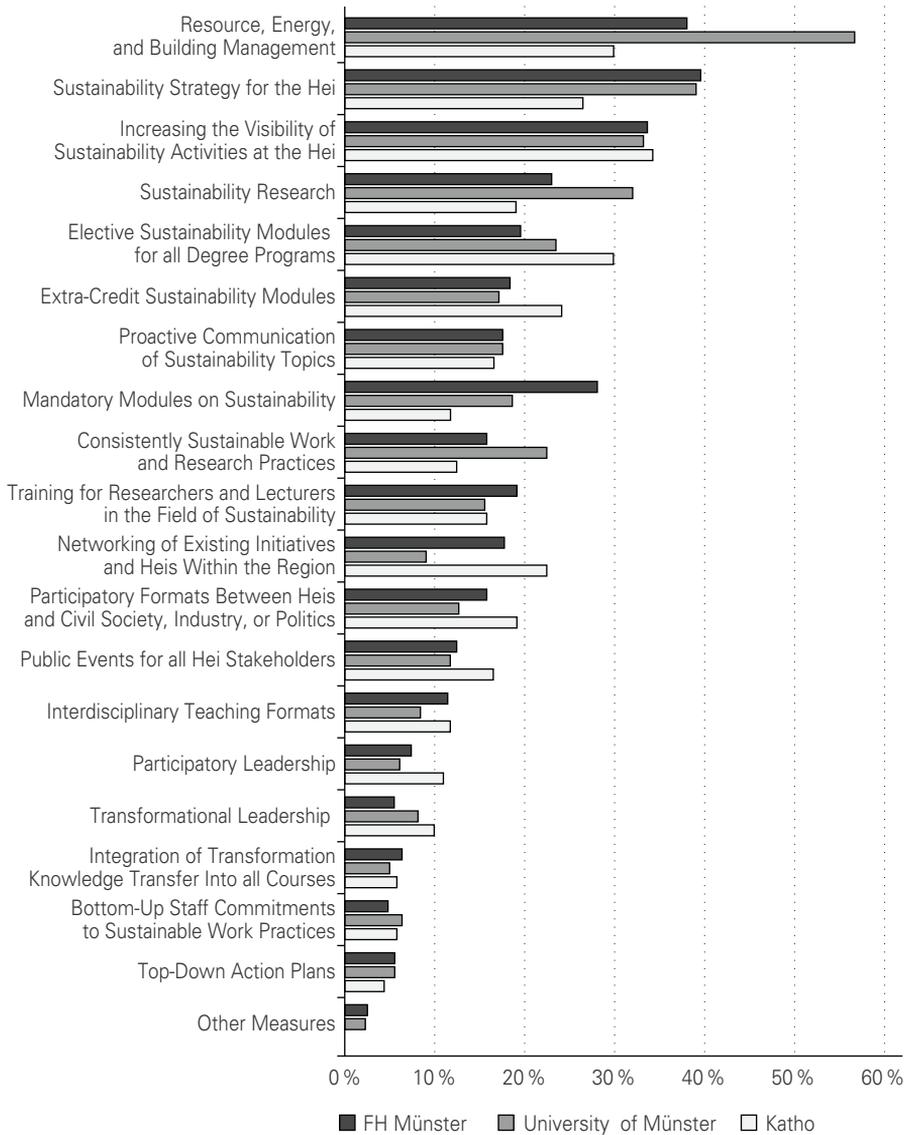
Status group differences were small (V < 0.2) but significant: ATO staff rated *sustainable resource, energy, and building management* and *interdisciplinary teaching formats* highest, while research associates emphasized *sustainability research*.

4 Discussion

4.1 Perception and Prioritization of Sustainability Dimensions

Analysis of the sustainability dimensions shows that Community Engagement and Societal Transformation (CE/ST) is perceived as the most strongly implemented or integrated, whereas Curricula and Teaching (CT) receives comparatively lower ratings. The high values for CE/ST indicate that the participating HEIs actively recognize and demonstrate their societal responsibility and engagement as part of their "Third Mission" (Compagnucci & Spigarelli, 2020). The lower rating of CT suggests that sustainability is not yet fully or coherently integrated into educational content and methods, a pattern widely observed in previous studies (Holst, 2023; Lozano, 2010). This gap presents a key challenge for achieving SDG 4, particularly target 4.7, which emphasizes ensuring that all learners acquire the knowledge and skills necessary to promote sustainable development and highlights the importance of quality education and the development of sustainability competencies to empower students as future agents of change.

Respondents identified *empowering students to think and act sustainably* as the top priority, emphasizing educators' key role in fostering knowledge, values, and awareness for sustainable transformation (UNESCO, 2021).The second priority was *sustainable resource, energy, and facility management,* highlighting the importance of ecological and organizational sustainability levers on campus (Clement et al., 2015; Holst, 2023). *Ecological and socially sustainable startups* received the lowest priority, which may reflect varied awareness among respondents of the role of HEIs in supporting startups. It may also indicate that startups are more relevant to certain fields, leading some respondents to consider them less important. In fact, HEIs are an integral part of the innovation system of their region (Fritsch, 2015). Creating a startup culture at HEIs could be beneficial, supported by appropriate events, as well as contacts and advice for (potential) founders (Fritsch, 2015).

Significant differences in sustainability evaluations appear both across HEIs and status groups, reflecting the distinct profiles, disciplinary strengths, missions, and organizational conditions of each institution (Kohl et al., 2022). For instance, FH Münster was generally rated highest overall, particularly in Curricula and Teaching (CT), likely reflecting both active sustainability initiatives and their visibility within the institution. These differences are also influenced by the institutional profile of each HEI. Notably, katho shows a higher rating for Societal Transformation compared to the other HEIs surveyed, as illustrated in Table 3 and Figure 1. This reflects its strong social sciences orientation and focus on societal transformation in research, teaching, and community engagement.

Differences among status groups align with functional roles: professors tend to prioritize empowering students, whereas ATO staff focus on sustainable resource, energy, and facility management, reflecting their institutional responsibilities. These variations highlight the importance of engaging all stakeholders in a holistic, whole-institution sustainability approach (Christou et al., 2024, p. 2). Framing the analysis around these institutional and role-based differences provides a clear context for interpreting varied sustainability priorities and underscores the need to tailor strategies to the unique profile of each HEI.

4.2 Engagement for Sustainability: Barriers and Opportunities

About half of the respondents are engaged in sustainability-related activities. Notably, more people are engaged in sustainability outside HEIs than within. This could indicate that HEIs do not provide sufficient incentives or supportive structures to promote engagement within the institution (Wright & Horst, 2013). This is also reflected in the perceived lack of institutional support within HEIs, reported by 84 % of the respondents. Both financial resources and organizational support are rarely provided, which can hinder engagement. These results reinforce previous findings on the structural and cultural barriers for sustainability engagement in higher education, especially when sustainability is not institutionally anchored or rewarded (Aleixo et al., 2018; Leal Filho et al., 2019). HEIs therefore need to create stronger structures and measures to harness the potential of their members for sustainable action. Approaches such as linking courses with sustainability projects or recognizing engagement in the academic context could help increase participation (Bauer et al., 2024; UNESCO, 2021). Aligning such measures explicitly with the SDGs could further enhance motivation and provide a recognized framework for engagement.

Significant differences in activity level were observed between status groups, with students being notably less active. This is concerning, as students, as future "agents of change", play a central role in driving sustainable transformation within universities and society. This lower engagement may be due to factors such as the high study load from full-time studies combined with part-time work (Kroher et al., 2021; Pittman, 2004), as well as a decline in overall participation in sustainability-related activities among young adults (Bundesministerium für Umwelt und Verbraucher, 2023). Insufficient integration of sustainability into CT may limit meaningful engagement. HEIs should ensure educators and staff model sustainable behaviour and provide students with concrete participation opportunities, such as project-based learning, service-learning, or practical sustainability projects. Strengthening the link between teaching, institutional support, and student engagement can foster a culture of sustainability and empower students as active agents of change (Holst et al., 2024; UNESCO, 2021; Leal Filho et al., 2019; Barth et al., 2014).

4.3 Network and Stakeholders of Sustainability

Respondents highlighted companies, civil society organizations, and public institutions as particularly relevant stakeholders, in line with prior research identifying these actors as main drivers of sustainable development (Lozano, 2018). However, practical cooperation with these stakeholders appears limited. Barriers such as bureaucratic hurdles and complex administrative processes often impede joint sustainability initiatives (Kirst et al., 2024). These results reflect the challenges in stakeholder engagement within HEIs. The lack of institutionalized collaboration formats and unclear responsibilities often prevent fruitful partnerships (Breuckmann et al., 2024). Collaboration with companies and their perceived relevance are evaluated differently depending on the type of HEI. FH Münster achieves higher values in both areas, indicating that it has a stronger practical orientation and closer cooperation with companies (Nölting, 2024). Here, the academic orientation could again play a role.

To strengthen these connections, formats such as real-world laboratories offer promising approaches to foster cooperation between academia and practice. In teaching, for example, student project work is often developed in collaboration with and for external partners; in research, real-world labs serve as transdisciplinary arenas for experimentation and mutual learning. Such formats can help bridge institutional boundaries and promote long-term networks between HEIs and societal stakeholders (Nölting, 2024). Such institutional profiles are important context factors for interpreting the results and may limit the transferability of findings to other HEI types. Future research should explore how different governance cultures, disciplines, and third mission strategies influence stakeholder integration in sustainability processes.

4.4 Areas of Action and Measures for Sustainability

Almost half of the respondents identified *governance, operations, and transfer* as key areas for advancing sustainable change, with a comprehensive sustainability strategy and sustainable management of resources, energy, and facilities rated as especially relevant. These areas span multiple institutional levels and actors, highlighting the need for coordinated and inclusive efforts. Effective sustainability transformation depends on interactions between top-down leadership and bottom-up participation (Holst, 2023). This dynamic is emphasized in the Whole-Institution Approach (WIA), which combines strategic leadership with participatory processes (Kohl et al., 2022). The findings suggest a need for clearer institutional anchoring, structural support, and defined responsibilities. Linking academic learning to practical sustainability projects, institutionalizing co-creation formats, or formally recognizing engagement (e. g., through credits or awards) could foster broader participation and mobilize the potential of all status groups.

4.5 Methodological Discussion and Limitations of the Study

This study is based on 1,035 participants from the three largest HEIs in Münster, reflecting local institutional, geographic, and cultural conditions. Including multiple status groups provides nuanced insights, but the findings should be interpreted with caution when applied to other German HEIs. The questionnaire, based on the WIA, showed high internal consistency ($\alpha = 0.7$–0.9), but no factor analysis was conducted to confirm its dimensional structure.

Sample composition also poses limitations: respondents from the University of Münster dominate, reflecting institutional size, and small subgroups, particularly professors (n=57), limit robustness of group comparisons. Another limitation is that voluntary participation in the survey may have led to self-selection of respondents. It is conceivable that primarily individuals who already have a strong interest in sustainability topics participated. This could result in a biased perception and evaluation of sustainability (measures). Finally, while the study provides quantitative insights, qualitative data from open responses and SUNRISE LAB interviews were not included here, limiting understanding of underlying motivations. Overall, the results offer a contextualized snapshot of one urban HEI setting, highlighting the need for broader, cross-regional, and mixed-methods research.

5 Conclusion

The study shows that sustainability perceptions and priorities differ across HEIs and stakeholder groups. FH Münster is seen as strong in curricula and teaching, katho emphasizes community engagement and societal transformation, and the University of Münster focuses on sustainable resource, energy, and building management. Professors prioritize student empowerment and curricular integration, administrative and technical staff focus on resource and infrastructure management, and students show interest in diversity, inclusion, and equality. These findings underline the importance of aligning institutional efforts with the WIA to ensure that all perspectives are considered.

The study highlights that engagement in sustainability-related activities is generally higher outside HEIs than within, indicating that institutional structures and incentives for internal participation remain limited. To fully leverage the potential of internal stakeholders, HEIs need to create supportive frameworks that empower students, faculty, and staff to actively contribute to sustainability initiatives. Collaboration with external actors such as companies, civil society, and public institutions is essential for a holistic approach. Innovative formats like real-world laboratories offer promising

avenues to facilitate practical cooperation, transdisciplinary learning, and the integration of sustainability into both teaching and institutional practice.

The limited engagement of students, especially within HEIs, is a critical concern for the sustainability of future institutional change. Addressing structural and cultural barriers, recognizing contributions, providing flexible participation opportunities, and linking engagement to academic learning are necessary steps to empower students as active agents of sustainable transformation. Overall, be combining inter- and transdisciplinary, cross-institutional participatory structures across all status groups with institutional support, innovative approaches, and strong engagement with external stakeholders, HEIs can become effective drivers of sustainability with lasting impact on campus and society.

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