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## An Approach and a Tool for Measuring Impacts of Sustainable Events for “Hiilitalli”

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## Abstract

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The objective of the thesis was to develop an approach for measuring impacts of "Hillitalli Green Summit 2024" (6<sup>th</sup> May 2024) and based on the first implementation, develop it into a measuring tool for impacts of similar sustainable events in future. HT is as an organization that focuses on developing innovative solutions for climate change mitigation and providing research-driven insights and information about sustainability transformation. As such, HT strives to ensure that its own events align with these goals.

This study relied on applied action research and qualitative research methods. The theoretical framework explored previous studies on available measuring tools for environmental and social impacts of events. The analysis part collected data from key stakeholders via meetings, discussions and interviews and analyzed documents of the case company related to the previous event. The conceptual framework was developed, incorporating selected relevant element of best practices and existing knowledge, so that to guide the development of own measurement tool.

The outcome of this study had two parts: 1) the approach and the set KPIs for measuring impacts of the HT Green Summit on 6<sup>th</sup> of May 2024, and 2) a measuring tool aligned to the set of goals of HT for similar event in the future. The outcomes were developed in co-creation with the key stakeholders. The study facilitate collaboration and further discussions among key stakeholders and it aims to provide aid and guidance for the case company to organizer sustainable events in the future. By organizing events that creates collaboration possibilities, promote sustainability education, and provide networking opportunities, HT can actively contribute to the sustainability transformation.

Keywords: Events, Event Management, Environmental Impact, Social Impact

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## 1 Introduction

The Sustainable Development Agenda for 2030 (Sustainable Development Goals report, 2024) calls for an urgent action from countries - developed and developing - for the sake of well-being of the people and the planet during this generation and for the future. Intergovernmental Panel on Climate Change (IPCC) emphasizes that all sectors must take transformative actions and immediate steps to restrict global warming to 1.5°C beyond pre-industrial levels to mitigate devastating risks to secure sustainable future for generations to come. However, the world is struggling to limit global average temperature to 1.5°C as the United Nation's Intergovernmental Panel on Climate Change indicates that crossing the 1.5°C threshold risks unleashing severe climate change impacts, including frequent and severe droughts, heatwaves and rainfall. (UNFCCC, nd). The progress to advance action in all fields by 2030 was too slow across all areas of climate action – from reducing greenhouse gas emissions, to strengthening resilience to a changing climate, to getting the financial and technological support to vulnerable nations. (UNFCCC, 2024)

Climate change is arguably the most critical problem facing humanity in the 21st century and most of the human activities leave a carbon footprint that contributes to the ever challenging issue. “The current rates of increase of the concentration of the major greenhouse gases (carbon dioxide, methane and nitrous oxide) are unprecedented over at least the last 800,000 years wherein several lines of evidence clearly show that these increases are the results of human activities.” (Eyring, et al. 2021). Incorporating sustainability in these activities are currently one of the strategies that companies, public or private institutions, and private individuals are embracing in order to reduce the carbon footprint, create a positive societal image, and minimize environmental impact.

However, measuring the impacts (both positive and negative) of certain human activities, for example conferences and events wherein people gather temporarily, remains a challenge for institutions. Thus, this thesis focuses on the environmental and social impacts of gatherings or events and to develop a tool for measuring impacts of similar events in the future, on the example of the case organization of this thesis, Hiilitalli.

## 1.1 Business Context

The case organization of this thesis, “Hiilitalli” (HT) or “Carbon Garage”, is a project and learning platform located in Metropolia UAS with the focus on developing solutions for climate change mitigation and providing research-based information about the sustainability transformation. It is partly funded by EU and Helsinki-Uusimaa Regional Council. A total of 56 projects have been done for 25 companies which involved 201 students. (Hiilitalli, 2024) HT key activities include events and trainings; innovation projects and theses; innovation system; and sustainability consulting with focus on developing skills for the future and providing solutions for companies on sustainability. (Hiilitalli 2023.)

## 1.2 Business Challenge, Objective and Outcome

In early 2024, the case organization was faced with a new activity of conducting an event on 6th May 2024 to showcase its innovation projects, demonstrate solutions and strengthen its ecosystem which was participated in by the university students, staff, small medium enterprises (SMEs), and research institutes. In this event, HT particularly aimed to help SMEs facing difficulties within the current green transition.

To make this event the first one in a series of sustainable event, HT set the target to develop an approach to measure the impacts of its events, both environmental and social (in a proven, calculable way). By using this first implementation as a pilot, HT planned to develop a tool for measuring the impacts of similar events in the future.

Accordingly, the objective of this thesis is *to develop an approach for measuring impacts of one sustainable event (6th May 2024), and based on the first implementation, develop it into a measuring tool for impacts of similar HT events in future.*

The outcome of this thesis is a proposal of (a) *an approach* for measuring impacts of the “Hiilitalli Green Summit 2024” sustainable event (6th May 2024), and (b) *a tool* for measuring the impacts of similar HT events in future.

### 1.3 Thesis Outline

This thesis is limited to the evaluation of the environmental and social impact of one event hosted by Hiilitalli on 6th May 2024 in Finland.

This thesis will be conducted first by Current state analysis which includes analysis of previous events and stakeholder analysis, second through searching of available literature and best practice to come up with Conceptual framework, third initial proposal of developed approach for measuring the impacts, and finally the implementation and final proposal of the tool for measuring impacts of future events.

## 2 Method and Material

This section describes the methodological approach of the thesis, research design, and data collection and analysis methods used. This provides a picture of how the research was conducted, how the data was gathered, how the results and findings were derived.

### 2.1 Research Approach

Research is a systematic and logical study of an issue or problem or phenomenon through scientific method. (Krishnashwami and Satyaprasad, 2010). Understanding research families and research approaches require complex various task to ensure that the objective of the study is achieved. Depending on the researcher's goals and methods, a researcher should plan and design the study effectively. Research design is a logical and systematic plan prepared for directing a research study (Krishnashwami and Satyaprasad, 2010).

The first methodological choice is whether you follow a quantitative, qualitative or mixed methods research design (Lewis et al. 2019). One way of differentiating quantitative research from qualitative research is to distinguish between numeric data (numbers) and non-numeric data (words, images, audio recordings, video clips and other similar material) (Lewis et al. 2019). Mixed methods research is use of both quantitative and qualitative data collection techniques and analysis procedures either at the same time (concurrent) or one after the other (sequential) (Lewis et al. 2019). The main characteristics of quantitative, qualitative and mixed methods according to Creswell (2014) is summarized in Table 1.

Table 1. Quantitative, mixed and qualitative methods (Creswell, 2014).

Quantitative Methods	Mixed Methods	Qualitative Methods
Pre-determined	Both predetermined and emerging methods	Emerging methods
Instrument based questions	Both open- and closed- ended questions	Open-ended question
Performance data, attitude data, observational data, and census data	Multiple forms of data drawing on all possibilities	Interview data, observation data, document data, and audiovisual data
Statistical analysis	Statistical and text analysis	Text and image analysis
Statistical interpretation	Across databases interpretation	Themes, patterns interpretation

Another research strategies are basic or applied research. Basic research is generally not related to a specific problem and its findings cannot be immediately applied and applied research directly addresses the problem at hand (Bajpai, 2011). Kananen (2013) combined action and development research characteristics as applied action research, which typically relates to continuous enhancement and improvement in organizations wherein results are a change to the better (Kananen, 2013). As a background, applied action research aspires that “there is phenomenon, process or situation that one wants to be improved after development of change” (Kananen, 2013). Objective of Applied actions research in working life may be: processes, activities, products, services, situations as subjects to continuous improvements in organizations (Kananen, 2013).

Applied research focuses on finding practical solution, to achieve this research methods and techniques are used. The most typical methods are interviews, that involves asking open-ended questions to individuals or groups which can be conducted in-person, over the phone, or online (Hassan, 2024); document analysis, involves analyzing written or recorded documents to extract data can include written records, audio or video recordings (Hassan, 2024); observations, involves watching and recording behaviors or events in a systematic way (Hassan, 2024); surveys, questionnaires designed to collect data from a large sample of people (Hassan, 2024); focus groups, involves a group of people discussing a topic with a moderator (Hassan, 2024); and secondary data analysis, involves analyzing data that has already been collected by someone else (Hassan, 2024).

In this study, the action applied research strategy was selected. Hiilitalli would like to come up with an approach for measuring impacts for the upcoming event on the 6<sup>th</sup> of May 2024 and to develop a tool for measuring the impacts to used in future events and applied action research is fitting because the objective of the said research design is to find practical solution to existing challenges an organization is facing.

## 2.2 Research Design

The research design consists of five stages with three data collection rounds. As presented in Figure 1, the stages of research design used in this thesis from setting of

objective up to the final proposal and final outcome stage. Figure 1 below shows the research design of this study.

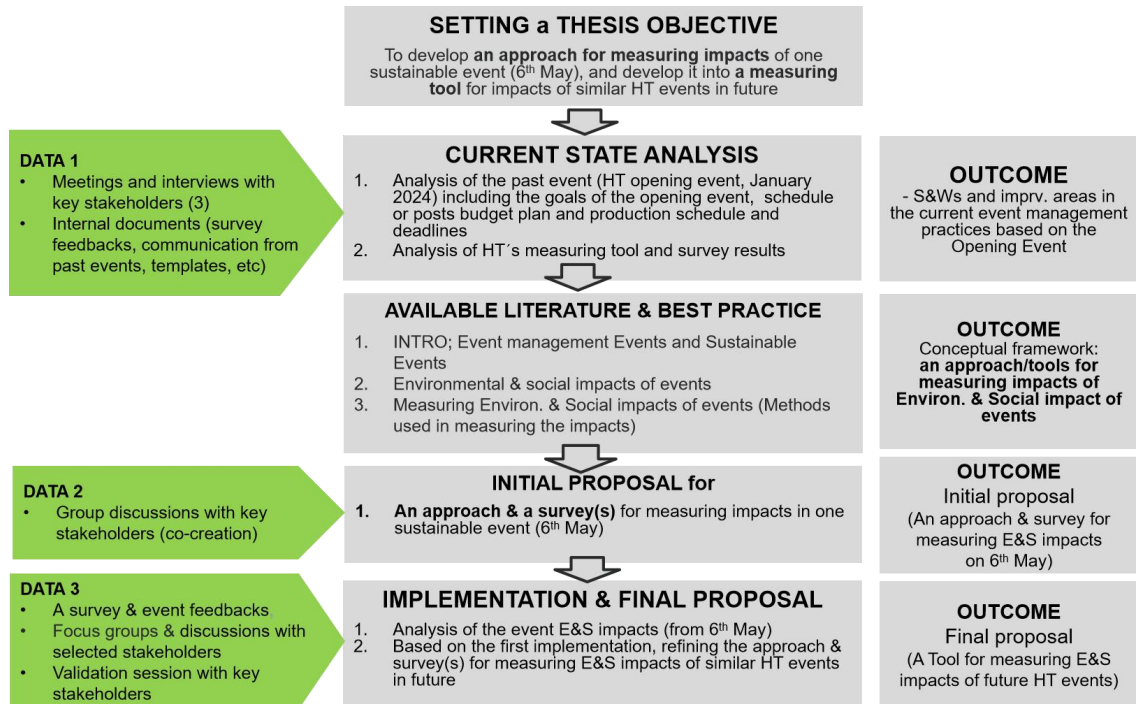


Figure 1. Research design used for this thesis.

As shown in Figure 1, first, the thesis researcher conducts the Current state analysis (CSA) which includes analysis of the previous HT events (especially the “HT Opening”) and their impact measurements and mapping the past approach. The current state analysis includes the stakeholder analysis to identify stakeholder groups, including their needs and expectations, size of the stakeholder groups, and possible data related to these groups, etc. Data collection for the current state analysis is gathered based on interviews, internal documents, and HT Green Summit events plan.

Second, the researcher focuses on searching for available literature and best practice on related topics, namely: (1) on the stakeholder engagement in project management (how to engage stakeholders and measure such stakeholder engagement) and (2) event management and measuring impacts of events. The outcome of this stage is the Conceptual framework that pull together a generalized approach (and tools) for measuring impacts of sustainable events. The Conceptual framework (CF) pull together the most applicable ideas from available literature and guide the Proposals building in the next step.

Third, the thesis researcher cooperates with the key stakeholders to develop an approach for measuring impacts of the sustainable “HT Green Summit 2024” event (6<sup>th</sup> May 2024). For this end, the thesis researcher organizes group discussion with the key stakeholders for brainstorming the approach, based on (a) the results from CSA, (b) most applicable ideas from literature and best practice, and (c) creative inputs from the key stakeholders.

Finally, the thesis researcher assists in the implementation and developing the final proposal of a Tool for measuring the impacts of HT future events based on (a) the results from analysis of the event impacts from the survey and feedback (conducted immediately after 6<sup>th</sup> May), (b) focus groups and interviews with selected stakeholders, and (c) a validation session with key stakeholders. The final proposal focuses on developing a Tool for measuring the impacts of similar HT events in future.

### 2.3 Data Collection and Analysis

Table 2 shows details of data collections 1-3 used in this thesis. Data were gathered through qualitative research. Key stakeholders involved in the event management from the opening were involved and shared their knowledge and inputs from the previous event.

Table 2. Details of Data collections 1-3 used in this study.

	<b>Participants / role</b>	<b>Data type</b>	<b>Topic, description</b>	<b>Date, length</b>	<b>Document ed as</b>
	<b><i>Data 1, for the Current state analysis (Section 3 or 4)</i></b>				
1	Project owners, project consultant	Video recording	Introduction to the topic and the expectations from researcher	2 <sup>nd</sup> February 2024 (45mins)	Recordings and field notes
2	Project owners / Previous event manager / Academic Researcher	Face to face meeting / Interview	Needs and goals of the event in 6 <sup>th</sup> May 2024. Materials and documents from the opening event were shared.	26 <sup>th</sup> February, 2024 (54mins)	Recordings and field notes
3	Project owners / Academic researcher	Face to face meeting / Interview	Details of past events and initial planning of the event.	March 25, 2024	Recordings and field notes

<b>Data 2, for Proposal building (Section 5)</b>					
4	Project owners / Project consultant / Academic researcher	Online meeting and group discussions	Brain storming and planning of event. Presentation and review of proposed survey questions.	19 <sup>th</sup> April 2024 (60mins)	Recordings and field notes
<b>Data 3, from Validation (Section 6)</b>					
5	Project owners / Project consultant / Academic researcher	Face to face meeting / Interview	Final planning of event and final review of survey questionnaires, trial and approval.	29 <sup>th</sup> April 2024 (60 mins)	Recordings and field notes

As seen from Table 2, data for this Thesis was collected in three rounds. The first round, Data 1, was conducted for the current state analysis of the event management practices of the case company based on the opening event. Understanding the current state was supported by key stakeholders through online and face to face meetings / interviews and utilizing the internal documents (the list is presented in Table 3) of the case company from the opening event.

Table 3. Internal documents used in the current state analysis, Data 1.

	<b>Name of the document</b>	<b>Number of pages/other content</b>	<b>Description</b>
A	palaute kooste Hiilitallin avajaiset	23 slides	Hiilitalli Opening recap and feedback discussions
B	Tuotannon aikataulu_Hiilitallin avajaiset_2024_Metropolia	1 sheet	Production schedule and deadlines of the opening event
C	Budjetti_Hiilitallin avajaiset_2024	1 sheet	Budget plan of the opening event
D	Avajaisviestit_hiilitalli	9 pages	Schedule of posts of the opening event
E	palautekysely	2 pages	List of survey questions
F	Eventplan Hiilitalli green showcase	4 pages	The opening of Hiilitalli event plan

As seen from Table 3, several internal documents were used to analyze and understand the current event management practices of the case company. These documents were the product of the launching and opening event of the case company.

In the next round, Data 2 was gathered to collect suggestions from the case company's key stakeholders proposal development. The collection of data included online meeting wherein brain storming and planning of event happened as well as the presentation and review of the proposed survey questions.

In the final round, Data 3 was collected when conducting final planning of event and during this round the survey questionnaires was revised according to the suggestions and need of the case company and key stakeholders reviewed, trialed and approved the revised initial proposal.

In this study, the meetings and interviews made the primary method of data collection. Key stakeholders participated in the activity and including the previous event manager. The meetings and interviews were conducted as semi-structured, online and face-to-face meetings / interviews, at the case company's premises. The meetings were recorded and transcribed.

The biggest part of the data was analyzed for the current state analysis to establish the current state of event management practices of the case company. The findings from the current state analysis are discussed in Section 3 below.

### 3 Current State Analysis of the Event Management Practices at Hiilitalli

This section discusses the project background and the event management practices based on previous events, Opening event, and their impact measurements.

#### 3.1 Overview of the Current State Analysis Stage

The goal was to gain a comprehensive understanding of the case organization even management practices, from the perspective of key stakeholders. This includes examining the already existing documents and guidelines, tools, and processes, as well as identifying areas for improvement that can help to conduct the next sustainable event. In the CSA stage, two steps were performed to achieve these objectives.

The first step centered on understanding HT's *existing event management practices*, specifically *focusing on the Opening event*, drawing from internal documents, meetings, as well as conducting internal interviews. (Sections 3.2 and 3.3)

The second step focused on *analyzing the "tool"* that was used in the past event so that to evaluate its environmental and social elements targeting to measure the impacts of the past event. (Section 3.4)

Building upon these findings, the last employed S&W analysis to identify strengths, weaknesses, related to HT's past event and HT's event management capabilities.

To gain this understanding, insights were gathered through interviews, meetings and discussions with the key stakeholders (using video recording and face to face meetings) and data was collected from the analysis of the documents generated from the previous event. This analysis involved examining event plan, schedule of posts, survey questions and corresponding results. The results would be used to develop the approach and the tool for measuring impacts of future events by the case organization.

#### 3.2 Description of the Case Organization

Hiilitalli (HT), or "Carbon Garage", is a new and unique sustainable development learning platform and project space situated at Metropolia University of Applied Sciences - Myyrmäki Campus. It is a one-of-a-kind learning environment where Metropolia students can develop into environmental experts, network with industry

professionals, and gain work experience (Finnish Meteorological Institute 2024, web-page). HT serves as a hub (both physical and digital) where carbon neutrality goals are promoted through various learning methods and concrete actions. (Metropolia 2024, web-page). HT is part of Metropolia's Clean and Sustainable Solutions innovation cluster, whose key themes are sustainable food systems, food technology, the circular economy, industrial applications in sustainable development, and smart mobility. HT is one of the four collaborative platforms of Clean and Sustainable Solutions. The other platforms are Urbanfarmlab, Robo Garage, and AIoT Garage. (Metropolia 2024, web-page)

HT's primary focus is on developing innovative solutions for climate change mitigation and providing research-driven insights and information about the sustainability transformation. The goal for HT is to create collaboration possibilities, enhance sustainability education and concretely advance climate change mitigation and sustainable development solutions through collaborative innovation projects. (HT 2024, web-page.) Also, HT aims to strengthen cooperation between different actors, increase environmental expertise, and concretely promote actions related to mitigating climate change and sustainable development, such as developing carbon capture technologies, through corporate projects. (Finnish Meteorological Institute 2024, web-page)

Collaboration and interaction platforms are essential for achieving a sustainable and carbon-neutral future. Thus, HT collaborates closely with Metropolia staff and students, research institutes, as well as small and medium-sized enterprises who are facing difficulties and challenges of green transition. The collaboration aligns with HT's goal to enhance sustainability education and concretely advance climate change mitigation and sustainable development solution through collaborative projects. (HT 2024, web-page.)

The Finnish Meteorological Institute and VTT are research partners of HT in its Carbon Busters project. Carbon Busters is the first project of the Hiilitalli operating platform. The open learning environment being developed in the Carbon Busters project is a meeting and development place for the skills needs and supply of small and medium-sized enterprises, learners, educational institutions, research institutions, and municipal actors. (Metropolia 2024, web-page)

Together with Metropolia, the Finnish Meteorological Institute launched a new series of lectures, Studia Hiilitallin, in the autumn of 2023. The lecture series was piloted in the fall. The themes of the lectures included climate change mitigation, the future of the climate, and the practical use of openly available weather and climate data. The series of lectures continued on February 6, 2024. (Finnish Meteorological Institute 2024, web-page)

The projects developed by students aid companies by providing weather and climate data, while also advancing Finland's carbon neutrality goals. These projects align with the Finnish Meteorological Institute's focus on innovation and education. According to Team Leader Eeva Kuntsi-Reunanen from the Climate Change and Innovation Research Group at the Finnish Meteorological Institute

"The project relies heavily on our existing strengths and areas of expertise, and we act as a bridge between climate science and engineering. It is fantastic to be sharing our knowledge at a university of applied sciences where concrete actions are so prevalent," (Finnish Meteorological Institute 2024, web-page)

HT already finished 36 projects and there are still 20 projects ongoing. Joint projects between Metropolia students and experts, as well as companies and research institutes, support companies in promoting green practices, ensure the retention of skilled labor, raise the level of environmental expertise, and promote the adoption of new sustainable practices and technologies. (Metropolia 2024, web-page)

HT organized an opening event, through its communications manager as overall event organizer, last 24<sup>th</sup> of January 2024. An event management company was hired to do the planning, coordination of different elements needed for the execution of the event, supervision & guidance of subcontractors, event supervision and event assistants. One of the outcomes of the event are the materials that can be used as reference in planning future events and be self-sufficient.

Since its official launching, HT is gaining attention from different stakeholders because of its innovative system, practical approach, and concrete actions in helping companies mitigate climate change. The interested parties want to see Hiilitalli's contents and practical impacts of the innovation projects developed.

HT expressed its interest in organizing a sustainability focused event showcasing and highlighting innovative student projects. These innovation projects involve student

groups, from different Metropolia degree programs, developing solutions for small and medium-sized companies facing green transition challenges. HT discusses and partners with these companies to identify specific sustainability issues and transforms that into project briefs for students.

Thus, HT planned this project through an event called "Hillitalli Green Summit" with the main goal to showcase different innovative projects. The event will involve key contents and the project has three main points. One, to plan and organize for the project held on 6<sup>th</sup> of May 2024. Two, to identify key factors and indicators in planning a successful sustainable event through environmental and social point of view. And third, to know the estimation of environmental and social impacts, specially the positive impacts created by the event. HT's project specialist, clarified in the meeting held last February 2, 2024 and stated that

*"We're really interested in the impacts created by the event itself... for example, the carbon footprint impact. What kind of food is served? Are there paper materials used? How do people arrived at the event? How is the arrival encouraged? Do people come by car or by walking?" (HT project stakeholder-1)*

In addition to this, HT's project engineer, added the things they are truly interested to find from Green Summit.

*"We want to get answers from questions such as, how did the event impact the participants? Did it cause action for them? Like, did it change their thinking about something? Would they like to participate more in cooperation? Do we get new partners? Because the people we're inviting are companies that already work with us but also companies that don't work with us already. So would the event convince them to work with us, for example. And for the students, do they get jobs or can they get the network with the companies? Do they get more ideas from the other projects? Because we're planning on it like the students are from many different degree programs. So maybe there are some ideas formulating from that kind of meeting. So I think those are the most important indicators." (HT project stakeholder-2)*

Additionally, HT project engineer said that one of the ideas of the event is to bring together the ecosystem, Metropolia staff, students, lecturers, partner companies, research institutes and future possible partner companies.

### 3.3 Analysis of the Past Event (HT Opening, January 2024)

For organizations of all sizes holding events, meetings, conferences and other programs that gather people is essential for connecting with stakeholders and strengthening relationships within its ecosystem. As a new organization HT needs a strong foundation and good materials for its event planning which includes having access to high-quality resources and effective baselines. By doing so, HT can ensure that its future events are well organized and successful even without the need to hire an external event management company.

Documents and materials gathered from the opening event are schedule of posts, budget plan, the opening of HT event plan, feedback compilation of HT's opening, HT opening feedback survey questionnaire and production schedule and deadlines, these materials are discussed in the following paragraphs and sections.

#### 3.3.1 Goals of HT Opening Event

In the document "The Opening of HT Event Plan", the goals and objectives of the event were outlined. The primary objective included: (1) HT profiles itself as a socially significant player for the mitigation of climate change and the promotion of sustainable systemic change (Top of Mind), (2) let's understand what HT is, why it was established (social significance, why it is needed), (3) increasing environmental awareness: Why should we aim for carbon neutrality? What does climate change and sustainable development mean?, (3) increasing life cycle awareness, (4) Distinction (innovations, business projects, first of its kind), (5) introduce the possibility of cooperation and joint development, and (6) ROI (so that the resources and time allocated on the event corresponds to the quality and quantity of those who came).

First, HT is a socially significant player in climate change mitigation and sustainable development. During the opening event, HT has solidified its role and social significance by fostering ecosystem among SMEs, Metropolia, students, and research institutions. The event effectively showcased HT's impact by highlighting its mission, tangible projects, and research-driven solutions. HT has consistently communicated its commitment to addressing climate change through research-based solutions and sustainable development initiatives increasing its social significance by addressing the

societal problems linked to issues and challenges brought by climate change and limitations in sustainability development.

Second, HT wanted to share to the audience what is HT, why it was established and its social significance. One of HT's primary goal in the launching event was to introduce HT to the public, clearly communicate its mission, and establish its relevance. its reason for existence and demonstrate its public relevance. To accomplish this, Jenni Kurki-Suonio delivered a presentation titled *Hiilitallin tarina ja olemassaolon tarkoitus* (translated in english as *The story of Hiilitalli and its purpose*).

Third, HT wanted to increase attendees' environmental awareness about climate change, sustainable development and the importance of carbon neutrality. During the opening event, HT organized three speeches (*Ilmastonmuutos tutkimusmatkailijan, Pata Degerman; Hiilitallin tarina ja olemassaolon tarkoitus, Jenni Kurki-Suonio; and Miten kestävä tulevaisuus ratkaistaan? Paneelikeskusteluand*) wherein speakers share their experience and expertise on the topics.

Fourth, HT wanted to showcase HT's distinctive and innovative projects. HT's collaborations with small and medium-sized enterprises (SMEs) are distinguished by a tailored support. By engaging directly with companies to understand their green transition challenges, HT transform these issues and challenges into student project ideas. This collaborative approach ensures that developed solutions directly address specific business needs.

Fifth, HT planned to build networks and explore potential collaborations. To achieve its goal, one of HT's backbone is collaboration. HT collaborate with students, considered as future experts, by combining open learning environment with innovative educational methodologies and offer platform for students to acquire in-depth sustainability knowledge and practical experience through real-world projects. HT's unique approach empowers students to start building professional networks while contributing concrete solutions in mitigating climate change. HT offers companies and research institutes to collaborate a venue for building networks and is a great venue for students to build and finding future potential employment.

Sixth, HT needed to measure the event's success through attendance and engagement gathered from survey. In the document "The Opening of HT Event Plan",

three target groups were identified, first, the media to highlight HT's unique approach to climate change mitigation; second, companies, research institutes, other stakeholders to emphasize the mutual benefits of collaboration with Metropolia and HT, particularly in addressing labor shortages and developing a skilled workforce; and third, Metropolia's students and staff to position HT as a center for developing future environmental leaders.

In summary, the goals and objectives of the Opening event were aimed to demonstrate HT's social significance. The Opening event raised public awareness about HT's mission and commitment to climate change mitigation and sustainable development. Collaborative projects with SMEs showcased in the event highlighted the innovative ideas by the students and staff, this enhanced environmental awareness among attendees.

### 3.3.2 Schedule of Posts

As a relatively new and unique learning space, HT had to ensure that marketing and outreach is effective to ensure that attendance is maximized and targeted audiences are reached. Identifying and engaging potential attendees through various platforms, creating compelling content and developing and adhering to a detailed invitation timeline can help the event organizer ensure that attendees are reminded properly thus boosting attendance.

HT created and followed invitation schedules starting with the invitation schedule, a welcome message from the Opening that was sent out 13th of December 2023. The welcome message included the date of the event and a reminder "add it to the calendar". It was also mentioned that a detailed schedule would be updated and more information about the event published in January. The welcome letter was intended to pique potential attendees' interest and encourage them to mark their calendars. A sense of excitement was also created by mentioning that further details and more information about the event will be shared in the coming days. The potential attendees were given something to look forward to.

Second, a general invitation was sent out 3rd of January 2024. General invitation message started with "Welcome to hear the story of HT, which combines innovation

and learning!” which gives a sneak peek of what HT is all about. A compelling content that stimulates someone's curiosity, such as interesting speeches and a panel discussion on solutions to climate change mitigation and sustainability challenges, was mentioned to catch the interest of the attendees. A registration link was provided in this email and interested individuals were given until 15th of January to register.

Third, a reminder email sent out to successful registrants. After a successful registration, an email was sent to registrants that serves as a thank you email for the successful registration. The same email was also sent out to remind them of the event's date, time, and the address. In this email registrants were informed that if their plans have changed and cannot attend, canceling of participation must be done as soon as possible.

Fourth, a number two reminder email was sent out including including important details to remember about the upcoming event. In the email the registrant was reminded that the event is just around the corner mentioned in the email was the date of the event, time and address. The new information in the email is the arrival and parking instructions. Arrival instructions were given for those who would come to the venue by train and bus, meanwhile parking spaces for bicycles and vehicles were also available and included in the arrival instructions.

Fifth, final email reminder was sent out including events schedule and practicalities during registration and the event itself. The day before the event a final email was sent out, in the email it was mentioned that there were almost 150 registrants interested in climate change mitigation and sustainable development topics, the program starts at 12noon and participants were reminded that they should reserve some time for onsite registration. Included in the email it was nice to note that event participants will be given a break from the program to explore the premises of HT and the business projects implemented by the students and of course for networking. also mentioned that participants will be given a chance to ask questions to the speakers after speeches, a survey will be asked to gather ideas, questions, and feedback. This information shall be used to develop HT's operations. Another important information included in the email is the event schedule. Informing registrants of the event schedule gives them the freedom to organize and plan their own time effectively and ensures that they won't miss important sessions and speeches that they are interested in the most. This creates anticipation, excitement and satisfaction as registrants can highlight key

moments and activities they are most interested in. Additionally, a well-structured schedule also helps registrants maximize their time at the event, making it a more valuable and satisfying experience. A thank you email will be sent day after the event with the feedback survey form.

Overall, the schedule of post was used as a key strategy to catch attention of the potential registrants. The emails sent were clear and concise wherein each message provided with relevant information. Starting with early welcome message that served as a strong foundation, piquing interest and encouraged attendees to mark their calendars. General invitation provided a more detailed overview of the event, highlighting compelling content. Multiple reminder emails reinforced the important details such as date, time and location providing additional information like arrival instructions and program highlights. Sending multiple emails and reminders keep the event on top of the mind of registrants. The final reminder email emphasized the event's relevance and provided practical information such as onsite registration and networking opportunities. HT's schedule of post was a successful strategy for maximizing number of registrants and engaging their target audience.

### 3.3.3 Budget Plan

The budget plan for the Opening outlined the estimated costs and realized expenses including program costs, catering, technology used, furniture, accessories, printed materials, staff and production.

Program costs including keynote speaker, musical performance and technical fees came in slightly over budget from the estimated costs. Over budget was due to the technical fees which were not anticipated in the budget planning. Catering costs for lunch services and refreshments were within the estimated budget. Technology used incurred with no costs for in-house technology was provided at no charge. Furniture and accessories costs were paid for furniture transfer, grand piano tuning and flower arrangements, realized expense was way below than the estimated cost. Printed materials costs were for schedule cards and nameplates while the signs for event points and graphic design of all printed products were at zero costs because it was handled internally by HT, realized costs went over from the estimated costs. Staff costs were paid for the security in consideration of the size of the event of more than 150 pax,

the expenses aligned with the estimated budget. Production costs including advance planning, coordination of different elements, supervision & guidance of subcontractors, event supervision and event assistants, realized costs tallied with the estimated budget.

HT's Opening event budget was managed effectively which demonstrated effective financial management. However, organizers can still explore more opportunities to reduce costs by seeking alternative options and negotiating with suppliers. Overall, the HT's Opening event budget plan provided valuable insights into the financial aspect of event planning wherein the template generated can be used for HT's future events. By using this existing information, future organizers can make informed decisions for future events and optimize resource allocation.

#### 3.3.4 Production Schedule and Deadlines

The production schedule and deadlines document provided the list of tasks, the date of when the task should be done, responsible individual and additional information columns.

In October 2023, the production schedule major tasks includes venue familiarization which includes dimensions and floor plans, the event will take place at the Metropolia auditorium in Myyrmäki campus; clarification of the goals of the event, the event aims to increase environmental awareness, promote sustainable development and showcase HT's work; technical aspects, all technology related materials will be handled internally and will be provided with no charge; food, catering service has been contacted already; budget specification including the possible internal costs is to be determined; and, clarification of the invitation process and the schedule of sending invitations the communications manager will handle it including the guest list collection.

In November 2023, further tasks and decisions to be made as the event draws near. The following tasks and updates were made, as shown in Table 4.

Table 4. List of production tasks for the month of November 2023 (HT 2024, Tuotannon aikataulu\_Hiilitallin avajaiset).

1. Furniture arrangement has been agreed preliminary including the transfers
2. Catering updated offer includes lunch for 50 people and snacks will be served during the break, eventually finalized and agreed with food choices.
3. Measurement of nameplates. Over 200 nameplates left over from other projects will be utilized
4. The schedule and the content of the program has been locked for good
5. Contact information updated for musical performance from Arabia
6. Obtain a quote from supplier for flower arrangements
7. Noted that during lunch attendees will be given time for networking
8. Planning of public participation and selection of the possible to be used
9. Student cooperation with Varia. Students from Varia will be invited to assist during the event. Schedules and specs for them at the start of January.
10. Securitas staff finalized.

One month before the event, December 2023, the production schedule moved on to the finalization of more details. During this time the task list was updated, as shows in Table 5.

Table 5. List of production tasks for the month of December 2023 (HT 2024, Tuotannon aikataulu\_Hiilitallin avajaiset).

1. Parking control off on the day of the event.
2. The guest list is finalized and ready
3. All printed product texts are ready in the listing
4. All graphic material was made by Metropolia
5. Save the date invitations forwarded
6. Large parts of the event will be ready before Christmas holidays
7. Flower arrangements confirmation finalized.
8. Nameplates are all counted.
9. First information for the panelists and fun fact gathering.

The final month of the preparation, January 2024, the remaining open and detailed tasks are finalized, as shown in Table 6.

Table 6. List of production task for the month of January 2024 (HT 2024, Tuotannon aikataulu\_Hiilitallin avajaiset).

1. Invitation email, last day for participant registration, email reminder, and event information forwarded to guests.
2. Creating supply list for Metropolia
3. Fun facts from the panelists gathered
4. Detailed specs out for student cooperation from Varia
5. Program has been permanently locked
6. Screen materials from the speakers are ready
7. Send final number of participants to catering
8. Printed products are ready
9. A thank you message to the guests will be sent out the day after the event.

The production schedule provided a clear timeline for the specific tasks to be completed for the opening event. Tasks are well-distributed throughout the dates leading up to the day of the event this ensures that workload is balanced and deadline are met. The schedule also allowed for adjustment and updates as needed, demonstrating adaptability and responsiveness to changing circumstances.

### 3.4 Analysis of HT's Measuring Tool and Survey Results

This part focuses on analysing HT's measuring tool used during the Opening event and the survey results collected. During the opening event, feedback from survey was among the important indicator for HT team to identify the events success. In Hiilitallin avajaiset (palautekysely), there are nine questions for participants to answer. Survey questions focused on the following areas: event goals and objectives, event satisfaction, marketing and outreach, facilities and business projects and speaker evaluation. Survey questions that were asked as part of the initial tool" and are important for this analysis were selected below. Full list of questions used in this initial tool is listed in Appendix I.

*Question 1. "What grade/rating would you give to the event as a whole?"* In Question 1, the tool asked about the grade/rating of the whole event. This metric is a basis for HT to identify how participants perceive the event overall. HT wanted to know if the event was positively perceived by the attendees. Figure 2 shows the overall event grade/rating based on the responses from 36 respondents.

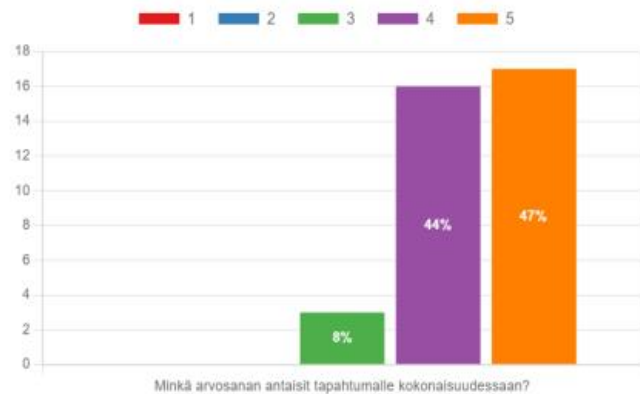


Figure 2. Survey result on the overall grade/rating of the Opening event as a whole (on the scale 1-5. 1= I didn't like it at all, 5= I liked it a lot). (HT 2024. Palaute kooste Hiilitallin avajaiset, s.17).

As seen in Figure 2, 44% and 47% of total respondents rating their perception of the event as “very good” or “excellent”. The positive grading/rating shows that the opening ceremony was a successful event that met or exceeded the expectations of attendees. While the majority of respondents were satisfied, the 8% who have a rating of 3 may indicate areas where improvements could be made for future events. The high average rating fosters community engagement it encourage attendees to participate in future events. Respondents who gave high ratings may share their positive experiences with others contributing to the event’s overall impact and reputation. This question is a valuable part of the tool for measuring event success. It provides a direct measure of attendee’s satisfaction and overall event impact.

*Question 2. “Based on the event, what do you think Hiilitalli’s activities are aiming for”*, if choosing among these:

- a. Raising environmental awareness (Ympäristötietoisuuden kasvattaminen)
- b. Carbon sequestration (Hiilensidonta)
- c. Mitigation of climate change (Ilmastonmuutoksen hiillintä)
- d. Promotion of sustainable development (Kestävän kehityksen edistäminen)
- e. Increasing life cycle awareness (Elinkaaritietoisuuden lisääminen)
- f. Increasing collaboration. (Yhteistyön lisääminen)

This Question 2 asked about attendees perception of HT’s goal or objectives based on the opening event and its activities. This question gauge audience comprehension of HT’s goals and objectives as outlined in the presentation. Figure 3 illustrates the

responses from survey 36 respondents regarding HT's social significance.

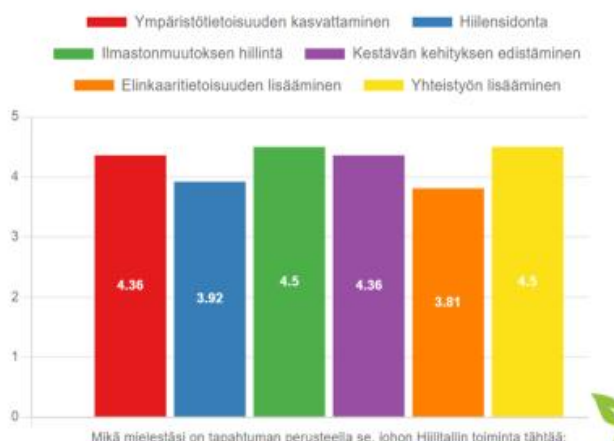


Figure 3. Survey result for attendees perception of goal or objectives that HT aims to achieve through its activities based on the opening event (on the scale 1-5. 1=a little, 5=a lot) (HT 2024. Palaute kooste Hiilitallin avajaiset, s. 18).

As seen in Figure 3, respondents rated two activities, mitigation of climate change and increasing collaboration, with highest average points (4.5 each) of what they perceived that HT aims to achieve through its activities based on the opening event. It shows that HT focused on activities that mitigates climate change also attendees viewed the importance of partnerships and teamwork in achieving environmental goals. Raising environmental awareness and promotion of sustainable development both received average points of 4.36 each. Carbon sequestration and increasing life cycle awareness received the lowest average points of 3.92 and 3.81 respectively, suggests that HT can enhance its activities by focusing to improve in these areas.

*Question 3. "What grade/rating do you give each speech (out of 3 key notes)"?*

- Climate change through the eyes of an explorer. Peta Degerman
- The story of Hiilitalli and the purpose of existence. Jenni Kurki-Suonio
- How is sustainable future solved? Panel discussion

This Question 3, asked about the grade/rating of the different presentations. This question assess the speaker's effectiveness in delivering their message, engaging the audience, and providing valuable information. Figure 4 shows the result on the grade/rating for 3 key presentations.

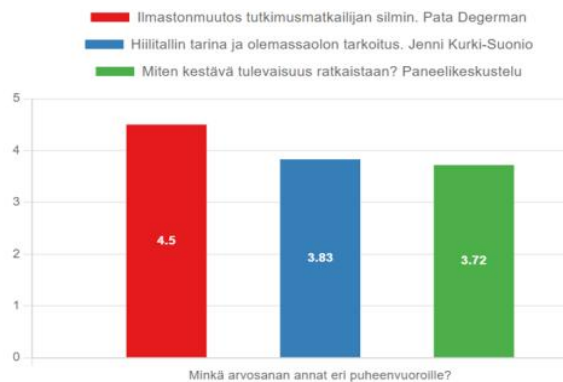


Figure 4. Survey result on the grade/rating respondents give to 3 key presentations/ speeches (on the scale: 1-5. 1= I didn't like it at all, 5= I liked it a lot) (HT Palaute kooste Hiilitalliin avajaiset, s.18).

Several respondents have also expressed their feedback to speakers and speeches via free commenting form.

*“Good keynote speaker and panel, clear presentations by both Jenni and Timo. Clearly a carefully prepared occasion.” (Retrieved from translated Survey Questions word file from Hiilitalli, page 1)*

*“Interesting topics, dynamic speakers. Pata's presentation at the beginning set the theme well, bringing out environmental problems on Earth concretely. It's always nice to hear concrete examples; fluffy advertising speeches don't resonate.” (Feedback from powerpoint presentation, palaute kooste Hiilitalliin avajaiset, Slide 7)*

*“Panels are often general, although it was mostly good discussion and progressed quite naturally. The discussion wall worked well, and perhaps it could have been utilized even more as part of the panel.” (HT, Palaute kooste Hiilitalliin avajaiset, s.7)*

Survey result illustrated in Figure 4 shows that 36 respondents graded/rated Pata Degerman's with the highest rating of 4.5 average points, respondents giving him generally positive rating and feedback to the topic and speech. This shows that concrete examples provided by Pata Degerman helped to make the topic much more relatable and impactful. Both Jenni Kurki and the panel discussion also received positive ratings with a slightly lower average compared to Degerman, at 3.83 and 3.73 respectively. While the panel discussion was generally well-received, the greater use of discussion wall could have enhanced audience participation.

*Question 4. “Do you have an interest in participating in other Hiilitalli events in the future?”* Question 4 asked if attendees would be interested in participating HT's future

events. This metric is a basis for HT to know if participants find the event interesting and relevant. Figure 5 shows the responses from 36 survey respondents.

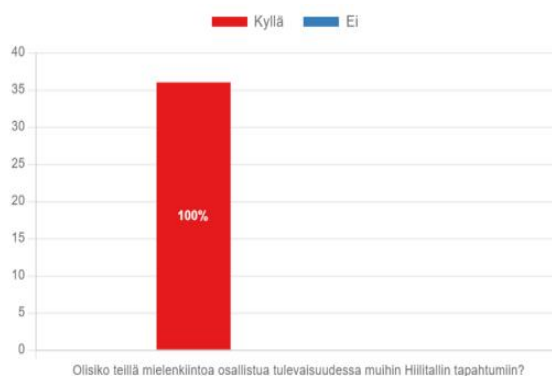


Figure 5. Survey result on attendee's future Hiilitalli event participation (HT Palaute kooste Hiilitallin avajaiset, s.14).

Figure 5 illustrates that based in the opening event, 100% of 36 respondents would participate in future HT events. This result indicates a high level of engagement and satisfaction with the opening event. The opening ceremony generated a high level of interest and attracted attention suggesting that HT has effectively positioned itself as a valuable platform for individuals interested in climate change and sustainable development. This also shows that the opening event have met or even exceeded attendees needs and expectations. This question is seen as a valuable part of the tool for measuring social impact.

*Question 5. "What thoughts did the premises of Hiilitalli and the business projects carried out by the students evoke in you?"* Question 5 was asked to gather attendees' thoughts about premises of HT and the business projects carried out by the students that evoke them. A total of 21 respondents gave their thoughts from several student projects showcased at the event, including such comment from survey respondents:

*"Great projects! Surely, a particularly good experience for the students." (HT, palaute kooste Hiilitallin avajaiset, s.12)*

*"It was nice to get to know the business projects and chat with the students." (HT, palaute kooste Hiilitallin avajaiset, s.12)*

*"Really interesting projects, especially the coffin using biomass for 3D printing in the future caught my interest." (HT, palaute kooste Hiilitallin avajaiset, s.12)*

*"A good start. The level of concreteness of the projects specifically implemented in Hiilitalli still remains somewhat open." (HT, palaute kooste Hiilitallin avajaiset, s.12)*

*"I have seen the first space shuttle plans from Hiilitalli. They were innovative in terms of space and design. It remains to be seen whether they achieve the same depth with the current ones." (HT, palaute kooste Hiilitallin avajaiset, s.12)*

*"The premises looked pleasant, I didn't notice any business projects when I just went around the premises quickly." (HT, Default report survey results, p.2)*

*"Only a little time to familiarize yourself with the premises and no observation of the projects." (HT, Default report survey results, p.2)*

*"Important work and activities from the point of view of companies, students and the educational institution. I liked the idea that all Metropolia students get basic information about sustainable development." (HT, Default report survey results, p.2)*

Overall, majority of respondents expressed positive impressions of both HT premises and student projects. Positive feedback indicates that the innovative projects captured the audience's interest and generated valuable discussions. Twenty-one respondents expressed appreciation for the collaborative atmosphere, the students' project work, and Metropolia's commitment to sustainability. It is also highlighted the potential for further development in project concreteness and depth. By addressing suggestions for more time to explore the premises and projects in future events, HT can further enhance the attendee experience and maximize event's impact. This question is a valuable part of the tool for measuring social impact as it encourage attendees share their personal thoughts and impressions, providing qualitative data that can be analyzed to understand event's impact.

*Question 6. "Free commenting on the event."* In this question the attendees were freely expressed opinions regarding the opening event. 19 responses were received including:

*"Excellent collaboration; Good activities; Interesting; Hopeful and joyful." (HT, palaute kooste Hiilitallin avajaiset, s.12)*

*"It's great to involve students and connect them to the professional world!" (HT, palaute kooste Hiilitallin avajaiset, s.12)*

*"An inspiring space that invites collaborative development." (HT, palaute kooste Hiilitallin avajaiset, s.12)*

*"Great that Metropolia is widely promoting environmental awareness among students! Collaboration between companies, the institution, and, of course, the municipality is important for many reasons." (HT, palaute kooste Hiilitallin avajaiset, s.12)*

*"The overall experience was truly successful." (HT, palaute kooste Hiilitallin avajaiset, s.10)*

*"The program was good, and the duration of the event was appropriate. A slight downside with the sound system, especially that it couldn't be fixed during the break." (HT, palaute kooste Hiilitallin avajaiset, s.10)*

*"There should be parking spaces for guests x 3." (HT, palaute kooste Hiilitallin avajaiset, s.5)*

*"However, the food from Sodexo did not match the level of the event." (HT, palaute kooste Hiilitallin avajaiset, s.5)*

Based on the data collected from survey conducted during the opening ceremony, nineteen attendees provided open-ended feedback about the event. The program, speeches, atmosphere, and event duration received positive comments. By analyzing the comments, event organizers can easily identify areas where the event excelled and areas where improvements can be made. Respondents expressed dissatisfaction with the sound quality, food taste, and parking availability for guests, these are the areas for improvement for the future event. Asking for feedback shows attendees that their opinions matter and that the organizers are committed to providing a positive experience.

### 3.5 Key Findings from the Current State Analysis

This section summarizes the key findings and insights on the current practices in the HT event management based on data collection and analysis, as well as the analysis of the measuring tool and results from HT. It highlights the strengths, weaknesses and areas for improvements identified in the project background and measuring tool.

First, the key findings related to the current practices in the HT event management derived from the project background, documents and meetings with HT staff include the following. (1) HT hired an event management company to learn from and gather materials and be self-sufficient in the future events. (2) HT issued survey questionnaires to get feedback and from it measure the satisfaction of attendees to improve future events and to determine the return of investment. (3) Invited speakers to help share their knowledge across to the attendees, invited media to let the people be aware of HT, and gave time for networking to strengthen the ecosystem within Metropolia and HT.

Second, as for the future plans, HT intends (1) to organize an event on their own that is sustainable, and to know the estimation of positive environmental and social impact created by the event; (2) to develop a tool that measures environmental and social impact of the future events. HT has now gathered sufficient materials to organize future events on their own. To align with its goals and objectives and to demonstrate a commitment to environmental responsibility, HT wants for future events they organize to be sustainable and that bring positive environmental and social impact. To achieve this, an approach and a tool for measuring the said impacts of the events will be developed.

### 3.5.1 Strengths and Weaknesses of the current event management practices based the Opening event

The key strengths were explored during the meeting and documents analysis. They are summarized in Table 7 below.

Table 7. Summary of weaknesses, strengths and improvement areas in the current event management practices based on the Opening event.

	Strengths	Weaknesses	Improvement areas:
1	The schedule of posts effectively reached many people that resulted to a diverse and good number of attendees. Good attendance, many people attended the event.	The survey response on the opening event was low.	Increase audience interest to engage in survey response and create a tool to be used also in the future events.
2	The production schedule and task was met according to the deadline set. The program was full of activities, speeches, time to network and even some entertainment.	Program did not included proper presentation of the students projects. Not all attendees were aware of the projects presented by the students.	Improve floor plan of the event so that the projects of the student will be more visible to the attendees.
3	The food served reflects aligned to the goals and objectives of HT, the effort was appreciated by the attendees.	The food taste did not appeal to the taste of the attendees thus resulted to some negative free-form feedback comment.	Probably it is possible to ask from the catering for food tasting first and give feedback what can be improved or if other alternative might be suggested

4	The budget was within the plan manifesting strong financial knowledge from the event organizer.	The survey questionnaire is relatively short and did not contain questions related to measuring environmental impacts, example about food and transportation, and only few questions about social impact.	Provide more parking areas next time. Include in the email announcement to inform the organizer if they are bringing car so that enough parking spaces will be prepared or alternative option can suggested ahead. But also encourage them to take public transportation if possible as it is the most environment friendly mode of transport.
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The first strength was regarding the relevance of HT's aim and purpose. More and more people are becoming environmentally and sustainably aware and conscious with their choices thus HT's aim and purpose gained attention from many people. The organization is innovative thus attractive for the stakeholders who are also seeking for innovation with a purpose. Second, HT strengthened its ecosystem through collaboration within Metropolia organization, research institutes and businesses. The attendees at the opening have seen it as a very positive thing because groups, especially students, now have a platform to showcase their ideas and potentially gain network outside school organization. Third, HT is clear and committed to its brand of being a learning space that mitigate climate change. HT as a learning is continuously seeking innovation, developing ideas that translate into real world projects that mitigate climate change. And fourth, HT now gained an event planning template that they can use for their future events. This is a helpful tool for a starting organization so that they can be sustainable and can stand on their own in the future event organization.

For the weaknesses of the project background, first, no target KPIs yet. Survey results remained as numbers without basis if they indeed reached their goal successfully. Second, the event was only held in English. Thus, limiting the audience to only Finnish speakers. Third, the survey response was relatively low. Attendees are not less than a hundred people but the number of respondents was only thirty six. It did not reach half of the number of attendees. And lastly, no experience in event organizing. HT is a new learning space and have never organized an event on their own.

### 3.5.2 Selected Focus Areas

The selected focus areas for the next steps would be on:

- a. an approach for measuring impacts of the HT Green Summit on 6<sup>th</sup> of May 2024
- b. a tool (in a form of survey) aligned to the set of goals of HT for similar event in the future

These selected areas inform the choice of topics for the next section that will look into available knowledge and best practice in conducting sustainable event. The results will help HT strengthen its goal of becoming an organization that helps mitigate climate change by organizing a sustainable and socially significant event that promotes sustainability and collaboration. The existing knowledge regarding the selected focus areas are discussed in Section 4 below.

## 4 Available Knowledge and Best Practice on Measuring Environmental and Social Impacts of Events

This section will explore the available knowledge and best practices on event management, the environmental and social impacts of events, and how to measure these impacts. The section is divided into three sub-sections. First, introduction to event management and how climate change influenced people to consider making events more sustainable. Second, is all about environmental and social impacts of events. And third, is the measurement of environmental and social impacts of events.

### 4.1 Event Management, Events and Sustainable Events

There are many definitions of event management

"Event management refers to the strategic planning and coordination of public events aimed at investing emotional energies and economic resources to achieve specific goals. These events are part of the hospitality, leisure, and tourism industries and encompass a wide range of activities, including Meetings, Incentives, Conventions, and Exhibitions (MICE)." (Rojek, 2013).

"Event management is the process of planning, organizing, and executing an event, whether it's a small meeting or a large-scale conference." (Maxwell, 2014).

"Event management is the coordination of all the resources and activities necessary to create an event and ensure its success. It involves everything from planning and budgeting to on-site management and post-event evaluation." (Anderson, 2019).

"Event management is the art and science of creating and executing successful events. It requires a combination of creativity, organization, and attention to detail." (Marks, 2017).

*Events industry* is a multifaceted field encompassing a diverse array of activities. As the event industry's scale is growing, research and studies about events is also increasing. One academic field is event studies, which Getz and Page (2024) defined as "the academic field devoted to creating knowledge and theory about planned events, including their management and their roles in tourism and other development strategies". Getz and Page (2024) also added that "event studies is defined by its holistic approach towards events as a phenomenon, including all the issues surrounding planned events, in addition to their management, design, and production". Getz and Page (2024: 5) add that:

“...two distinct and potentially complementary approaches to events-related research and educations developed in tandem, with increasing interdependence: *An interdisciplinary approach*, which was based upon the theoretical and intellectual basis of higher education, with a philosophical approach underpinned by traditional disciplines and new subject areas (we call it Event Studies). *The professional bodies approach*, which is based on competencies and skills, with factual knowledge and problem-solving at the heart of the curriculum (both Event Management and Event Tourism)”.

Figure 6 shows the new framework wherein “event studies is all-encompassing and interdisciplinary.” (Getz and Page 2024: 6).

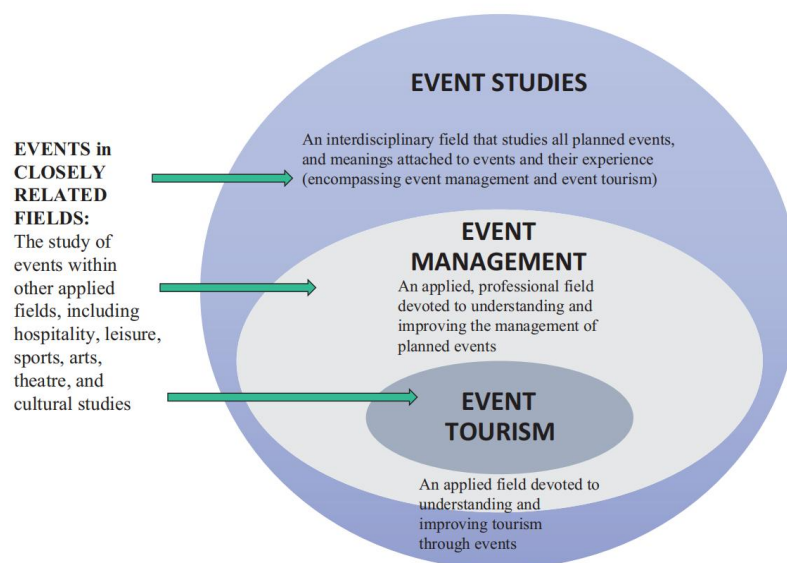


Figure 6. Events studies, event management and event tourism (Getz & Page 2024: 6).

*Event management* involves various responsibilities, including hiring and training staff, ensuring smooth operations on the day of the event, addressing logistical issues, obtaining necessary licenses, permits, and insurance, and managing equipment needs, signage, sanitation, and ticket-taking processes (Kolb, 2021). It requires a different skill set from event planning, emphasizing organizational ability, prioritization, problem-solving under pressure, and strong interpersonal skills for effective team collaboration (Kolb, 2021). Given the events industry’s immense scale, dynamic nature and complex interplay of factors, successful event planning and event management requires meticulous planning and thoughtful execution.

*Events* are described by several notable authors in the following way, as compiled by Dowson and Bassett (2018)

“An occurrence at a given place and time; a special set of circumstances; a noteworthy occurrence” (Getz, 2012. - Cited from: Dowson and Bassett, 2018: 4).

“Those non routine occasions set apart from the normal activity of daily life of a group of people” (Shone & Parry, 2013. - Cited from: Dowson and Bassett, 2018: 4).

“An occasion, a gathering of people at a certain place at a certain time for a specific reason” (Kilkenny, 2011. - Cited from: Dowson and Bassett, 2018: 4).

“A gathering of human beings, generally lasting from a few hours to a few days, designed to celebrate, honour, discuss, sell, teach about, encourage, observe, or influence human endeavour” (Matthews, 2008. - Cited from: Dowson and Bassett, 2018: 4).

Thus, events range from corporate conferences to cultural festivals, sporting events to social gatherings, the industry caters to a wide range of interests, objectives and genres Figure 7 shows the key eight types of events categorized.

<b>Cultural celebrations</b>	<b>Business and trade</b>	<b>Arts and entertainment</b>	<b>Educational and scientific</b>
Festivals	Meetings	Concerts	Conferences
Carnivals	Product launches	Performances	Seminars
Religious events	Trade shows	Awards ceremonies	Training
<b>Political &amp; state</b>	<b>Private events</b>	<b>Recreational</b>	<b>Sport competition</b>
Political summits	Parties	Games	Individual/Team
Royal occasions	Weddings	Outdoor activities	Amateur/Professional
State visits	Family occasions	Adventure activities	Local/International

Figure 7. Getz typology of events (Dowson and Bassett, 2018: 4).

Figure 8 below shows the phases of event planning, from designing and making decisions in choosing various stakeholders for different tasks, up to the operations applying different management strategies, until the closing of event.



Figure 8. Event planning phases (Event Management Handbook, IRFU 2008).

Managing *an event* does not just end with all the planning for the benefit of the organizer and ensuring that the event will be done according to what was planned, but also, “event management aims to fulfill the expectations and needs of customers, guests, and attendees, while aligning with the objectives and goals of the event's host or client” (Silvers and O’Toole 2020). The role of event organizers extends even beyond hiring and logistical needs and ensuring that attendees are satisfied. The role of event management extends “encompass risk management, which is crucial for ensuring the safety and success of events. Understanding event management is essential for risk managers, as the risk process for events differs significantly from other types of business, given the project nature of events and their focus on people and intangible objectives” (Silvers and O’Toole 2020).

The event management industry is becoming increasingly professionalized and with that increased professionalism comes an understanding that research can contribute to events’ success (Richards et al. 2013:2). The growing interest and studies in events’ impacts reflects an importance and wider significance to current trend. According to Case (2013), “changes in society are forcing a reappraisal of the impacts of events”. Currently, the growing concern with climate change and environmental impacts of events are gaining attention. “Environmental degradation, climate change and resource shortages are threatening global lifestyles and that includes delivery of and participation in events”. (Case, 2013:1.) “Event industry actors-in particular outdoor event organizer-have always had to deal with weather-related incidents (such as fierce

storms or torrential rain) and have have a variety of health risk and safety-related back-up plans to mitigate the risks and to protect their attendees” (Werner et al. 2024).

In the events sector, organizations, such as Sustainable Events Alliance, has taken up the challenge which offers a virtual network for ideas exchange, resources and current international programs, seeks to engage new participants and encourages adoption of management systems such as ISO 20121 and public sustainability reporting; for example, the Global Reporting Initiative (GRI), Sustainable Event Alliance, 2021. Sustainability however extends beyond environmental concerns, to include local community well-being and business success (Pernecky and Lück, 2012). This is exactly aligned to the Sustainable Development Goals Report of 2022, wherein it highlighted the urgent need for action to address the converging crises that were hindering progress towards the SDGs and to ensure that meaningful advancements were made before the 2030 deadline (United Nations Organization website, SDG Report of 2022). Getz and Page (2024) combined these global themes and applied to event studies as shown in Table 8.

Table 8. Global implications and issues for events (summarized from: Getz and Page, 2024: 4).

Global Issues	Issues Implications for Events (actions are applicable to multiple issues)
“Climate Change: continued dependence on fossil fuels; urgent need for carbon reduction and clean, sustainable energy; increased impacts of severe weather and sea-level rise threaten millions”	<ul style="list-style-type: none"> <li>– the events sector must commit to implementation of the UN sustainable development goals– use full-circle waste reduction and life-cycle accounting to achieve sustainability goals</li> <li>– develop comprehensive environmental standards and evaluation measures for events and event venues</li> <li>continuously reduce carbon and environmental footprints</li> </ul>
“Poverty: extreme contrast between rich and poor countries and individuals is entrenched”	<ul style="list-style-type: none"> <li>– many events, and event tourism in general, are exclusionary in terms of their unaffordability for many people– events should raise money for poverty reduction</li> </ul>
“Food: famine and hunger are recurrent; food security is not assured for all; need for more sustainable agriculture and aquaculture”	<ul style="list-style-type: none"> <li>– many events are wasteful of food and encourage over-consumption</li> <li>– use local produce and manage the supply chain to promote sustainable practices and healthy eating</li> </ul>
“Health: unhealthy eating and drinking are endemic in some countries; lingering effects of the pandemic and the threat of future diseases; need for clean water and adequate sanitation”	<ul style="list-style-type: none"> <li>– be leaders in combating disease and unhealthy lifestyles</li> <li>– favour participation-for-all over spectator events</li> <li>– focus on the well-being of staff, volunteers, and participants</li> <li>– permanent and event-specific health policies are needed for the event sector, aimed at prevention</li> <li>– the events sector must learn how to react and recover,</li> </ul>

	<p>become more resilient in the face of “permacrisis”</p> <ul style="list-style-type: none"> <li>– continual improvements are required to make events more inclusive, safe, and healthy for all</li> </ul>
<p>“Human Rights: persecution and denial of basic rights; gender inequality; lack of educational opportunities; mass migration and the mixed treatment of refugees; underemployment”</p>	<ul style="list-style-type: none"> <li>– how can the events sector overcome inequality, contribute to social justice, and ensure equitable accessibility related to disparities in income, discrimination and violation of human rights?</li> <li>– take a proactive stance on these issues</li> </ul>
<p>“Living Environments: need for safe, healthy cities and resilient, sustainable infrastructure; innovation required as cities grow larger, more diverse, and congested”</p>	<ul style="list-style-type: none"> <li>– require green and sustainable events and event venues</li> <li>– create and manage a balanced portfolio of events for all ages and segments</li> <li>– challenge claims of businesses and events becoming “carbon-neutral”, as in many cases it is nothing more than green-washing</li> <li>– those promoting and bidding on major events that attract large numbers of tourists must re-think their claims of being sustainable; huge costs leading to long-term debt, white-elephant venues with little feasible after-use, and mass tourism are not sustainable</li> </ul>
<p>“Ecology: serious threats to biodiversity are mounting; diminishing forests and especially old-growth; increasing desertification, water and air pollution, and erosion”</p>	<ul style="list-style-type: none"> <li>– use events as demonstration projects; foster events with environmental themes</li> <li>– evaluate the social marketing effectiveness of environmental messages at events</li> <li>– integrate event policy with planning, land use, and all environmental management systems</li> <li>– supply chain controls are needed to enforce sustainability</li> </ul>
<p>“Peace: war, forced migration, and aggression mean that peace is not assured; mechanisms of international cooperation are threatened”</p>	<ul style="list-style-type: none"> <li>– events and tourism must foster international goodwill and cooperation</li> <li>– bringing people together peacefully and safely is a top priority for the entire events sector</li> </ul>
<p>“Democracy is under threat in many countries, non-existent in others; there is a need for inclusive, accountable institutions and civil society”</p>	<ul style="list-style-type: none"> <li>– event organizers and stakeholders have the potential to demonstrate inclusiveness, accountability, and the benefits of a vibrant civil society (i.e., the voluntary sector)”</li> </ul>

A sustainable approach to event management offers a holistic perspective that benefits key stakeholders and local communities alike. “There are pragmatic and altruistic motivations for sustainable development of events. Sustainable development and sustainability have gained global recognition as an important issue associated with the continued survival of human society. The idea of sustainability has permeated all aspects of society and is therefore an important consideration in event development”. (Holmes et al. 2015: 22). Figure 9 illustrates the three interconnected components of human society: economic, environment and social.

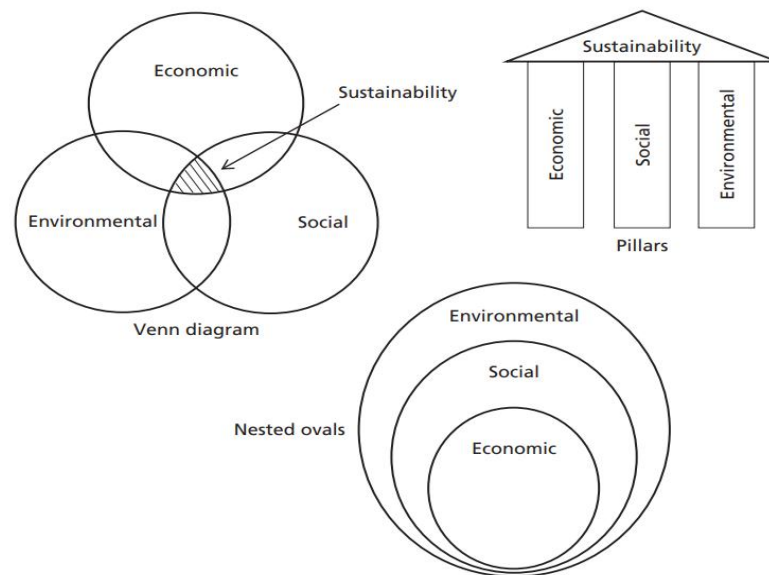


Figure 9. Common diagrams used to represent the sustainability concept (Holmes et al. 2015: 20).

According to Holmes et al. (2015), who are drawing on the United Nations definitions, in order to be *sustainable*, events need to address the three aspects that include environmental, economic and social issues and enumerated examples as shown in Table 9.

Table 9. Economic, environmental and social issues that sustainable events should address (Holmes et al. 2015: 5).

1. "Economic issues: Depending on size and scale, the event itself is economically viable and contributes to the development of viable enterprises in the region in which it occurs and also triggers related economic activity that can be maintained in the long term."
2. "Environmental issues: Event planning and operation focuses on conservation of natural resources by minimizing pollution and other negative impacts, actively working to conserve natural and built environments where the event takes place and perhaps more broadly."
3. "Social issues: The event is based on socially ethical and equitable principles, for example, equal opportunity employment and reasonable working conditions with an absence of exploitation. Events may also contribute to maintaining and strengthening local communities through local employment and promotion of aspects such as social and cultural pride, conservation of cultural heritage and strengthening community networks".(Holmes et al. 2015: 5.)

Summing up, managing an event requires a lot of effort by going through different phases. Event management is essential to ensure success, minimize risk, optimize resources and create memorable experiences. With the recent issues regarding environment and sustainability, events organizers are now putting more efforts to create events with minimized negative environmental impact, involving society for positive engagement and improving the economy of the surrounding community. By understanding the economic, environmental and social impacts and issues of the event, the event organizers can create decisions that are not only in consideration of the success of the event but also for the benefit of the community and the planet.

#### 4.2 Environmental and Social Impacts of Events

According to Schlenker et al. (2010), “the initial focus of *event impact measurement* and management was on economics. This is because the success of an event or festival was commonly considered to relate primarily to its economic contribution to event stakeholders and the region where the event occurs” (Holmes et al. 2015: 22). That economic impact of events are undeniably one of the reasons why countries and cities are exerting efforts in hosting events, such as big sporting events like Olympic Games, FIFA World Cup, European Sports Champions, and Super Bowl. “While economics are obviously important, event organisers and managers as well as event goers have become more aware of the wider impacts of events and the need to ensure negative impacts are minimized while any benefits are maximized across social, economic and environmental issues” (Holmes et al. 2015: 22). Figure 10 illustrates a model for the estimation of impacts according to Andersson and Lundberg (2013).

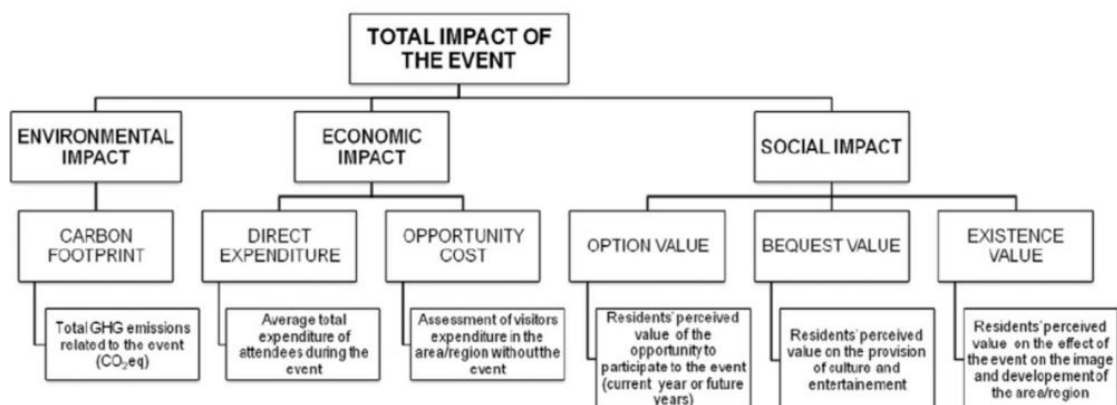


Figure 10. Model for the estimation of impacts (Scrucca et al 2016; Andersson and Lundberg, 2013).

As seen in Figure 10, the total impact of the event encompasses environmental, economic and social aspects. It guides event organizers to make better choices in consideration of the factors that contributes to the impacts. The decisions they make in planning stage can help them minimize the negative consequences of the event and maximize the positive outcomes.

“Event planners can seek to ensure that the impacts of an event stay within acceptable limits that do not contribute to economic adversity, social disadvantage or environmental degradation for the region in which it occurs” (Holmes et al. 2015). As presented in Table 10, impacts of events are wide variety and multifaceted (Coban, 2016).

Table 10. Social, Environmental and economic impacts of events (Coban, 2016).

	<b>Social Impacts</b>	<b>Environmental Impacts</b>	<b>Economic Impact</b>
<b>Positive</b>	Induced development and construction expenditure	Raising awareness of environmental issues	Direct/Indirect expenditure
	Long-term promotional benefits	Development of waste land	Increased property value due to regeneration
	Civic pride	Long-term conservation of area	Additional trade and business development
	Community development		Induced development and construction expenditure
	Increased employment opportunities		Event product extension
<b>Negative</b>	Future use of infrastructure not maximized	Site/location damage-short and long-term	Cost of event failure to local/national economy
	Interruption of normal business	Waste and pollution	Inflated price of products, services and amenities
	Resident exodus	Noise pollution	Unequal distribution of wealth
	Disruption of lifestyle	Traffic disruption and congestion	
	Media impacts	Increase in energy demands and other natural resources	
	Community apathy and antagonism		
	Increased risk of security issues		
	Unequal issues distribution of wealth		

Recent developments in event impact assessment have seen a subtle transition towards a more holistic approach, balancing economic, social, and environmental considerations. Event impact assessment is evolving towards a more comprehensive approach, recognizing the interconnectedness of the three mentioned factors.

“While methods for evaluating the economic outcomes of events and festivals are well established and there is a general consensus on the indicators to be used, methods for assessing the socio-cultural and environmental dimensions of sustainability are less widely agreed” (Gration et al. 2011; Collins and Cooper, 2016).

“The study by Du Preez and Heath (2016) depicted the relationship between social dimension and the environmental responsible behavior of cycling spectators. Authors found that social norms play an important role in deciding the spectators’ intention towards the environment and more specifically, the factor of place attachment comes out as a precursor driving the spectators toward environmentally responsible behavior.” (Singh et al. 2020:4).

“Also during recent decades, event management has emerged as a growing sector of the tourism and leisure industries, and many see it as having considerable economic, socio-cultural, environmental and political impacts on local areas and host communities” (Richards et al. 2013).

#### 4.2.1 Environmental Impacts of Events

“Event tourism and the event sector in general have been recognized to be a source of massive pollution for several environmental aspects” (Dickson & Arcodia, Citation2010; Cavallin Toscani et al., 2021). “This has prompted an urgent call for green practices in events, leading to awareness-raising among the sector stakeholders, including organizers, policymakers, sponsors, and attendees” (Collins & Cooper, Citation2017; Cavallin Toscani et al., 2021). “Thus, over the last 10 years, there has been an increased interest amongst policy-makers, event organisers, sponsors and academics to understand the environmental impacts of events and festivals” (Collins et al. 2016). “An increased understanding of evaluation tools that measure the environmental impact of events and festivals is important due to their potential negative environmental impacts, at both local and global scales” (Gibson & Wong, 2011; Collins et al. 2016).

“Whether and to what extent decision-makers in the event industry opt for climate adaptation measures depends on whether they have an acceptance towards these measures.” (Werner et al. 2024, 3). “Following Kollmann (1998) and Griese et al. (2021), a dynamic understanding of the acceptance of climate adaptation measures in the event industry can be derived on the basis of the theory of Diffusion of Innovation

(DoI) and the Theory Planned Behavior (TPB)” (Werner et al. 2024, 3) is illustrated in Figure 11.

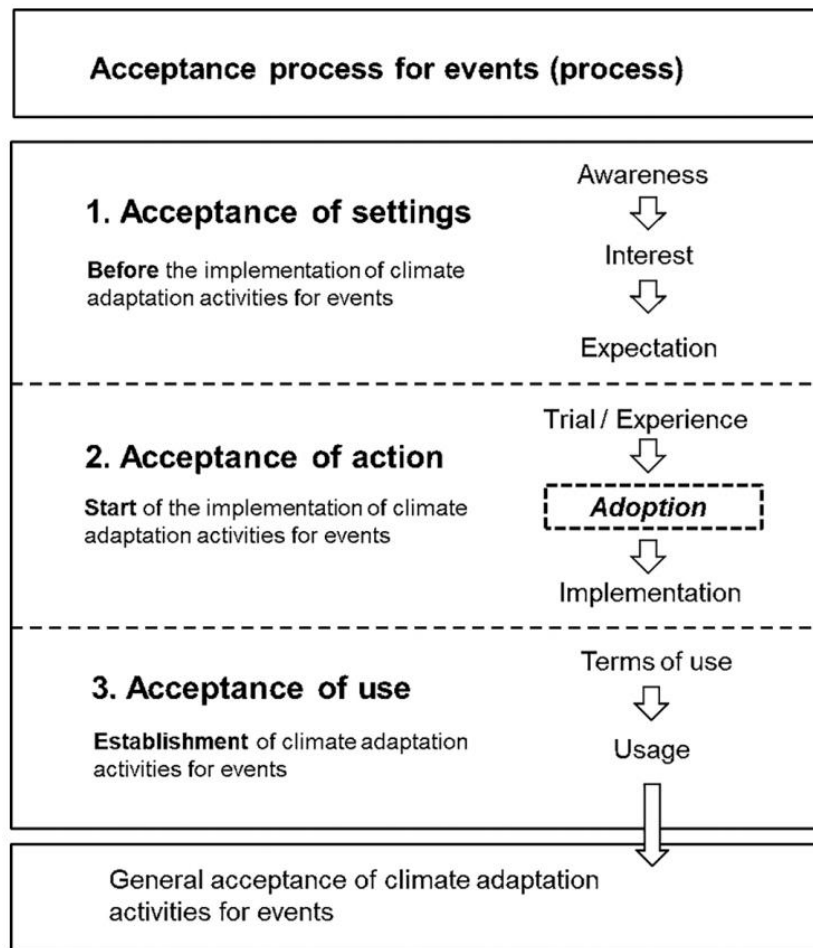


Figure 11. The acceptance and adaptation process of climate adaptation measures in the event industry, based on Greiase et al. 2021 (Werner et al. 2024, 4).

As illustrated in Figure 11, acceptance of climate adaptation measures in the event industry occurs in three stages. First, stakeholders become aware of, interested in, and develop expectations for these measures. Second, they gain practical experience through pilot implementations. Finally, climate adaptation becomes a standard part of event planning, with tailored measures and efficient processes in place.

The research and study about environmental impacts of events gained interest and when the events industry started to be affected by the impacts of climate change. “These impacts are, for example, extreme weather, the impact of extreme weather incidents usually depends on its duration, but they often lead to event cancellations

and/or terminations, due to the danger for attendees and operational limitations, rising temperature; droughts and water shortages; air and water pollution; snow reliability for winter (sports) events” (Werner et al., 2024, 7).

Dávid (2009) mentioned that environmental impacts of events “can be local and global impacts, direct and indirect impacts, reversible and irreversible, favourable (positive) and unfavourable (negative) impacts”. In his work he also summarized the most important environmental impacts of events (Puczkó and Rátz, 2002, 2005; Michalkó, 2007) such as air quality, geological condition, water pollution, depletion of natural resources, and flora and fauna.

“Negative impacts from tourism events occur when the level of visitor use is greater than the environment’s ability to cope with this use within the acceptable limits of change” (Dávid 2009, 4). “Environmental impacts caused by festivals (events) are summarized below” (Halmay et al., 2006; Dávid 2009, 4).

“Air pollution from event tourists’ transportation has impacts at the global level, especially from CO<sub>2</sub> emissions related to transportation energy use. Additionally, it can contribute to severe local air pollution. Some of these impacts are quite specific to event tourists’ activities”. (Dávid 2009, 5.)

“The interest of the scientific community toward sustainable mobility for events is recent and not yet fully established. Figure 12 shows that the first papers date back to 2007, intensifying from 2015 onward. It is interesting that, in 2020, publications were absent, which can be correlated with the absence of events for the global COVID-19 pandemic and the resulting restrictions imposed by countries. In recent years, scientific activity seems to have intensified.” (Ballarano et al., 2022).

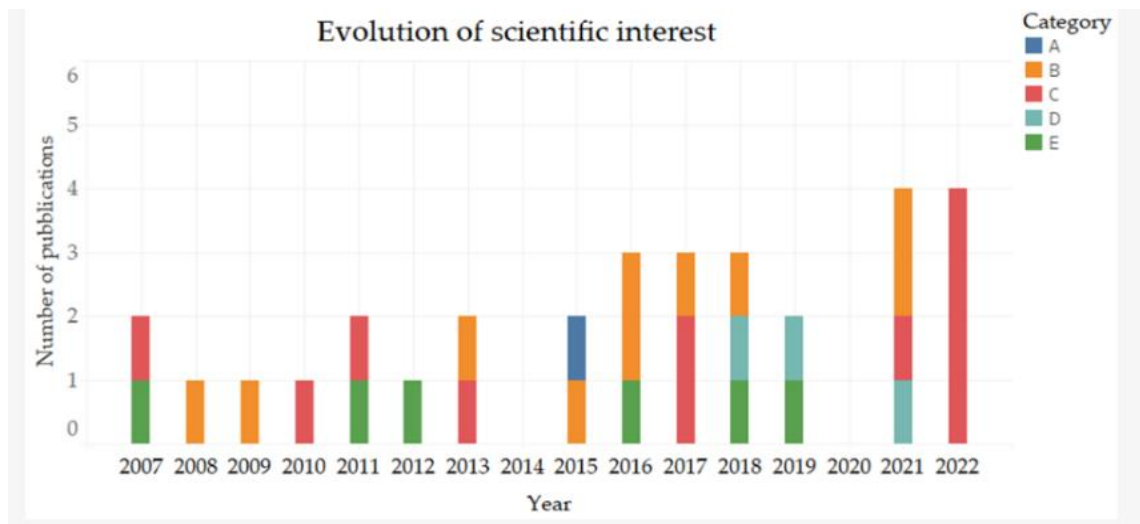


Figure 12. Time evolution of scientific interest toward sustainable mobility of events (Ballarano et al., 2022).

Dávid (2009) discussed that while accommodation facilities themselves typically have a minimal direct impact on the environment, their land use and disruption of natural habitats can significantly disturb ecosystems. Additionally, the energy consumption required for heating, cooling, and lighting these facilities can be substantial. To mitigate these environmental effects, it's essential to employ energy-efficient practices such as constructing buildings that exceed European building regulations, using eco-friendly materials, and optimizing insulation. Excessive water consumption is another common concern, often due to wasteful practices by event attendees or inefficient equipment.

Food and beverage services at events can generate considerable waste and emissions. Dr Dávid (2009) suggest that every individual attending an event has an impact on the environment, especially when it comes to food consumption. Furthermore, the choices we make about what to eat can affect the amount and type of waste produced, as well as the methods used to produce the food. Food production can be resource-intensive, leading to soil pollution and other environmental problems. The use of chemicals in agriculture further increases the environmental burden. Additionally, consuming food from distant countries contributes to higher fuel consumption and air pollution due to transportation. Single-use packaging and excessive packaging materials also contribute to significant waste. Choosing locally produced, natural foods is a healthier and more environmentally friendly option. Food production contributes to a staggering 37% of global greenhouse emissions, releasing 17.3 metric tonnes of carbon into the atmosphere per year. To put that into perspective, the carbon output of food production

is nearly 19 times than that of the commercial aviation industry. (Headbox webpage, 2023.) “Tackling what people consume, and how the food is produced, plays a key role in tackling climate change, reducing water stress and pollution, restoring lands back to forests or grasslands, and protecting the world’s wildlife” (Ritchie et al., 2022.). Figure 13 illustrates the environmental impacts of food and agriculture.

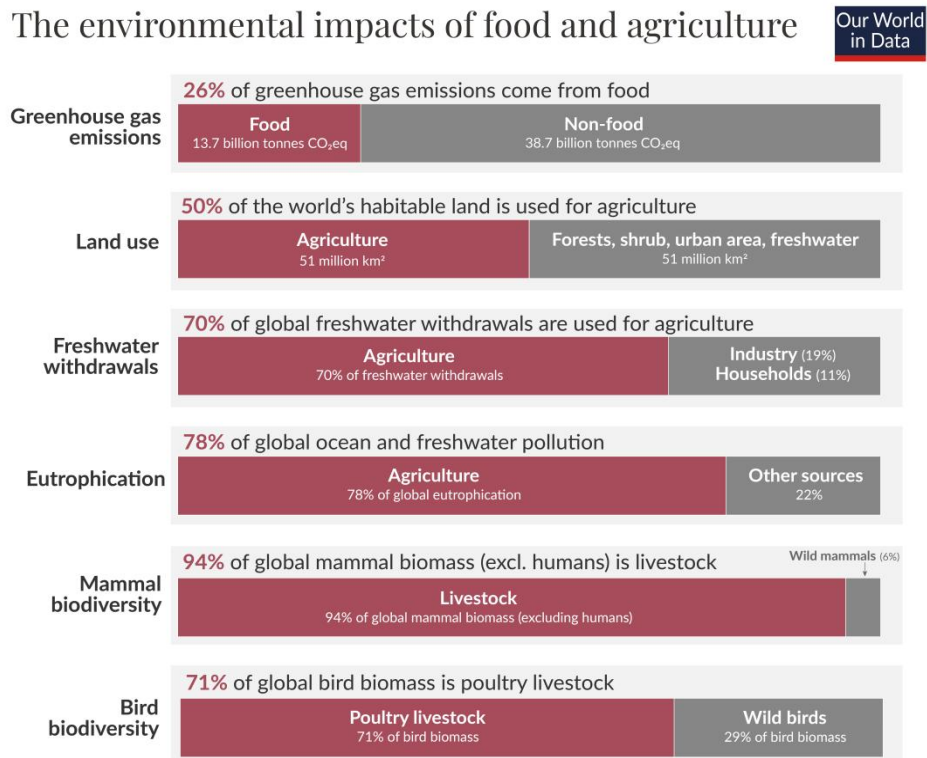


Figure 13. Environmental impacts of food and agriculture (Ritchie et al., 2022).

Dávid (2009) discussed that the energy consumed by tourism and festivals comes from electricity and heating used in hotels and other accommodations, cooking fuel, and transportation. This excessive energy use leads to higher costs and increased greenhouse gas emissions like CO<sub>2</sub>. “It is the production of energy that is responsible for 87% of global greenhouse gas emissions” (Roser, M 2020). Figure 14 shows data from Ember (2024); Energy Institute - Statistical Review of World Energy how much is the global electricity production from various power generation sources (Ourworldindata website, 2024).

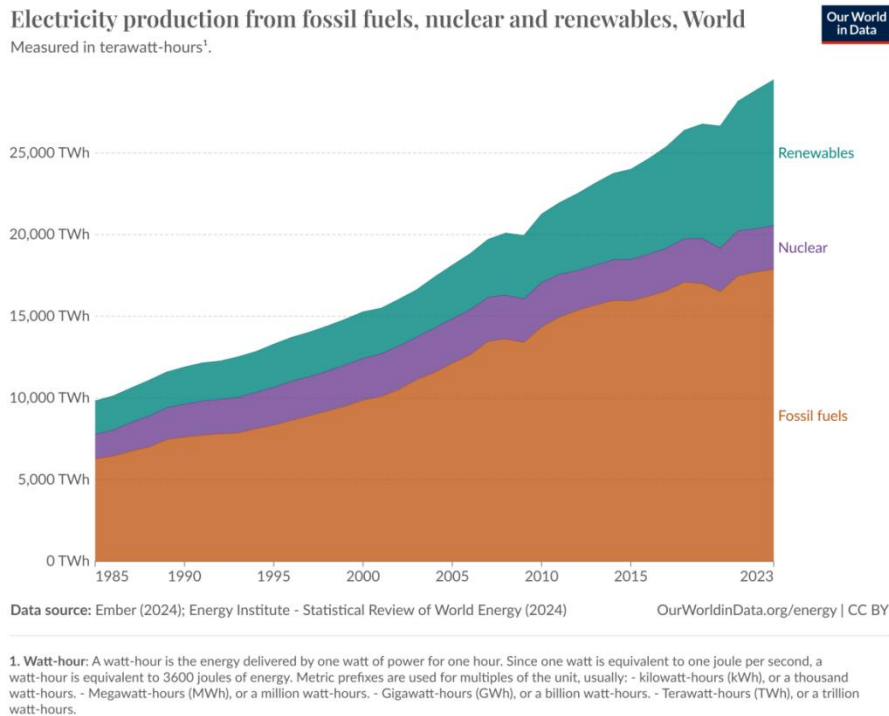


Figure 14. Global electricity production from different power generating sources (Ember 2024).

Dávid 2009 discussed that the excessive water consumption associated with festivals, such as for food preparation, hygiene, and site upkeep, contributes to the ongoing depletion of freshwater resources.

Dávid (2009) mentioned that at festivals, beverage waste is a major problem. Half of all trash comes from beverage packaging. Recycling isn't common at events, so most bottles and glasses are disposable. Leftover food and utensils also contribute significantly to the waste." For example, "festival waste is a serious issue. Powerful Thinking's 'The Show Must Go On' report 2020 says UK camping music festivals are generating 25,800 tonnes of waste annually" (Circularonline website, 2022).

Learning all the possible impacts of events to environment, Dávid (2009) suggests that sustainable planning and developmental principles should be taken into consideration. Figure 15 presents the most important services of environment-conscious events (Dr Dávid 2009, 6).

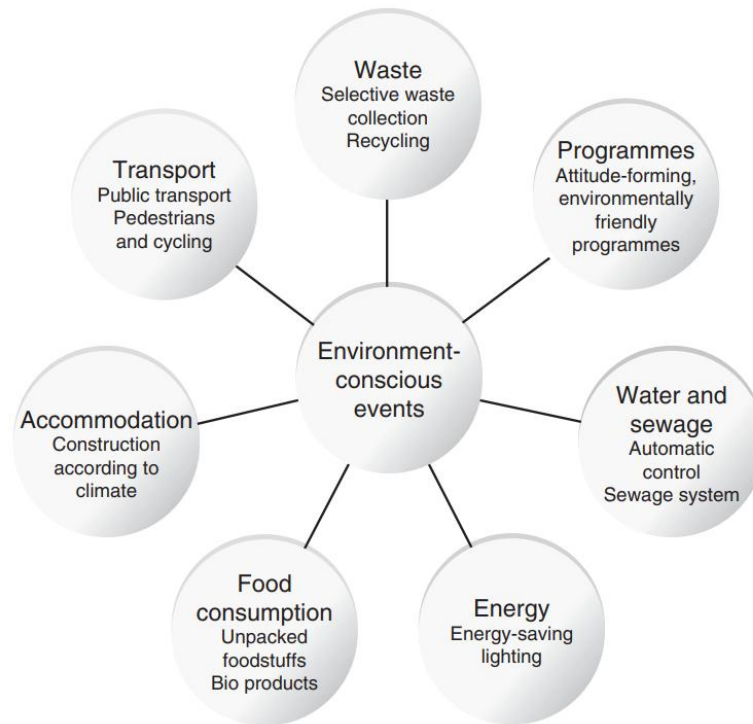


Figure 15. The most important services of environment conscious events (Dávid 2009, 6).

As seen in Figure 15, the diagram effectively communicates the multifaceted nature of sustainable event planning. It highlights the importance of various aspects to minimize the environmental impacts of events.

#### 4.2.2 Social Impacts of Events

“It is recognized that large-scale events have enormous impacts on the host community” (D. Kelly & Fairley, 2018; Nguyen et al., 2024). “Compared to rich and prosper literature on the economic front, studies on the social impacts of events are scant (W. Kim & Walker, 2012).” (Singh et al. 2020, 4). In literature review conducted by Singh et al. (2020) there are varied perspective on the social impacts of events. Several authors who advocated that events bring an overall positive social impact were “Glasson (1994), Marcouiller (1997), Crompton (2006), and W. Kim and Walker (2012)” (Singh et al. 2020, 4). On the other hand, “authors such as Weaver and Oppermann (2000) contended that events exert negative impact on the social strata as they tend to alter the existing dynamics of society.” (Singh et al. 2020). “One reason the lack of exploration in the social domain is the intangible nature of impacts which, unlike economic, are hard to quantify (H. Kim et al., 2006).” Singh et al. 2020: 4.)

“Social impacts could include the development of social networks, community pride, feelings of inclusion or exclusion, social integration, increased mutual understanding, changes in perceptions of attitudes, and the development or preservation of traditions.” (Richards et al. 2013: 1). “Community events develop the sense of place by enabling people to take part in activities together and recognize interrelationships with their community and place of residence, which subsequently strengthens community connectedness, social ties, and local identity.” (Stevenson 2023; Nguyen et al. 2024). “Social impacts can be at an individual, family, group, or community level. Social impact is sometimes examined as one of a range of impacts, but until recently tended to be seen as of lesser importance than, say, economic impact or environmental impact.” (Richards et al. 2013: 1.).

“The existing events literature in general identifies several benefits of events for local communities. In relation to social aspects, events can facilitate interaction among community members” (Misener & Mason, 2006; Nguyen et al. 2024), “foster community cohesion” (Gursoy et al. 2004; Nguyen et al. 2024)), “social inclusion” (Rich et al., 2015; Nguyen et al., 2024), “and encourage pride and attachment” (Getz, 2010; Nguyen et al., 2024). “Existing studies found that smallscale events are often strongly supported by residents due to their focus on the community and are largely designed by and for the benefit of a local community” (Gration et al. 2016; Tkaczynski et al. 2019; Tkaczynski et al. 2022; Nguyen et al., 2024.)

“Reflecting its place at the crossroads of several disciplines, study of the social dimensions of events has a rich range of theory on which to draw for frameworks. One of the most popular theories is that of social capital.” Social capital can be used to frame studies on inclusion, community, trust, social networks and volunteering in events. (Richards et al. 2013.) “It has been argued that social capital is in decline in today’s society, and one consequence of this social change is the emphasis on individual success over collective achievements. However, event management may help build social capital by enhancing community resources. Thus, if organizers of events want to make successful arrangements, they have to interact with local businesses and the community” (Richards et al., 2013.).

Summing up, historically, research and academic studies has predominantly focused on evaluating events economic impacts. “This holds specifically true in the case of

events being organized in developing economies, as the emphasis is placed on development by these countries rather than focusing on the social and environmental contexts (Swart, Robinson, & Cohen, 2003).” (Singh et al., 2020)”. Events social impacts can be positive wherein it creates social cohesion among attendees, bringing people together, improving the sense of community and promoting cultural exchange and expanding social network. On the other hand, events can negatively impact in terms of disruption in daily life among the local community, traffic congestion, and even social unrest. Event organizers must ensure that stakeholders are positively engaged and design programs and initiatives that benefit the local community. Understanding social impacts of events is important as it can significantly impacts the local community, both positively and negatively. Also, these impacts helps assess the event’s long term effects on the local community. Studying the social impact of events allows the organizers to better understand the complex relationship between events and society.

#### 4.3 Methods for Measuring Environmental and Social impacts of Events

As the events industry is becoming more and more adaptive to sustainability, the initiatives taken by event organizers is a proof of their commitment to create positive impact to the environmental and society. Below are the methods that are commonly used in measuring environmental and social impacts.

##### 4.3.1 Method-1 for Measuring Environmental and Social impacts of Events (Antón-Maraña et al. 2024)

The first method is described by Antón-Maraña et al. (2024), “a novel multi-perspective and multi-stakeholder approach to event impact measurement; synthesizing the triple bottom line”, and it mentioned that this methodology is designed to evaluate the impact of cultural events, but is particularly useful those that are smaller in scale, locally focused, and environmentally conscious event when held in rural setting. “The methodology is based on the Triple Bottom Line (TBL) approach (Elkington, 1997; Sherwood, 2007), an analytical framework that includes economic, social, and environmental impact” (Antón-Maraña et al. 2024, 6). Figure 16 illustrates the proposed methodology. For this thesis socio-cultural and environmental aspects will be discussed.

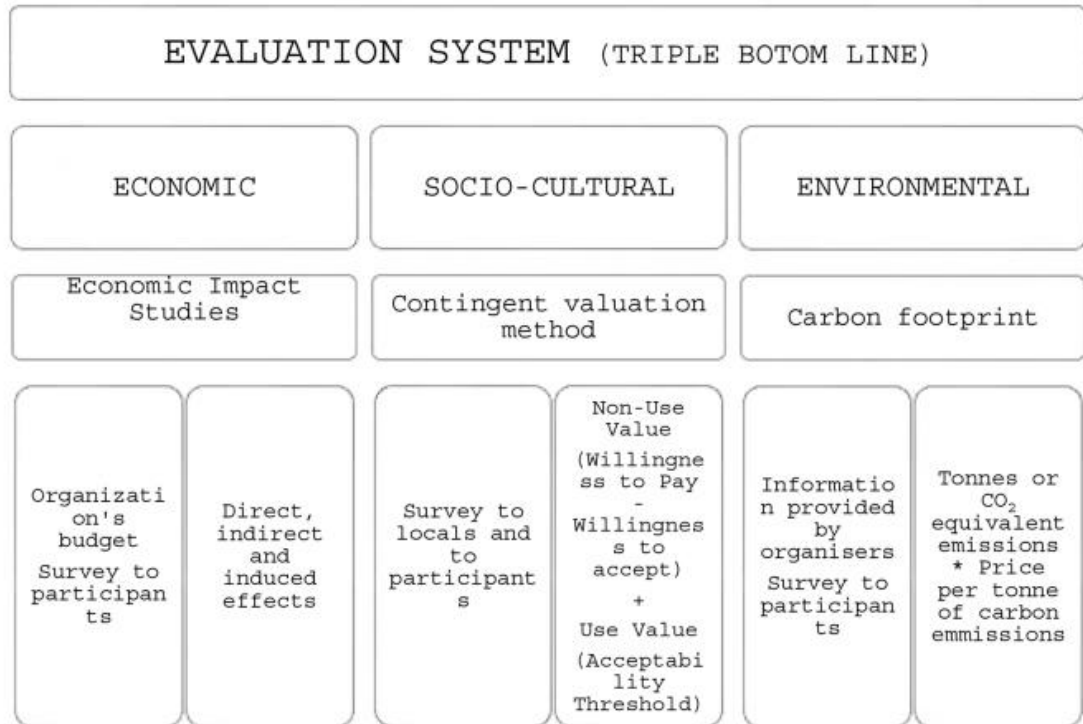


Figure 16. Methodological model based on Triple Bottom Line approach (Antón-Maraña et al. 2024, 7).

Antón-Maraña et al. (2024) discuss that sociocultural impacts, as perceived by stakeholders, can be both positive and negative. These can be measured in monetary terms using the contingent valuation (CV) method. “The purpose of this method is to present a hypothetical market to consumers. Instead of actual behavior, willingness to pay and willingness to accept are estimated on the basis of the behavioral intention expressed in response to the hypothetical market (Lindberg & Johnson, 1997b)” (Antón-Maraña et al. 2024, 10).

“This approach requires people to report their willingness to pay (WTP) for a specific good or their willingness to accept (WTA) not purchasing a good instead of inferring them from behaviors observed in regular markets (Breidert et al., 2006)” (Antón-Maraña et al., 2024,p11) Respondents were asked with questions in relation to WTP and WTA, the results were then averaged. “Finally, the socioeconomic impact of non-use value results from the difference between the average WTA values and the average WTP values” (Antón-Maraña et al. 2024, 10).

To gauge the sociocultural value, the attendees assess the event, for which Antón-Maraña et al. (2024) use the Acceptability Threshold (AT). This is the maximum price

they would pay before choosing a different activity. “The total sociocultural impact is then calculated as the sum of the non-use value, which comes from the difference between the WTP and the WTA of the local residents, and the use value, which comes from the AT of non-local festival goers (considering only non-locals to avoid the double counting of residents attending the event). After calculating the averages of the values, the total population of residents and alien attendees is inferred by weighting the sum to reflect the real weight that the groups have in each event”. (Antón-Maraña et al. 2024, 11.) Figure 17 illustrates the equation used in calculating the total sociocultural impact.

$$\text{soc} = \frac{\Sigma(\text{WTP} - \text{WTA})}{\text{n}^{\circ} \text{ surveys}} \times \text{n}^{\circ} \text{ of locals} \\ + \frac{\Sigma \text{AT}}{\text{n}^{\circ} \text{ surveys}} \times \text{n}^{\circ} \text{ of alien attendees}$$

Figure 17. Equation in calculating the total sociocultural impact (Antón-Maraña et al. 2024, 11).

To measure environmental impacts, Antón-Maraña et al. (2024) adopted carbon footprint measurement to simplify sustainability evaluation for non-experts. This approach offers a balance between ecological footprint and life cycle assessment, combining their strengths while mitigating their weaknesses. By calculating carbon dioxide emissions, we can estimate environmental impacts. Antón-Maraña et al. (2024), remind that this model has limitations, such as the loss of detail when converting impacts into a single unit like metric tons of CO2 equivalent. Nevertheless, monetizing carbon emissions is relatively straightforward due to the existing market for carbon credits Antón-Maraña et al. (2024) added.

Antón-Maraña et al. (2024) mention in assessment of environmental impacts, event organizers should gather data on, (1) utilities energy consumption (type and source) and water usage; (2) consumables: food and beverage purchases (quantity, local sourcing, dietary considerations for vegans/vegetarians), and waste management (compostable, recyclable, non-recyclable).; (3) merchandising: product types, materials, quantity, and origin.; (4) communication: promotional activities, platforms used, and printed materials; (5) space: total area occupied, including resting areas, and usage duration; and (6) participant questionnaire about transport (place of residence, mode of transport, distance traveled, carpooling, distance to accommodation, and mode of

transport during the festival) and accommodation (type of accommodation, quantity of stay, and length of the event).

For comprehensive carbon footprint calculations, Antón-Maraña et al. (2024) “recommend using the 'bp Target Neutral' events calculator. After inputting data into the calculator, the total carbon emissions associated with the event are calculated. To estimate the monetary cost, these emissions are multiplied by the current market price of carbon per metric ton. Figure 18 shows the calculation to be performed” (Antón-Maraña et al. 2024, 13).

$$\text{env} = \sum \text{kg of CO}_2 \text{ eq (total output from the calculation tool)} \\ \times \text{price per tonne of CO}_2$$

Figure 18. Equation in calculating the total environmental impact (Antón-Maraña et al. 2024, 13).

“It is determined that there are four imminently environmental SDGs, eight social SDGs, and four economic SDGs” (Antón-Maraña et al. 2024:14) as presented in Figure 19.

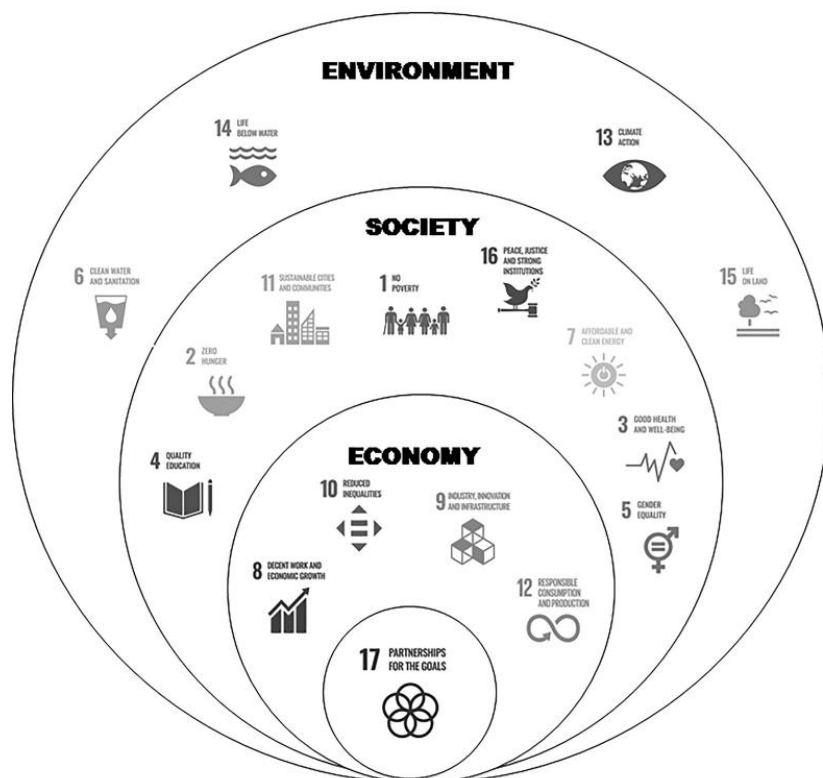


Figure 19. SDGs-TBL Association, based on Rockström & Sukhdev, 2016 (Antón-Maraña et al. 2024:14).

Figure 19 presents “a logical classification of the SDGs into the assessed impact categories has been made, as supported in the literature (Rockström & Sukhdev, 2016)” (Antón-Maraña et al. 2024:13).

This method includes a survey, in essence, the survey will ask residents to rank the importance of different Sustainable Development Goals (SDGs) for their local area. “This will be done according to the number of SDGs in each category identified as locally relevant. Since there are a large number of social SDGs, these SDGs have been grouped so that all three categories have four goals to be assessed.” (Antón-Maraña et al. 2024).

“In this way, based on an equal weighting, in which the three impact categories contribute one third of the total impact each, the feedback from the residents surveyed on how important they think each goal is in their area will be taken into account by varying the coefficient associated with each impact” (Antón-Maraña et al. 2024).

“The residents’ survey includes a section with the following question: “Which of the following aspects are most relevant for the development of the area where you live?” The purpose of this question is to determine residents’ views on those objectives that should be achieved in their area” (Antón-Maraña et al. 2024).

To conclude, an advantage of the synthetic index is its ability to simplify complex information. This makes it easier for the general public to understand the overall trends, rather than having to analyze numerous individual indicators. From a practical standpoint, this methodology offers event organizers a valuable instrument to evaluate the efficacy of event organizer’s efforts in optimizing socioeconomic gains while mitigating environmental harm

#### 4.3.2 Method-2 for Measuring Environmental and Social impacts of Events (Singh et al. 2020)

The second method focuses on using triple bottom line approach in developing indicators and impacts for sustainable event management. Before deep diving into this approach, the first approach emphasizes the importance of considering multiple viewpoints and actively engaging stakeholders in the impact assessment process. It goes beyond traditional economic measures to incorporate social, environmental, and

governance factors. While, the second method aims to create a framework for measuring the sustainability performance of events. It focuses on identifying specific impacts and developing indicators to track these impacts over time.

The second method, that uses Delphi technique approach, is based on the study conducted by Singh et al. (2020) which focused on the Auto Expo held in India. Delphi method as defined by Corporate Finance Institute is a qualitative method of forecasting where experts answer several rounds of questionnaires.

The development of Auto Expo impacts and indicators follows three phases. First phase is impact identification where experts identified and rated the economic, social, and environmental impacts of the Auto Expo. Second phase is indicator suggestion wherein panelists proposed indicators to measure the identified impacts. And the third phase is indicator review, experts reviewed and refined the suggested indicators.

The first phase includes selection of experts. “The very success of the Delphi technique depends on the careful selection of experts” (Chan, Yung, Lam, Tam, & Cheung, 2001).” (Singh et al., 2020, 7). The expert panel was selected to ensure balanced representation across disciplines. Criteria included (1) practitioners with over 5 years of experience in the automotive industry’s management, strategy, consulting, or analysis, (2) event management: experts with over 5 years of experience organizing events at state or national levels, and (3) academic researchers with publications or research in business sustainability or automobiles.

Singh et al. (2020) discussed the three stages of first phase, first stage survey administration with the objective to evaluate the effects of Auto Expo and rank them by significance, second stage results wherein experts were required to develop impacts in economic, social and environmental aspect” (list of these impacts is presented in Table 11).

Table 11. List of Auto Expo Impacts Developed by the Experts (Singh et al. 2020, 8).

---

<b>Economic impacts</b>
1. Business development
2. Visitor expenditure
3. Generation of employment
4. Skill development
5. Net income generation
6. Infrastructure development cost
7. Inflation pressures on economy
8. Cost of staging event
<b>Social impacts</b>
1. Community pride
2. Change in quality of life
3. Overcrowding and traffic congestion
4. Crime rate and women safety
5. Celebration and entertainment
6. Inculcation of values and ethics
<b>Environmental impacts</b>
1. Effect on natural resources
2. Air and noise pollution
3. Waste generation
4. Recycling practices
5. Consumption of water and energy

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The third stage rating the impacts wherein experts rated the impacts on a 5-point Likert scale (list of impacts with ratings is presented in Table 12).

Table 12. List of Auto Expo Impacts Rated by the Experts (Singh et al. 2020, 8).

Impacts	Mean Rating
<b>Economic impacts</b>	
1. Business development	4.2
2. Visitor expenditure	3.9
3. Generation of employment	4.0
4. Skill development	3.9
5. Net income generation	4.5
6. Infrastructure development cost	3.8
7. Inflation pressures on economy	3.7
8. Cost of staging event	4.4
<b>Social impacts</b>	
1. Community pride	4.0
2. Improvement in quality of life	4.2
3. Overcrowding and traffic congestion	3.8
4. Crime rate and women safety	3.9
5. Celebration and entertainment	3.8
6. Inculcation of values and ethics	3.4
<b>Environmental impacts</b>	
1. Effect on natural resources	4.4
2. Air, water, and noise pollution	4.0
3. Waste generation	3.9
4. Recycling practices	3.5
5. Consumption of water and energy	4.2

---

Moving to the second phase, the experts were sent a survey form for the indicators development to quantify the outcomes and effects achieved during the initial phase.

Singh et al. (2020) discussed that the member of panel were asked to propose indicators in every impact area. For guiding this process, they were provided with guidelines, instructions, and examples of Triple Bottom Line (TBL) indicators. The diversity of impact indicators was evident, with respondents submitting numerical, percentage, and ratio-based measures. Many provided multiple indicators, enriching the pool of potential options. To select the most effective indicators, the SMART criteria (Specific, Measurable, Attainable, Relevant, and Trackable) were applied. This approach ensured that the final set of indicators would be clear, quantifiable, achievable, meaningful, and monitorable.

“Finally the indicators that survived the grilling of the SMART process were discussed separately with a group of experts. These were scrutinized for their specificity and overall applicability in the context of Auto Expo. Accordingly, some indicators were modified, refined, and finally a list of indicators emerged” (Singh et al. 2020) as illustrated in Table 13.

Table 13. Initial list of developed indicators from second phase (Singh et al. 2020, 10).

Initial List of Developed Indicators		
Impacts	Mean Rating	Indicators
<b>Economic impacts</b>		
1. Business development	4.2	Number of business contracts signed during the event Boost for economy and/or new business developments
2. Visitor expenditure	3.9	Increased hotel occupancy and rise in food and beverages revenues during the Auto Expo
3. Generation of employment	4.0	Number of full-time jobs created by Auto Expo Number of local youth temporarily employed at Auto Expo event
4. Skill development	3.9	Number of people trained specifically for the Auto Expo event
5. Net income generation	4.5	Types of skills learnt during the training for Auto Expo Total income generated from the Auto Expo and net collection of taxes by the government
6. Infrastructure development cost	3.8	Impositions and other duties, Rise in gross domestic product and per capita income due to Auto Expo Total cost incurred on developing infrastructural and basic facilities specific to Auto Expo
7. Inflation pressures	3.7	Inflation/price rise due to staging of Auto Expo
8. Cost of staging event	4.4	Total cost incurred in hosting the event including rental cost, operational cost, and performance cost
<b>Social impacts</b>		
1. Community pride	4.0	Media coverage/articles about the Auto Expo in local, national, and international media Impact of the event on local community's pride and sense of belongingness
2. Improvement in quality of life	4.2	Improvement in quality of life of local community due to Auto Expo
3. Overcrowding and traffic congestion	3.8	Number of business hours lost in the traffic congestion due to Auto Expo
4. Crime rate and women safety	3.9	Increase in crime rate/women molestation during the Auto Expo
5. Celebration and entertainment	3.8	Ratio of locals to outside visitors to Auto Expo event Entertainment and amusement facilities availed by the Auto Expo visitors
6. Inculcation of values and ethics	3.4	New values and ethical behavior inculcated by Auto Expo visitors
<b>Environmental impacts</b>		
1. Effect on natural resources	4.2	Degradation of land resources and soil erosion caused by auto expo
2. Air, water, and noise pollution	4.0	Increase in air, water, and noise pollution level due to hosting of Auto Expo event
3. Waste generation	3.9	Waste generated and quantity of waste sent to landfill from Auto Expo venue
4. Recycling practices	3.5	Recycling practices adopted by the Auto Expo organizers
5. Consumption of water and energy	4.2	Volume of water used during Auto Expo Total electricity consumed during Auto Expo Portion of used energy generated from renewable sources

Final phase is achieving the consensus, according to Singh et al. (2020) the concluding stage of the process was essential for securing agreement among the expert panel on the indicators formulated in earlier phases. In this phase, Panel members were presented with three options for each indicator: accept, modify, or reject. If they chose to modify an indicator, they were provided with a space to suggest specific changes.

Singh et al. 2020 added that based on expert input, a "consolidated list of eighteen impacts (six social, five environmental and seven economic) and twenty five indicators" was finalized. The unanimous agreement of the expert panel confirms the pertinence of these parameters as illustrated in Table 14.

Table 14. Initial list of developed indicators from second phase (Singh et al. 2020, 10).

Final Consolidated List of Auto Expo Impacts and Indicators		
Impacts	Mean Rating	Indicators
<b>Economic impacts</b>		
1. Business development	4.2	Number of business contracts signed during the event Boost for economy and/or new business developments
2. Visitor expenditure	3.9	Increased hotel occupancy and rise in food and beverages revenues during the Auto Expo
3. Generation of employment	4.0	Number of full-time jobs created by Auto Expo Temporary employment generated by the Auto Expo
4. Skill development	3.9	Number of people trained specifically for the Auto Expo event Types of skills learnt during the training
5. Net income generation	4.5	Total income generated from the Auto Expo and net collection by the government from taxes, impositions, and other duties
6. Infrastructure development cost	3.8	Total cost incurred on developing infrastructural and basic facilities specific to Auto Expo
7. Cost of staging event	4.4	Total cost incurred in hosting the event including rental cost, operational cost, performance cost, and miscellaneous cost
<b>Social impacts</b>		
1. Community pride	4.0	Media coverage/articles about the Auto Expo in local, national, and international media Impact of the event on local community's pride and sense of belongingness
2. Improvement in quality of life	4.2	Impact of Auto Expo on quality of life of local community
3. Overcrowding and traffic congestion	3.8	Number of business hours lost in the traffic congestion due to Auto Expo
4. Crime rate and women safety	3.9	Increase in crime rate/women molestation during the Auto Expo
5. Celebration and entertainment	3.8	Ratio of locals to outsiders visitors to Auto Expo event Entertainment and amusement facilities availed by the Auto Expo visitors
6. Inculcation of values and ethics	3.4	New values and ethical behavior inculcated by Auto Expo visitors
<b>Environmental impacts</b>		
1. Effect on natural resources	4.2	Degradation of land resources and soil erosion caused by auto expo
2. Air, water, and noise pollution	4.0	Increase in air, water, and noise pollution level due to hosting of Auto Expo event
3. Waste generation	3.9	Waste generated and quantity of landfill sent from Auto Expo venue
4. Recycling practices	3.5	Environment-friendly practices adopted by Auto Expo event organizers
5. Consumption of water and energy	4.2	Volume of water used and recycled water per visitor Total electricity consumed per visitor Percentage of total used energy generated from renewable resources

Singh et al. (2020) mention that the indicator and impacts developed in the study should be tested and validated in different contexts and cultures. Case studies can evaluate to assess the applicability of these findings to events like auto expo. As the Auto Expo is centered around auto industry, the applicability of these indicators and impacts in other industries may be limited. While the overall impacts (social, environmental, and economic) might be similar, the specific indicators needed to measure them could differ significantly based on the event's nature and scale. To develop a comprehensive set of indicators and impacts for evaluating and measuring purposes, substantial research and involvement from key stakeholders are essential.

In conclusion, Singh et al. (2020) use a Delphi Analysis, a comprehensive set of impacts and indicators was developed for the said event. This involved consulting a wide range of experts from academia, related industries, and the automotive sector to

identify key sustainability factors across economic, environmental, and social dimensions. “For event organizers, this method holds special significance. Auto Expo organizers can make use of these indicators to prioritize the areas where they are lagging and use them in 19 sustainable reporting (Henderson, & McIlwraith, 2013).” (Singh et al. 2020). “This is particularly relevant in social and environmental domains where the absence of tangible parameters hampers progress (Brown et al. 2015).” (Singh et al. 2020). By utilizing the developed impact and indicator framework, mega and large events can be made more sustainable through assessment, evaluation, and refinement. This knowledge can empower stakeholders to make informed decisions.

To add, the comprehensive list of impacts and indicators presented in this method constitutes a valuable tool for the assessment, evaluation, and refinement of large and mega-event approaches. Furthermore, this framework can be utilized to educate and sensitize a diverse array of stakeholders, encompassing event planners, participating companies, service providers, governmental bodies, and attendees, regarding the environmental and social ramifications of their actions.

#### 4.3.3 Method-3 for Measuring Environmental and Social impacts of Events (Boggia et al. 2018)

The third method suggests measuring events through environmental research (METER) index, as discussed by Boggia et al. (2018). The METER index is designed to assess the events’ environmental sustainability, particularly those of small or medium scale. “It consists set of indicators (organized into indexes and sub-indexes) that reflect the level of environmental sustainability.” (Boggia et al. 2018). Boggia et al. (2018) suggest that by using METER during event planning, organizers can explore alternative options for each environmental aspect, promoting the most sustainable choices. After the event, METER can be used to analyze key aspects and evaluate performance, facilitating continuous improvement.

Boggia et al. (2018) mentioned that the “METER index uses nine primary operational categories to evaluate the overall environmental sustainability of an event. Building upon the work of Laing and Frost (2010),” they established the following categories: “Location, Energy, Water resources, Catering, Promotional giveaways, Materials, Internal travel, Waste management, and Participatory approach.” (Boggia et al. 2018). Table 15 shows a detailed structure of the METER index.

Table 15. Detailed structure of METER index (Boggia et al. 2018, 4).

As seen in Table 15, Boggia et al. (2018) suggests that a complete evaluation is

Categories, sub-categories and detailed items of the METER index.

Category	Subcategory	Detailed Item	Unit	
Location	Area	Saved space used	%	
	Tensile structures		yes/no	
Energy	Signage		yes/no	
	Environmental certification		yes/no	
	Energy classification		score	
	Energy consumption	Electricity saved	%	
		Renewable energy	%	
Water management	Water saved	Fuels saved	%	
		Electricity generators	yes/no	
		Non-potable	%	
		Drinking	%	
Catering	Zero km company		yes/no	
	Materials	Eco-friendly materials	%	
		Eco-friendly dishes	yes/no	
		Packaging	%	
	Food and beverages	Organic products	%	
		Fair trade products	%	
		Seasonal products	%	
		Zero km products	%	
		Fruit and vegetables	%	
		Bread, pasta, rice and by-products	%	
		Animal products	%	
		Certified fish	yes/no	
		Food wastage	%	
		Non-food	Eco-friendly products	%
			Fair trade products	%
Organic products			%	
Food	Zero km products	%		
	Seasonal products	%		
	Packaging	%		
Materials	Flowers/plants	Endemic seasonal species	%	
		Zero km	%	
	Paper, brochures and documents	Recycled/environmentally certified paper	%	
		Electronic format	%	
		Double-sided printing	%	
		Eco-friendly products	%	
	Detergents	Eco-friendly products	%	
	Other	Eco-friendly products	%	
	Reused and reusable products	%		
	Packaging		%	
		%		
Internal travel	Packaging	On foot/public transport/car sharing	%	
		By car	%	
Waste management		Separate collection	%	
Participatory approach		Question 1	% yes	
		Question 2	% yes	
		Question 3	% yes	
		Question 4	% yes	
		Question 5	% yes	
		Question 6	% yes	

possible that covers the overall stages of event from planning, organization, implementation up to post-event. Figure 20 illustrates the participatory approach questionnaire.

**Participatory Approach**

Tick the appropriate box to select whether you agree with the following statements:

1. You felt confident of your knowledge to participate in an eco-friendly event.  
YES  NO
2. You were aware you were attending a sustainable event.  
YES  NO
3. Conduct and event management were sufficiently consistent with the goal of sustainability.  
YES  NO
4. The event was able to combine efficiency and quality with the need for environmental sustainability  
YES  NO
5. You were aware you were attending an eco-friendly event.  
YES  NO
6. If you actively took part, do you think your behaviour can have a positive impact on the end result of the eco-event?  
YES  NO

If not, give your reasons:

Figure 20. Participatory approach questionnaire (Boggia et al. 2018, 6).

As seen from Figure 20, the methodology to calculate the score, Boggia et al. (2018) suggests that the maximum score for each category is determined by adding up the scores assigned to its subcategories and detailed items. These scores range from 0 to 5 and are measured in two way. First, percentage where scores are divided into six classes corresponding to percentages from 0 to 5, as illustrated in Table 16. Percentage of score range. (Boggia et al., 2018, 6). The percentage indicates the extent to which a specific action is performed. For example, separate waste collection might be 30% (score 2) or 90% (score 4).

Table 16. Percentage of score range. (Boggia et al. 2018:6).

Percentage classes for scores definition.	
Score	% range
0	0%–1%
1	1%–12.5%
2	12.6%–37.5%
3	37.6%–62.5%
4	62.6% - 87.5%
5	87.6%–100%

Second, presence/absence, a score of 5 is assigned for "Yes" (100%) and 0 for "No" (0%). This translates into a score of 5/0 or 0/5, depending on whether the presence is positive or negative. In determining boundary values for scores, Boggia et al. (2018) discussed that the score ranges were defined proportionally based on percentages. The range from 1% to 100% was initially divided into five equal parts (1%, 25%, 50%, 75%, 100%), with corresponding scores of 1, 2, 3, 4, and 5. To allow for more precise scoring, each of these sub-ranges (1-25%, 25-50%, 50-75%, 75-100%) was further divided into two parts. This provided more granular options for assigning scores based on percentages. A score of 0 was introduced to account for cases where an item was equal to or very close to 0. This penalty reflects the negative impact of such items on the overall assessment. "Since the nine categories can play very different roles depending on the kind of event, each of them has been assigned a weight in decimal values. These weights reflects the contribution of each category to a fully sustainable event." (Boggia et al. 2018:5-6).

Boggia et al. (2018) mentioned that "the SWING method (von Winterfeldt and Edwards, 1986) was used to determine the weights. A group of environmental management experts were asked to imagine a hypothetical event with all categories at their lowest

possible scores.” They were then asked to select the first category they would like to improve to its best level and assign 100 points to it. This process was repeated for each remaining category, with points assigned in descending order of desirability. Finally, the assigned points “were normalized to sum up to one (Pöyhönen and Hämäläinen, 2001).” Boggia et al. 2018). The resulting weights are shown in Table 17.

Table 17. Resulting weights for each category (Boggia et al. 2018:6).

Weights for the categories.

Categories	Weights
Location	0.1
Energy	0.15
Water resources	0.13
Catering	0.15
Promotional giveaways	0.075
Materials	0.1
Internal travel	0.08
Waste management	0.14
Participatory approach	0.075

As a result of all the steps Boggia et al. (2018) obtained the final index as illustrated in equation in Figure 21.

$$\text{Final Index METER} = \max_{i=1,\dots,J} \sum_{j=1}^J (w_j \bar{z}_{ji})$$

Figure 21. The equation obtained from the final index (Boggia et al. 2018: 6).

Boggia et al. (2018) presented a sample case study wherein this method was used. It was at “the First European School on “Multiple criteria decision making: a key for sustainability” held from 26<sup>th</sup> to 31<sup>st</sup> of May 2014 at the Department of Agricultural, Food and Environmental Sciences (DSA3) in Perugia Italy.” Table 18 presents index structure with input data for the case study.

Table 18. Input data for the case study (Boggia et al. 2018: 8).

**Table 4**  
Input data for the case study.

Category	Sub-category	Detailed Item	Value	Quantification Method
Location	Area	Saved space used	50%	Estimate
		Tensile structures	no	Evidence
Energy	Environmental certification (ISO, EMAS, exc.) Energy classification Energy consumption	Signage	yes	Evidence
		Electricity saved	no	Evidence
		Renewable energy	Class F	Italian classific.
		Fuels saved	25%	Estimate
		Electricity generators	0%	Measured
Water management	Water saved	Non potable	50%	Measured
		Drinking	no	Evidence
			25%	Measured
Catering	Zero km company		0%	Measured
		Materials	yes	Evidence
	Food and beverages	Eco-friendly materials	100%	Measured
		Eco-friendly dishes	yes	Evidence
		Packaging	75%	Estimate
		Organic products	90%	Measured
		Fair trade products	0%	Measured
		Seasonal products	100%	Measured
		Zero km products	90%	Measured
		Fruit and vegetables	63%	Measured
		Bread, pasta, rice and by-products	25%	Measured
		Animal products	12%	Measured
		Certified fish	–	Measured
		Food wastage	0%	Measured
		Eco-friendly products	75%	Estimate
		Fair trade products	0%	Evidence
		Organic products	Not used	Evidence
Zero km products	Not used	Evidence		
Seasonal products	Not used	Evidence		
Materials	Packaging		100%	Evidence
		Flowers/plants	Not used	Evidence
	Paper, brochures and documents	Zero km	Not used	Evidence
		Recycled/environmentally certified paper	Not used	Evidence
		Electronic format	100%	Measured
		Double-sided printing	Not used	Evidence
	Detergents	Eco-friendly products	100%	Measured
		Other (badge)	100%	Measured
	Packaging	Eco-friendly products	100%	Measured
		Reused and re-usable products	50%	Estimate
Internal travel	Packaging	On foot/public transport/car sharing	100%	Measured
		By car	0%	Measured
Waste	Participatory approach	Separate collection	100%	Measured
		Question 1	94% yes	Questionnaire
		Question 2	97% yes	Questionnaire
		Question 3	97% yes	Questionnaire
		Question 4	100% yes	Questionnaire
		Question 5	94% yes	Questionnaire
		Question 6	91% yes	Questionnaire

Table 19 presents the collected and processed data which gained a value of 638 METER index.

**Table 5**  
Categories and total index.

Category	Index value	% of total
Location	<b>13.3</b>	2
Energy	<b>65</b>	10
Water management	<b>13</b>	2
Catering	<b>115.4</b>	18
Promotional giveaways	<b>47.5</b>	7
Materials	<b>88.9</b>	14
Internal travel	<b>80</b>	13
Waste management	<b>140</b>	22
Participatory approach	<b>75</b>	12
<b>Total METER index</b>	<b>638</b>	<b>100</b>

Table 19. Resulting weights for each category (Boggia et al. 2018, 6).

Boggia et al. (2018) discussed that the resulting value can be considered passing as the closer the value to 1000 the more sustainable the event is.

In conclusion, Boggia et al. (2018) discussed that despite being a prototype, the METER index constitutes an innovative approach to environmental management, distinguished by its participatory nature. Also added that the index provides a rigorous analytical framework for assessing the diverse environmental impacts of an event. Simultaneously, its user-friendly design ensures broad accessibility and straightforward interpretation of result. Boggia et al (2018) also suggested that “it is possible to identify improvements and future developments of the model.”

Boggia et al. (2018) method is straightforward and easy to implement three-step process, the categorization of topics offers a clear, focused and standardized approach in measuring environmental impact. Other methods are broader, can be subjective and may not capture all relevant impacts and more complex to implement due to multiple perspectives and data sources involved.

“With the growing demand for effective social investment, transparency and accountability, the need for social impact measurement has become more critical than ever, attracting the interest of practitioners, policymakers and academics who are keen to measure social impact or value. Despite a broad range of frameworks, finding a universal approach or standard for measuring social impact has been one of the challenges in social impact measurement, at least for the last thirty years (Gibbon & Dey, 2011).” (Hazenberg, et al. 2022, 29.) Additional methods specifically to measuring social impact are explored below.

#### 4.3.4 Method-4 for Measuring Social impacts of Events (Hazenberg et al. 202)

The fourth method is utilizing a holistic social impact measurement framework. The framework is the output though the development of Theory of Change. “This approach to identifying the key elements of Theory of Change built upon the work of McLoughlin et al. (2009), who first identified outputs, outcomes and impacts.” (Hazenberg et al. 2022, 17) “which can be defined as a causative logic model that demonstrates the links between inputs and activities, and the changes that these deliver to individuals,

communities and societies (Clifford et al., 2014).” (Hazenberg et al., 2022, 17). Figure 22 shows the holistic social impact measurement framework.

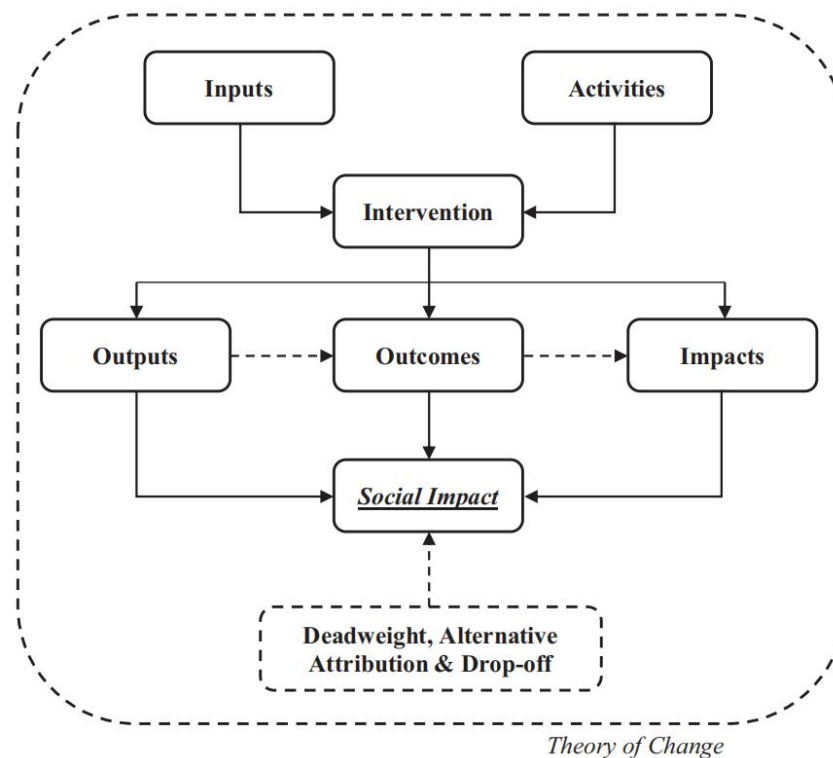


Figure 22. A holistic social impact measurement framework based on Clifford et al. 2014 (Hazenberg et al. 2022, 18).

As seen from Figure 22, Hazenberg et al. (2022, based on Clifford et al. 2014) include the following elements into their framework. First, outputs are the direct results of the program, second outcomes are the positive or negative changes in individuals' lives as a result of the program, and third impact is the broader societal benefits that arise from the program. Clifford added that to accurately measure these elements, it's essential to account the following factors, first, deadweight, what would have happened without the program? This helps to isolate the program's specific contributions; second, alternative attribution, are there other factors that might have caused the observed outcomes or impacts, independent of the program?; and third, drop-off, do the benefits of the program diminish over time? This can influence the long-term sustainability of the program.

Clifford et al. (2014); Hazenberg et al., 2022 within the Group d'Experts de la Commission sur l'Entrepreneuriat Sociale "(GECES) report the five steps to undertaking social impact measurement, which clearly identify the need to: (1) Identify

objectives: What are the objectives of the impact measurement (i.e. organisation and partners)?; (2) Identify stakeholders: Who are the beneficiaries and who provide resources?; (3) Relevant measurement: Understand the theory of change and then utilise relevant indicators to capture this; (4) Measure, validate and value: Assess whether outcomes are achieved and whether they are recognised by the various stakeholders; and (5) Report, learn and improve: Ensure the dissemination of and meaningful use of the data gathered and findings produced to internal and external stakeholders/audiences.” (Hazenberg et al., 2022, 18-19.)

“With so much relying on measurement it is evident that measurement should be good. Here, ‘good’ does not necessarily mean well-formed, complete or consolidated. All those things are desirable, but not essential.” (Clifford et al., 2014; Hazenberg, et al., 2022, 64). Table 20 illustrates the characteristics of good measurement as described in the GECES characteristics based on Clifford et al. (2014).

Table 20. Characteristics of good measurement, based on Clifford et al. (2014) (Hazenberg et al., 2022, 65).

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<b>A good social impact measure should be:</b>
<b>Relevant</b> – related to and arising from the outcomes it is measuring
<b>Helpful</b> – in meeting the needs of the of the stakeholders, both internal and external
<b>Simple</b> – both in how the measurement is made and in how it is presented
<b>Natural</b> – arising from the normal flow of activity to outcome
<b>Certain</b> – both in how it is derived and how it is presented
<b>Understood and accepted</b> – by all relevant stakeholders
<b>Transparent and well-explained</b> – so that the method by which the measurement is made and how that relates to the services and outcomes concerned are clear
<b>Founded on evidence</b> – so that it can be tested, validated and form the grounds for continuous improvement.

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Whilst the definitional aspects of social impact are contested, the actual process of developing and conducting social impact measurement has evolved considerably in recent years, as best practice models and frameworks have emerged; whilst definitions of the constituent elements within social impact measurement have also risen. (Hazenberg et al. 2022, 16). Social Accounting and Audit (SAA) measurement model, for example, follows a holistic approach, further measurement model that uses holistic approach are Impact Reporting and Investment Standards and Global Reporting Initiative (Feor et al. 2023:10).

#### 4.3.5 Method-5 for Measuring Social impacts of Events (Hazenberg et al. 202)

The fifth method is multi-level social impact measurement approach by Hazenberg et al. (2022) that shows collaboration and relationship between stakeholders. Figure 25 shows this approach. This approach was used in public service delivery at libraries in Vietnam.

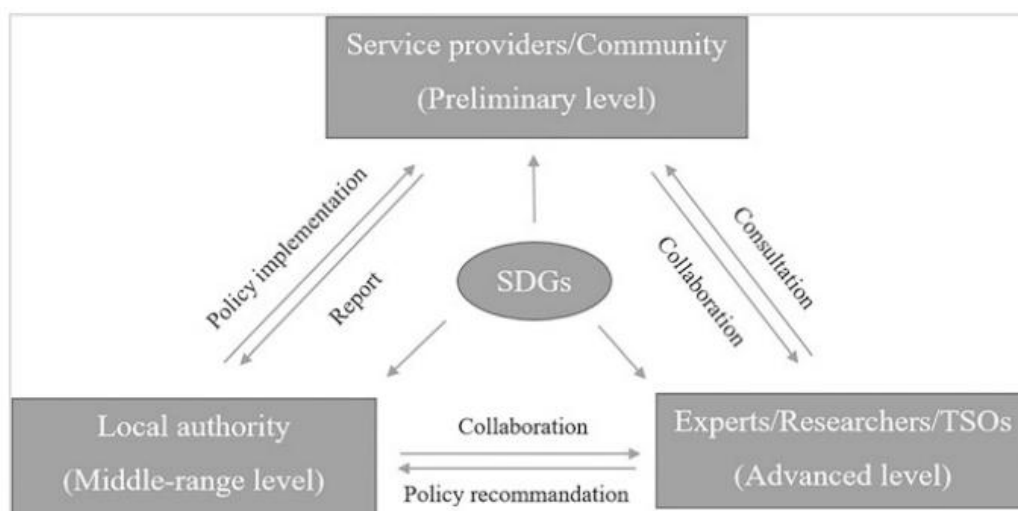


Figure 23. Multi-level social impact measurement approach (Hazenberg et al. 2022, 183).

As seen from Figure 23, Hazenberg et al. (2022) offer a multi-level impact measurement approach. “To effectively measure social impact, a three-tiered approach is recommended: (1) Primary-Level Measurement: Conducted by service-providing social organizations, this level focuses on immediate outcomes and outputs. (2) Middle-Level Measurement: Led by local authorities, this level uses evaluation data to inform policy implementation. (3) Advanced-Level Measurement: Conducted by experts and researchers from research institutions, this level involves in-depth analysis and contributes to broader knowledge development.” (Hazenberg et al. 2022, 182.)

A key challenge is the varying levels of capability among stakeholders. While advanced-level measurement is currently best suited for experts, the goal is to gradually transfer this knowledge to service providers and local authorities. Conversely, simple but realistic ground-level measurements can provide valuable insights for developing more sophisticated social impact measurement approaches. The Sustainable Development Goals (SDGs) offer a general framework that focuses on both numerical indicators and the development of diverse social groups. While primarily

applicable at advanced and middle levels, the SDGs can also guide primary-level measurement through tailored indicators and targets.

According to Hazenberg, et al. (2022), “adopting an ethical framework for measuring social impact, aligned with the SDGs, will allow evaluators and researchers to ensure professional standards in evaluation research. Figure 24 provides an overview of an ‘Ethical Framework for Social Impact Measurement’ evaluation and/or research. The ‘Ethical Framework for Social Impact Measurement’ draws on core ethical principles outlined by The United (Hazenberg et al. 2022, 311) Nations Evaluation Group (2008) Ethical Guidelines and the DFID (2019) Ethical Guidance for Research, Evaluation and Monitoring Activities.” (Hazenberg et al. 2022, 312.)

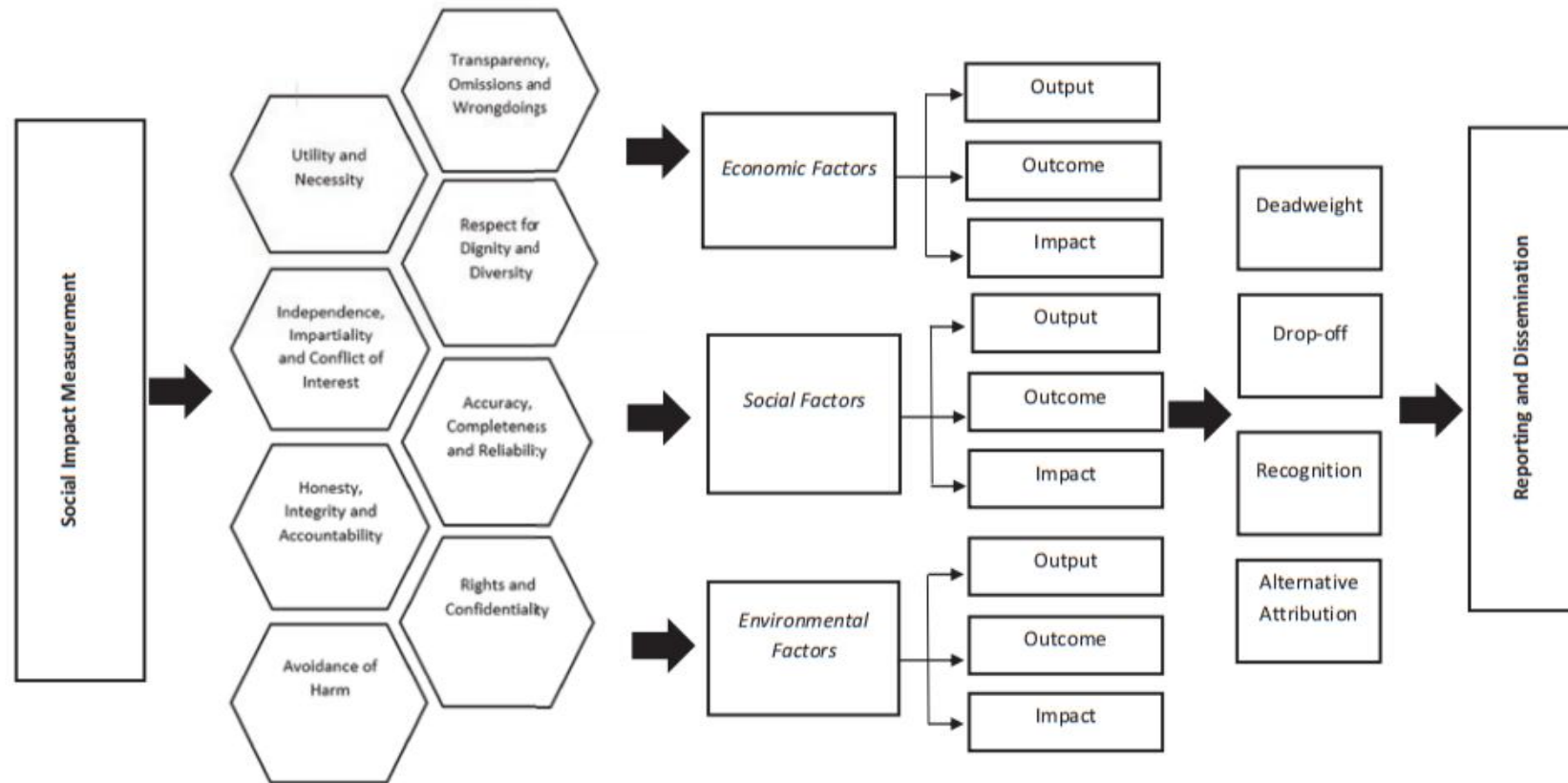


Figure 24. Ethical Framework for Social Impact Measurement (Hazenberget al. 2022, 311).

The Sustainable Development Goals (SDGs) were established to foster a sustainable, peaceful, and prosperous world for all through the achievement of 17 interconnected goals. The SDG agenda has spurred organizations to develop initiatives that address the systemic challenges outlined in these goals. This pressure presents an opportunity for organizations to align their impact measurement efforts with the SDGs. By doing so, they can effectively demonstrate their contributions at local, national, and global levels.

Summing up, to fully understand the impact of programs and interventions in addressing societal problems, it is essential to consider the ethical implications associated with social impact measurement. This includes factors such as data privacy, transparency, and the potential for unintended consequences. The methods reviewed in this section guide event management and organizers in assessing their current event management practices and help them plan for sustainable events. Table 17 below illustrates the five selected method from existing knowledge in approach and tools for measuring environmental and social impacts of events. This helped in the building the conceptual framework that is discussed below.

Method 3 employs an environmental research lens, which can be particularly relevant for projects with significant environmental impacts. The METER index provides a standardized way to measure social impact, facilitating comparisons across different projects. Method 4 takes a holistic approach to social impact measurement, considering multiple dimensions (economic, social, environmental). Emphasizes the importance of good measurement practices, ensuring that the assessment is reliable and valid. Provides a framework for measuring social impact at different levels (primary, middle, advanced), allowing for a comprehensive assessment. Method 1, while the multi-perspective and multi-stakeholder approach is valuable, it can be complex and time-consuming to implement. It may also be challenging to ensure that all perspectives are equally represented. Method 2, The Delphi technique approach can be useful for generating ideas and reaching consensus among experts. However, it can also be prone to bias and groupthink. Method 5, The multi-level social impact measurement approach of Method 5 is comprehensive but may be difficult to implement in practice, especially for organizations with limited resources. Overall, Method 3 and 4 appear to be good choices because they offer a good balance of specificity, simplicity, and comprehensiveness offer valuable approaches to environmental and social impact measurement. They are also likely to be more practical and feasible to implement than Methods 1, 2, and 5.

Table 21. A summary of the five methods for measuring impacts of events (summarized from Section 4).

Method	Method 1 (Antón-Maraña et al., (2024)	Method 2 (Singh et al. 2020)	Method 3 (Boggia et al. 2018)	Method 4 (Hazenberg et al., 2022)	Method 5 Hazenberg et al. (2022)
Approach	A novel multiperspective and multistakeholder approach synthesizing triple bottom line	Delphi technique approach using triple bottom line	Measuring events through environmental research (METER) index	A holistic social impact measurement and characteristics of good measurement	Multi-level social impact measurement approach
Phases / Steps	<p>Four steps in calculating the total environmental impacts.</p> <ol style="list-style-type: none"> <li>Gather data on, (1) utilities energy consumption and water usage; (2) consumables: food and beverage, and waste management; (3) merchandising; (4) communications; (5) space: total area occupied and usage duration; and (6) participant questionnaire about transport and accommodation</li> <li>Using bp Target Neutral events calculator.</li> <li>Getting the current market prices of carbon per metric ton.</li> <li>Utilizing the equation in calculating the total environmental impact.</li> </ol>	<p>Three phases in developing impacts and indicators.</p> <ol style="list-style-type: none"> <li>Impact identification xperts identified and rated the economic, social, and environmental impacts of the event.</li> <li>Indicator suggestion wherein panelists proposed indicators to measure the identified impacts</li> <li>Third phase is indicator review, experts reviewed and refined the suggested indicators.</li> </ol>	<p>Three steps for calculating METER index.</p> <ol style="list-style-type: none"> <li>Normalize category values: Divide the measured or evaluated value for each category by the maximum possible score within that category. This results in a value between 0 and 1.</li> <li>Apply weights: Multiply each normalized value by its corresponding weight, which represents the relative importance of that category.</li> <li>Calculate the final index: Sum the weighted values for all categories to obtain the overall METER index using the equation provided.</li> </ol>	<p>Three main steps in holistic measurement.</p> <ol style="list-style-type: none"> <li>Identify outputs are the direct results of the program, 2. Know the outcomes are the positive or negative changes in individuals' lives as a result of the program, 3. Evaluate impact is the broader societal benefits that arise from the program.</li> </ol> <p>It is essential to account the following factors</p> <ol style="list-style-type: none"> <li>Deadweight which helps to isolate the program's specific contributions.</li> <li>Alternative attribution other factors that might have caused the observed outcomes or impacts, independent of the program.</li> <li>Drop-off can influence the long-term sustainability of the program.</li> </ol> <p>Charateristics of good measurement.</p> <p>A good social impact measurement should be relevant, helpful, simple, natural, certain, understood and accepted, transparent and well-explained and founded on evidence.</p>	<p>Three levels of measurement.</p> <ol style="list-style-type: none"> <li>Primary-Level Measurement: Conducted by service-providing social organizations and focuses on immediate outcomes and outputs.</li> <li>Middle-Level Measurement: Led by local authorities which uses evaluation data to inform policy implementation.</li> <li>Advanced-Level Measurement: Conducted by experts and researchers from research institutions, this involves in-depth analysis and contributes to broader knowledge development.</li> </ol>

#### 4.4 Conceptual Framework of This Thesis

Table 22 below shows the conceptual framework that will help for measuring impacts of sustainable events, based on the available knowledge and best practices discussed above.

Table 22. Conceptual framework for measuring environmental and social impacts of events.

<p>Measuring environmental and social impacts of event.</p>	<p style="text-align: center;"><b>1. Measuring environmental impact Measuring events through environmental research via (METER) Index (Boggia et al., 2018)</b></p> <p style="text-align: center;">Three main steps for measuring environmental impact:</p> <ol style="list-style-type: none"> <li>1. Normalize category values: Divide the measured or evaluated value for each category by the maximum possible score within that category.</li> <li>2. Apply weights: Multiply each normalized value by its corresponding weight, which represents the relative importance of that category.</li> <li>3. Calculate the final index: Sum the weighted values for all categories to obtain the overall METER index using the equation provided.</li> </ol> <p style="text-align: center;"><b>2. Measuring social impact via A holistic social impact measurement (Hazenberg et al., 2022)</b></p> <p style="text-align: center;">Three main steps in holistic social impact measurement.</p> <ol style="list-style-type: none"> <li>1. Identify outputs are the direct results of the program</li> <li>2. Know the outcomes are the positive or negative changes in individuals' lives as a result of the program</li> <li>3. Evaluate impact is the broader societal benefits that arise from the program.</li> </ol> <p style="text-align: center;">Additionally, it is essential to account the following factors (Hazenberg et al., 2022):</p> <ol style="list-style-type: none"> <li>1. Deadweight which helps to isolate the program's specific contributions</li> <li>2. Alternative attribution other factors that might have caused the observed outcomes or impacts, independent of the program</li> <li>3. Drop-off can influence the long-term sustainability of the program.</li> </ol>
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Section 4 considered various approaches and tools for measuring impacts and have selected the following approaches, METER index and holistic social impact measurement, for the conceptual framework as characteristics of good measurement, for measuring environmental and social impacts.

The selected approaches are discussed in literature as good measurement and therefore will serve as a guide in the development of impacts and indicators in the next step, in the proposal building that will be discussed in Section 5.

## **5 Building Proposal for a Measuring Tool for Environmental and Social Impacts for HT Events**

This section merges the results of the current state analysis and the conceptual framework towards the building of the Proposal based on meetings and discussions for the proposal co-creation with key stakeholders of the case company.

### **5.1 Overview of the Proposal Building Stage**

This section presents the steps in the Proposal building for this study. The data collection was done through Interviews with key stakeholders, review of internal documents (manuals, feedback, communication from past events, etc), as well as the data from the research institutes website and case company's web-page. This data supports the important information in identifying the strength and weaknesses that lead to focus areas for improvement which are (1) survey tool and increase reliability of results and (2) measuring tool for impacts of similar events in the future.

The current main priorities for the case company are to ensure that the event is organized in a sustainable manner evidenced by the results from the measuring tool developed. There were two main focus identified. The first focus is on the improvement of survey tool previously used by the case company. The second focus area is the development of measuring tool to use for similar future events with focus on environmental and social impacts.

The inputs were collected from (a) current state analysis data through review of documents, online and face to face meetings with case company's stakeholders (Data 1), (b) group discussion and brain storming with key stakeholders for planning of event and presentation of proposed questions as part of the measuring tool (Data 2). Key stakeholders reviewed the proposed questions and gave feedback, suggestions and approval for the questions to be used in the tool. Some inputs came from the conceptual framework found from available knowledge with relevant best practices. These inputs supported and helped me in building the proposal for the case company measuring tool for the similar events in the future.

## 5.2 Findings from Data 2 (1)

The main inputs for the proposal building from (1) Data 1, the current state analysis, (2) and inputs from best practices and existing knowledge about impacts of events and combined into the conceptual framework, and (3) Data 2, the input from key stakeholders during the co-creation or validation stage.

However, since Data 2 was collected via two iterations and there were considerable changes based on them, the gradual revision of the proposal is presented separately. Table 23 below shows Data 2 (1) inputs that have led to the development of the Initial proposal. (Later on, based on Data 2 (2) inputs, the Initial proposal was modified into the Revised initial proposal that is presented later in Section 5.5.).

Table 23. Inputs and suggestions from key stakeholder for Proposal building, Data 2(1)

	<i>Key focus areas from CSA (from Data 1)</i>	<i>Inputs from literature (CF)</i>	<i>Suggestions from stakeholders for the Proposal, summary (from Data 2)</i>
1	Approach and methods for measuring impact for the event on 6 <sup>th</sup> of May 2024	<p><b>Environmental impact via METER index</b></p> <p>a) Normalization: Each environmental category (e.g., energy, waste, water) is assigned a score, and these scores are normalized to a common scale.</p> <p>b) Weighting: Each category is assigned a weight based on its relative importance.</p> <p>c) Calculation: The weighted scores are summed to calculate the overall environmental impact index.</p> <p>-----</p> <p><b>Social Impact via A holistic social impact measurement (Hazenberg et al., 2022)</b></p> <p>a) Outputs: The direct products or services delivered by the event.</p> <p>b) Outcomes: The changes in individuals or communities as a result of the event.</p> <p>c) Impacts: The broader societal benefits or consequences of the event.</p> <p>Factors to consider:</p>	<p>a) The thesis researcher will create a list of questions and share it with key stakeholders via email. Key stakeholder could add or remove more questions before giving approval.</p> <p>b) Key stakeholders suggested specific questions they want to be included in the survey, including branding and networking related questions. Additional inputs from project consultant shall be included in the survey.</p> <p>c) A pre-survey and post survey will be conducted.</p> <p>d) Key stakeholders suggested that google forms will be used in creating survey questionnaire and collecting survey results.</p>

		<p>Deadweight: Isolating the specific impact of the event from other factors.</p> <p>Alternative Attribution: Identifying other potential causes of the observed impacts.</p> <p>Drop-off: Assessing the long-term sustainability of the event's impact.</p>	
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As seen from Table 23, in the first key focus area on approach and setting of KPIs for measuring impact for the event on 6<sup>th</sup> of May 2024. Based on these initial inputs of Data 2(1), the Initial proposal was built, as shown in Section 5.3.

### 5.3 Initial Proposal

Initial survey proposal was presented and sent to key stakeholder 1 for comments, trial and further improvement.

The first element contains a pre-survey, which will focus on brand recognition and brand loyalty to measure and identify registrants initial knowledge about HT. Table 24 presents the proposed pre-survey questions for successful registrants.

Table 24. A proposed pre-event survey for registrants.

1. How familiar are you with Hiilitalli? Rate from 1 to 5. 1=Never heard of it, 5= I am very familiar
2. How do you evaluate your experience with Hiilitalli so far? Rate 1-5. 1=Poor, 5=Great!
3. Have you already collaborated with Hiilitalli? Please specify the nature of the collaborations if possible. Free from comment.
4. Do you plan to collaborate with Hiilitalli in the future? Yes or no.
5. Which of the following attributes do you associate with Hiilitalli? Informative Innovative Quality-driven Impactful Relevant

Collaborative Practical
----------------------------

Table 25 presents the post-survey questions as initial proposal.

Table 25. Post-survey questions initial proposal.

<b>I. General questions</b>
<p>How have you arrived at Hiilitalli Green Summit 2024 today? Please mark all options that apply</p> <ul style="list-style-type: none"> <li>by walking</li> <li>by bike</li> <li>by e-scooter</li> <li>by train</li> <li>by bus</li> <li>by personal car (petrol)</li> <li>by personal car (electric)</li> <li>by a shared car (with someone else)</li> </ul>
<p>Please choose the option that best describes the industry you currently working in:</p> <ul style="list-style-type: none"> <li>Event sector</li> <li>Tourism sector</li> <li>Research Institute</li> <li>Hospitality</li> <li>Marketing</li> <li>Public Sector</li> <li>Non-profit/Charity</li> <li>Student</li> <li>Other (Please specify)</li> </ul>
<p>What was your main goal for participating in this by Hiilitalli?</p> <ul style="list-style-type: none"> <li>Raising awareness</li> <li>Project presentation</li> <li>Publicity</li> <li>Lecture</li> <li>Networking</li> <li>Academic purposes</li> <li>Community</li> <li>Other</li> </ul>

<p>What type of events you have previously participated with?</p> <p>Private</p> <p>Sport</p> <p>Recreational</p> <p>Music/concert</p> <p>Art</p> <p>Corporate</p> <p>Festival</p> <p>Fundraising</p>
<b>II. Venue</b>
Did you find the event to be accessible to people of all abilities? (Yes/No)
<b>III. Food</b>
Have you enjoyed today's plant-based food? yes, no, comments _____
How appealing today's plant-based food looked and tasted to you? (on the scale 0-5)
Environmental awareness
Did you feel that enough was done to reduce waste at the event? (Likert scale)
How satisfied were you with the waste management practices at the event? (Likert scale)
Were any sustainable materials, such as recycled paper or biodegradable utensils, used at the event? (Yes/No)
How would you rate the overall environmental impact of this event? (Likert scale: 1-5, with 1 being very low and 5 being very high)
How important is it to you that future events prioritize sustainability? (Likert scale)
The event was able to combine efficiency and quality with the need for environmental sustainability. Yes or no.
Were you aware that you were attending a sustainable event? Yes or no.
<b>IV. Experience</b>
What was especially useful or remarkable for you in the event today?
How would you describe the atmosphere of the event? (Multiple choice: friendly, inclusive, energetic, etc.)
Did attending this event influence your personal environmental practices? (Yes/No) If yes, please describe how. (Open-ended)
Will you recommend Hiilitalli's events to others? Yes or no.

How was your overall experience with the event? Rate 1 to 5. 1=poor, 5=excellent Food Venue Program Staff Networking
How do you think the event will impact the community in the long term? (Open-ended)
Value creation and brand awareness
If you are a partner, has this event created value for you & how? Yes, No, How? _____
If you are a student, has this event created value for you & how? Yes, No, How? _____
If you are an organizer, what challenges you faced in organizing this event? What should have been done differently?
If you volunteered at the event, how satisfied were you with your experience? (Likert scale)
What would you like to see more in Hiilitalli's future events? Please specify
Evaluate how, in your opinion, the following statements about Hiilitalli hold true on a scale of 1-10. Hiilitalli is: Quality-driven: Things are done thoughtfully and with expertise Open: Promotes collaboration and engagement, operates transparently Impactful: Advances sustainable development and educates future professionals Practical: Hiilitalli takes concrete actions to mitigate climate change Lifecycle-conscious: Critically assesses operational models and understands the impact of its actions
Have the event increased your sense of community and interest in sustainability topics? Rate 1-5. 1=Disagree, 5=Agree
Have you been able to find opportunities for employment, or networking, or project collaborations, or new ideas? Yes or no.
Will you participate in Hiilitalli's events in the future? Yes or no.
Did you learn something new or gain valuable insights from the event? (Yes/No)
Do you plan to cooperate with Hiilitalli in the future? Yes or no.
Have the event increased your sense of community and interest in sustainability topics? Rate 1-5. 1=Disagree, 5=Agree

Pre-survey was reviewed, tested, and approved by the key stakeholder 1. Post-survey however, needed to be revised according to the suggestions and wants of the key stakeholder discussed in Section 5.4.

The next part presents the data collected from the revision round to the Initial proposal.

#### 5.4 Findings from Data 2 (2)

However, after discussing once again the Initial proposal presented in Section 5.3 above, the key stakeholders wanted to incorporate their own specific questions in the development of the survey questionnaire. A pre-survey and post survey shall be conducted, with pre-survey focusing on brand recognition and brand loyalty and post-survey will include more questions in relation to food, transportation, event experience and brand attributes based on the suggestion of previous event manager. For the second key focus area, a tool for measuring impacts, it was suggested that google forms will be used.

Based on key stakeholders' inputs from Data 2 (2), the Initial Proposal was further modified into the Revised Initial Proposal. In the Revised initial proposal, the list of questions (see Table 27-30) specifically for post-survey, is shorter and more tailored to the needs of the case organization.

Table 26. Inputs and suggestions from key stakeholder for Proposal building, Data 2(2).

	<i>Key focus areas from CSA (from Data 1)</i>	<i>Inputs from literature (CF)</i>	<i>Suggestions from stakeholders for the Proposal, summary (from Data 2)</i>
1	Approach and methods for measuring impact for the event on 6 <sup>th</sup> of May 2024	<p><b>Environmental impact via METER index</b></p> <p>a) Normalization: Each environmental category (e.g., energy, waste, water) is assigned a score, and these scores are normalized to a common scale.</p> <p>b) Weighting: Each category is assigned a weight based on its relative importance.</p> <p>c) Calculation: The weighted scores are summed to calculate the overall environmental impact index.</p> <p>-----</p> <p><b>Social Impact via A holistic social impact measurement (Hazenberg et al., 2022)</b></p> <p>a) Outputs: The direct products or</p>	<p>a) The researcher will create a list of questions and share it with key stakeholders via email. Key stakeholder could add or remove more questions before giving approval.</p> <p>b) Key stakeholders suggested specific questions they want to be included in the survey, including branding and networking related questions. Additional inputs from project consultant shall be included in the survey.</p> <p><b>c) Survey questionnaire will be divided into sections and will include focused questions</b></p>

		<p>services delivered by the event.</p> <p>b) Outcomes: The changes in individuals or communities as a result of the event.</p> <p>c) Impacts: The broader societal benefits or consequences of the event.</p> <p>Factors to consider:</p> <p>Deadweight: Isolating the specific impact of the event from other factors.</p> <p>Alternative Attribution: Identifying other potential causes of the observed impacts.</p> <p>1. Drop-off: Assessing the long-term sustainability of the event's impact.</p>	<p><b>according to the role of attendees.</b></p> <p>d) A pre-survey and post survey will be conducted.</p> <p>e) Key stakeholders suggested that google forms will be used in creating survey questionnaire and collecting survey results.</p>
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After sending the initial proposal to the key stakeholder 1, it was noted that the post survey is too long and should be reduced and it was suggested that it should be divided in to sections according topics and role of the attendees, thus, the survey must be restructured. Upon the receipt of the feedback from key stakeholder 1, the researcher revised and restructured the post-survey questions. Revision of post-survey was done with inputs from project consultant and another researcher. The post-survey was presented to key stakeholder 2 during the final meeting, it was reviewed, trialed and approved by key stakeholder 2 as Revised initial proposal.

The next part presents the Revised initial proposal for post-survey questions based on the inputs from the stakeholders received from the revision round.

### 5.5 Revised Initial Proposal for Post-survey

The Revised initial proposal contains a post-event survey, divided into four sections. First three sections, namely transportation, food and about the event and HT shall be answered by the all survey respondents (see Table 27) and fourth section are focused questions which will answered depending on your role of participation in the event.

Table 27. The revised post-event survey for all attendees part 1.

<b>I. Transportation Questions</b>
<p>1. How have you arrived at Hiilitalli Green Summit 2024 today? Please mark all options that apply.</p> <p>by walking</p> <p>by bike</p> <p>by e-scooter</p> <p>by train</p> <p>by bus</p> <p>by personal car (petrol)</p> <p>by personal car (electric)</p> <p>by a shared car (with someone else)</p>
2. How long is your estimated distance of travel (in kilometers, one way)?
<b>II. Food questions</b>
3. Have you enjoyed the plant-based food at the event today? Rate 1-5. 1=No, 5=Absolutely enjoyed
<p>4. How appealing today?s plant-based food looked and tasted to you? Based on looks and taste.</p> <p>Not appealing to me</p> <p>No special opinion</p> <p>Ok to me</p> <p>Rather appealing</p> <p>Very appealing</p>
<p>5. How do you feel, will today?s experience help you choose the plant-based food more often in your everyday life?</p> <p>Yes, I fully agree</p> <p>Maybe, I partly agree</p> <p>I don ´t know</p> <p>No big change in my attitude</p> <p>No special interest in plant-based food from my side</p>
<b>III. ABOUT TODAY'S EVENT and "Hiilitalli"</b>
<p>6. Evaluate how, in your opinion, the following statements about Hiilitalli hold true on a scale of 1-5. 1=Poor, 5=Outstanding</p> <p>Hiilitalli is:</p> <p>Quality-driven: Things are done thoughtfully and with expertise</p>

<p>Open: Promotes collaboration and engagement, operates transparently</p> <p>Impactful: Advances sustainable development and educates future professionals</p> <p>Practical: Hiilitalli takes concrete actions to mitigate climate change</p> <p>Lifecycle-conscious: Critically assesses operational models and understands the impacts</p>
<p>7. You have participated in the event in the role of</p> <p>Partner Companies, Associates</p> <p>Students or staff</p> <p>Organizers</p> <p>Others</p>

Proposed post-survey questions for students and staff only (see Table 28) aims to measure the effectiveness and impact of the event which focuses on the following aspects event value and impact, overall event experience and future event suggestions.

Table 28. The revised post-event survey for students and staff only.

<b>For Students or staff</b>
8. Has this event created value for you? Yes or no.
9. What was especially useful or remarkable for you in the event today?
10. Have you been able to find opportunities for employment, or networking, or project collaborations, or new ideas? Yes or no.
11. Have the event increased your sense of community and interest in sustainability topics? Rate 1-5. 1=Disagree, 5=Agree
12. How was your overall experience with the event? Rate 1 to 5. 1=poor, 3=ok, 5=excellent
Food
Venue
Program
Staff
Networking
13. Will you recommend Hiilitalli's events to others? on the scale from 1 to 10. 1=No, absolutely not, 10=Absolutely yes
14. What would you like to see more in Hiilitalli's future events? Please specify

As seen in Table 28, one unique question from this focused list is Question 11. HT wants to measure the impact of the event on the participant's sense of community and interest in sustainability topics.

The revised post-survey questions for partner companies and associates only (see Table 29) aims to assess the effectiveness of the event in fostering relationships with partner companies and associates, identify areas for improvement, and tailor future events to meet their specific needs and interests.

Table 29. The revised post-survey questions for partner companies and associates only.

<b>For Partner Companies or Associates</b>
8. Has this event been useful for you? Yes, No, How?
9. What was especially useful or remarkable for you in the event today?
10. Have you been able to find opportunities for employment, or networking, or project collaborations, or new ideas? Yes or no.
11. How was your overall experience with the event? Rate 1 to 5. 1=poor, 3=ok, 5=excellent Food Venue Program Staff Networking
12. Will you recommend Hiilitalli's events to others? on the scale from 1 to 10. 1=No, absolutely not, 10=Absolutely yes
13. What would you like to see more in Hiilitalli's future events? Please specify
14. Do you plan to cooperate with Hiilitalli in the future? Yes or no.

As seen in Table 29 one specific question asked to the partner companies and associates is question number 14. HT, based on the outcome of the survey, wants to assess the strength of its partnerships with these companies, attract new collaborators, and enhance its overall impact.

Proposed post-survey questions for organizers only (see Table 30) aims to evaluate the success of the event from the organizer's perspective, identify areas for

improvement in future events, and better understand the needs and expectations of organizers.

Table 30. The revised post-survey questions for organizers only.

<b>For Organizers</b>
8. What was your main goal for participating in this by Hiilitalli? Raising awareness Project presentation Publicity Lecture Networking Academic purposes Other
9. What was especially useful or remarkable for you in the event today?
10. Have you been able to find opportunities for employment, or networking, or project collaborations, or new ideas? Yes or no.
11. What challenges you faced in organizing this event?
12. How was your overall experience with the event? Rate 1 to 5. 1=poor, 3=ok, 5=excellent Food Venue Program Staff Networking
13. What should have been done differently? improved?
14. What would you like to see more in Hiilitalli's future events? Please specify
15. Will you participate in Hiilitalli's events in the future? Yes or no.

As seen in Table 30, there are four unique questions asked to the organizers, questions number 8, 11, 13, and 15. The outcome of the survey, specifically from those mentioned questions, can help HT strengthen its relationships with organizers, attract new participant, and improve overall quality of the future events.

## 5.6 Summary of the Initial Proposal

An initial survey proposal was presented to key stakeholders for feedback and improvement. The initial proposal included a pre-survey to assess brand recognition and loyalty, and a post-survey to gather feedback on various aspects of the event, including food, transportation, event experience, and brand attributes see Table 31.

Table 31. The pre-survey questions for successful registrants.

<b>Hiilitalli Green Summit 2024 - Pre Survey</b>
1. How familiar are you with Hiilitalli? Rate from 1 to 5. 1=Never heard of it, 5= I am very familiar
2. How do you evaluate your experience with Hiilitalli so far? Rate 1-5. 1=Poor, 5=Great!
3. Have you already collaborated with Hiilitalli? Please specify the nature of the collaborations if possible. Free from comment.
4. Do you plan to collaborate with Hiilitalli in the future? Yes or no.
5. Which of the following attributes do you associate with Hiilitalli?
Informative
Innovative
Quality-driven
Impactful
Relevant
Collaborative
Practical

After receiving a feedback from key stakeholder, the post-survey was revised and restructured according to topics, transportation, food and event experience, which applies to all respondents and specific questions which applies according to role of attendees. The revised post-survey aims to provide valuable insights into the; success of event, identification of areas for improvement, and better information for future planning decisions. Summary is presented in Table 32.

The following section will discuss the results of the surveys and report on the validation stage of the initial proposal with the key stakeholders.

Table 32. Summary of the Revised initial proposal post-survey questions.

I. Transportation Questions	For Students or staff	For Partner Companies or Associates	For Organizers
<p>I. Transportation Questions</p> <p>1. How have you arrived at Hiilitalli Green Summit 2024 today? Please mark all options that apply.</p> <ul style="list-style-type: none"> <li>by walking</li> <li>by bike</li> <li>by e-scooter</li> <li>by train</li> <li>by bus</li> <li>by personal car (petrol)</li> <li>by personal car (electric)</li> <li>by a shared car (with someone else)</li> </ul> <p>2. How long is your estimated distance of travel (in kilometers, one way)?</p> <p>II. Food questions</p> <p>3. Have you enjoyed the plant-based food at the event today? Rate 1-5. 1=No, 5=Absolutely enjoyed</p> <p>4. How appealing today? s plant-based food looked and tasted to you? Based on looks and taste.</p> <ul style="list-style-type: none"> <li>Not appealing to me</li> <li>No special opinion</li> <li>OK to me</li> <li>Rather appealing</li> <li>Very appealing</li> </ul> <p>5. How do you feel, will today's experience help you choose the plant-based food more often in your everyday life?</p> <ul style="list-style-type: none"> <li>Yes, I fully agree</li> <li>Maybe, I partly agree</li> <li>I don't know</li> <li>No big change in my attitude</li> <li>No special interest in plant-based food from my side</li> </ul> <p>III. ABOUT TODAY'S EVENT and "Hiilitalli"</p> <p>6. Evaluate how, in your opinion, the following statements about Hiilitalli hold true on a scale of 1-5. 1=Poor, 5=Outstanding</p> <ul style="list-style-type: none"> <li>Hiilitalli is: Quality-driven: Things are done thoughtfully and with expertise</li> <li>Open: Promotes collaboration and engagement, operates transparently</li> <li>Impactful: Advances sustainable development and educates future professionals</li> <li>Practical: Hiilitalli takes concrete actions to mitigate climate change</li> <li>Life-cycle-conscious: Critically assesses operational models and understands the impacts</li> </ul> <p>7. You have participated in the event in the role of</p> <ul style="list-style-type: none"> <li>Partner Companies, Associates</li> <li>Students or staff</li> <li>Organizers</li> <li>Others</li> </ul>	<p>8. Has this event created value for you? Yes or no.</p> <p>9. What was especially useful or remarkable for you in the event today?</p> <p>10. Have you been able to find opportunities for employment, or networking, or project collaborations, or new ideas? Yes or no.</p> <p>11. Have the event increased your sense of community and interest in sustainability topics? Rate 1-5. 1=Disagree, 5=Agree</p> <p>12. How was your overall experience with the event? Rate 1 to 5. 1=poor, 3=ok, 5=excellent</p> <ul style="list-style-type: none"> <li>Food</li> <li>Venue</li> <li>Program</li> <li>Staff</li> <li>Networking</li> </ul> <p>13. Will you recommend Hiilitalli's events to others? on the scale from 1 to 10. 1=No, absolutely not, 10=Absolutely yes</p> <p>14. What would you like to see more in Hiilitalli's future events? Please specify</p>	<p>8. Has this event been useful for you? Yes, No, How?</p> <p>9. What was especially useful or remarkable for you in the event today?</p> <p>10. Have you been able to find opportunities for employment, or networking, or project collaborations, or new ideas? Yes or no.</p> <p>11. How was your overall experience with the event? Rate 1 to 5. 1=poor, 3=ok, 5=excellent</p> <ul style="list-style-type: none"> <li>Food</li> <li>Venue</li> <li>Program</li> <li>Staff</li> <li>Networking</li> </ul> <p>12. Will you recommend Hiilitalli's events to others? on the scale from 1 to 10. 1=No, absolutely not, 10=Absolutely yes</p> <p>13. What would you like to see more in Hiilitalli's future events? Please specify</p> <p>14. Do you plan to cooperate with Hiilitalli in the future? Yes or no.</p>	<p>8. What was your main goal for participating in this by Hiilitalli?</p> <ul style="list-style-type: none"> <li>Raising awareness</li> <li>Project presentation</li> <li>Publicity</li> <li>Lecture</li> <li>Networking</li> <li>Academic purposes</li> <li>Other</li> </ul> <p>9. What was especially useful or remarkable for you in the event today?</p> <p>10. Have you been able to find opportunities for employment, or networking, or project collaborations, or new ideas? Yes or no.</p> <p>11. What challenges you faced in organizing this event?</p> <p>12. How was your overall experience with the event? Rate 1 to 5. 1=poor, 3=ok, 5=excellent</p> <ul style="list-style-type: none"> <li>Food</li> <li>Venue</li> <li>Program</li> <li>Staff</li> <li>Networking</li> </ul> <p>13. What should have been done differently? improved?</p> <p>14. What would you like to see more in Hiilitalli's future events? Please specify</p> <p>15. Will you participate in Hiilitalli's events in the future? Yes or no.</p>

## **6 Results and Validation of the Proposal**

This section reports on the results of the validation stage and points to further developments to the initial Proposal. At the end of this section, the Final proposal and Recommendations are presented at the end of this section.

### **6.1 Overview of the Validation Stage**

The initial proposal was validated by implementing the earlier developed tool and collecting feedback about it from key stakeholders. There were two important events of the co-creation with key stakeholders that helped with developing the final set of survey questionnaire.

The first one was in the meeting where the initial proposal of survey questions were presented and sent to key stakeholders for suggestions; and the second one was when key stakeholders' question suggestions were included, the revised initial proposal had been presented and a trial was done via google forms and the approval of the survey questionnaire.

### **6.2 Testing the Tool**

The key stakeholder reviewed and tested the questionnaire via google forms; they subsequently approved both questionnaires. The pre-survey questionnaire was sent before the Summit to 48 participants and for the post-survey questionnaire, via the QR code was flashed on screen at the end of the event for all participants to fill in.

### **6.3 Implementation of the Final Proposal**

As there were no further changes recommended to the Initial proposal, the final proposal for this thesis was implemented as shown in Figure 25 through Figure 31 below.

## Hiilitalli Green Summit 2024 - Pre Survey

**Share your thoughts on the Hiilitalli Green Summit!**

This anonymous feedback survey will help us improve Hiilitalli's overall operations and functionalities.

If you'd like a response to your feedback or have further questions, feel free to contact us at [hiilitalli@metropolia.fi](mailto:hiilitalli@metropolia.fi).

[Kirjautu Googleen](#), jotta voit tallentaa edistymisesi. [Lue lisää](#)

**\* Pakollinen kysymys**

How familiar are you with Hiilitalli? \*

1 2 3 4 5

Never heard of it      I am very familiar

How do you evaluate your experience with Hiilitalli so far? \*

1 2 3 4 5

Poor      Great!

Have you already collaborated with Hiilitalli? Please specify the nature of the collaboration if possible. \*

Oma vastauksesi \_\_\_\_\_

Do you plan to collaborate with Hiilitalli in the future? \*

Yes

No

Muu: \_\_\_\_\_

Which of the following attributes do you associate with Hiilitalli? \*

Informative

Innovative

Quality-driven

Impactful

Relevant

Collaborative

Practical

Muu: \_\_\_\_\_

**Lähetä** Tyhjennä lomake

Figure 25. HT Green Summit 2024 Pre-survey using google forms.

## Hiilitalli Green Summit 2024 - Post Survey

**We want to hear from you! Please share your thoughts on the Hiilitalli Green Summit!**

This anonymous feedback survey will help us improve Hiilitalli's overall operations and functionalities.

If you'd like a response to your feedback or have further questions, feel free to contact us at [hiilitalli@metropolia.fi](mailto:hiilitalli@metropolia.fi).

[Kirjautu Googleen](#), jotta voit tallentaa edistymisesi. [Lue lisää](#)

**\* Pakollinen kysymys**

### I. TRANSPORTATION questions

1. How have you arrived at Hiilitalli Green Summit 2024 today? Please mark all options that apply \*

- by walking
- by bike
- by e-scooter
- by train
- by tram
- by bus
- by a personal car (petrol)
- by a personal car (electric)
- by a shared car (with someone else)
- Muu: \_\_\_\_\_

2. How long is your estimated distance of travel (in kilometers, one way)? \*

Oma vastauksesi \_\_\_\_\_

Figure 26. HT Green Summit 2024 Post-survey transportation questions using google forms.

II. FOOD questions

3. Have you enjoyed the plant-based food at the event today? \*

1      2      3      4      5

No                                    Absolutely enjoyed

4. How appealing today's plant-based food looked and tasted to you? \*

	Not appealing to me	No special opinion	Ok to me	Rather appealing	Very appealing
Looks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Taste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. How do you feel, will today's experience help you choose the plant-based food more often in your everyday life? \*

Yes, I fully agree

Maybe, I partly agree

I don't know

No big change in my attitude

No special interest in plant-based food from my side

Figure 27. HT Green Summit 2024 Post-survey food questions using google forms.

III. ABOUT TODAY'S EVENT and "Hiilitalli"

6. Evaluate how, in your opinion, the following statements about Hiilitalli hold true \*  
on a scale of 1-5. Hiilitalli is:

	Poor	Unsatisfactory	Satisfactory	Very satisfactory	Outstanding
Quality-driven: Things are done thoughtfully and with expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open: Promotes collaboration and engagement, operates transparently	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impactful: Advances sustainable development and educates future professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Practical: Hiilitalli takes concrete actions to mitigate climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lifecycle- conscious: Critically assesses operational models and understands the impacts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. You have participated in the event in the role of \*

Valitse

Figure 28. HT Green Summit 2024 Post-survey About Today's Event and Hiilitalli using google forms.

**For Partner Companies or Associates**

8. Has this event been useful for you? Yes, No, How? \*

Yes

No

Muu: \_\_\_\_\_

9. What was especially useful or remarkable for you in the event today?

Oma vastauksesi \_\_\_\_\_

10. Have you been able to find opportunities for employment, or networking, or project collaborations, or new ideas? \*

Yes

No

Muu: \_\_\_\_\_

11. How was your overall experience with the event? \*

	1, poor	2	3, ok	4	5, excellent
Food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Venue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Networking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Will you recommend Hiilitalli's events to other companies? on the scale from 1 to 10 \*

1 2 3 4 5 6 7 8 9 10

No, absolutely not           Absolutely yes

13. What would you like to see more in Hiilitalli's future events? Please specify

Oma vastauksesi \_\_\_\_\_

14. Do you plan to cooperate with Hiilitalli in the future? \*

Yes

No

Muu: \_\_\_\_\_

Takaisin **Lähetä** Tyhjennä lomake

Figure 29. HT Green Summit 2024 Post-survey for partner companies and associates questions only using google forms.

**For Students or staff**

8. Has this event created value for you? \*

Yes

No

Muu: \_\_\_\_\_

9. What was especially useful or remarkable for you in the event today?

Oma vastauksesi \_\_\_\_\_

10. Have you been able to find opportunities for employment, or networking, or project collaborations, or new ideas? \*

Yes

No

Muu: \_\_\_\_\_

11. Have the event increased your sense of community and interest in sustainability topics? \*

1 2 3 4 5

Disagree      Agree

12. How was your overall experience with the event? \*

1, poor 2 3, ok 4 5, excellent

Food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Venue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Networking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Will you recommend Hiilitalli's events to others? on the scale from 1 to 10 \*

1 2 3 4 5 6 7 8 9 10

No, absolutely not           Absolutely yes

14. What would you like to see more in Hiilitalli's future events? Please specify

Oma vastauksesi \_\_\_\_\_

Takaisin **Lähetä** Tyhjennä lomake

Figure 30. HT Green Summit 2024 Post-survey for students or staff only using google forms.

For Organizers

8. What was your main goal for participating in this by Hiilitalli? \*

Raising awareness

Project presentation

Publicity

Lecture

Networking

Academic purposes

Muu: \_\_\_\_\_

9. What was especially useful or remarkable for you in the event today?

Oma vastauksesi \_\_\_\_\_

10. Have you been able to find opportunities for employment, or networking, or project collaborations, or new ideas? \*

Yes

No

Muu: \_\_\_\_\_

11. What challenges you faced in organizing this event?

Oma vastauksesi \_\_\_\_\_

12. How was your overall experience with the event? \*

	1, poor	2	3, ok	4	5, excellent
Food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Venue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Networking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. What should have been done differently? improved?

Oma vastauksesi \_\_\_\_\_

14. What would you like to see more in Hiilitalli's future events? Please specify

Oma vastauksesi \_\_\_\_\_

15. Will you participate in Hiilitalli's events in the future? \*

Yes

No

Muu: \_\_\_\_\_

Takaisin **Lähetä** Tyhjennä lomake

Figure 31. HT Green Summit 2024 Post-survey for organizers questions only using google forms.

## 6.4 Analysis of Pre-survey and Post-Survey Results

This part focuses on analysing survey results collected from the pre-survey and post-survey. The Pre-survey focused on brand recognition and brand loyalty, and post-survey questions focused on transportation, food, event experience and brand attributes.

### 6.4.1 Analysis of Pre-survey results

There were 48 online registrants that received an email to answer pre-survey questionnaire consisting of five questions. 6 registrants responded to the pre-survey and the results and analysis are presented below.

*Question 1. "How familiar are you with Hiilitalli?"* This question 1 measured respondent's awareness of HT and gauged HT's branding and marketing efforts. A total of 6 respondents shared their thoughts, as presented in Figure 32.

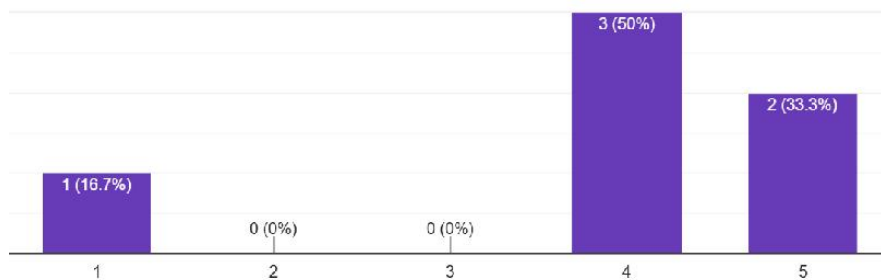


Figure 32. Survey result of how familiar the respondents are with Hiilitalli (on the scale 1-5. 1=never heard of it, 5=I am very familiar).

Figure 32 illustrates that a significant portion of the respondents indicated a familiarity level of 4 and 5, suggesting a relatively high level of awareness of HT. However, there were also those who have never heard of HT thus indicates an opportunity to enhance HT's visibility to reach wider audience.

*Question 2. "How do you evaluate your experience with Hiilitalli so far?"* Question 2 aimed to measure overall satisfaction of respondents towards their experience with HT. Figure 33 presents how the respondents evaluated their experience with HT so far.

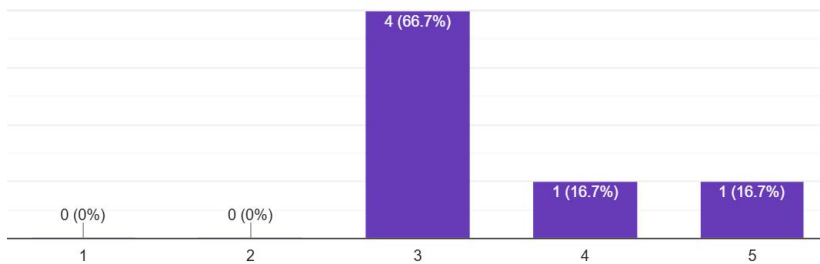


Figure 33. Survey result of respondents evaluation of their experience with Hiilitalli so far (on the scale 1-5. 1=poor, 5=great).

Figure 33 shows that the majority of respondents rated their experience with HT good up to great, indicating a positive overall perception. This suggests that HT successfully provided positive experience for people it worked with.

*Question 3. "Have you already collaborated with Hiilitalli? Please specify the nature of the collaborations if possible. Free from comment."* Question 3 aimed to understand the extent of user engagement with HT beyond awareness and perception and to identify specific areas of collaboration and identify opportunities for future engagement. Answers from free comments are listed below.

*"Participating Studia Hiilitalli events".*

*"Contributor in CarbonBusters -project".*

*"I've participated in the events".*

*"Yes, academic".*

*"I have participated on a project for Hiilitalli".*

Based on the answers collected, some did not yet collaborated with HT, and some collaborated with HT through projects or participated in HT events. This shows that HT collaboration is recognized diverse. Potential implications are for HT to strengthen the community by organizing more events, expanding collaboration opportunities with academic workers and targeted outreach by identifying individuals who have yet collaborated with HT.

*Questions 4. "Do you plan to collaborate with Hiilitalli in the future?"* Question 4 purpose is to gauge future intentions and know potential opportunities for continued

engagement with HT. By asking this question, HT assess future interest, identify potential partners and measure the impact of current initiatives. Figure 34 shows the respondents future plan to collaborate with HT.

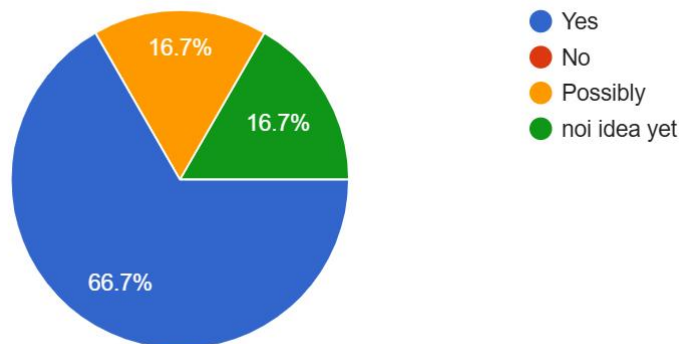


Figure 34. Survey result on respondents future collaboration with Hiilitalli.

Figure 34 shows that majority of the respondents (66.7%) are sure to collaborate with HT in the future, while the remaining respondents are still unsure. This show that most of the respondents are satisfied with their past collaboration with HT, for the remaining unsure respondents HT should identify and address any barriers that are preventing them from collaborating.

*Question 5. "Which of the following attributes do you associate with Hiilitalli?"*

- a. Informative
- b. Innovative
- c. Quality-driven
- d. Impactful
- e. Relevant
- f. Collaborative
- g. Practical

Question 5 aims to measure the respondents' perception of HT's brand attributes. By understanding how respondents perceive HT, it can determine core values and strengths that resonate with audience, identify any gaps or misalignments between the perceived and desired brand image, develop targeted branding and marketing campaigns that align with brand perception and assess overall strength and value of HT brand. Figure 35 shows the respondents perception of HT's brand attributes.

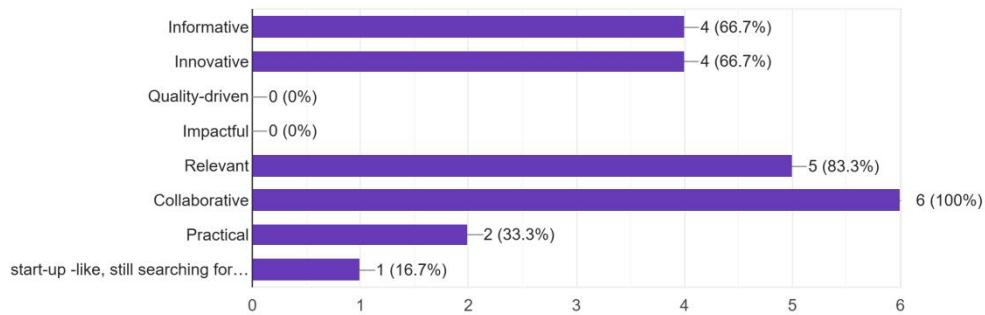


Figure 35. Survey result of respondents perception of Hiilitalli's brand attributes.

Figure 35 shows that respondents perceive HT to be collaborative, relevant, informative and innovative gaining percentage above 66.7% each. No one perceived HT as quality-driven and impactful. This results shows that HT positioned itself the most as collaborative, if the HT wants to be attributed as quality-driven and impactful it has work and improve on that areas. Through these results HT can make informed decisions on how to strengthen its brand identify, improve its reputation and attract new audiences. Overall, pre-survey results are positive although the number is very low.

#### 6.4.2 Analysis of Post-survey results

There are a total of 31 registered attendees, 26 online registrants and 5 attendees registered on the day of the event. 14 respondents answered the post-survey, 11 students or staffs, 3 organizers and zero from partner companies or associates. The analysis of survey results of post survey are presented below.

##### 6.4.2.1 Transportation Questions

*Question 1. "How have you arrived at Hillitalli Green Summit 2024 today? Please mark all options that apply"*

- a) by walking
- b) by bike
- c) by e-scooter
- d) by train
- e) by bus
- f) by personal car (petrol)
- g) by personal car (electric)
- h) by a shared car (with someone else)

The primary purpose of this question 1 was to assess attendees' mode of transportation to the event. This information was used to evaluate the event's sustainability, inform future event planning, identify transportation barriers and promote sustainable transportation. Figure 36 shows the result of attendees' mode of transportation to the event.

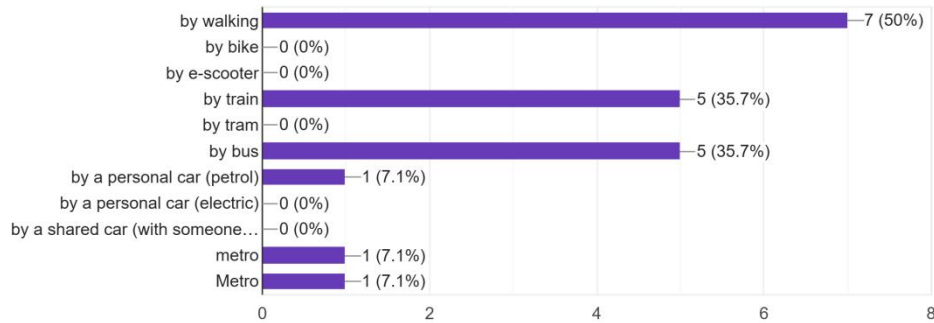


Figure 36. Survey result of attendees' mode of transportation to the event.

Figure 36 shows walking emerged as the most popular mode of transportation, with 13 out of 14 respondents opting for this sustainable choice. This suggests that the event venue was conveniently located within walking distance for many attendees. Public transportation, including train, bus, and metro, was the second most popular choice. This indicates that attendees were willing to utilize public transport options to reach the event. Personal cars, were used by a minority of respondents. This suggests that attendees were conscious of their environmental impact and preferred more sustainable modes of transport.

*Question 2. "How long is your estimated distance of travel (in kilometers, one way)?"*

1,2,8, 2-10,12, 15, 16, 21, 180, 2.5, 25-30, 9.5, less than 1km.

#### 6.4.2.2 Food Questions

*Question 3. "Have you enjoyed the plant-based food at the event today?"* Question 3 aimed to assess the satisfaction of attendees with the plant-based food options provided at the event. By understanding their preferences and feedback, organizers can improve future food offerings. Figure 37 below illustrates the response of attendees on how they enjoyed the plant-based food at the event.

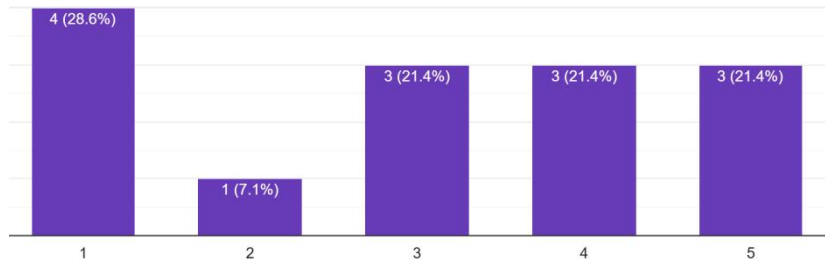


Figure 37. Survey result of attendees on how they enjoyed the plant-based food at the event (on a scale of 1-5. 1=no, 5=absolutely enjoyed).

Figure 37 shows that 6 out of 14 respondents enjoyed the food served during the event, 3 respondents gave a somewhat neutral or positive opinion, and 5 gave a low rating. Based on the results the organizers can consider expanding plant-based options and because some respondents were not satisfied, organizer can focus on improving a better choice of plant-based food in the future event.

*Question 4. “How appealing today’s plant-based food looked and tasted to you? Based on looks and taste.*

- a) Not appealing to me
- b) No special opinion
- c) Ok to me
- d) Rather appealing
- e) Very appealing

Question 4 aimed to assess the visual and taste appeal of the plant-based food offered at the event. By understanding how attendees perceive the food, organizers can make informed decisions about future food offerings and presentation. Figure 38 illustrates the respondents thoughts on plant-based food served at the event based on looks and taste.

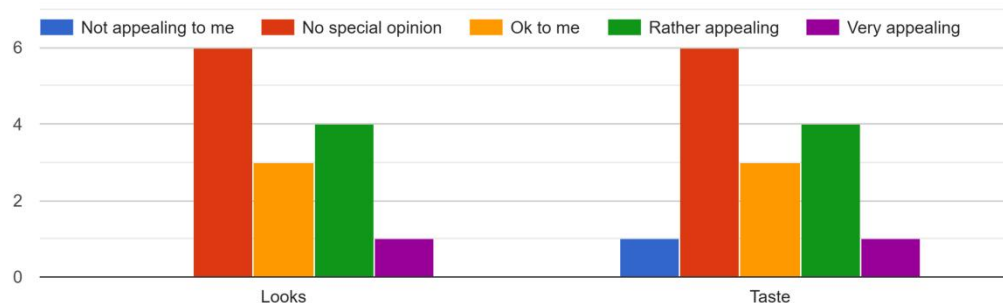


Figure 38. Survey result of respondents thoughts on plant-based food served at the event based on looks and taste.

Figure 38 shows that 8 out of 14 respondents found the plant-based food to be ok and appealing and the remaining 6 respondents do not have any special opinion on the plant-based food in terms of looks and . This indicates that the presentation and plating of the food were generally well-received although improvements can be considered to improve the overall response. In terms of taste, Figure 38 shows that 7 out of 14 respondents did not seem to like the food and the other half gave a positive feedback. The percentage of respondents who found the food to be "Not Appealing" or "No Special Opinion." indicates that there is still room for improvement in terms of taste and presentation.

*Question 5. "How do you feel, will today's experience help you choose the plant-based food more often in your everyday life?"*

- a) Yes, I fully agree
- b) Maybe, I partly agree
- c) I don't know
- d) No big change in my attitude
- e) No special interest in plant-based food from my side

Question 5 aimed to assess the impact of the event on attendees' future food choices. By understanding how the experience influenced their perception of plant-based food, organizers can gauge the effectiveness of their efforts to promote sustainable and healthy eating habits. Figure 39 shows how the plant-based food experience from the event will affect the respondent's food choices in everyday life.

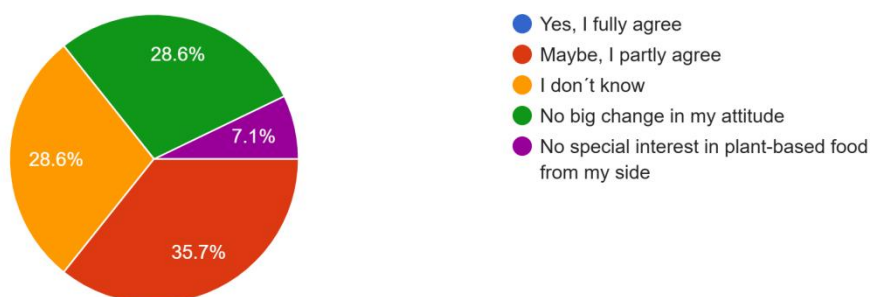


Figure 39. Survey result on how the plant-based food experience from the event will affect the respondent's food choices in everyday life.

Figure 39 shows that 35.7% expressed no special interest in plant-based food, 64.3% gave a neutral response and were unsure about the impact or felt that there would be no significant change in their attitude. The results shows that the respondents' food experience at the event did not affect their choices to choose plant-based in their

everyday life. This is highly related to question 4 wherein looks and taste of the food served got a relatively low grade or rating.

#### 6.4.2.3 Event Experience (About today's event and Hiilitalli) Questions

*Question 6. Evaluate how, in your opinion, the following statements about Hiilitalli hold true. Hiilitalli is:*

- a) Quality-driven: Things are done thoughtfully and with expertise
- b) Open: Promotes collaboration and engagement, operates transparently
- c) Impactful: Advances sustainable development and educates future professionals
- d) Practical: Hiilitalli takes concrete actions to mitigate climate change
- e) Lifecycle-conscious: Critically assesses operational models and understands the impacts

Question 6 aimed to measure the perception of respondents regarding HT's core values and attributes. By understanding how respondents perceive Hiilitalli, the organization can identify areas of strength and weakness and make informed decisions about future strategies. Figure 40 shows how the respondents evaluate HT according to the given statements.

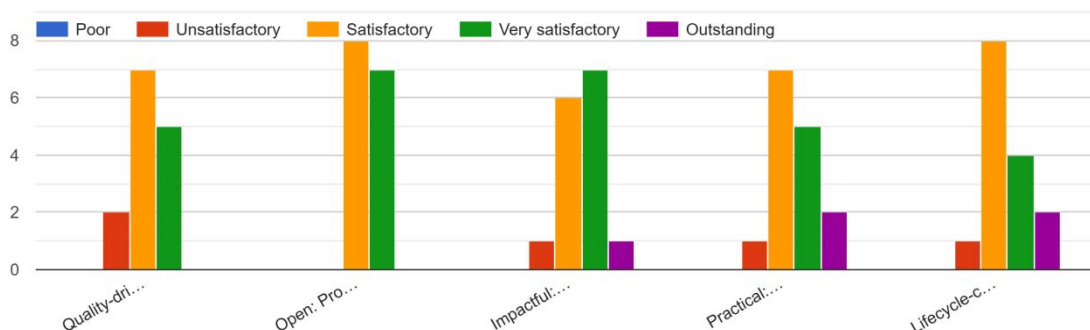


Figure 40. Survey result of respondents evaluation of Hiilitalli according to the statements given.

Figure 40 shows that among all five choices, respondents generally perceive Hiilitalli as open and promotes collaboration and engagement, operates transparently. It is the only choice which did not receive unsatisfactory remark. Four other choices generally received positive feedback and the unsatisfactory remarks are implications for future areas of improvements. Implications for future strategies HT should a) highlight quality and impact and continue to emphasize HT's commitment to quality and impact through effective communication and showcasing successful projects; b) enhance transparency by sharing information about decision-making processes, project updates, and

organizational goals; c) highlight the practical applications of HT's work through case studies, workshops, and other outreach activities; and d) continue educating stakeholders about the importance of lifecycle thinking and the steps that Hiilitalli is taking to reduce its environmental impact. Through these efforts HT can improve the perception of other people towards the organization.

*Question 7. You have participated in the event in the role of"*

- a) Partner Companies, associates
- b) Students or staff
- c) Organizers
- d) Others.

Question 7 aimed to categorize the respondents based on their role at the event. By understanding the specific roles of participants, organizers can tailor future events and communications to their needs and expectations. Figure 41 shows the percentage of the respondents based on their role at the event.

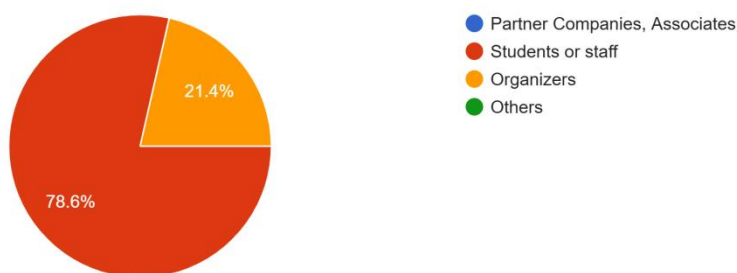


Figure 41. Survey result of the percentage of the respondents based on their role at the event.

Figure 41 shows that students or staffs were the majority of the respondents followed by the organizers. By analyzing the distribution of responses, HT identified that the primary target audiences for future events are students and staff. HT can focus their efforts on meeting their specific needs and by tailoring event experiences through understanding the different roles of participants.

#### 6.4.2.4 Student or Staff Only Questions

The following post-survey questions are specifically asked for students or staff only.

*Question 8. "Has this event created value for you?" Yes or no.* Question 8 aimed to directly assess the perceived value of the event by the participants. By understanding

whether the event met the expectations and needs of attendees, organizers can evaluate the overall success of the event and identify areas for improvement. Figure 42 shows the result on the event value creation towards the respondents.

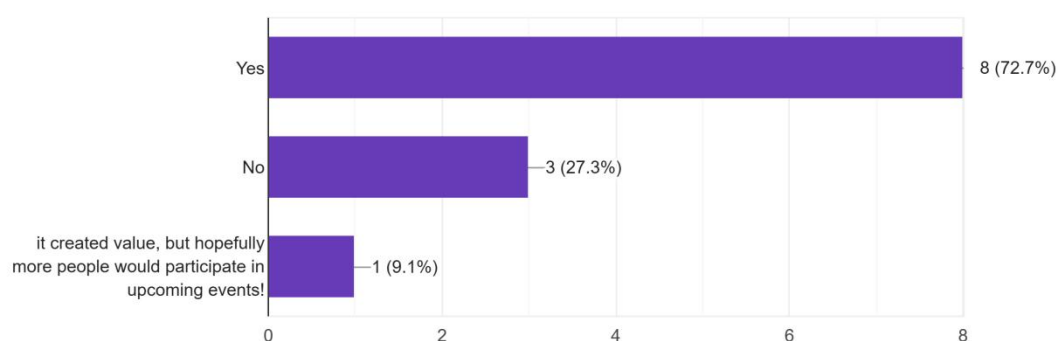


Figure 42. Survey result on the event value creation towards the respondent (student or staff).

Figure 42 shows overall satisfaction with a high percentage of "Yes" responses indicates that the event was considered valuable by the majority of participants. A significant number of "No" responses may signal specific issues or areas of dissatisfaction that need to be addressed.

*Question 9. "What was especially useful or remarkable for you in the event today?"*

This open-ended question 9 allowed participants to share their specific experiences and insights about the event. By analyzing the responses, organizers can identify the most valuable aspects of the event and areas where they excelled. Below are all the responses collected.

*"Super interesting projects. Unfortunately I missed most of the presentations I would have liked to see due to the changes and unavailable information about the schedule (it wasn't clear where and when presentations would be held)".*

*"to learn more about the projects".*

*"There were no instructions on what i should bring in the event as we were supposed to showcase our project there. Information about anything was poor. Even the food was not labeled and i didn't get to taste anything as i didnt know what was in it."*

*"It was a very well thought out event and it was nice to hear students presenting their projects".*

*"Presentations".*

*"It was nice to hear about the projects made by other students".  
(translated)"*

The survey results showed several positive feedback, respondents highlighted the presentations as a valuable aspect of the event. This suggests that the opportunity to learn about the work of other students was well-received. The respondents also expressed some issues with event organization such frustration with the lack of clear information and lack of clarity on expectations as one respondent felt unprepared for the event, as there were no clear instructions. This indicates that there were organizational challenges that impacted the participant experience. This feedback can be used as improvements to improve planning and communication by providing clear clear instructions and information.

*Question 10. "Have you been able to find opportunities for employment, or networking, or project collaborations, or new ideas?" Yes, no or others.* Question 10 this question aimed to assess the immediate impact of the event on participants' professional and academic lives. By understanding whether the event provided valuable opportunities for networking, collaboration, and career development, organizers can measure the event's long-term impact. Figure 43 shows the result if the students or staff have found opportunities at the event.

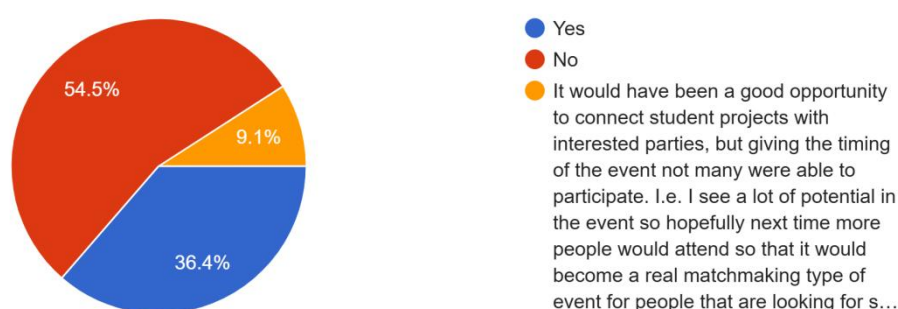


Figure 43. Survey result if the respondent (student or staff) have found opportunities at the event.

Figure 43 shows a significant portion of respondents (54.5%) reported finding opportunities for employment, networking, project collaborations, or new ideas. This indicates that the event was successful in facilitating connections and generating valuable opportunities. However, a substantial number of respondents (36.4%) did not find such opportunities. This indicates that there is room for development in terms of creating more structured networking opportunities and promoting the event to potential employers and collaborators. And one respondent gave a free feedback comment found below.

*“It would have been a good opportunity to connect student projects with interested parties, but giving the timing of the event not many were able to participate. I.e. I see a lot of potential in the event so hopefully next time more people would attend so that it would become a real matchmaking type of event for people that are looking for sustainable solutions to current climate issues”.*

By analyzing the survey results organizers can enhance the long-term impact of the event and provide valuable opportunities for participants.

**Question 11.** *“Have the event increased your sense of community and interest in sustainability topics?”* Question 11 aimed to assess the event's impact on participants' sense of community and interest in sustainability topics. By understanding how the event contributed to community building and knowledge sharing, organizers can evaluate its overall effectiveness. Figure 44 shows the result if the respondent agree or disagree that the event increased their sense of community and interest in sustainability topics.

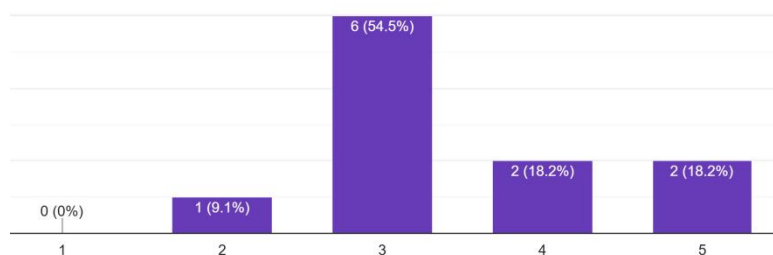


Figure 44. Survey result if the event increased the respondent's (student or staff) sense of community and interest in sustainability topics (on a scale of 1-5. 1=Disagree, 5=Agree)

Figure 44 indicates that a significant majority of respondents (54.5%) strongly agree that the event increased their sense of community and interest in sustainability topics. This suggests that the event was successful in creating a positive impact on participants' attitudes and behaviors.

**Question 12.** *“How was your overall experience with the event?”*

- a) Food
- b) Venue
- c) Program
- d) Staff
- e) Networking.

Question 12 aimed to gather overall feedback on the event from various aspects, including food, venue, program, staff, and networking opportunities. By understanding participants' overall satisfaction, organizers can identify areas for improvement and enhance future events. Figure 45 shows the rating respondents gave as overall experience in the event.

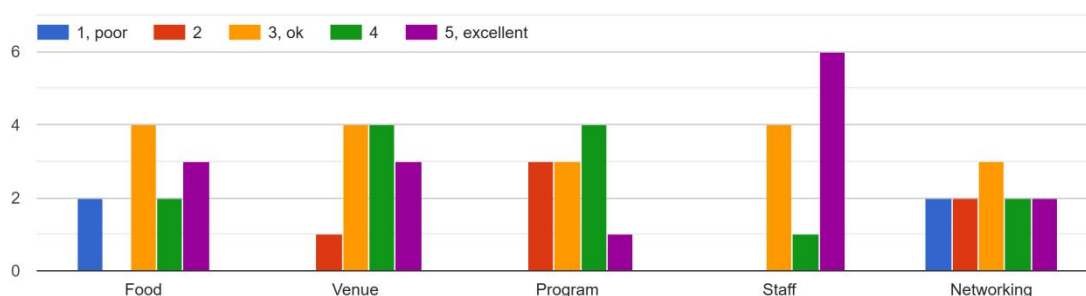


Figure 45. Survey result of the rating respondent (student or staff) gave as overall experience in the event (on a scale of 1-5. 1=poor, 3=ok, 5=excellent)

Figure 45 illustrates that staff generally received the highest rating among the other choices, this indicates that the respondents appreciated how the staff performed in the event. The program and venue received an acceptable rating, indicating that the content and structure of the event were well-received. Food and networking are the topics that received poor ratings, suggests that these areas should improve. Food quality should be prioritized in the next event and organize structured networking sessions such as icebreaker or group discussions to encourage interaction among participants.

*Question 13. "Will you recommend Hiilitalli's events to others?"* This question 13 assessed the overall satisfaction of participants and their willingness to recommend HT's events to others. By understanding the perceived value of the event, organizers can gauge the event's impact on participant satisfaction and loyalty. Figure 46 shows the survey result if the respondent will recommend HT's events to others.

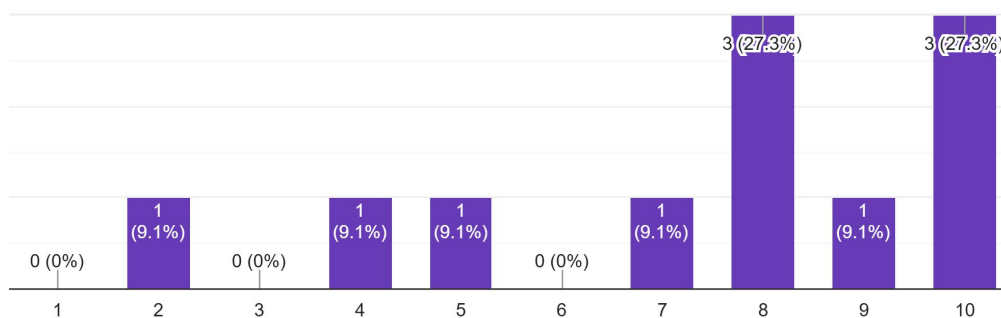


Figure 46. Survey result if the respondent (student or staff) will recommend HT's events to others (on the scale from 1 to 10. 1=No, absolutely not, 10=Absolutely yes).

Figure 46 shows a wide distribution of responses, with a majority number of respondents rating the event very highly, 7 and above and a few rating it 5 and below. This suggests that the event may have had a polarizing effect on participants. This suggests that majority of the respondents liked their experience with HT while a few may have had high expectations for the event, and if these expectations were not met, they may have rated the event poorly. The event may have catered to a diverse audience with varying interests and needs. Some participants may have found the event highly relevant and engaging, while others may not have. Issues such as poor communication and negative feedback on food may have negatively impacted the experience for some participants.

*Question 14. "What would you like to see more in Hiilitalli's future events? Please specify"* This question 14 directly taps into the participants' desires and expectations for future events. By asking this open-ended question, organizers can gain valuable insights into how to improve future events and better cater to the needs of their audience. Three responses were collected from the survey respondents found below.

*"More organized events, information about everything especially to people who are showcasing things there, use metropolias social media to promote events!!"*

*"Like I mentioned a matchmaking type of event would be great, given that students can have great ideas but may not have the resources to actually give their ideas a fighting chance. Industry leaders and professionals in the field could have the "power" to help students realize their ideas!"*

*"The communication about what was expected of us as presenters (we were supposed to present our speakers) was a bit lacking, or perhaps my classmates simply gave me wrong information about the event. None of my classmates seemed to be entirely clear about what was wanted of us and what we should mentally prepare for. When I arrived, I found out*

*that I was supposed to tell 50 people about my speaker, when I had been told it would be a casual setting. This was not very casual for me, as I have stage fright and had not prepared a presentation.”*

*“It would have been more helpful if the survey allowed for more nuanced responses, such as 'neutral' or 'unsure'.”*

*“The ambiance of the space was really welcoming, and the layout was practical. Great job on that!” (Translated)*

Key themes from the responses are a) organization and communication of event should be improved, respondents highlighted the need for clear and timely communication regarding event expectations, especially for presenters and provide detailed information about the event schedule and specific requirements can help participants prepare effectively; b) create more opportunities for students to connect with industry professionals and potential collaborators as it can foster innovation and entrepreneurship; c) improve survey answer choices; d) leverage on social media platforms to promote events can increase visibility and attract a wider audience.

#### 6.4.2.5 Organizer Only Questions

The following post-survey questions are specifically asked for organizers only.

*Question 8. What was your main goal for participating in this by Hiilitalli? Raising awareness*

- a) Project presentation
- b) Publicity
- c) Lecture
- d) Networking
- e) Academic purposes
- f) Other.

Question 8 aimed to understand the primary motivations of participants in attending the event. By identifying the main goals of attendees, organizers can assess the effectiveness of the event in meeting their needs and expectations. Figure 47 shows the survey results of the primary goal of the respondents for participating in the event.

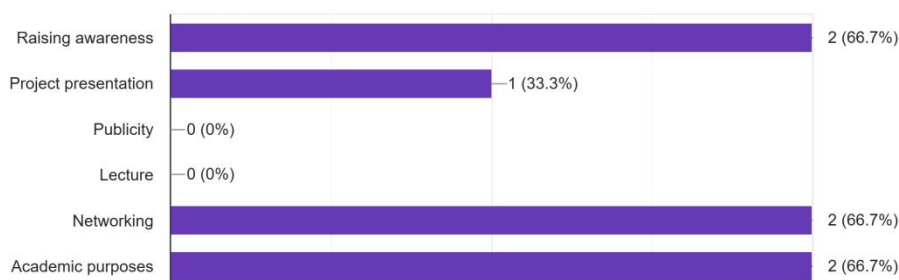


Figure 47. Survey result of the primary goal of the respondent (organizer) for participating in the event.

Figure 47 shows that raising awareness, networking and academic purposes are the tops goals of the respondents in attending the event, followed by the project presentation, meanwhile publicity and lecture gained zero percentage.

*Question 9. "What was especially useful or remarkable for you in the event today?"*

This question 9 allowed participants to share their specific experiences and insights about the event. By analyzing the responses, organizers can identify the most valuable aspects of the event and areas where they excelled. The respondents found the student's project inventions to be interesting.

*Question 10. "Have you been able to find opportunities for employment, or networking, or project collaborations, or new ideas? Yes or no."* Question 10 this question, similar to Question asked in student and staff, aimed to assess the immediate impact of the event on participants' professional and academic lives. Figure 43 shows the result if the respondents have found opportunities at the event.



Figure 48. Survey result if the respondent (organizers) have found opportunities for employment, or networking, or project collaborations, or new ideas at the event.

Figure 48 shows that all of the respondents have not found opportunities for employment, or networking, or project collaborations, or new ideas. It suggests that the

event may have been primarily focused on students and staff, with limited opportunities for organizers to network or collaborate, it can be considered in the future incorporating specific sessions or activities targeted at organizers, such as workshops on event planning, best practices, or networking opportunities. Also, the event may not have provided sufficient opportunities for organizers to connect with other professionals in the field, it is recommended to organize dedicated networking sessions or social events for organizers to interact and exchange ideas.

*Question 11. What challenges you faced in organizing this event?* This question 11 was designed to gather insights into the difficulties and obstacles encountered during the event planning and execution process. By understanding these challenges, organizers can identify areas for improvement and develop strategies to mitigate potential issues in future events. One response was collected in response to this question found below.

*“It was stated on the registration details that there will be English presentations but it never happened. English language should have been considered for better comprehension.”*

The primary challenge identified in the response is a mismatch between the advertised language of the event and the actual language used in presentations. This discrepancy led to potential communication barriers and hindered the overall experience for some participants.

*Question 12. How was your overall experience with the event? Rate 1 to 5. 1=poor, 3=ok, 5=excellent*

- a) Food
- b) Venue
- c) Program
- d) Staff
- e) Networking.

Question 12 aimed to gather overall feedback on the event from various aspects, including food, venue, program, staff, and networking opportunities. Figure 49 shows the rating respondents gave as overall experience in the event.

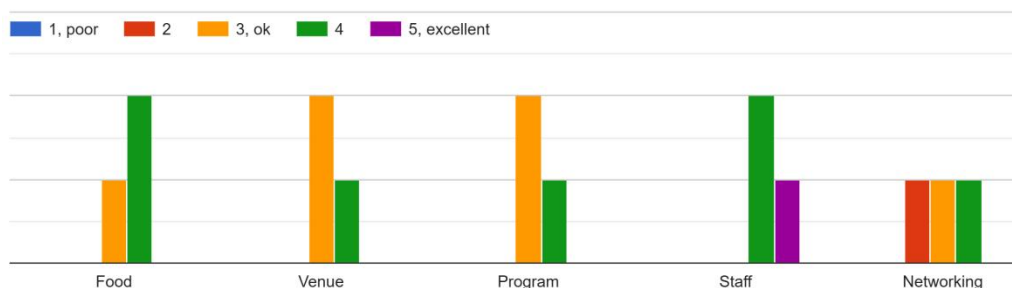


Figure 49. Survey result of the rating respondent (organizer) gave as overall experience in the event (on a scale of 1-5. 1=poor, 3=ok, 5=excellent)

Figure 49 shows that staff received the highest rating out of all the other choices, networking generally received the lowest rating, while food venue and program received somewhat the same ratings.

*Question 13. What should have been done differently? improved?* This open-ended question allowed respondents to provide specific feedback on areas where the event could have been improved. As one of the respondents stated: “*Presentations should also be translated in English*”. The feedback suggests that there was a language barrier for some participants, hindering their ability to fully understand and engage with the presented content. The event may have attracted participants from diverse linguistic backgrounds if English was considered to be means of communication.

*Question 14. What would you like to see more in Hiilitalli’s future events? Please specify.* This open-ended question allowed participants to provide specific feedback on how future Hiilitalli events can be improved. By understanding participants' desires and expectations, organizers can make informed decisions about future event planning. As one of the respondents stated: “*summits, networking , etc.*” This response shows that the respondent desire more opportunities to connect with other attendees.

*Question 15. Will you participate in Hiilitalli’s events in the future? Yes or no.* This question 15 assessed participants' willingness to attend future HT events. By understanding the factors that influence their decision, organizers can identify areas for improvement and implement strategies to attract and retain participants. Figure 50 shows the survey results if the respondent will participate in HT’s events in the future.

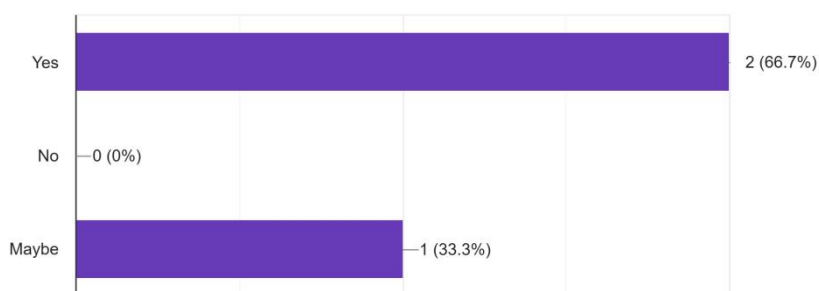


Figure 50. Survey result if the respondent will participate in HT's events in the future.

Figure 50 shows that majority of respondents (66.7%) are willing to participate in future Hiilitalli events. This positive response indicates that the event was perceived as valuable and engaging.

## 6.5 Recommendations

While growing initiatives for sustainable events are promising, grassroots implementation alone is insufficient. As this study reveals, active involvement from event organizers and key stakeholders is crucial to drive sustainable event practices. This engagement can significantly influence an organization's ability to host environmentally responsible events.

The result of the survey questionnaire turned out to be unsuccessful due to low response. There were only six responses to the pre-survey out of fifty-three registrants and only fourteen responses to the post-survey out of thirty-one who attended.

If the key stakeholders want to truly measure and assess the impact of the event as close to the actual numbers as possible the survey response must be improved.

The following section will discuss the conclusion of this thesis.

## 7 Conclusion

This section provides a summary of the thesis. The executive summary articulates the thesis objective and delineates the business implications of the proposed solutions.

### 7.1 Executive Summary

The objective of the thesis was to develop an approach for measuring impacts of “Hillitalli Green Summit 2024” (6<sup>th</sup> May 2024) and based on the first implementation, develop it into a measuring tool for impacts of similar sustainable events in future. HT is as an organization that focuses on developing innovative solutions for climate change mitigation and providing research-driven insights and information about sustainability transformation. As such, HT strives to ensure that its own events align with these goals.

This study employed applied action research and qualitative methods. The theoretical framework analyzed earlier studies on available measuring tools for environmental and social impacts of events. The analysis part collected data from key stakeholders via meetings, discussions and interviews and analyzed documents of the case company related to the previous event. The current state analysis was conducted to identify the need for a structured approach to measuring environmental and social impact. The conceptual framework was developed, incorporating selected important component of existing knowledge and best practices, so that to guide the development of own measurement tool.

The outcome of this study had two parts: 1) the approach and the set KPIs for measuring impacts of the HT Green Summit on 6<sup>th</sup> of May 2024, and 2) a measuring tool aligned to the set of goals of HT for similar event in the future. The outcomes were developed in co-creation with the key stakeholders. The study helped to facilitate discussions and collaboration among key stakeholders and it aims to provide aid and guidance for the case company to organizer sustainable events in the future. By organizing events that creates collaboration possibilities, promote sustainability education, and provide networking opportunities, HT can actively contribute to the sustainability transformation.

In response to the growing global emphasis on sustainable event practices, this study contributed to the industry's efforts to organize events responsibly. By implementing

the proposed approach, the case company can gain valuable insights into the environmental and social impact of its events. This information can be used to make informed decisions, improve future event planning, and demonstrate the company's commitment to sustainability. Ultimately, this thesis should help the organization to achieve its sustainability goals, enhance its brand reputation, and contribute to positive societal change.

Organizing a sustainable event is certainly not easy. The case company understands that even the best event organizers face challenges in the process of ensuring the impact of the events is more positive than negative. The key stakeholders and the case company itself is relatively young comprising a very limited number of personnel.

This thesis also recommends to add manpower. A significant challenge arose from the case company's limited human resources to allocate the necessary time and attention to event planning, given the short time frame. By assigning a dedicated individual to focus solely on the event, the company could gain upskilled employees and strengthen future event management competencies.

## 7.2 Thesis Evaluation

The thesis was done to support the case company organizing an event. The case company aims to make a greater societal impact through climate change mitigation projects, it places equal importance on demonstrating its commitment to sustainability by organizing sustainable events.

The initial objective to develop a research driven approach and a tool for measuring the impact of the event held on 6<sup>th</sup> of May 2024, several approach and methods were presented however sometimes the needs of the key stakeholders might differ from what the researcher found based on existing knowledge and practices. However, the survey questionnaire is always open for development as the needs and the demand changes.

As an external researcher, access to the company's resources was limited, hindering the depth of information gathering. However, valuable insights were gained through collaborative meetings and interviews with key stakeholders. This thesis contributes to both theoretical and practical knowledge in the field of event management.

Theoretically, it explores existing knowledge and best practices related to measuring event impact. Practically, it develops a structured approach and measurement tools that can be applied by event organizers to assess their environmental and social performance

This thesis provides a valuable resource for event organizers seeking to improve the sustainability of their events. It offers actionable recommendations and a foundation for measuring and managing environmental and social impacts.

### 7.3 Closing Words

The aim of this thesis was to help the case company to identify its next steps in organizing an event in sustainable manner and be able to measure the environmental and social impacts of the event in the future. However, the commitment should really start from the leadership. The event industry's journey towards measuring environmental and social impacts is ongoing, with much still to be discovered. Finally, organizing a sustainable event is a self-fulfillment for the organizers to have positively contributed to the global sustainability efforts from different industries.

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## Appendix 1. Survey Questions in the Opening Event

1. What grade/rating would you give to the event as a whole? on the scale 1-5. 1= I didn't like it at all, 5= I liked it a lot)
2. Based on the event, what do you think Hiilitalli's activities are aiming for. (on the scale 1-5. 1=a little, 5=a lot) if choosing among these:
  - a. Raising environmental awareness (Ympäristötietoisuuden kasvattaminen)
  - b. Carbon sequestration (Hiilensidonta)
  - c. Mitigation of climate change (Ilmastonmuutoksen hiillintä)
  - d. Promotion of sustainable development (Kestävän kehityksen edistäminen)
  - e. Increasing life cycle awareness (Elinkaaritietoisuuden lisääminen)
  - f. Increasing collaboration. (Yhteistyön lisääminen)
3. What grade/rating do you give each speech (out of 3 key notes)? (on the scale: 1-5. 1= I didn't like it at all, 5= I liked it a lot)
  - a. Climate change through the eyes of an explorer. Peta Degerman
  - b. The story of Hiilitalli and the purpose of existence. Jenni Kurki-Suonio
  - c. How is sustainable future solved? Panel discussion
4. Do you have an interest in participating in other Hiilitalli events in the future?
5. What thoughts did the premises of Hiilitalli and the business projects carried out by the students evoke in you?
6. Where did you receive information about the event?
7. Free commenting on the event.
8. At HT, we develop solutions to curb climate change and promote sustainable development in cooperation with research institutes and companies. *Want to hear more? Do you have needs or challenges related to the green transition in your company that you would like help with. Enter your contact information and we will contact you.*
9. I want Hiilitalli to send marketing material in the future. *If you want Hiilitalli to send me marketing material in the future, leave your email address below.*

## Appendix 2. AI Written Statement

### WRITTEN STATEMENT

on the use of AI-based tools in this thesis

by Cecilia Ann Malabor, the student of BI Master's Degree Programme

**Thesis title: An Approach and a Tool for Measuring Impacts of Sustainable Events for "Hiilitalli"**

According to the "Guidance for addressing the use of AI-based tools in studies at Metropolia Business School (for written submissions)" from August 2023, I make this statement on the use of AI-based tools in my submitted Master's thesis.

- 1) Which AI-based large language models or other AI-based tools I used  
Gemini.
- 2) In which parts of the thesis which tools were used, and for which tasks (*please make a list*)  
The tool was used for the Available Knowledge and Best Practice and Building Proposal part only for improving the text.
- 3) What portion of the text was helped with these tools, for each use  
To improve text context and simplify sentences.
- 4) Which prompts were asked, exactly (*please indicate the page number in the text where used*)  
No prompts appeared.
- 5) Here, I describe what continues an ethical and reliable use of AI-based tools that I used (*use, for example, the recommended documents from "MBS Guidance" referred to above*)  
The AI tool was used as a guide in improving and refining my academic writing.
- 6) Here, I describe how ethically and reliably I used the AI-based tools in my thesis submission  
I fully understand the appropriate use of AI-based tools for this thesis.

This written statement makes part of my thesis and is done to help in evaluation and assessment.

17.11.2024, Helsinki, Finland

(Data and place)



(Signature)