



Opportunities and priorities for co-created nature-based solutions at Dinh Mon and HUSC

Deliverable 2: Results from stocktaking local conditions.

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The joint research project GreenCityLabHuế – Strengthening the climate resilience of urban regions in Central Vietnam through good governance in the co-creation of nature-based solutions, funded by Federal Ministry of Research, Technology and Space (BMFTR) as part of the funding measure „Sustainable Development of Urban Regions" within the framework of the Strategy „Research for Sustainability" (FONA), entered its implementation phase in July 2025. Building on the findings, methods, networks, and good-practice approaches developed during the preceding definition and Research and Development (R&D) phases. In this phase, the project focuses on co-creating and scientifically supporting the implementation of nature-based solutions (NbS) through urban green-blue infrastructure (GBI). Implementation will take place at two selected public sites in Huế: (1) the cultural green space around the communal house of Dinh Mon in Hung Tho Ward, and (2) a designated area of the Huế University of Sciences (HUSC) campus in the city centre. To deliver these interventions, the international consortium—Independent Institute for Environmental Issues (UfU), Humboldt-Universität zu Berlin (HUB), Mientrung Institute for Scientific Research (MISR), Huế City Institute for Development Studies (HuếIDS), the Faculty of Architecture at HUSC, and the landscape architecture studio ad hoc practice—will establish a participatory co-creation process that brings together stakeholders from administration, politics, planning practice, science, and civil society to develop site-specific NbS designs. The central output of this process will be landscape architectural construction plans tailored to each site. Based on these plans, local partners will implement and finance construction, while the consortium will support and scientifically accompany implementation and conduct monitoring and evaluation of both (a) the impacts and perceived benefits of the measures and (b) the effectiveness of the participatory co-creation approach. Finally, the project will synthesize lessons learned and share them through factsheets and other dissemination formats, strengthening capacity building and knowledge exchange and supporting the mainstreaming of good NbS governance and implementation practices in Huế and beyond.

Project website: <http://www.greencitylabhue.com/>

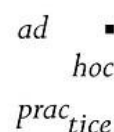
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EXECUTIVE SUMMARY

The implementation phase of the GreenCityLabHuế project co-creates and implements nature-based solutions (NbS) as green-blue infrastructure (GBI) on two pilot sites: the Dinh Mon cultural green space (a communal heritage setting) and a designated area on the Huế University of Science (HUSC) campus (a high-use, semi-public learning environment). This deliverable provides the stocktaking baseline that is intended to (i) ground the co-design process in locally evidenced needs, constraints, and preferences, and (ii) establish a pre-implementation reference point for later perception-based follow-up after implementation.

Stocktaking was conducted primarily through site-specific questionnaires that share a common structure (relationship to place, use and experience, valued qualities and barriers, improvement preferences, and stewardship potential), producing descriptive and practice-oriented evidence for co-creation rather than statistically representative estimates. Across both sites, a clear, consistent message emerges: users interpret “green” primarily through everyday benefits and expect NbS/GBI to improve comfort and usability. As a result, priorities cluster around “fix-the-basics-first” improvements that combine shade and cooling, in particular through trees, with practical upgrades such as seating, shelter, cleanliness, waste bins, lighting, safe surfaces, and a realistic maintenance concept.

At Dinh Mon, long-term residents report a context strongly shaped by climate-related hazards, especially flooding and riverbank erosion. At the communal-house site, respondents value accessibility and natural qualities (fresh air, shade, trees) and recognise the site’s community relevance, but point to barriers linked to missing amenities and insufficient upkeep. Desired improvements are strongly practical: trees, facilities, additional planting, shade structures, lighting, and waste management. At HUSC, responses largely reflect student perspectives and an intensive use of the designated area, meaning changes will be highly visible and day-to-day functionality matters during and after implementation. Flooding and drainage-related issues are the dominant reported burden, while respondents also highlight gaps in amenities and maintenance. Preferences for redesign form a minimum upgrade package: facilities (e.g., Wi-Fi), comfortable seating, and shelter from sun and rain, complemented by planting and enabling infrastructure (e.g., bins).

CONTENT

- 1 Why stocktaking matters: Baseline, objectives, and how it feeds co-creation and evaluation..... 1
- 2 The two GreenCityLabHuế case study sites 3
 - 2.1 Dinh Mon Cultural Green Space 3
 - 2.2 Designated campus space at the Hue University of Sciences 4
- 3 Methodological approach 5
 - 3.1 Survey tool selection and preparing implementation..... 5
 - 3.2 Questionnaire design and rationale 7
 - 3.2.1 Dinh Mon cultural green space 7
 - 3.2.2 Designated campus area at the Hue University of Sciences 8
 - 3.3 Data collection approach and field implementation..... 9
 - 3.4 Data processing and evaluation 10
- 4 Key findings from the surveys at the two pilot sites 11
 - 4.1 Dinh Mon cultural green space 11
 - 4.1.1 Sample characteristics 11
 - 4.1.2 Environmental qualities and challenges..... 12
 - 4.1.3 Uses and perceptions of the Dinh Mon communal house/communal green space 15
 - 4.1.4 Desired improvements 21
 - 4.2 Designated campus area at the Hue University of Sciences 24
 - 4.2.1 Sample characteristics 24
 - 4.2.2 Perception of the campus and its environmental conditions, burdens, and management 25
 - 4.2.3 Uses and perceptions of the designated campus space 29
 - 4.2.4 Desired improvements 34
- 5 Synthesis: What the baseline implies for NbS co-design, implementation, and monitoring 38
- 6 Bibliography..... 40
- 7 Appendix..... 42

LIST OF ABBREVIATIONS

HUSC	Huế University of Sciences
GBI	Green-blue infrastructure
IUCN	International Union for Conservation of Nature and Natural Resources
NbS	Nature-based solutions
R&D	Research and development

LIST OF FIGURES

Figure 1. Photos of the Dinh Mon Cultural Green Space in August 2025. Note that the exercise equipment shown in the picture has been installed only recently (Photo: Minh)..... 4

Figure 2. Impressions of the current condition of the designated area prior to redesign (Photo: Tung)4

Figure 3. Gender, age group, marital status and connection to Dinh Mon of the sampled population. 11

Figure 4. Perception of selected environmental qualities and/or environmental management in Dinh Mon..... 12

Figure 5. Awareness towards (and or affectedness by) environmental challenges in Dinh Mon incl. Kim Long ward (top), and reported level of concern (from 1=least concerned to 6=most concerned; bottom). 13

Figure 6. Reported visitation frequency of the Dinh Mon focal site, and visitors mode of travel..... 15

Figure 7. Reported use behaviour for the Dinh Mon focal site..... 16

Figure 8. Positively perceived environmental characteristics and qualities motivating and/or supporting uses of the Dinh Mon site. Rankings show relative importance of items to respondents (lower ranks indicate higher perceived importance). 17

Figure 9. Negatively perceived environmental characteristics and qualities of the Dinh Mon site. Rankings show relative importance of items to respondents (lower ranks indicate higher perceived importance). 19

Figure 10. Preferences towards actions and measures to improve conditions at the Dinh Mon site. Rankings show relative preferences towards specific actions/measures of respondents (lower ranks indicate higher preference). 22

Figure 11. Support for improving and maintaining the Dinh Mon cultural green space. 23

Figure 12. Gender, age group, connection to the campus and length of affiliation of the sampled population..... 24

Figure 13. Perception of availability of different greenery types on campus..... 26

Figure 14. Perception of selected environmental characteristics on the campus..... 26

Figure 15. Awareness towards (and or affectedness by) environmental challenges on campus (top), and reported level of concern (from 1=least concerned to 6=most concerned; bottom). 27

Figure 16. Desired roles and functions of green and open space on campus (top) and respondents’ ranking (bottom)..... 28

Figure 17. Reported visitation frequency of the designated campus space..... 29

Figure 18. Reported use behaviour for the designated campus space..... 30

Figure 19. Positively perceived environmental characteristics and qualities motivating and/or supporting uses of the designated campus area. Rankings show relative importance of items to respondents (lower ranks indicate higher perceived importance). 32

Figure 20. Negatively perceived environmental characteristics and qualities of the designates campus space. Rankings show relative importance of items to respondents (lower ranks indicate higher perceived importance)..... 33

Figure 21. Preferences towards actions and measures to improve conditions at the designated campus space. Rankings show relative preferences towards specific actions/measures of respondents (lower ranks indicate higher preference). 36

Figure 22. Support for improving and maintaining the designated campus space. 37

Figure 23. How to read the ranking figures..... 42

LIST OF TABLES

Table 1. Overview of evaluated survey tools and their results across the following criteria: mapping, functionality, internationalisation, accessibility to backend, and availability, GDPR compliance. 6

1 Why stocktaking matters: Baseline, objectives, and how it feeds co-creation and evaluation

When implementing nature-based solutions (NbS), the way a place is currently used, experienced, and managed strongly shapes which green-blue infrastructure (GBI) interventions will be feasible, accepted, and maintained in practice. For this reason, contemporary NbS guidance treats an evidence-based baseline assessment as a prerequisite for good governance and effective delivery; not an optional extra. The IUCN Global Standard for NbS, for example, requires interventions to build on an evidence-based assessment of the ecosystem's current state and the drivers of degradation, drawing on both local knowledge and scientific understanding (IUCN, 2020).

Stocktaking as the evidence base that makes co-creation effective

Co-creation processes often bring together actors with different priorities and vocabularies (e.g., “heat stress” vs. “lack of shade”, “flood risk” vs. “drainage problems”). Co-creation guidance therefore recommends an initial grounding phase that clarifies context, stakeholders, and expected benefits before moving into intensive co-design. The CLEVER Cities co-creation guidance highlights the importance of early work to identify stakeholders and articulate expected benefits and co-benefits so that later design is anchored in local needs rather than general aspirations (Morello et al., 2018). Similarly, the RECONNECT stepwise pathway emphasises beginning with problem framing and process set-up to ensure that co-creation leads to implementable outcomes (Dushkova & Kuhlicke, 2024). In the GreenCityLabHuế project, this grounding is provided through stocktaking: a structured effort to compile key characteristics of the focal sites and their wider context and to elicit what citizens and users consider most important. This supports the project's focus on good governance in NbS co-creation and helps ensure that the subsequent co-design phase starts from locally evidenced priorities.

Capturing lived experience through surveys

Many NbS outcomes in public spaces are partly experiential, e.g., thermal comfort, amenity value, perceived cleanliness, usability, and perceived environmental quality. Stocktaking therefore needs to capture not only biophysical characteristics, but also user experience and priorities. Survey-based approaches are widely used in public space assessment to gather design-relevant evidence and link observation with user needs (Martinuzzi et al., 2020). A survey-centred stocktaking also supports inclusiveness, as it can reach people who do not participate in workshops and provides a comparable evidence base across sites and user groups. In practice, it helps translate local knowledge into co-design inputs such as ranked priorities, perceived barriers and constraints, and preferences for intervention elements—exactly the kinds of outputs that co-creation guidance recommends producing before moving into detailed design options (Morello et al., 2018; Dushkova & Kuhlicke, 2024).

Turning baseline evidence into co-design inputs

Co-creation and co-governance research emphasise that participation should be strategic and staged: who to involve, when, and for which decisions. Systematic stakeholder mapping is one recommended method to reduce bottlenecks and improve planning efficiency in NbS co-creation (Zingraff-Hamed et al., 2020). Survey results support this by indicating which groups use a site, what concerns they raise, and what roles they might realistically take (e.g., stewardship, reporting

maintenance issues, participating in action days). This aligns with broader synthesis guidance from the European Commission (2023), which stresses that co-creation and co-governance need to be adapted to context, with attention to roles and responsibilities across design, implementation, and monitoring stages. Accordingly, stocktaking in this deliverable is designed to produce co-design-ready information including site briefs, priority lists of desired benefits, a shortlist of preferred GBI elements, and a transparent summary of perceived constraints (e.g., maintenance, safety, flooding/heat concerns). This information helps structure co-creation workshops by keeping discussion focused on choices that matter locally and are feasible within governance and maintenance realities.

Stocktaking as the reference point for impact assessment

NbS projects are increasingly expected not only to deliver measures, but also to demonstrate outcomes and learn what worked, for whom, and under what conditions. The European Commission's guidance on evaluating the impact of NbS emphasises the importance of developing a theory of change, selecting appropriate indicators, and collecting baseline data so that impacts can be assessed credibly (European Commission, 2021). The Connecting Nature Framework similarly positions NbS delivery as an iterative process that links co-production with reflexive monitoring and impact assessment, reinforcing the need for an early baseline (Collier et al., 2023). For the GreenCityLabHuế project, this means the stocktaking survey is designed to serve two purposes at once:

1. Co-design input (short-term): provide evidence on perceived challenges, priorities, and preferred interventions that helps shape site-specific designs; and
2. Impact baseline (medium-term): create a pre-implementation reference for perception-based follow-up (e.g., changes in perceived thermal comfort/shade, amenity and usability, perceived environmental quality) and for reflection on the effectiveness of the co-creation process.

Objectives of stocktaking in this deliverable

Aligned with the project's implementation strategy, stocktaking pursues three linked objectives:

- Baseline understanding (site and context): obtain structured, user-centred data on current socio-environmental conditions (environmental traits) and locally management issues, and elicit users' perceptions, demands, and preferences, combining technical site understanding with lived experience.
- Co-design input: synthesise survey results into concise, design-relevant outputs (e.g., priorities, constraints, preferred elements, potential stewardship roles) that directly inform the participatory co-creation process and support development of site-specific NbS designs.
- Evaluation readiness: provide the reference baseline for post-implementation, perception-based impact assessment, enabling before/after comparison and iterative learning in line with NbS evaluation practice.

2 The two GreenCityLabHuế case study sites

During its implementation phase, the GreenCityLabHuế project aims to implement NbS as GBI on two sites in the city of Hue. Within Vietnam, Central Vietnam, where the city of Hue is located, is widely considered among the regions most vulnerable to climate-change impacts (Bruun & Casse, 2013). Hue and Central Vietnam are particularly exposed to recurring climate-related hazards, most notably heavy rainfall, storms and flooding, as well as intensifying heat stress (Nguyen & Nguyen, 2020). These risks interact with rapid urbanisation and growing pressures on urban infrastructure and environmental quality (Schirmbeck, 2017). The two pilot reflect distinct everyday realities and governance settings: (i) a culturally significant communal space in a ward-level neighbourhood context; and (ii) a university campus space with high daily use and strong potential for learning-by-doing. This dual-site approach supports the project's objective to support locally grounded, site-specific design solutions while generating insights that can be transferred to other locations in Hue and beyond.

2.1 Dinh Mon Cultural Green Space

The first pilot site is the Dinh Mon Cultural Green Space, planned on plot No. 07 (cadastral map No. 76) with an area of 764 m². Located in Dinh Mon hamlet, the site includes a one-storey community house set on an elevated foundation and equipped with basic outdoor exercise facilities (e.g., horizontal and parallel bars). The surrounding landscape is currently characterised by wild grasses and naturally growing shrubs, complemented by scattered perennial trees (including coconut and native hardwood species). The site is adjacent to the hamlet football field, an important venue for gatherings, and lies next to the Dinh Mon Communal House, a cultural and spiritual heritage site. This setting creates a strong opportunity to link NbS/GBI interventions not only to climate and environmental objectives (e.g., shade, cooling, rainwater management, and enhanced environmental quality), but also to the site's social function, cultural identity, and place attachment. From a wider development perspective, the area is also positioned along the heritage route associated with Nguyen dynasty imperial tombs, giving it potential relevance for eco-community tourism and cultural programming. With its distinctive location and diverse potential, the Dinh Mon Cultural Green Space can become a model public space for Hue, supporting recreation and quality of life while contributing to the preservation and visibility of local cultural-historical values.



Figure 1. Photos of the Dinh Mon Cultural Green Space in August 2025. Note that the exercise equipment shown in the picture has been installed only recently (Photo: Minh).

2.2 Designated campus space at the Hue University of Sciences

The second pilot site is located on the campus of the HUSC, near the Dong Da Gate, one of the main entrances and a symbolic university landmark. The area is partially enclosed by 3–4 storey classroom and administrative buildings with paved courtyards and walkways. Visible wear (e.g., peeling paint, moss growth) is described as both a challenge and an opportunity, signalling the potential for NbS to contribute to revitalisation and improved environmental quality. The site already contains some enabling elements: existing shade trees provide partial canopy cover, stone benches support informal gathering and studying, and a greenhouse supports research and hands-on training. At the same time, large surfaces, e.g., walls, rooftops and paved open areas, are identified as underutilised and suitable for measures such as green walls, rain gardens, ecological mini-landscapes, and shaded resting or study spaces. With a large daily campus community, the site is positioned to function as a “living lab” space where NbS benefits are highly visible and where participation and stewardship can be integrated into campus routines.



Figure 2. Impressions of the current condition of the designated area prior to redesign (Photo: Tung)

3 Methodological approach

Stocktaking in the GreenCityLabHuế project were conducted primarily through questionnaires to systematically capture how people use, experience, and prioritise the two pilot sites and their wider contexts. This approach reflects two key requirements of NbS implementation: (i) many benefits in public and semi-public spaces are partly experiential (e.g., perceived comfort, amenity, usability), and (ii) co-creation requires an evidence base that can be shared, compared and discussed across stakeholder groups. Public space assessment guidance therefore recommends combining an understanding of site conditions with user-centred evidence to inform design decisions (Martinuzzi et al., 2020). At the same time, NbS standards and evaluation guidance emphasise that interventions should build on an evidence-based baseline that draws on local knowledge and scientific understanding, and that can later support credible impact assessment. In this deliverable, the survey-based stocktaking was therefore designed to (a) provide co-design-ready insights for WP2 and T3.2 and (b) establish a pre-implementation reference point for perception-based follow-up after implementation.

To deepen insights, particularly on maintenance, financing, and implementation processes, semi-structured interviews may be conducted following analysis of the survey results. If pursued, these interviews would be implemented by Vietnamese partners using an interview guide developed under the lead of HUB. At the time of writing, however, their application is still under discussion and is therefore outside the scope of this document. Additional stocktaking activities were also considered to complement the survey, including direct on-site observation, an event-based photo journey (often referred to as photo voice), and timelapse documentation. Because their implementation would require substantial local coordination and capacity—particularly from the Vietnamese partners responsible for fieldwork—these activities were not included in the current workplan due to resource constraints. Should capacities or resources change, they may still be pursued in later project steps; detailed information about the activities and their potential implementation are therefore not included in this deliverable.

3.1 Survey tool selection and preparing implementation

Prior to designing and deploying the questionnaires, several survey tools were reviewed for their suitability for stocktaking. The selection criteria were guided by a set of initial expectations towards functionality and features, including (i) support for mapping/PPGIS features; (ii) a broad range of question types to enable diverse response formats and scales; (iii) straightforward internationalisation (i.e., support for English and Vietnamese language); (iv) potential access of project partners to the back-end (e.g., to support translation workflows or retrieve responses); and (v) free availability (not necessarily open source), with a preference for GDPR-compliant data handling. These criteria were formulated against the backdrop of a potentially required broad range of functions and also consider practical considerations with respect to project-internal cooperation. Based on these requirements, tools previously used in the R&D phase (e.g., Microsoft Forms or Google Forms) were excluded early because they do not provide adequate mapping/PPGIS functionality. Four tools were then assessed in more detail: LOUPE, an in-house PPGIS tool still partly under development but previously used in an EU Horizon project (Mishra et al., 2024); KoboToolbox, an open-source data collection tool; LimeSurvey, a web survey tool; and SurveyMars, a commercial web survey tool with a free plan that is broadly aligned with project needs.

LOUPE and KoboToolbox feature a wide range of mapping capabilities, including, e.g., categorical markers and multiple basemaps options (LOUPE), or support for different geometry types (KoboToolbox). By contrast, LimeSurvey and SurveyMars offer only limited mapping options (primarily single-marker placement). However, they both feature a comparatively wide range of question types, including ranking options, whereas KoboToolbox and particularly LOUPE have more limited features. All four tools support internationalisation, however, LimeSurvey offers a Vietnamese user interface out of the box, requiring only translation of the questionnaire content. SurveyMars supports translation via an AI-based feature. As third-party tools, both KoboToolbox and SurveyMars allow partner access to the back-end. This is not possible for both LOUPE and LimeSurvey, as these tools are hosted by HUB and thus require HUB accounts to be accessed. Finally, while all tools are available free of charge, SurveyMars stores data on servers in the US, which may create GDPR compliance concerns for this project context.

Considering the relative importance of the criteria and the trade-offs between mapping features and overall survey functionality, LimeSurvey was selected as the primary platform for stocktaking at the two focal sites.

Table 1. Overview of evaluated survey tools and their results across the following criteria: mapping, functionality, internationalisation, accessibility to backend, and availability, GDPR compliance.

	Mapping (15%)	Functionality (30%)	Internationalisation (30%)	Accessibility to backend (5%)	Availability, GDPR compliance (20%)
LOUPE	+	-	O	-	+
KoboToolbox	+	O	O	+	+
LimeSurvey (HUB-hosted)	O	+	+	-	+
SurveyMars	O	+	+	+	-

After selecting an appropriate survey tool, the questionnaire structure and content (question types, wording, and response options) based on a state-of-the-art review were developed and then shared with project partners for initial feedback, serving as a preliminary pre-test. Based on partners input, both surveys were revised. Key revisions included: aligning the overall structure of the two questionnaires; restructuring sections; reducing redundancies; consolidating overlapping questions; harmonising question types and scales across both surveys; presenting potential interventions as a “shopping list”; simplifying age cohorts; and revisiting the scope of socio-demographic items. Particular attention was also given to embedding site-specific context in the survey items for a clearer presentation of content and its applicability to context (hamlet context vs. campus setting) or site (communal-house space vs. designated campus area).

In early September, revised English versions were sent to Vietnamese partners for translation. The Vietnamese questionnaires were then implemented in LimeSurvey and prepared for a final

pre-test. Partners distributed both language versions to selected individuals for piloting. The pre-test remained open for nearly three weeks but yielded limited responses: four completions for Dinh Mon and five for the campus survey.

3.2 Questionnaire design and rationale

Two separate questionnaires were developed—one for the Dinh Mon community setting and one for the HUSC campus—to reflect different user groups and site functions while maintaining a comparable logic across sites. Both questionnaires combine: (i) closed questions (single choice, multiple choice, with and without ranking options) to capture use patterns, perceived challenges, and priorities in a comparable way; (ii) Likert-type items to assess perceptions of site conditions and desired improvements; and (iii) open-ended questions to capture context-specific issues and suggestions that may not be covered by predefined response options. Across both pilot sites, the questionnaire follows a shared architecture:

1. Relationship to place (who uses the site and how long respondents have been affiliated with the area or institution);
2. Use and experience (how often the site is used, for which activities, and what users value or perceive as missing, including deficits and barriers);
3. Improvement preferences and stewardship potential (preferred interventions and realistic forms of contribution or support);
4. Perceived environmental conditions and burdens; and
5. Basic socio-demographics (for interpreting heterogeneity and ensuring inclusiveness).

3.2.1 Dinh Mon cultural green space

Contrary to initial expectations, the Dinh Mon site is not located within the core urban area of Hue, but at the urban fringe in a rather peri-urban or rural setting. Hence, the conceptualisation of this questionnaire does not only consider urban green space functions and traits in a narrower sense but also considers the outdoors, i.e., natural and semi-natural areas in a wider sense, e.g., for supporting livelihoods or as therapeutic landscapes (Ahmadu et al., 2021); and public spaces as broader category including public green spaces and (non-green) areas such as community centres and their social, cultural, or symbolic values (Ghavimi et al., 2025; Nam & Thanh, 2024).

From this end, the objectives for Dinh Mon questionnaire include, first, to elicit resident perceptions of their area of living with respect to environmental qualities (e.g., perceived amount of greenery, condition of the greenery) and environmental management (e.g., management of waste, traffic), perceived accessibility to public (green) spaces and natural as well as semi-natural areas and use behaviour of such spaces. Awareness towards and exposure to hazards, here particularly heat stress, are also elicited. Spatially explicit elicitation of the place of residents and open-ended questions on perceived advantages and disadvantages regarding the living area is conducted initially (i) to support the subsequent localization of responses and/or spatial analyses; (ii) to achieve a thematic approach by engaging in open reflection with residents' place of living; and (iii) to embed the subsequent co-design process into local (communal) context. Second, perceptions of the communal house area itself are elicited (Figure 1). To reveal current (non-)use of this space, residents are asked about their current use frequency and if applicable, use behaviour. Perceived traits supporting use(s), as well as local qualities perceived as lacking or missing, e.g., posing potential barriers to use, are elicited in the form of a ranking. So-doing aims at identifying both, relevant traits enabling or discouraging use of this place, as well as the

importance of these traits as perceived by respondents as underpinnings of use behaviour. The items for ranking correspond to various constructs related to multifunctional public (green) space values, significances, and benefits. In this context, Ko & Lee (2025) discuss health, social, aesthetic, growth and knowledge need satisfaction, i.e., relating public (green) space values and benefits to constructs such as psychological restoration, physical health benefits of recreation, social interaction, aesthetic appreciation, or cultural significance. The scales used in this context will provide a basis for developing suitable constructs and scales to assess perceived changes and NbS post-implementation. Furthermore, stated preferences regarding desired changes in local qualities are elicited through multiple choice and open-ended questions, and potential stewardship in terms of willingness to support the enhancement, maintenance or programming of the communal house area are also elicited. In this regard, the conceptualization of the questionnaire assumes that initially, there are no major limitations on possible changes, at least in principle.

Third, a basic set of socio-demographic indicators is proposed including age bracket and gender of the respondent, marital status, household size and household structure (composition), as well as duration of residency.

The target population for this survey is defined as residents of Dinh Mon and potential visitors of the communal house area, e.g., from surrounding villages.

3.2.2 Designated campus area at the Hue University of Sciences

In contrast to the peri-urban setting of Dinh Mon, the HUSC pilot site is situated in a dense inner-city university campus that functions as a semi-public everyday environment. The questionnaire therefore conceptualises the campus not only as “green space” in a narrow sense, but as an outdoor setting that can support restoration, well-being, informal learning, and social interaction. Recent evidence syntheses indicate that students’ mental well-being and restorative experiences in campus outdoor spaces are strongly linked to perceived environmental qualities such as greenery, comfort, safety, cleanliness, and maintenance (Li et al., 2024; Ribeiro et al., 2024; Gao et al., 2025). Scoping research on campus “in-between” spaces further highlights their relevance for informal learning and everyday campus life, emphasising design features such as accessibility and flexibility (Akkurt and Akbulut, 2025).

Against this background, the objectives of the HUSC questionnaire follow the same three-step logic applied at Dinh Mon, i.e., moving from (i) context, to (ii) site-specific use and experience, and (iii) preferences and stewardship, while tailoring content to campus routines and governance realities. First, the survey captures perceptions of the wider campus environment and its management (e.g., greenery, maintenance, cleanliness, and exposure to stressors such as heat or heavy rain), alongside basic information on respondents’ role and length of affiliation. This establishes a contextual baseline and supports interpretation of differences across user groups. Second, perceptions and (non-)use of the designated redesign area are assessed through questions on visit frequency and activity patterns, combined with prioritisation/ranking of valued qualities and perceived deficits that may discourage use. This mirrors the Dinh Mon approach of identifying both enabling traits and barriers as determinants of use behaviour, while reflecting campus-specific functions such as outdoor studying and waiting between classes. Third, the questionnaire elicits preferences for improvement elements and explores feasible contributions to stewardship. Here, university campuses play a particularly important role, as they are increasingly framed as sustainability living labs, i.e., settings in which interventions are highly visible, embedded in everyday routines, and supported through participation and learning-by-doing (Stuckrath et al.,

2025). Finally, a concise socio-demographic block supports interpretation and inclusiveness. The target population comprises the wider campus community and relevant nearby users (students, staff, and visitors), reflecting the semi-public character of the campus environment.

3.3 Data collection approach and field implementation

Data collection followed a pragmatic, context-adapted approach aimed at maximising accessibility and lowering participation barriers. The survey introduction emphasised voluntary participation and confidentiality, and framed responses as a direct contribution to the co-design process. Survey dissemination and field implementation were therefore tailored to the two pilot settings and carried out with the support of local project partners to reach the relevant user groups—community members and potential visitors at Dinh Mon, and students and campus users at HUSC.

At Dinh Mon, questionnaires were administered primarily as household surveys. Surveys were distributed to community members from 23 November 2025 to 26 December 2025. Whenever possible, up to three household members were encouraged to complete the questionnaire to capture intra-household perspectives. In the Dinh Mon context, fully digital participation proved challenging due to several practical constraints. A share of local residents do not own smartphones or are not accustomed to completing online survey forms. In addition, the survey period coincided with consecutive flooding events in the area, during which residents were primarily occupied with post-flood clean-up, repairing houses, and restoring livelihoods. As a result, many households had limited time and capacity to engage with an online-only survey format. In response to these circumstances, the MISR adapted the data collection approach to reduce participation barriers and ensure inclusiveness. Questionnaires were printed and distributed directly to households through neighbourhood representatives and local community coordinators. This format allowed residents to complete the questionnaire flexibly, at a time that suited their recovery activities, thereby maintaining community participation despite challenging field conditions. MISR coordinated the local implementation of the survey, including organising the distribution and collection of paper questionnaires, liaising with community representatives, and manually transferring all completed paper responses into the online survey system. The manual data entry and subsequent quality checks required considerable additional time and effort and were a key factor contributing to the extended survey timeline compared to the original schedule. However, this combined paper-and-digital approach significantly improved accessibility and ensured that residents with limited digital access were adequately represented in the dataset. To acknowledge the community's cooperation during a particularly demanding post-flood period, the project provided participating households with vegetable seed packages as a gesture of appreciation. The seeds were intended to support residents in re-establishing home gardens and small-scale food production after the flooding, while also strengthening trust and collaboration between the project and the local community. Overall, the context-sensitive adaptation enhanced participation and inclusiveness and highlights MISR's proactive coordination role in implementing the survey, ensuring data quality, and contributing to the stocktaking process that underpins the co-design of local NbS measures.

At HUSC, questionnaires were administered mainly as on-site surveys, supported by the Youth Union. Data collection took place between 25 November 2025 and 8 December 2025, covering different weekdays to capture variation in campus use patterns. Because the purpose of stocktaking is to inform co-design and establish a baseline for later perception-based follow-up, rather

than to produce statistically representative population estimates, the sampling approach should be understood as context-sensitive and practice-oriented. It aims to capture a diversity of perspectives that are relevant to the two sites, the challenges experienced there, and priorities for improvement.

UfU provided financial support for field implementation, including compensation for the HUSC interviewers, small gifts for survey participants, and compensation for community representatives in Dinh Mon who distributed and collected the questionnaires.

3.4 Data processing and evaluation

Survey structure and response data were exported from LimeSurvey using the platform’s standard export functions. This included exporting the survey structure (e.g., as an .lss file) and exporting response datasets to tabular formats for analysis. Keeping both files ensures transparency and traceability, i.e., question wording and answer options remain documented, and it supports repeat survey rounds with consistent instrumentation (e.g., for post-implementation monitoring). Quantitative responses were analysed using descriptive statistics (frequencies and distributions). Ranking questions were synthesised to identify the most salient priorities across respondents, while matrix rating questions (Likert-type items) were summarised with explicit attention to their ordinal nature and transparent reporting of category distributions. Open-ended responses (e.g., “anything else you would like to share”) were analysed using thematic analysis to identify recurring patterns and locally specific concerns that complement the structured items.

To streamline analysis and figure generation, the Python package `limesurveyspy`¹, developed in the project, was used to process the exported datasets. The package imports the LimeSurvey structure (.lss) and response exports, compiles response dataframes across question types, and generates standardised plots suitable for reporting (including multilingual label handling). This tool-supported workflow reduces manual post-processing, supports consistent outputs across both sites, and strengthens reproducibility, in particular when analyses need to be updated (e.g., if additional responses are collected).

¹ <https://pypi.org/project/limesurveyspy/>

4 Key findings from the surveys at the two pilot sites

4.1 Dinh Mon cultural green space

4.1.1 Sample characteristics

The total sample size is N=624 records (in the following, deviations from this sample size may be due to missing values or multiple choices allowed). Regarding gender, 306 respondents identified as Male, and 206 respondents identified as Female. Most respondents are in the age group 25 to 65 years (n=327), followed by elderly aged 65 or above (n=116) and young adults aged 18-25 (n=92) and minors under 18 years of age (n=12).

About 3 out of 4 respondents are long-term residents, living in the village for more than 10 years (10-25 years, n=84; more than 25 years, n=393). 28 respondents (about 4.5%) live in the village for 5-10 years, and about 7.6% of respondents live in the village for less than 5 years.

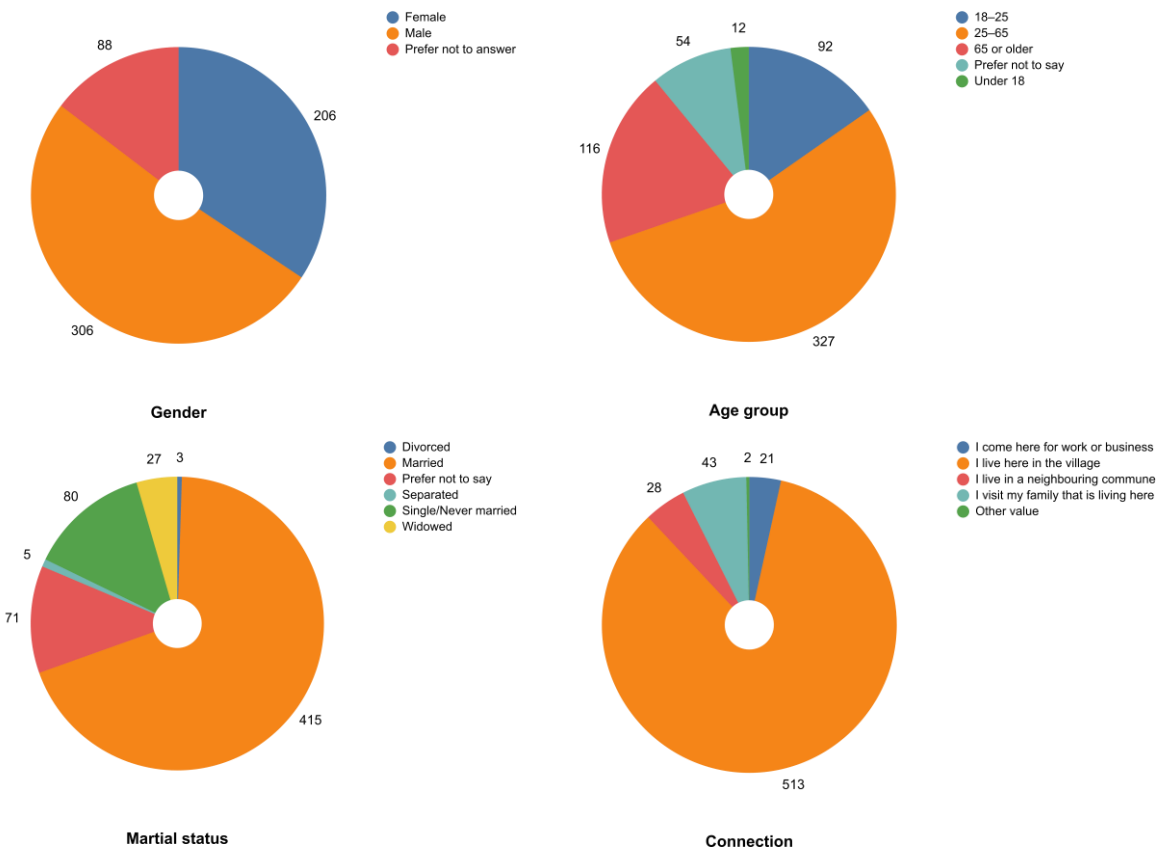


Figure 3. Gender, age group, marital status and connection to Dinh Mon of the sampled population.

Most respondents are married (n=415), followed by singles that never married (n=80). Only few respondents are separated, divorced, or widowed. A majority of respondents is directly connected to the village by living there (n=513) or by family (n=43). 28 respondents live in neighbouring communes. Comparatively few respondents (n=21) commute into the village for work or business.

4.1.2 Environmental qualities and challenges

Environmental qualities in Dinh Mon are seemingly seen by respondents as mostly favourable (excellent to fair). Higher shares of unfavourable responses (poor, very poor) are mostly observed for the management of noise, availability of sports facilities, cleanliness and waste management.

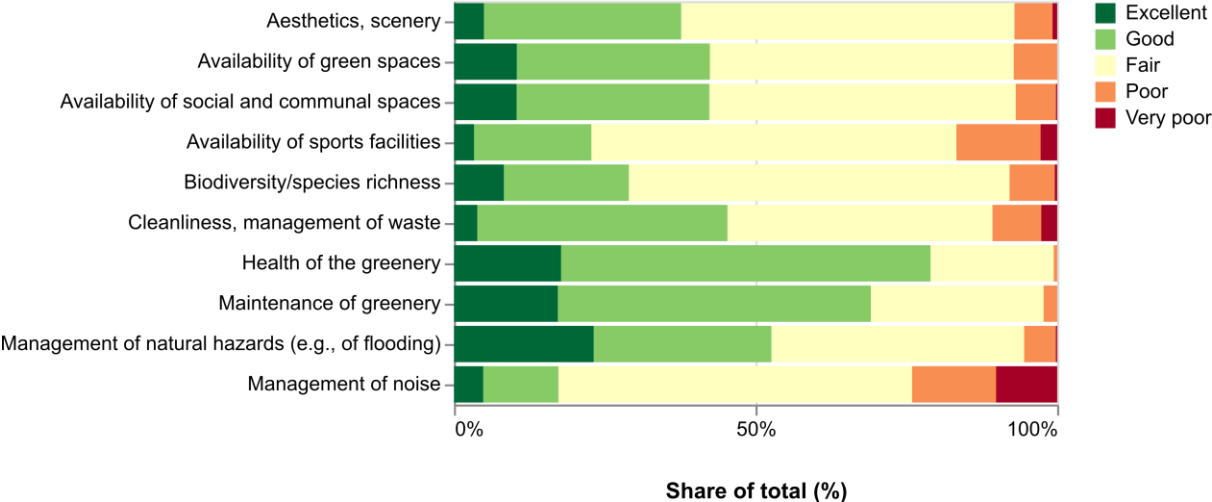


Figure 4. Perception of selected environmental qualities and/or environmental management in Dinh Mon.

There is a broad range of environmental and resilience challenges that citizens are aware of, or experience in Dinh Mon, or more generally, Kim Long ward. There is high awareness to or experience of natural hazards. Almost 95% of respondents are aware of/experienced flooding (n=587), and 70% are aware of/experience riverbank erosion (n=439). Droughts are reported by about 38% of respondents (n=234). Heat stress is reported by about 17% of respondents (n=106). There is some awareness towards or experience of urbanisation pressures, water shortages, loss of traditional garden houses, and loss of greenery and biodiversity. Challenges such as air pollution, waste and water pollution are reported less frequently. The level of concern/affectedness of respondents towards these mentioned hazards mirrors these frequencies to some extent, i.e., higher levels are reported for flooding, riverbank erosion, and drought. However, there is also higher concerns for air, waste, water pollution, water shortages, stagnant water, and loss of biodiversity.

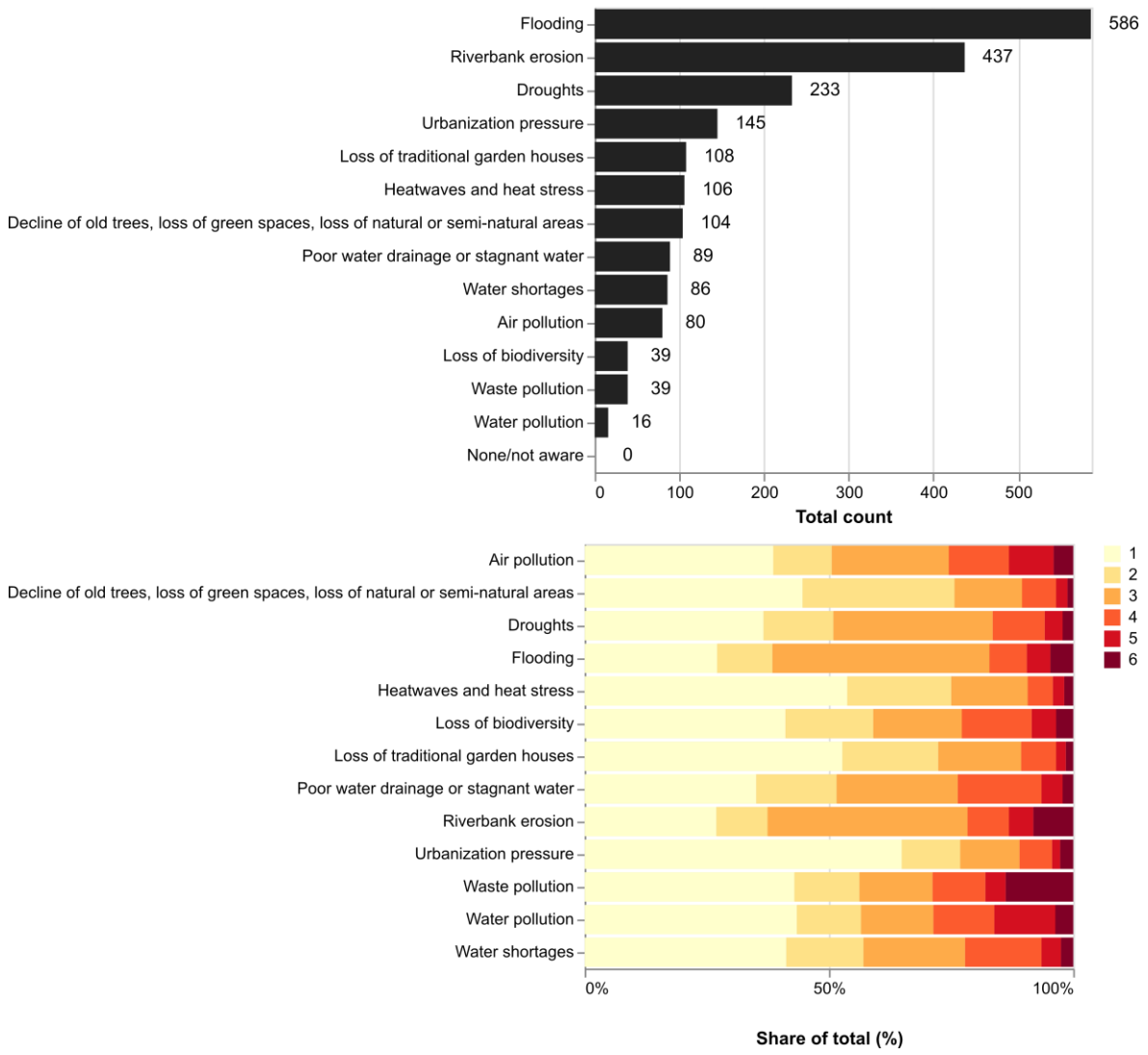


Figure 5. Awareness towards (and or affectedness by) environmental challenges in Dinh Mon incl. Kim Long ward (top), and reported level of concern (from 1=least concerned to 6=most concerned; bottom).

Main themes related to environmental qualities, challenges, and overall living in Dinh Mon that were reported by respondents as open text comments include:

Positive sentiments	Negative sentiments
<p>Environmental qualities</p> <ul style="list-style-type: none"> • Cool, fresh air • Harmony landscape, natural scenery • Quiet • Green space, many trees, lots of greenery, fertile alluvial banks, orchards, forests • Close to nature • Clean environment • Clean food <p>Social and cultural qualities</p> <ul style="list-style-type: none"> • Friendly people, strong social networks • Relics, monuments, traditions signifying cultural heritage • Place attachment (birthplace, home, fatherland) • Few tourists <p>Serenity</p> <ul style="list-style-type: none"> • Calm, peaceful • Few tourist • Quiet, very zen • Few cars • Comfortable, simple, traditional life-style 	<p>Environmental qualities, challenges</p> <ul style="list-style-type: none"> • Erosion of riverbanks • Dust pollution (request to regularly clean/sweep streets) • Pollution from free-roaming animals (animal droppings) • Lack of waste management, cleanliness: Trash after football („the youth does not clean after themselves“) • Sanitation issues • Climate change impacts on agricultural production • Few trees • Tree loss following flooding <p>Physical conditions, infrastructure</p> <ul style="list-style-type: none"> • Roads and pathways in bad condition, potholes, lack of lighting • Lack of infrastructure (no bridge dedicated to villagers) • Lack of maintenance of roads and roadside greenery („overgrown grass along [...] roadsides has taken over the space meant for green trees“) <p>Accessibility</p> <ul style="list-style-type: none"> • Remoteness: Distance to centre • Difficult commuting and transportation • Traffic situations perceived as dangerous especially to children • Lack of economic development, lack of touristic development

4.1.3 Uses and perceptions of the Dinh Mon communal house/communal green space

Use behaviour

The current use behaviour of respondents is characterised by the items use frequency and use behaviour. Regarding use frequency, about 30% of respondents visit comparatively frequent (daily, n=117 or up to several times a week, n=68). 115 respondents (about 20%) visit with moderate frequency of up to several times a month. Finally, about 50% of respondents visit the focal site (communal green space potentially incl. communal house) in Dinh Mon rather infrequently (up to several times a year, n=259 or rarely, n=47). Regarding mode of travel, about half of the respondents travel to the location by scooter/motorbike (n=340), and about 12% by car-based individual motorized travel (n=72). An equal share of respondents travels to the site by active travel, i.e., either by bicycle or walking (n=119, respectively 19%). Public transportation is of low relevance (n=7). No other modes of travel were reported by the respondents.

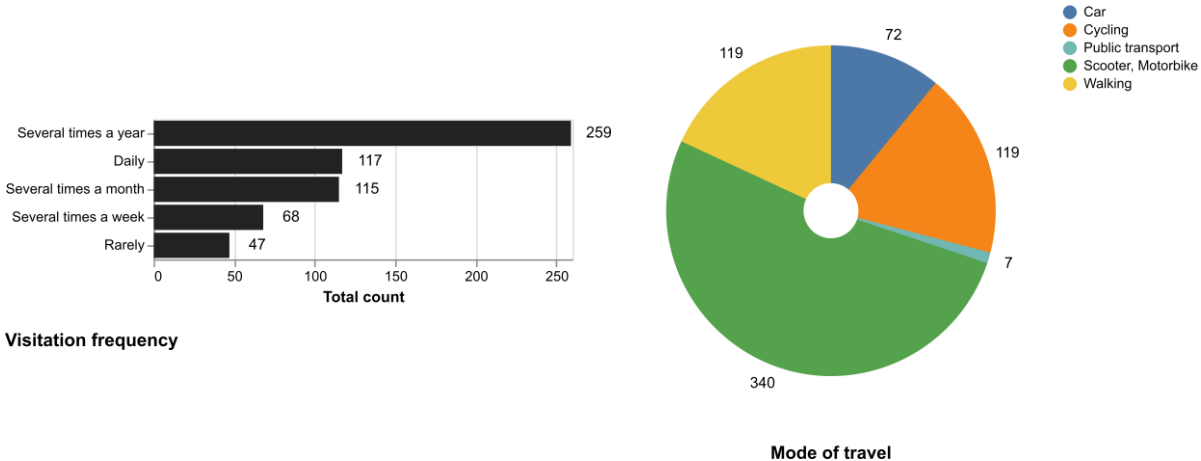


Figure 6. Reported visitation frequency of the Dinh Mon focal site, and visitors mode of travel.

Categories of use behaviour reported by respondents based on a multiple-choice question are summarized below. Use of the Dinh Mon focal site is dominated by uses supporting social interaction, with the highest counts for meeting friends or the community (n=238), taking part in collective and/or organized activities (n=218). Leisure time with family (n=190) and personal leisure (n=164) are also amongst the categories mentioned most often. Categories speaking towards community engagement are also reported comparatively often, including volunteering (n=133), staying informed about local events (n=116), and participating in village management (n=111). Other recreational and restorative uses, e.g., walking, sports or exercise, relaxation, and play with children form another major block of motivations/use behaviour, however, these uses are reported increasingly less frequent. This indicates the dominant role of the focal site for socializing and civic/community space, but also shows that is of less relevance for personal recreation and relaxation. Explicitly nature-focused or rather incidental uses like enjoying greenery, walking the dog, or passing through the site as part of commuting are of minor importance.

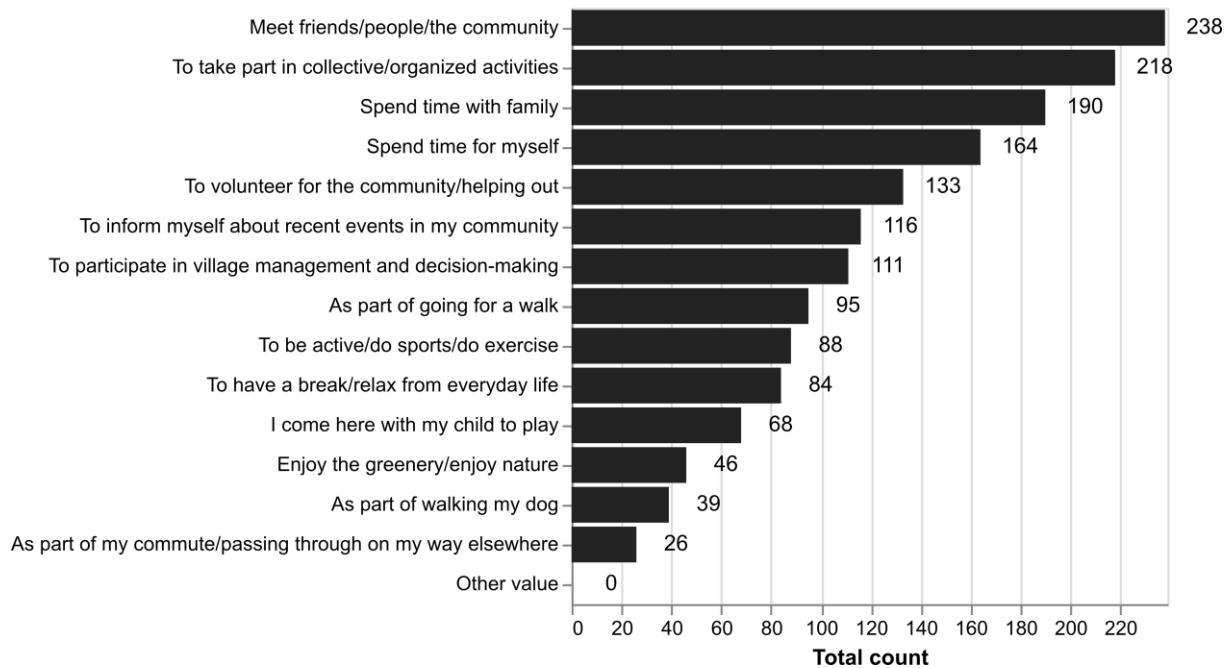


Figure 7. Reported use behaviour for the Dinh Mon focal site.

Positive perceptions

Positive perceptions, i.e., qualities that may be considered to motivate visits, support specific uses, or that are generally perceived positively and thus are appreciated by visitors, were elicited from respondents based on a ranking. I.e., respondents were asked to select respective qualities important to them from most to least important. On average, 9.4 items were ranked by respondents; the median number of items ranked is 5. 25% of respondents selected more than 16 items in their ranking. From the number of times and item is selected (i.e., included in a ranking), and from the assigned rank, probable positive qualities and aspects related to current conditions of the focal site shall be identified.

Items related to accessibility and location are comparatively often selected in rankings (good accessibility, n=385; proximity to home, n=285). From the assigned ranks, both items appear as key qualities of the focal site, with about 50% of respondents selecting these items as most important quality. Environmental comfort, microclimate and environmental qualities are apparently also perceived as positively, with fresh air (n=347), shading (n=335), abundance of trees (n=318), feeling cool and refreshing on hot days (n=219) and availability of open spaces (n=234) selected comparatively often. Shade and trees are also amongst the items often ranked as personally more important; in contrast, the median rank of fresh air is considerably lower. Items speaking towards aesthetics are also often included in the ranking (attractive and pleasing place, n=303; natural appearance of plantings, n=268), and these categories are also ranked comparatively high, and thus appear to be important to respondents. Access to facilities and presence of amenities, including, e.g., sanitary facilities, seating opportunities, sports and exercise equipment or child play areas are included least frequently in rankings, and similarly, assigned ranks for these items are considerably lower, indicating that these qualities are not as positively perceived or reported to support use of the space, or conversely, the location may be lacking facilities, amenities, or child friendliness.

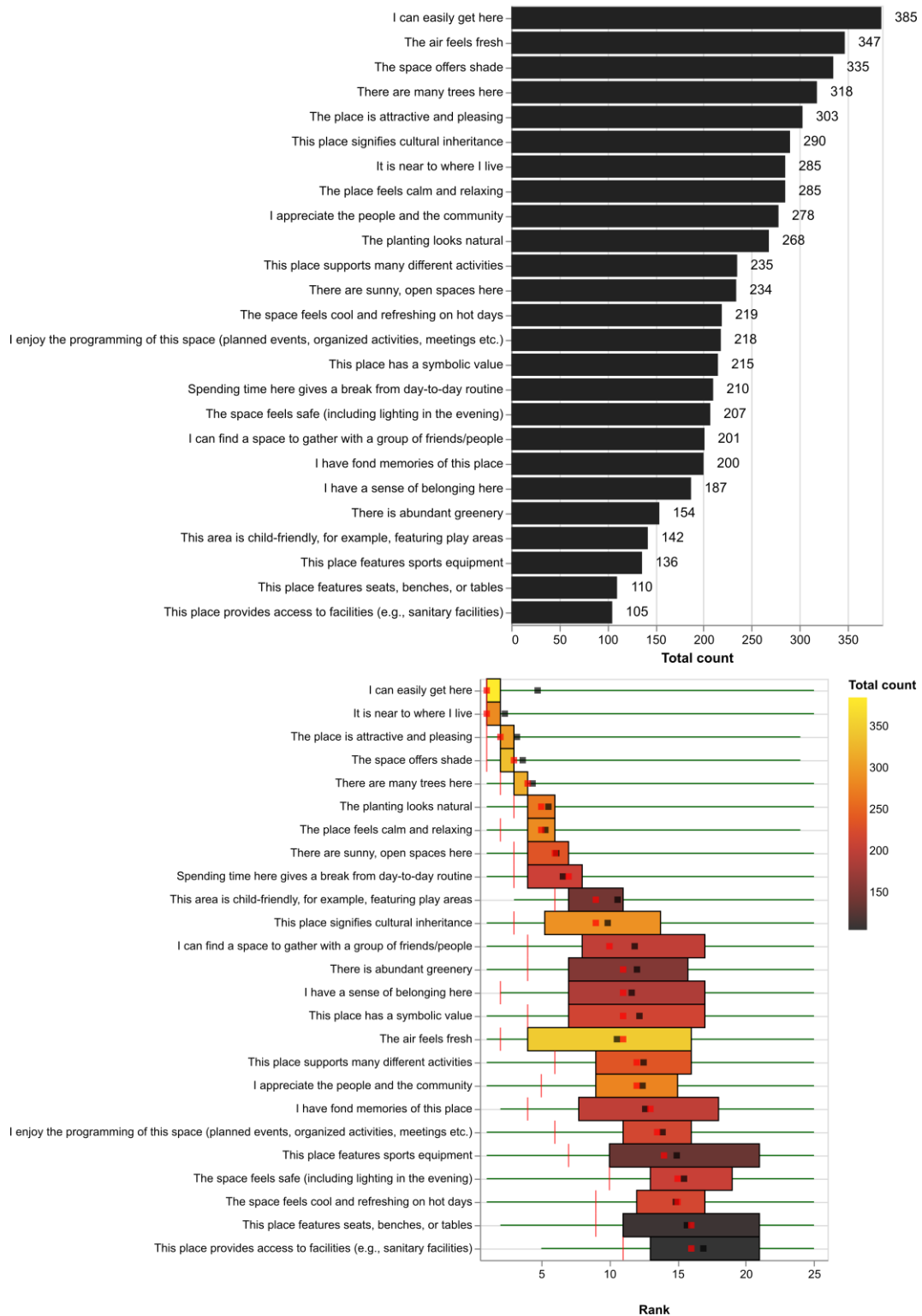


Figure 8. Positively perceived environmental characteristics and qualities motivating and/or supporting uses of the Dinh Mon site. Rankings show relative importance of items to respondents (lower ranks indicate higher perceived importance).

Negative perceptions

Negative perceptions, i.e., qualities that may be considered barriers to uses, or that are perceived rather unfavourable by visitors, were elicited from respondents based on a ranking. I.e., respondents were asked to select respective qualities important to them from most to least important/relevant. On average, respondents included 8.2 items in rankings, and the median count is 4. 25% of respondents ranked more than 9 items. From the number of times and item is selected (i.e.,

included in a ranking), and from the assigned rank, probable unfavourable qualities and aspects related to current conditions of the focal site shall be identified.

Predominant categories often perceived as negative qualities are related to physical conditions, comfort, safety, and maintenance of the focal site. This includes walkways, amenities or facilities in bad conditions (n=334), the location being perceived as either unattractive or poorly designed (n=333), lack of access to facilities (n=293), lack of shelter from the weather (n=292), lack of seating opportunities (n=281), lack of amenities supporting active recreation (n=254), troubles navigating the location due to physical barriers (n=221), and poor maintenance or lack of cleanliness (n=219), lack of child friendliness (n=192) or poor lighting (n=185). Assigned ranks indicate that these items are perceived as important barriers or relevant negative qualities of the location and mirror the low relevance of these items from the perspective of positive perception (i.e., ranks assigned to the place featuring sports equipment, perceived safety of the location incl. lighting, and the provision of seating opportunities or facilities and amenities). Barriers impeding social functions include lack of organized activities (n=185), lack of room for social interactions (n=171), lack of community/others visiting (n=143), and noise (n=104). Other barriers include personal/subjective reasons related to accessibility and social qualities, including inconvenient accessibility (n=138), distance from home (n=110), and lack of inclusiveness (n=160). In comparison to physical properties, comfort, safety and maintenance, these items received lower median ranks.

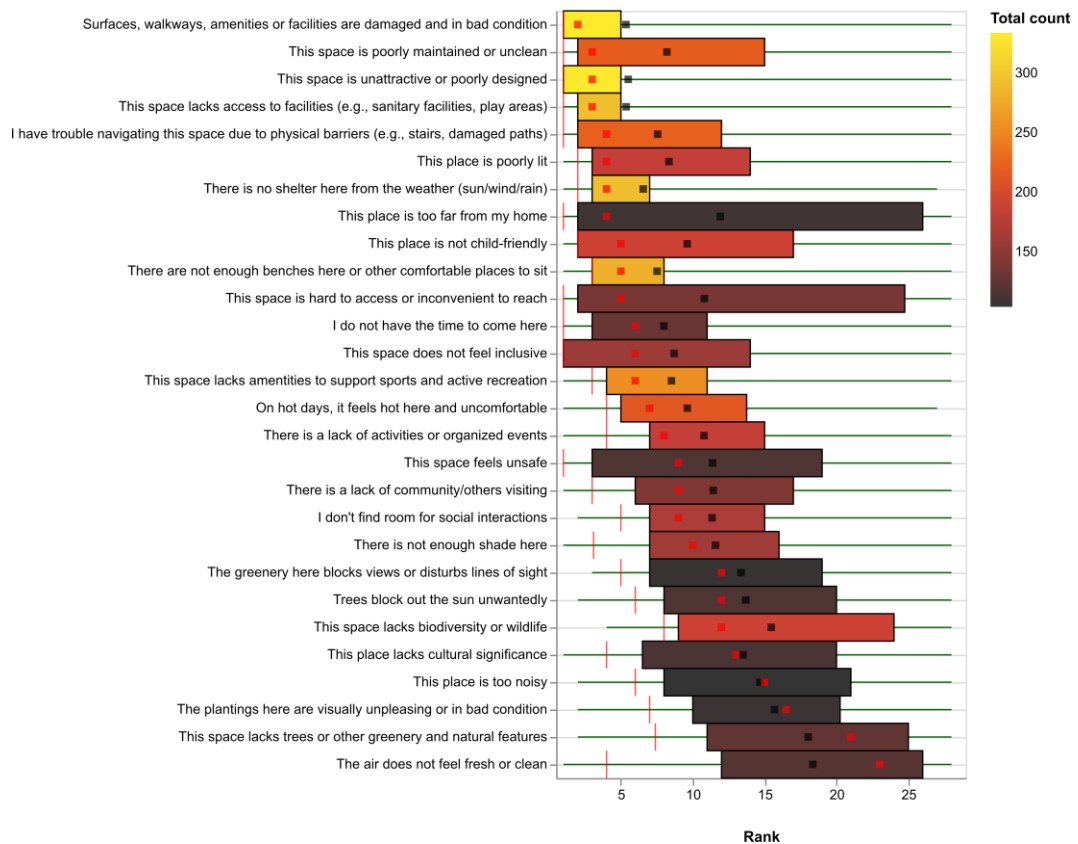
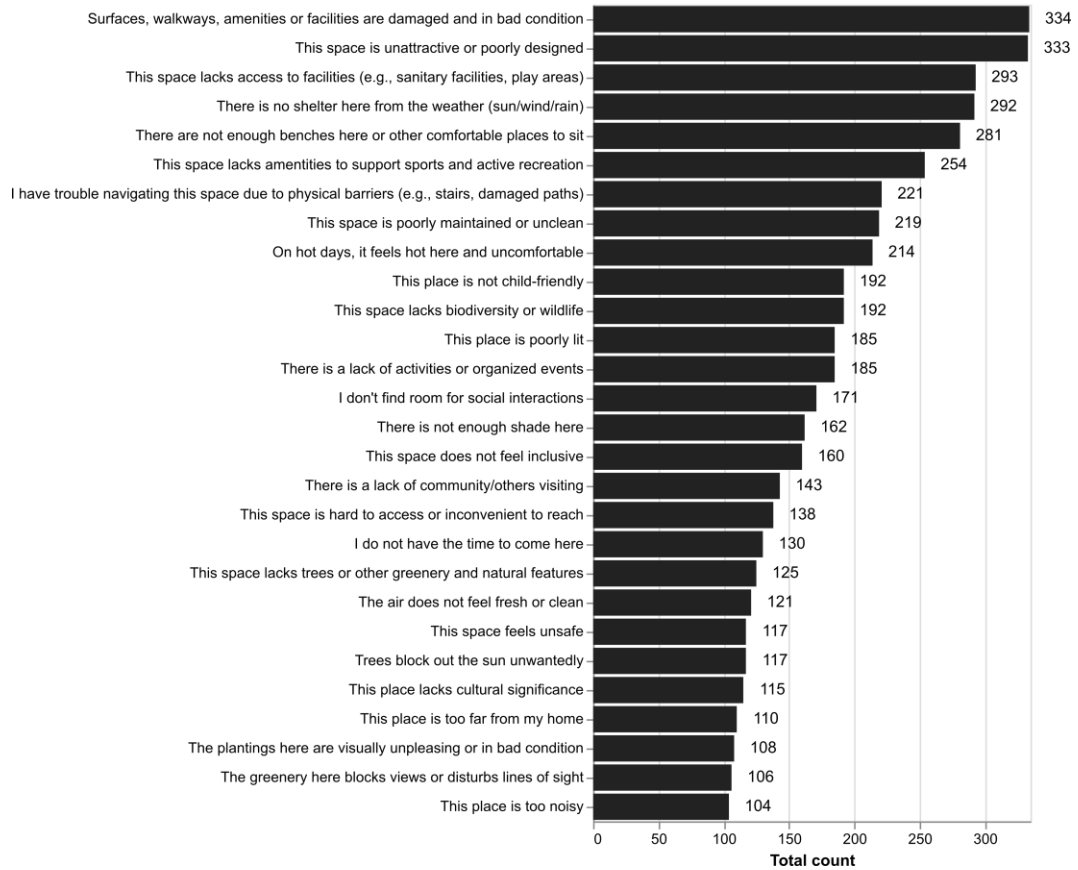


Figure 9. Negatively perceived environmental characteristics and qualities of the Dinh Mon site. Rankings show relative importance of items to respondents (lower ranks indicate higher perceived importance).

Main themes related to positively or negatively perceived qualities of the focal site that were reported by respondents as open text comments include:

Positive sentiments	Negative sentiments
<p>Environmental qualities</p> <ul style="list-style-type: none"> • Proximity to river • Quietness, peace, quiet place • Large almond trees (similar to many gardens with fruit trees across the village) • Cool air, fresh air, „quiet air“ • The landscape is very beautiful and fresh. • Bright, clean, green space <p>Cultural and social significance</p> <ul style="list-style-type: none"> • Friendly people • Historical relics • Dinh Mon communal house looks very sacred. • The communal house is a sacred place that brings people together and plays an important role in the organization of the village and the commune. • Friendly people, a place to connect with people • This space is not very attractive to young people. <p>Stewardship</p> <ul style="list-style-type: none"> • Villagers have contributed to renovate the Dinh Mon communal house but in limited amount cause villagers are poor on the average 	<p>Physical conditions, comfort, safety, maintenance</p> <ul style="list-style-type: none"> • Lack of facilities, „no roof“ (shelter?) • Lack of lighting, particularly in the evenings • Lack of security („not tight“, „not good“) <p>Environmental qualities</p> <ul style="list-style-type: none"> • Dust, noise due to traffic • Animal wastes due to grazing livestock <p>Social qualities</p> <ul style="list-style-type: none"> • Low attractiveness for younger people <p>Accessibility</p> <ul style="list-style-type: none"> • Inconvenient accessibility

4.1.4 Desired improvements

Preferences towards specific actions and measures as types of improvements

Preferred improvements were elicited using a ranking approach, with respondents being asked to select preferred actions/measures for improving the focal site, from most to least important/desired/preferred. On average, respondents ranked 4 items (median=5 items), and 25% of respondents ranked more than 10 items.

Adding facilities and trees (n=357 and n=483, respectively) represent often selected measures, ranked as highly preferred. Similarly, adding further vegetation elements, e.g., flower gardens or ornamental plantings (n=348) or grassy surfaces (n=309) are ranked highly. Further items ranked as comparatively preferred include further improvements to physical conditions, comfort, safety, and maintenance, e.g. adding lighting (n=313), adding (natural or artificial) shade (n=321), and the improvement of waste management (n=300). Notably, although the lack of seating opportunities has been perceived as rather negative, and the creation of seating opportunities is comparatively often included in rankings (n=218), based on these rankings, this measure appears to be of lower priority. Adding sculptures and exhibits, signage or educational boards, or water features are ranked comparatively undesired/low overall.

Specific comments from the respondents on the improvement of the focal site provided as open text comments include:

- Adding trash bins to improve waste management (including at the market)
- Improve the programming of the space: Organize activities, events, “propaganda programs”, “propaganda activities”
- Promote “local specialties”
- Implement campaigns for the improvement of environmental conditions (e.g., collection of waste/litter, road sweeping and road washing to reduce dust pollution), to raise environmental awareness, for education

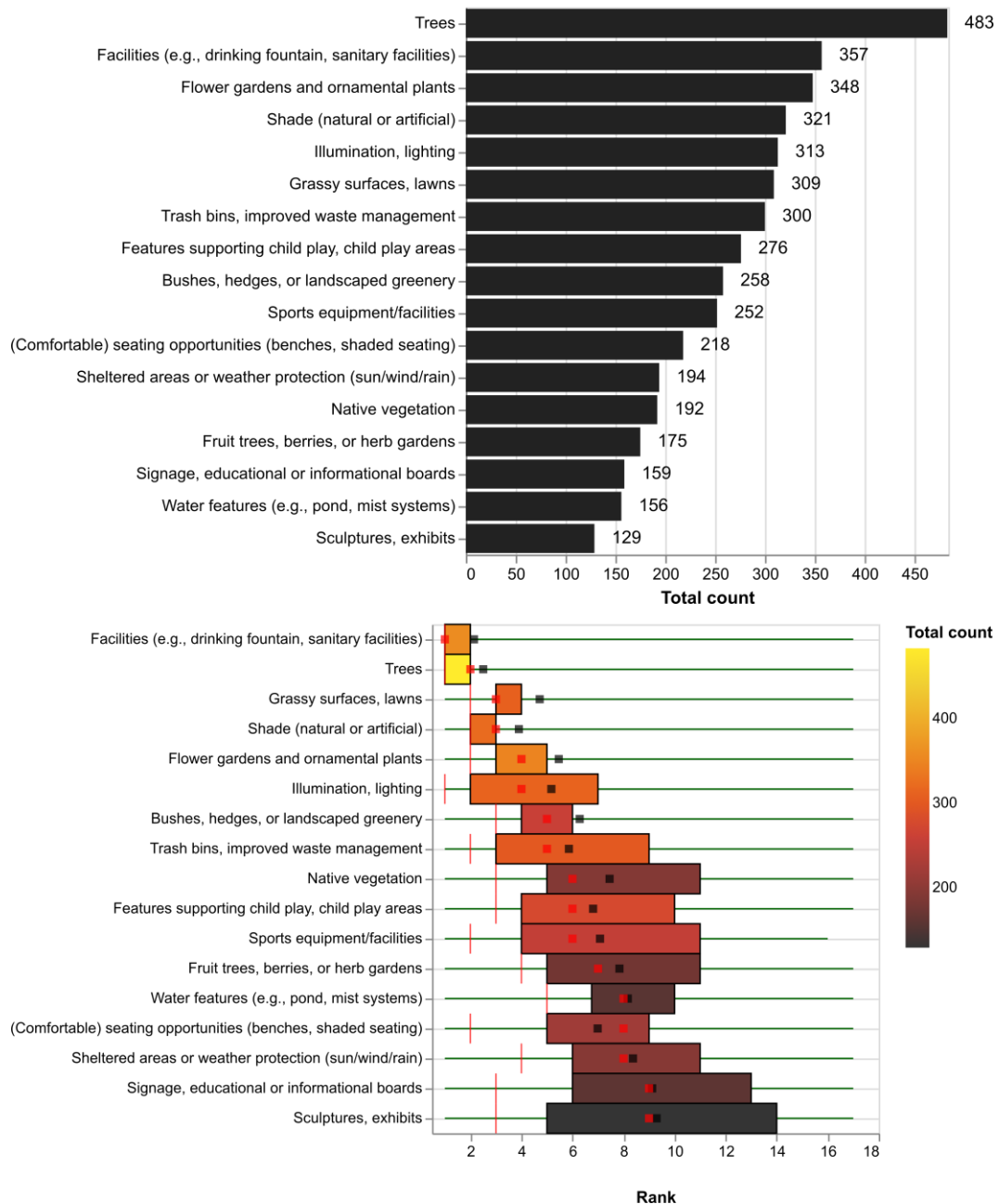


Figure 10. Preferences towards actions and measures to improve conditions at the Dinh Mon site. Rankings show relative preferences towards specific actions/measures of respondents (lower ranks indicate higher preference).

Leveraging stewardship

Based on reported willingness of respondents to contribute to potential improvements, there appears to be considerable potential to leverage (environmental) stewardship for the improvement of the Dinh Mon focal site. About 70% of respondents could be willing to volunteer to support regular maintenance of the site, including, e.g., watering plants or collecting litter (n=442). Similarly, about 70% of respondents reported their willingness to volunteer directly in the implementation of improvement actions/measures, e.g., helping to build or plant (n=441). Furthermore, approximately one-thirds of those surveyed stated that they could imagine (i) supporting the programming of the space by organizing or aiding in the organization of activities or events (n=240); (ii) participating in the further planning of the space (n=221); or (iii) contributing financially to support improvements or maintenance activities (n=215).

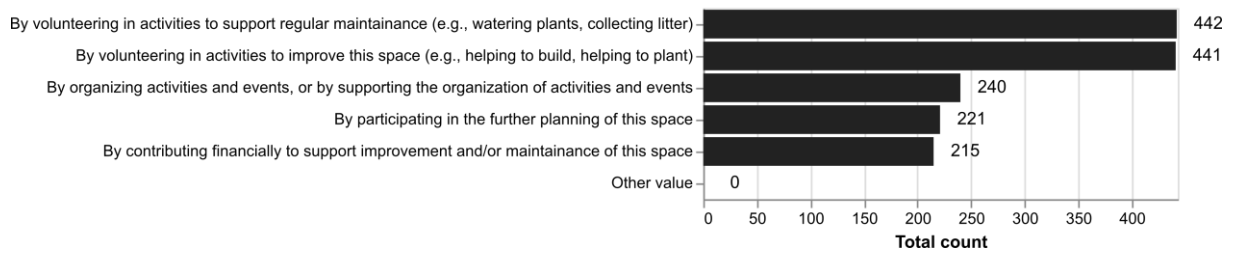


Figure 11. Support for improving and maintaining the Dinh Mon cultural green space.

4.2 Designated campus area at the Hue University of Sciences

4.2.1 Sample characteristics

The total sample size is N=510 records (in the following, deviations from this sample size may be due to missing values or multiple choices allowed). Regarding gender, 344 respondents identified as Female, and 137 respondents identified as Male. Almost all respondents are young adults aged 18 to 24 years (n=487), followed by minors under 18 years of age (n=20) and respondents in the age group 25 to 34 (n=4). About 95% of respondents are (high school) students (n=485). Around three quarters are relatively new to HUSC, with up to two years of affiliation (less than 6 months, n=235; 6 month to 1 year, n=37; 1 to 2 years, n=163). Fewer than 2% report a longer connection of three years or more (3 to 5 years, n=61; more than 5 years, n=6). Thus, the sample strongly reflects a young-adult, student cohort, ideally for a student-facing redesign of the designated space at the HUSC campus.

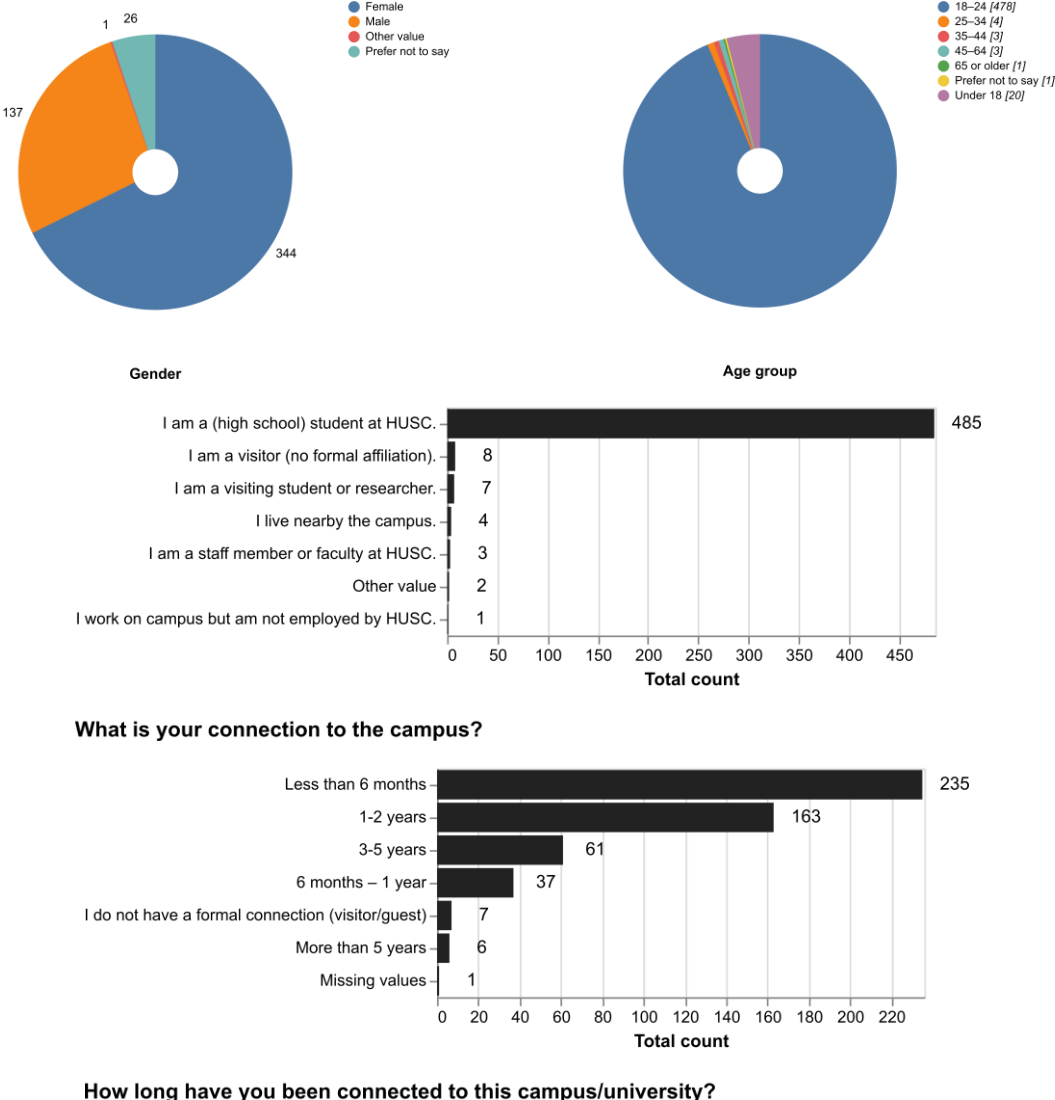


Figure 12. Gender, age group, connection to the campus and length of affiliation of the sampled population.

Marital status is unlikely to be a meaningful factor given the respondents’ young age. Most report being single/never married (n=442) or prefer not to say (n=56). Consistent with their campus affiliation, about half report an upper secondary school qualification as their highest completed education (n=264), while about 40% report a university degree (n=211).

4.2.2 Perception of the campus and its environmental conditions, burdens, and management

Introductory questions on appreciated aspects and shortcomings of the campus provide useful first insights into how respondents experience HUSC overall, before turning to the more detailed questions on environmental conditions, burdens, and management. Just over 30% of respondents used the open-text field to describe what they appreciate most. Many portray the campus as a green and pleasant place, most often highlighting trees and greenery, a fresh and cooler microclimate, and the sense that the campus feels open, airy, and spacious. Several also mention a calm, peaceful atmosphere that supports short breaks and studying between classes. A smaller but recurring set of comments points to “softer” qualities of campus life, such as a generally nice and beautiful vibe, cleanliness and good maintenance (for some), and a supportive learning environment (e.g., friendly teachers/staff/students and a positive study atmosphere).

More than 35% of respondents used the open-text field to reflect on shortcomings. Here, the tone shifts to practical, everyday issues. Respondents most often point to maintenance and physical condition problems, i.e., areas that feel worn, dated, or in need of repair, and to missing or weak basic amenities, especially Wi-Fi, but also seating and tables, bins, and lighting. Concerns about cleanliness and waste management (e.g., litter or uneven waste handling) appear repeatedly, alongside crowding at peak times. Some respondents also mention heat and sun exposure and limited shelter, as well as more situational challenges such as parking and traffic, stagnant water or poor drainage after heavy rain, occasional noise, and issues of general campus organisation. Taken together, the open text questions describe a campus that is widely valued for its “green comfort”—shade, cooling, fresh air, and an overall restorative feel—while everyday experience is limited by gaps in maintenance, services, and management.

This overall picture is reflected in the assessment of perceived environmental qualities and challenges. These were analysed through two complementary lenses: (i) respondents’ perceptions of existing green and environmental conditions, and (ii) their awareness of and concern about specific environmental burdens. HUSC is widely perceived as a campus with a strong baseline of green comfort (shade, cooling, healthy greenery). At the same time, daily life on campus is affected by a few very noticeable problems, especially flooding and poor drainage, as well as noise and waste-related issues.

Perceived environmental qualities indicate that greenery is not only present but also generally appreciated as functional infrastructure. For the availability of different types of greenery, ratings are strongest for canopy- and tree-related features. The share of respondents rating availability as “Excellent” or “Good” is highest for tree cover and shaded areas (n=372; 76.9%), followed by tree-lined walkways or boulevards (n=355; 73.7%) and small green pockets or courtyards (n=336; 69.7%), underlining the importance of trees for comfort. More “designed” or biodiversity-oriented layers, such as gardens or flower beds (n=277; 57.3%) and native or natural vegetation (n=279; 59.4%), are rated lower, suggesting that the campus green structure is perceived as strongest in its canopy and linear tree elements, while understory diversity and ornamental planting appear less developed or less visible.

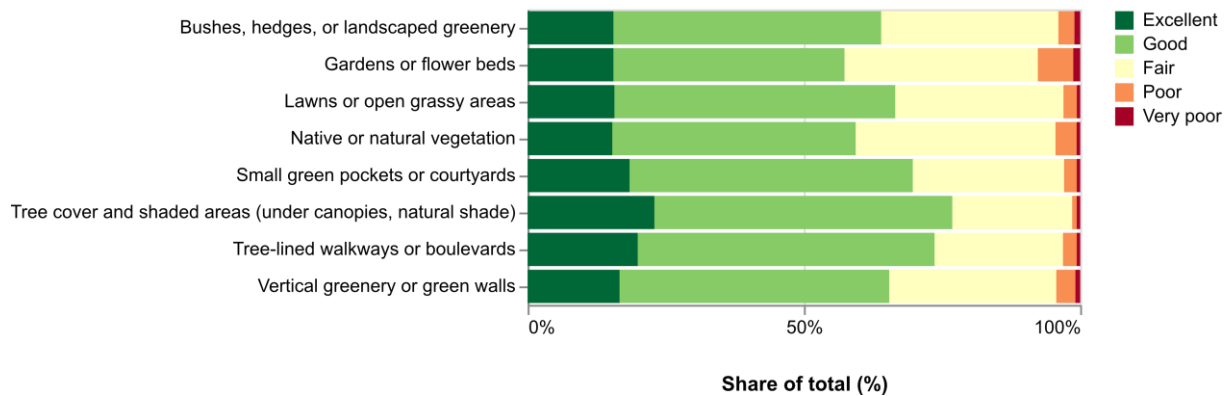


Figure 13. Perception of availability of different greenery types on campus.

This is also mirrored in the ratings of selected environmental characteristics on the campus. The highest shares of “Excellent” or “Good” are reported for health of greenery (n=403; 80.3%), shading and cooling (n=388; 77.4%), availability of green spaces for everyday use (n=378; 75.9%), and maintenance of green and open spaces (n=372; 74.3%). Ratings are also mostly positive for aesthetic quality and scenery (n=361; 71.9%), availability for social and communal spaces (n=356; 71.0%), and cleanliness and waste management (n=350; 70.0%). Lower ratings are given to areas that relate more to facilities and management, including availability of sports and recreational facilities (n=300; 60.2%), noise management (n=310; 62.0%), biodiversity and species richness (n=310; 62.6%), and natural hazard management including flooding (n=326; 65.9%). These results suggest that while the campus is widely seen as green and comfortable, some aspects of functionality and environmental management are experienced less consistently or are seen as less effective. It is also worth noting that “I don’t know” answers are relatively more common for hazard management. This suggests that resilience measures may not be very visible to users or that people are unsure how well these risks are being managed. This matters for co-creation, because it points to a need for solutions that are not only effective, but also clear and easy to understand (e.g., visible drainage features and clear communication).

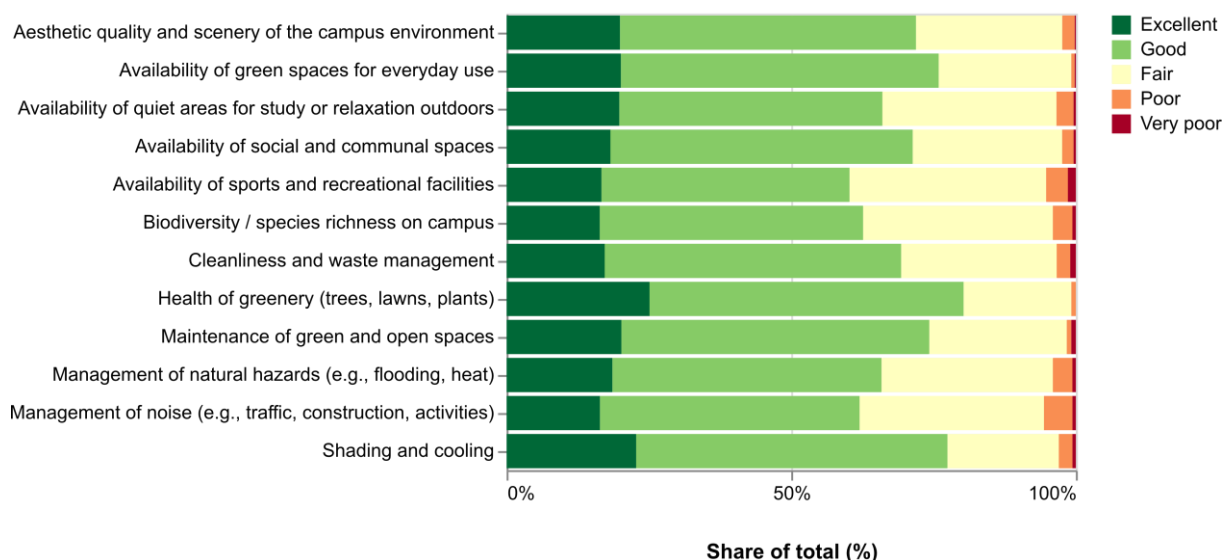


Figure 14. Perception of selected environmental characteristics on the campus.

There is a broad range of environmental challenges that respondents are aware of, or experience on campus, or in the nearby area. Flooding is dominant (66.9%; n=341)—far exceeding all other issues—and is accompanied by related burdens such as poor drainage or stagnant water (23.1%; n=118) and mosquito or vector risks (19.0%; n=97). A second cluster reflects day-to-day liveability

and management pressures, including noise pollution (27.1%; n=138), lack of recreational or relaxation spaces (24.7%; n=126), waste pollution (20.6%; n=105), and heat stress (18.4%; n=94). A non-trivial minority selected “None / not aware” (13.7%; n=70), suggesting that these burdens are not experienced equally by everyone; likely depending on location, time, or daily routines.

Respondents were then asked to rate how concerned or affected they feel by the issues they had selected. It is important to note that this follow-up question only applied to hazards chosen in the previous step; for everyone else, the response is “not applicable / not asked.” As a result, the “not applicable” share is large for many items (for example, flooding: n=169; 33.1% not applicable, while heat stress: n=416; 81.6% not applicable). Among those who reported an issue, the strongest concern levels relate to campus life quality constraints. The highest average concern is reported for overcrowding or insufficient facilities (n=74; mean=3.62; 28.4% rating 5–6) and lack of recreational or relaxation spaces (n=126; mean=3.52; 27.8% rating 5–6). Waste pollution (n=105; mean=3.32; 22.9% rating 5–6) and poor drainage or stagnant water (n=118; mean=3.31; 21.2% rating 5–6) also stand out as consistent concerns once experienced. Although flooding is the most widespread issue, its average concern is mid-range (n=341; mean=3.23), with a sizeable high-concern subgroup (24.0% rating 5–6). A pattern that likely reflects uneven exposure, such as specific hotspots or seasonal peaks. Noise shows moderate concern among those affected (n=138; mean=3.07; 16.7% rating 5–6).

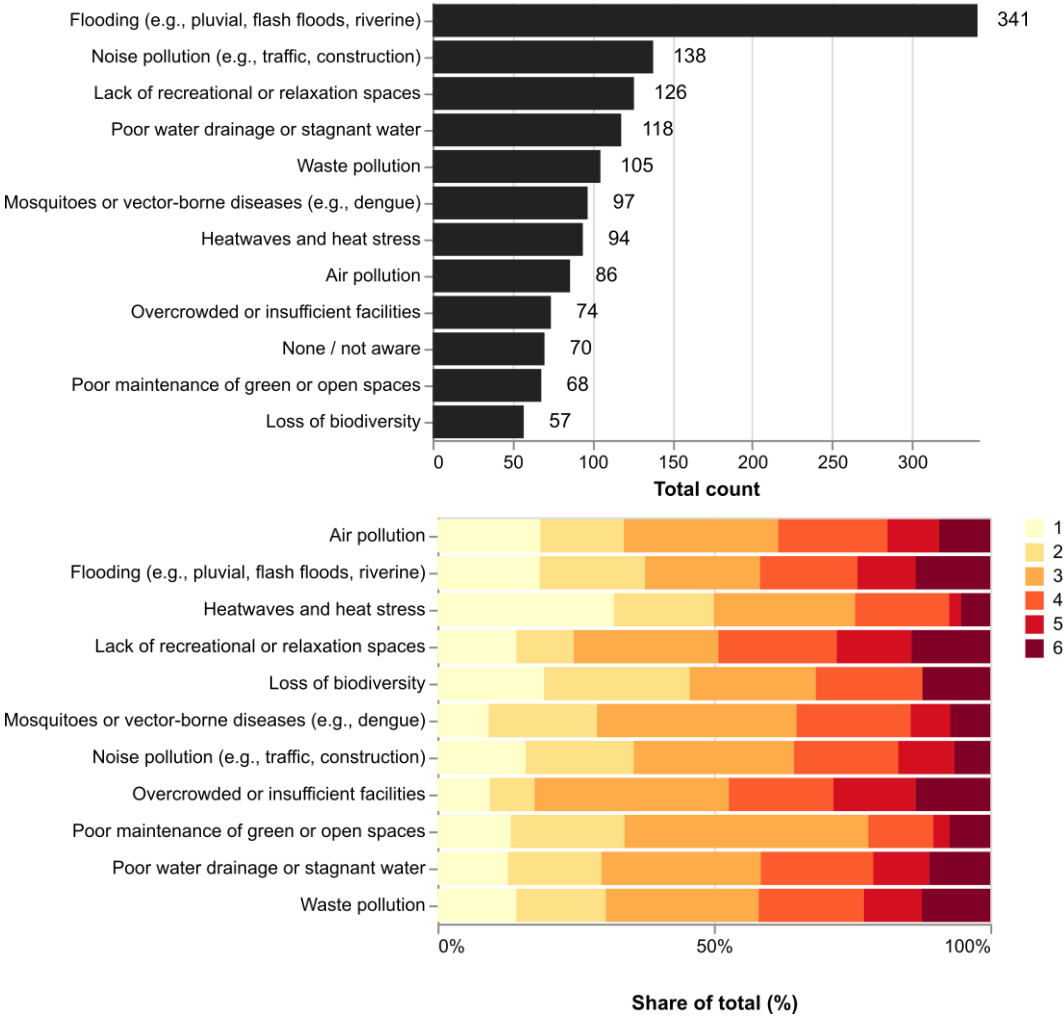


Figure 15. Awareness towards (and or affectedness by) environmental challenges on campus (top), and reported level of concern (from 1=least concerned to 6=most concerned; bottom).

In addition, respondents were asked how they think green and open spaces should function on campus. This provides an important reference point for interpreting expectations beyond the focal site. Overall, priorities are strongly oriented toward everyday comfort and learning support. The clearly dominant function is providing shade and cooling on hot days (56.1% ranked it #1; 75.1% placed it in the top three). Next come roles closely linked to campus life and study, such as spaces for group work and discussions (47.5% in the top three) and quiet places for studying and relaxing (37.1% in the top three), alongside well-being and social functions. By contrast, ecological services such as biodiversity or broader climate resilience appear less often as explicit “top priorities.” This should not be interpreted as rejection. Rather, it points to a useful framing opportunity. In a co-creation process, ecological and resilience measures are most likely to gain broad support when they are presented as practical enablers of what users value most. For instance, drainage-smart greening can reduce flooding and stagnant water while also improving shade, comfort, and everyday usability. Complementing physical interventions with simple environmental education elements (e.g., signage that explains cooling, stormwater, and health benefits) could further strengthen awareness of the wider services green-blue infrastructure provides.

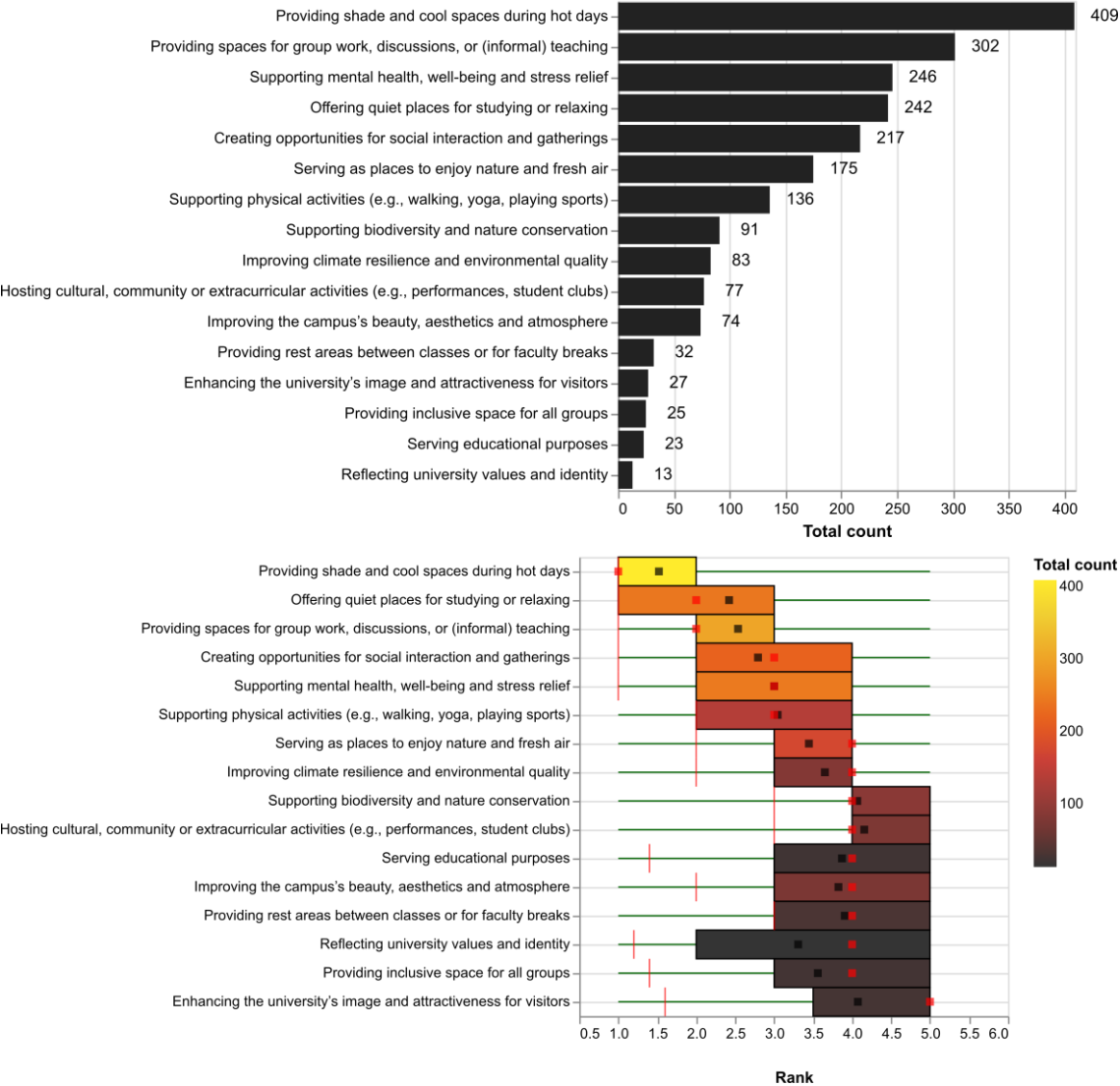


Figure 16. Desired roles and functions of green and open space on campus (top) and respondents’ ranking (bottom).

4.2.3 Uses and perceptions of the designated campus space

Use behaviour

Current use behaviour is captured through two dimensions: visitation frequency and typical activities in the space. With regard to frequency, respondents report very regular use. About 85% visit the designated space frequently, either daily (n=219) or several times a week (n=211), indicating that this is a high-frequency, everyday place rather than an occasional destination. Only a small share visit several times a month (n=15; about 3%). Approximately 10% report visiting rarely (n=55), and only around 2% report never visiting the space. Overall, the designated area is not just a “nice extra” spot; it is embedded in students’ daily routines and is therefore likely to be experienced immediately and judged quickly, once changes are implemented. This also implies that phasing and continuity of access during construction will matter, as disruptions would affect many daily users.

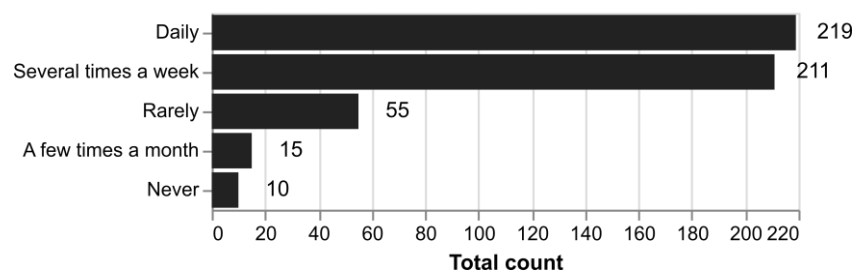


Figure 17. Reported visitation frequency of the designated campus space.

Reported use behaviour further highlights that the focal site already functions as a multi-purpose campus node. Activities cluster into three main modes. First, the space is used as a transition and waiting area between classes. Nearly half of respondents report using it to wait between classes (n=248), and a substantial group report passing through on their way elsewhere (n=104). Second, it serves as a social and restorative setting. Many respondents use it for meeting and socialising (n=220) and relaxing or taking breaks (n=205), and a smaller but still relevant share report attending events or organised activities (n=142). Third, it supports learning-related use, with a considerable number using the space to study, read, or do academic work (n=163). In addition, respondents report everyday supporting activities such as eating and drinking (n=116), spending time alone (n=82), and parking a vehicle (n=53), although these are less dominant.

Two broader implications follow from this use profile. On the one hand, the space already operates as a mixed-use campus hub—part corridor, part hangout, part study area. On the other hand, this combination of uses can produce natural tensions, especially between quiet studying and socialising, and between movement flows and stationary uses (waiting, sitting, gathering). Rather than trying to privilege one activity at the expense of others, the redesign should anticipate these overlaps by creating zoned micro-spaces and clear circulation, e.g., quieter pockets with seating encouraging studying, social seating clusters for groups, and unobstructed routes for pass-through movement.

Finally, it is worth noting that the survey did not explicitly include nature-focused activities (e.g., “enjoying greenery”) as answer options. This was based on the site pre-screening and the pre-test, which suggested that the focal site is currently not seen as a particularly green or nature-oriented place. Instead, respondents tend to associate it with functional everyday uses (waiting, meeting, studying, passing through). In line with this, respondents also did not add nature-focused activities via the open “other” option. Taken together, this indicates that while greenery

and microclimate qualities may still shape the experience of the space (e.g., shade, comfort, atmosphere), they are currently understood mainly as supporting factors for campus life rather than a main reason to visit on their own.

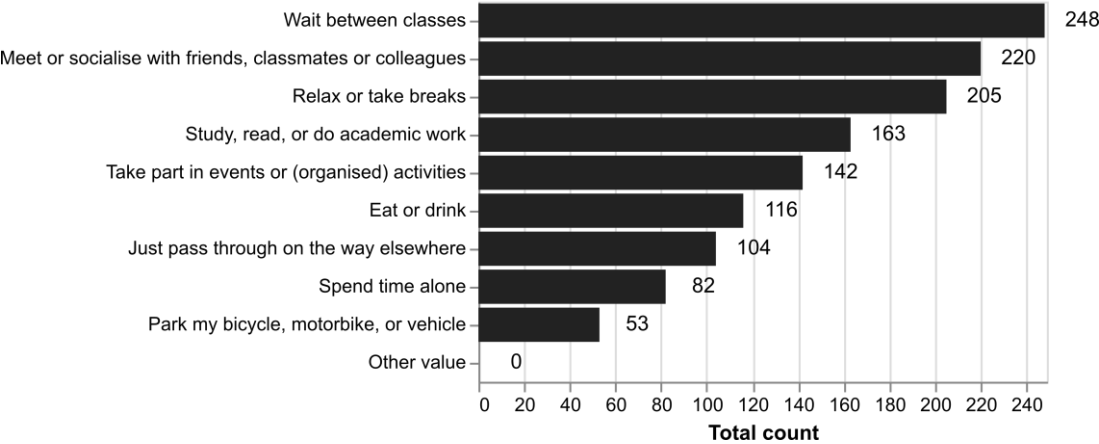


Figure 18. Reported use behaviour for the designated campus space.

Positive perceptions

Positive perceptions, i.e., qualities that may be considered to motivate visits, support specific uses, or that are generally perceived positively and thus are appreciated by visitors, were elicited from respondents based on a ranking. Respondents were asked to select qualities that matter to them and rank them from most to least important. Engagement with the task was high and suggests that users perceive the focal site through a broad bundle of valued attributes rather than a single defining feature. On average, 9.3 items were ranked by respondents; the median number of items ranked is 8, and around 25% ranked more than 16 items. This breadth of responses provides a robust indication of which site characteristics are currently experienced as positive and worth retaining or strengthening in a redesign.

Across rankings, the strongest positive perceptions cluster around microclimate comfort and restorative value, paired with basic usability. Respondents most consistently value conditions that make the site feel comfortable in everyday use, such as fresh air (n=288), shade (n=264), and cooling on hot days (n=249), with about 50% and more of respondents selecting these items. Together with the site’s green character (trees and abundant greenery; n=259) and a generally calm, relaxing atmosphere (n=239), the space is overall experienced as a cool, green and relaxing refuge. In addition to these positively perceived qualities, respondents also highlight more functional enablers such as the availability of seating (n=264), perceptions of maintenance and cleanliness (n=246), and accessibility (n=259). Social and functional versatility also matter for many respondents with “a place to gather with friends or colleagues” (n=230), “supports a variety of activities” (n=226), and “a quiet space for studying/reading” (n=224) featuring prominently. Looking specifically at what respondents most often placed in the top rank (i.e., first place), the leading quality was cooling on hot days (n=38 ranked it first), followed by fresh air (n=33) and abundant greenery and/or trees (n=31). This pattern reinforces that the focal site’s most valued strengths relate to thermal comfort, shade, and an overall restorative microclimate, while seating, accessibility, and basic maintenance are essential enabling conditions.

Open comments largely reinforce the ranking results and add practical nuance. The most common themes include appreciation of the site’s environmental qualities (greenery, fresh air, shade and cooling), existing seating opportunities, and the availability of quiet and peaceful moments.

Some comments appear to reference the campus environment more broadly rather than the designated space alone; however, even this ambiguity is informative, as it underlines the wider expectation that campus outdoor spaces should deliver comfort, calm, and usability, not just visual greenness.

For the redesign process, a clear direction is implied: upgrade rather than reinvent. The intervention should preserve and amplify the factors that already work (e.g., airflow, canopy and shade), while improving the elements that allow these qualities to be used (e.g., comfortable seating layouts, durable surfaces).

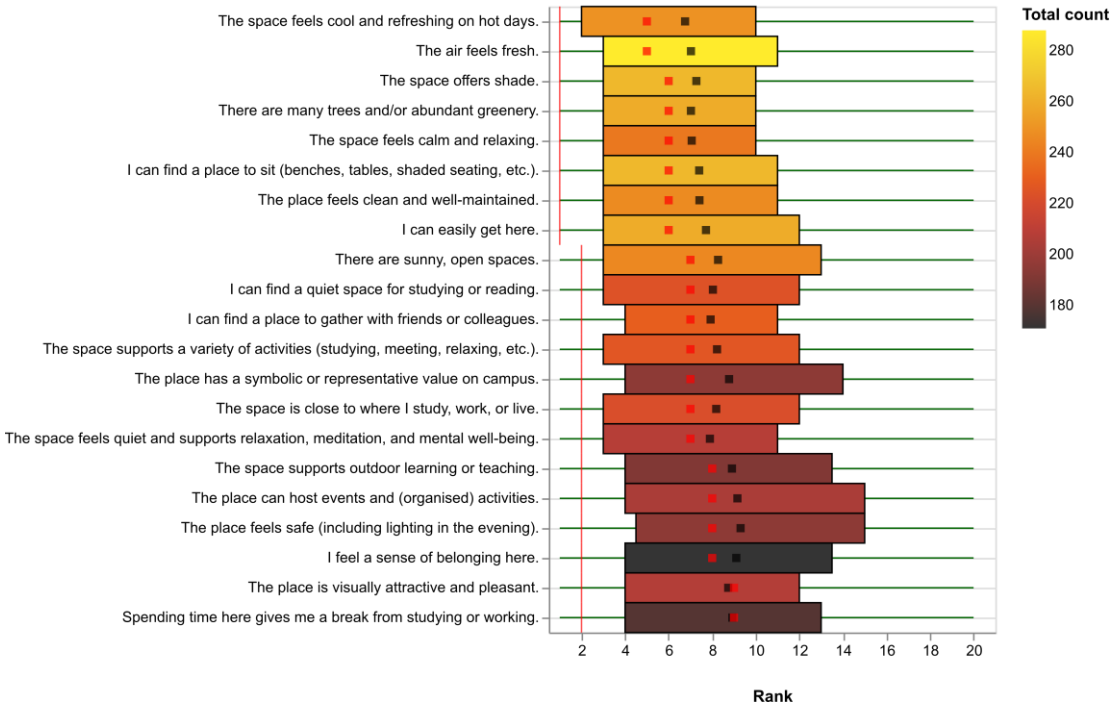
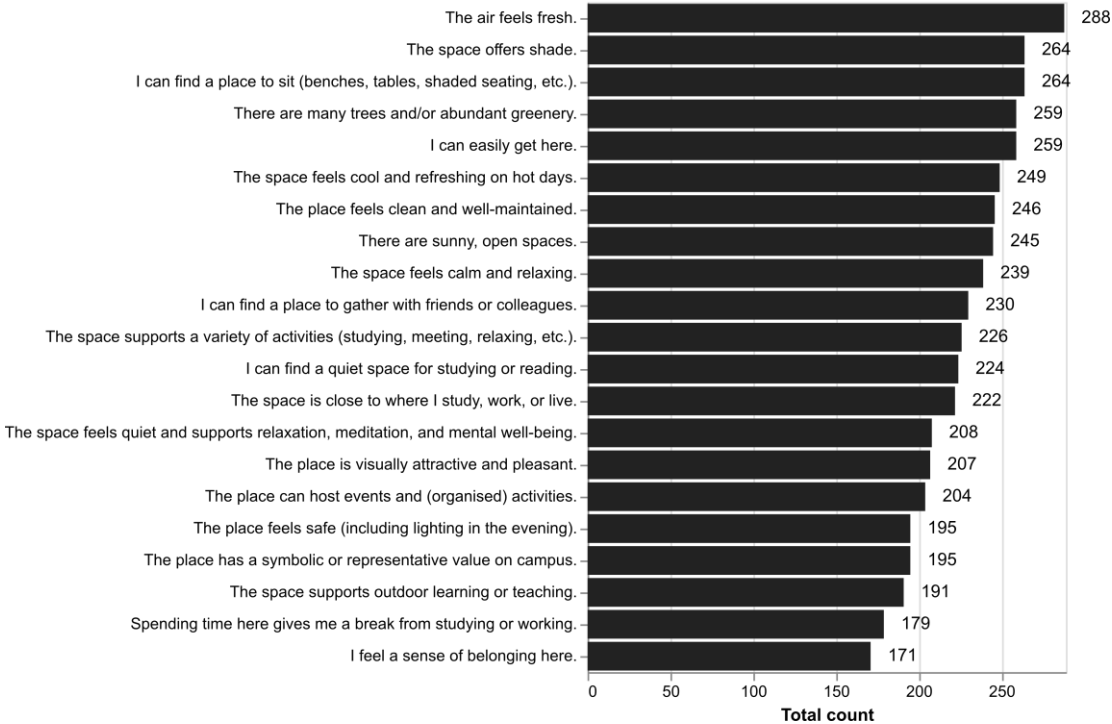


Figure 19. Positively perceived environmental characteristics and qualities motivating and/or supporting uses of the designated campus area. Rankings show relative importance of items to respondents (lower ranks indicate higher perceived importance).

Negative perceptions

Negative perceptions, i.e., qualities that may be considered barriers to uses, or that are perceived rather unfavourable by visitors, were elicited from respondents based on a ranking. Respondents were asked to select respective qualities important to them from most to least important or relevant. Engagement was more selective than for the positive perceptions, suggesting that users tend to converge on a smaller set of core frictions. On average, respondents included 6.4 items in rankings, and the median count is 3, while around 25% ranked more than 7 items. This indicates that many respondents identify a limited number of critical deficits, whereas a smaller but still sizeable segment perceives a broader bundle of problems.

Across rankings, negative perceptions are dominated by everyday usability gaps. The most common barrier is a lack of amenities (n=205), followed by insufficient seating or comfortable places (n=180) and lack of protection from weather conditions (sun or rain shelter) (n=151). Many also mention the perceived wear and tear of the physical environment, with damaged walkways or surfaces selected by 29% (n=148). In addition, a substantial share of respondents points to the overall quality of place, mentioning the space being unattractive or poorly designed (n=146) and lacking recreational or sport facilities (n=143). Beyond these main deficits, a second cluster of issues highlights thermal comfort, environmental character, and the space's ability to serve different user groups. About one quarter cite lack of biodiversity or visible wildlife (n=133) and heat discomfort on warm days (n=126). Others say the space does not adequately support key campus uses such as outdoor learning or teaching (n=125). Looking at what respondents most often placed as their top-ranked barrier, the top items are lack of amenities (n=44 ranked it first) and insufficient seating (n=39), followed by lack of time during the day (n=29), insufficient weather protection (n=24), and damaged surfaces (n=23).

Open comments support these findings and add detail on how shortcomings are experienced in everyday practice. Respondents frequently specify needs for more seating and tables (including for studying), better comfort during peak heat and rain, and stronger service provision (e.g., Wi-Fi, bins). Several remarks also relate to cleanliness and maintenance, implying that even small deficits (litter, worn surfaces, poor upkeep) can undermine an otherwise attractive green setting. As with the positive perception question, some comments appear to refer to the campus more generally, but they still highlight concrete design issues that prevent the space from working well as a reliable between-classes space.

For the redesign process, results point to a clear “fix-the-basics-first” message, with users primarily experience barriers through missing services, discomfort, and infrastructural deficits. Before adding more special features, improvements should address the most widely felt barriers through a minimum package of amenities, seating, weather protection and safe, durable surfaces, complemented by visible maintenance measures (e.g., bins, easy reporting of issues).

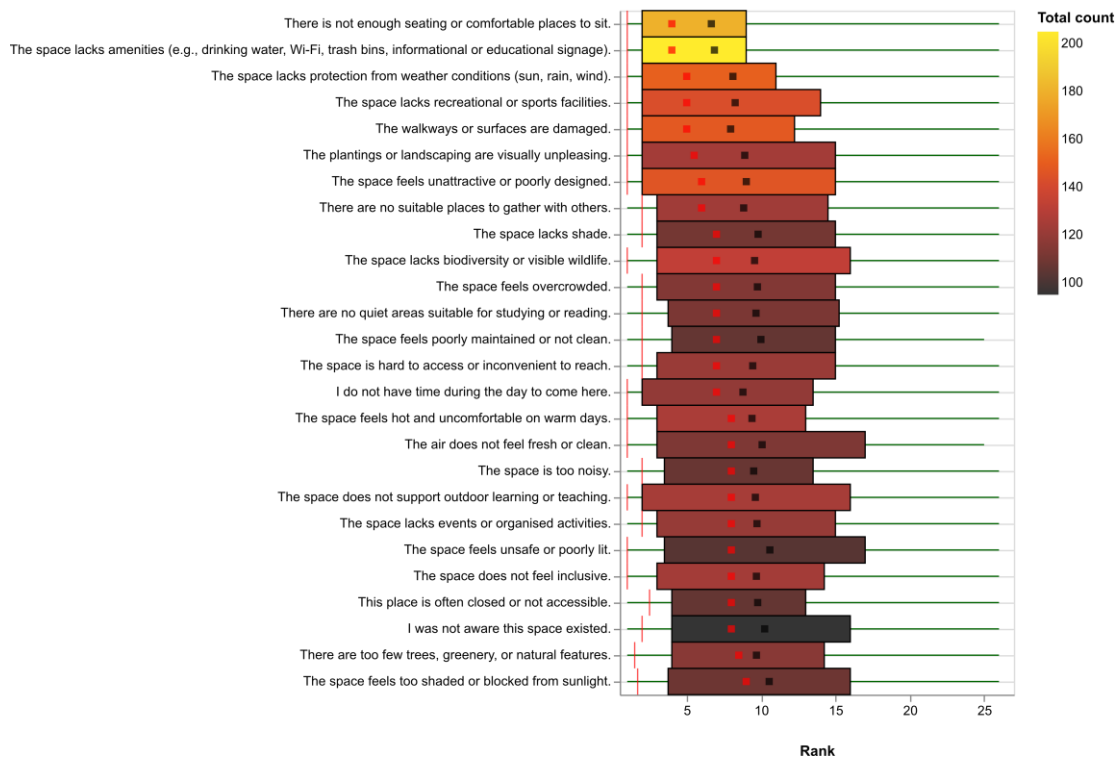
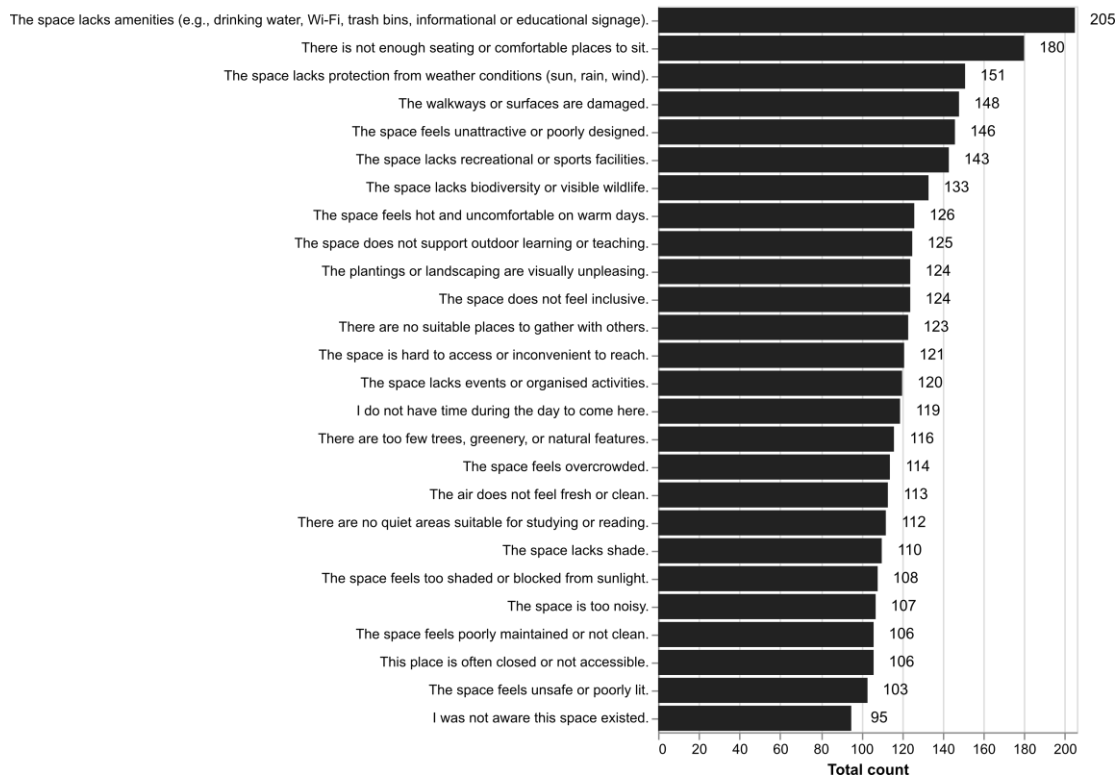


Figure 20. Negatively perceived environmental characteristics and qualities of the designates campus space. Rankings show relative importance of items to respondents (lower ranks indicate higher perceived importance).

Main themes related to positively or negatively perceived qualities of the focal site that were reported by respondents as open text comments include:

Positive sentiments	Negative sentiments
<p>Environmental qualities</p> <ul style="list-style-type: none"> • Abundant trees and greenery • Fresh, cooler air • Noticeable cooling on warm/hot days • Provided shade <p>Comfort and atmosphere</p> <ul style="list-style-type: none"> • Availability of seating opportunities • A quiet, calm atmosphere that supports resting, recharging, and studying between classes 	<p>Everyday comfort and basic infrastructure</p> <ul style="list-style-type: none"> • Lack of (better) seating opportunities and tables for studying • Lack of shelter, protection from rain and sun • Safety issues, e.g., uneven or slippery paving, especially after heavy rain • Poor physical condition in parts of the area (wear, damage, need for repairs) <p>Environmental qualities</p> <ul style="list-style-type: none"> • Noise, especially during busy periods <p>Social qualities</p> <ul style="list-style-type: none"> • Overcrowding at peak times, making the space less comfortable to use

4.2.4 Desired improvements

Preferences towards specific actions and measures as types of improvements

Preferred improvements were elicited using a ranking approach, with respondents being asked to select preferred features or elements for improving the focal site, from most to least important/desired/preferred. Engagement with this task was high. On average, respondents ranked 6.75 items (median=5 items), indicating that many participants did not select just one “favourite” intervention but expressed a bundle of needs. Around one quarter of respondents ranked more than eight items, suggesting that a sizeable group sees the redesign as a multi-component upgrade rather than a single change.

Overall, the strongest priorities point to practical improvements that increase daily comfort and functionality. The leading requests are facilities (e.g., Wi-Fi, drinking fountain) (n=272), (comfortable) seating opportunities (n=264), and weather protection or sheltered areas (n=239). Taken together, these preferences describe a clear “minimum upgrade package” centred on amenities, comfort, and all-weather usability—elements that can deliver immediate value in a space that is heavily used between classes. A second cluster of preferences focuses on quality and atmosphere. Respondents frequently prioritised adding flower gardens and ornamental plants (n=233), recreation and sport elements (n=213), and additional trees (n=212). These selections suggest that respondents want the site not only to function better, but also to feel more intentionally designed and inviting. Beyond headline features, respondents also highlighted enabling infrastructure that supports usability, cleanliness, and perceived safety: Bins and waste management (n=203) and lighting (n=190) were frequently selected.

More ecologically oriented greening measures also appear among the top choices, but were selected less often than the core functional upgrades, including bushes, hedges or landscaped greenery (n=145) and native vegetation (n=143). This pattern suggests that respondents broadly support “more green”, but tend to prioritise immediate functional value first, followed by ecological layering. By contrast, elements such as vertical greenery, sculptures or exhibits, signage or educational boards, and water features ranked relatively low overall. This does not necessarily imply rejection; rather, it indicates that these are seen as secondary when compared to the basics of comfort and everyday usability. Given that drainage and maintenance concerns are salient for the campus, some of these elements may also be perceived as carrying higher upkeep demands.

A design implication from respondents’ answers is that preferences clearly span both recreation and quiet study/learning-oriented use. This points to different user modes and potential conflicts, meaning the redesign should avoid an either/or decision and instead create zoned micro-spaces, e.g., quiet pockets for studying and recovery, social seating clusters, and an activity-oriented edge. A multi-mode layout can reduce friction between uses and help the space work well for more people, more of the time.

Open text feedback largely reinforces the ranking results. The most common suggestions include:

- More trees and greenery, often framed as improving comfort and attractiveness,
- More seating and outdoor learning/study options, including tables,
- More covered/roofed areas for sun and rain protection (all-weather usability), and
- Improving the parking situation through more efficient organisation and circulation strategies.



Figure 21. Preferences towards actions and measures to improve conditions at the designated campus space. Rankings show relative preferences towards specific actions/measures of respondents (lower ranks indicate higher preference).

Leveraging stewardship

Based on respondents' reported willingness to support improvements and ongoing maintenance, there is considerable potential to leverage (environmental) stewardship to enhance the campus focal site. Overall, respondents clearly favour low-barrier forms of involvement— actions that are easy to join, can be shared among many users, and do not require long-term individual commitments. The most frequently selected contribution option is sharing ideas and feedback for improvements (about 59%; n=299), followed by using the space responsibly and helping to keep it

clean (about 49%; n=249). Almost as prominent is a willingness to contribute time through volunteering for one-off improvement activities (about 48%; n=244) and supporting regular upkeep (about 46%; n=227). In addition, a sizeable share of respondents indicate interest in joining or supporting student or community groups (about 42%; n=212), suggesting that stewardship can be organised through existing social structures rather than relying solely on ad hoc participation. In contrast, respondents show noticeably lower interest in in larger commitments. Fewer participants selected organising activities and events (n=156), and financial contributions were least popular (n=84). Taken together, these patterns suggest that the strongest “fuel” for co-creation is participation and care/stewardship, rather than fundraising. This is an important planning implication: the redesign process should not assume that users will sustain funding or ongoing event organisation, but it can reasonably expect broad support for shared responsibility, light stewardship routines, and continuous feedback.

For implementation, the results point toward an approach that pairs physical upgrades with a simple stewardship model that is visible, realistic, and easy to maintain over time. This could include clearly defined, light-touch roles (e.g., student stewards or rotating “zone caretakers”), small but regular routines (e.g., short clean-up moments at peak times, periodic planting care days), and an easy reporting loop for problems (e.g., QR-based issue reporting, a simple feedback channel linked to facilities management). Embedding stewardship into the redesign in this way helps ensure that improvements remain functional and attractive, while also strengthening user ownership and social legitimacy—two factors that are essential for sustaining a co-created campus space.

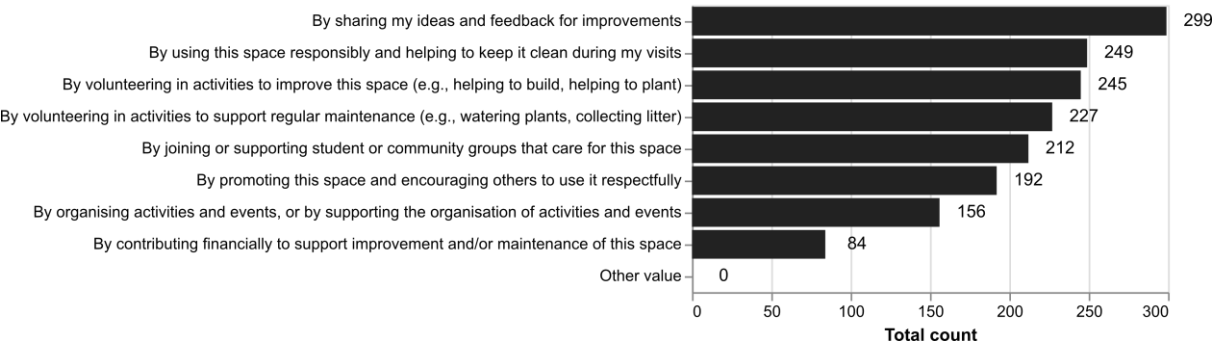


Figure 22. Support for improving and maintaining the designated campus space.

5 Synthesis: What the baseline implies for NbS co-design, implementation, and monitoring

This deliverable established a perception-based baseline for two very different but complementary pilot contexts in Hue: the culturally significant communal space at Dinh Mon and a highly frequented, semi-public campus setting at HUSC. Despite their differences, survey results converge on a clear message: users value and prioritise improvements that make everyday life in the space more comfortable, usable, and well cared for, in particular shade and cooling, cleanliness, and basic maintenance, while also emphasising site-specific meanings and functions (community identity and heritage at Dinh Mon; informal learning and student life at HUSC).

Although the two sites differ strongly in setting and governance, the survey results converge on the importance of “functional comfort”: trees/shade and cooling effects, reliable cleanliness, safe and accessible surfaces, and basic amenities that enable staying, gathering, and using the space as intended. At the same time, both cases demonstrate that users interpret “green” primarily through everyday benefits (e.g., comfort, attractiveness, and usability) rather than as an abstract ecological goal. This has practical consequences for co-design: NbS elements should be framed and designed as enablers of what users already care about (comfort, staying quality, reliable use), while their wider co-benefits (e.g., stormwater management, biodiversity, heat adaptation) are integrated in ways that do not compromise usability.

At Dinh Mon, the baseline is dominated by awareness and concern related to flooding and riverbank erosion. Many residents appreciate the place for location and comfort-related qualities (accessibility, fresh air, shade/trees, and a pleasant, natural character), yet use is constrained by deficits in maintenance, comfort, and basic infrastructure. Physical condition, lack of shelter, lack of facilities and seating, cleanliness, and lighting/safety repeatedly appear as barriers. In terms of desired improvements, priorities are highly practical and “place-making” oriented, with respondents most frequently prioritising trees, additional vegetation/flower gardens, and grassy surfaces, alongside shade structures, lighting, and waste management. Importantly, the data indicate strong willingness to contribute to maintenance and implementation support, suggesting that co-creation can build on real stewardship capacity, if roles and expectations are realistic and aligned with local routines. Design and governance discussions should therefore integrate: (i) comfort and shade, (ii) event and community functionality, (iii) visible cleanliness and basic infrastructure, and (iv) an explicit stewardship concept (who does what, when, and with which support).

At HUSC, respondents value the campus as a green and pleasant environment, yet they also describe recurring issues with maintenance, worn physical conditions, and missing amenities. Flooding is the most dominant reported burden, accompanied by drainage and stagnant water concerns, plus noise and waste-related issues. This points to a strong opportunity for NbS that make stormwater functions visible and tangible (e.g., rain-garden) while improving comfort and usability. For the redesign area specifically, the results send a consistent “fix-the-basics-first” signal. The most important barriers relate to missing amenities and comfort. The baseline points to an implementation pathway that pairs physical upgrades (e.g., shade structures, seating and tables, planting diversity, waste bins) with a light, feasible stewardship model that fits campus life and facility management. The comparatively higher interest in participation (rather than financial contribution) implies that governance should emphasise low-barrier engagement formats

such as student groups, rotating stewardship roles, periodic action days, and simple feedback/reporting loops.

Beyond informing co-design, the stocktaking results provide a concrete pre-implementation reference for later perception-based impact assessment. The findings can be translated into site-specific “theories of change” that link chosen measures to expected outcomes valued by users (e.g., improved thermal comfort through shade and canopy; improved usability through seating and amenities; improved perceived cleanliness and safety through maintenance and lighting; reduced flooding experience through visible drainage-smart greening). This will enable the project to assess not only whether the NbS interventions improved conditions, but also whether the participatory co-creation approach supported legitimacy, ownership, and long-term viability.

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7 Appendix

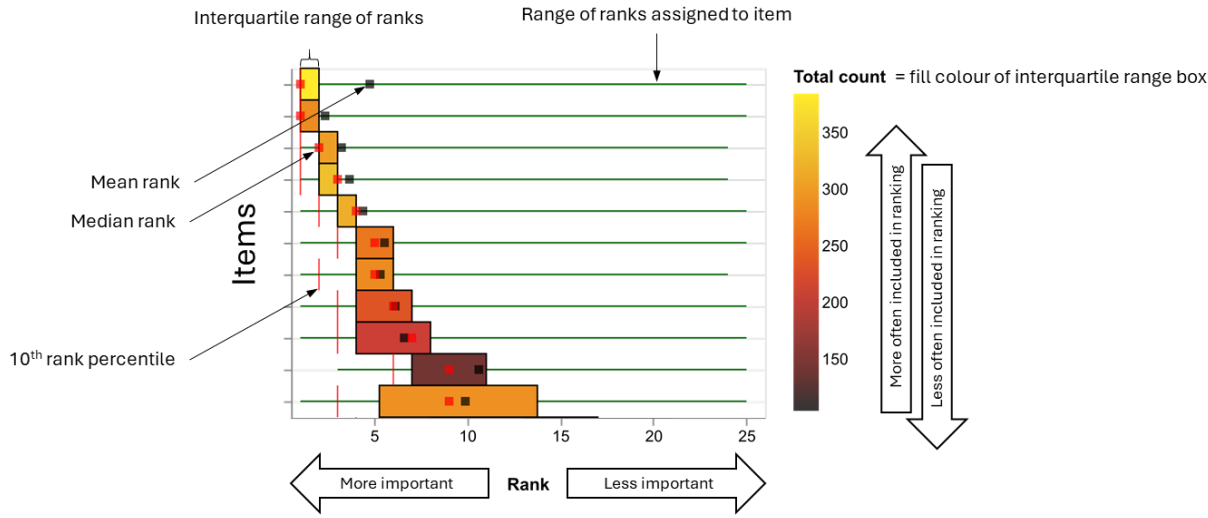


Figure 23. How to read the ranking figures.