

# **Improving the Sustainability of HVL: A Translation of the SDGs for Higher Education Institutes and HVL Stakeholders' Perceptions, Engagement and Recommendation in Relation to HVL Sustainability**



**Victoria Slaymark**  
with Contributions from Jan Zeiss

Master Thesis in Climate Change Management

Department of Environmental Sciences, Faculty of Engineering and Science

WESTERN NORWAY UNIVERSITY OF APPLIED SCIENCES

Sogndal

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I confirm that the work is self-prepared and that references/source references to all sources used in the work are provided, cf. Regulation relating to academic studies and examinations at the Western Norway University of Applied Sciences (HVL), § 10.



Western Norway  
University of  
Applied Sciences

**Improving the Sustainability of HVL: A Translation of the SDGs for Higher Education Institutes and HVL Stakeholders' Perceptions, Engagement and Recommendation in Relation to HVL Sustainability**

**Master thesis in Climate Change Management**

Author: Victoria Slaymark with contributions from Jan Zeiß

Author sign.

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Main Supervisor: Valeria Jana Schwanitz

Co-supervisors: Carlo Aall

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This thesis is a part of the master's program in Climate Change Management (Planlegging for klimaendringer) at the Department of Environmental Sciences, Faculty of Engineering and Science at the Western Norway University of Applied Sciences. The author(s) is responsible for the methods used, the results that are presented and the conclusions in the thesis.



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## Abstract

Higher education institutes (HEIs) have the potential to be key actors and leaders to transform society towards sustainable development (SD). They must function themselves as 'Living Labs', adopting a whole systems approach of SD to fulfil their role. This thesis focuses on improving the sustainability of Høgskule på Vestlandet (HVL), a HEI in Norway as currently they have no sustainability report or framework. To address this, this thesis firstly provides a translation of SDGs, along with their targets and indicators to be applicable for HEIs, for all four core functional areas of HEIs. This is the first translation of its kind. HEIs must also do more than just adopt a framework. All HEI stakeholders must have good understanding of SD; positive attitudes towards SD and good levels of engagement in HEI SD-related activities. Therefore, secondly this thesis carried out a quantitative and qualitative online questionnaire to gauge: HVL stakeholders' knowledge of and attitudes towards SD and the SDs; the level of communication to HVL stakeholders of HVL SD-related activities; and provide a space for HVL stakeholders to share their voice. This is the first study of its kind at HVL. Results show that stakeholders' knowledge is incomplete, but despite this they have strong attitudes; 81.6% want to learn more about SD, and 68.4% want to help support and participate in HVL SD-related activities. The level of communications could be improved, as two-thirds of respondents were not aware of HVL SD-related activities. Based on HVL stakeholders' responses seven key recommendation actions were formulated for HVL engage in SD, and most specifically the SDGs. The most important being that HVL should adopt the SDGs in all core functional areas, should work to improve engagement with all HVL stakeholders (through improving communication channels), and that a sustainable development officer and team should be employed to manage HVL to transform.

## Samandrag på norsk

Videregående institutter har en sentral rolle å lede samfunnet til å bli mer bærekraftig som steder for kunnskapsskaping og overføring. De må selv være en bærekraftig institusjon for å oppfylle sin rolle. Denne oppgaven fokuserer på case studie av Høgskule på Vestlandet (HVL), Norge. Denne studien fokuserer på hvordan man kan forbedre bærekraften til HVL, for tiden har de ingen bærekraftsrapport eller rapporteringsramme. For å løse dette oppgir denne oppgaven først og fremst en oversettelse av SDG, sammen med deres mål og indikatorer som skal gjelde for Høgskoler, for alle kjernefunksjonelle områder av høyere utdanningsnivåer (utdanning, forskning, drift og styring og samfunnsoppsøkelse). Dette er den første oversettelsen av sitt slag og anses å være uvurderlig i feltet. Høgskoler må også gjøre mer enn bare et rammeverk. Alle interessenter i HEI må ha god forståelse for SD; positive holdninger til SD og gode nivåer av engasjement i HEI SD-relaterte aktiviteter. For det andre gjennomførte denne oppgaven et kvantitativt og kvalitativt online spørreskjema for å måle: HVL-interessenter kjennskap til og holdninger til SD og SD-er; nivået på kommunikasjon til HVL-interessenter av HVL SD-relaterte aktiviteter; gir endelig plass til HVL-interessenter for å dele sin stemme. Dette er den første studien av sitt slag på HVL. Resultatene viser at interessenters kunnskap er gjennomsnittlig, men til tross for dette viser de sterke holdninger; 81,6% vil lære mer om SD, og 68,4% vil bidra til å støtte og delta i HVL SD-relaterte aktiviteter. Kommunikasjonsnivået kunne forbedres ettersom to tredjedeler av respondentene ikke var klar over HVL SD-relaterte aktiviteter.







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## A. Introduction

This thesis explores how the sustainability of Høgskule på Vestlandet (HVL) can improve its sustainability. This thesis is split up in to two studies. Firstly, the application of the UN Sustainable Development Goals to be a universal, standardised framework for higher education institutes (HEIs) was explored. The SDGs were translated to apply specifically to HEIs. Secondly, HVL stakeholders' perceptions of sustainable development, the level of engagement in sustainable development-related activities and HVL stakeholders' recommendations to improve the sustainability of HVL were explored.

### 1. The Development of a Standardized Universal Sustainable Development Framework for HVL: The UN SDGs.

Currently, HVL does not have a holistic framework to assess how sustainable the institution is or to monitor or report progress towards sustainable development (SD). It is well documented that such a framework is fundamental to aid HEIs to transform to a more sustainable state (VON HAUFF & NGUYEN, 2014). Worldwide, a number of different sustainability frameworks have been developed and adopted by different HEIs. However, there is currently no holistic, internationally recognised and standardised framework for HEIs to engage and implement SD within their institutions. We believe that there should be such a framework, and we advise that HVL, and other HEIs, should adopt the United Nations Sustainable Development Goals (UN SDGs) as the standardised framework.

However, The UN SDGs must first be translated to apply specifically to HEIs in order to operationalize them as their 169 indicators and 232 targets are written on a global level. The application of the UN SDGs for HEIs is still in its infancy; a few HEIs worldwide have begun to adopt the SDGs into their institutions, but there is not yet an accepted translation or guidance how to fully operationalise the UN SDGs in HEIs. Therefore, this master thesis translates the global UN SDGs to specifically apply to HEIs for each of HEIs core functional areas: education, research, operations and administration, community outreach. This translation provides: (i) a description of what sustainable development would look like for HEIs; (ii) the framework to holistically assess how sustainable HEIs are today; and lastly (iii) the framework to report and monitor progress towards SD at HEIs.

The translation can be applied to all HEIs, including HVL.

## 2. The key factors that influence engagement in and the operationalisation of sustainable development in HEIs

To engage HEIs, knowledge and positive attitudes of SD amongst the HEI community is fundamental. Knowledge and positive attitudes are key to bring behavioural change (Tilbury, 2009). It is documented that lack of knowledge and negative attitudes towards sustainable development is likely to lead to unsustainable behaviours (Valazquez et. al. 2006) and will affect the level of participation of the institutions' community to transform the institution (Derahim, Hashim, Ali, Abdul, & Aziz, 2012). Other key factors for successful integration of sustainable development in HEIs include: lack of interdisciplinary organizational structure and courses; lack of financial means; SD is seen as a threat to academic freedom and credibility; SD is not seen as relevant to a certain course or discipline; overcrowded curriculum; high work-pressure and lack of time; and amongst others. These barriers also have closely linked drivers. These barriers and their associated drivers are not directly addressed in this thesis due to lack of time for the thesis, and to limit the length of the questionnaire. Furthermore, Disterheft, Caeiro, Azeiteiro, & Filho, (2015) highlights that communication is a "critical success factor". All in the HEI stakeholders must feel engaged in the institution decision-making and sustainable development activities.

Several studies have explored students' knowledge of and attitudes towards sustainable development (give reference). However, there are very few studies exploring other HEI stakeholders, such as researchers, teachers, administration staff, leaders and other affiliates. Only one study was found to assess perceptions of HEI stakeholders (Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, 2017) Furthermore, few ask HEI stakeholders their attitudes towards communication or including and recognising their voice.

At HVL, no studies have been done to assess the level of knowledge and the attitudes towards SD amongst HVL stakeholders, to assess the level of engagement and communication or stakeholders' in HVL SD-related activities or to assess HVL stakeholders' recommendation to improve the sustainability of HVL. Therefore, an online questionnaire was carried out to assess: (i) the level of HVL stakeholders' knowledge and attitudes towards SD; (ii) the level of engagement of HVL stakeholders' in HVL SD-related activities; (iii) the voices of the HVL stakeholders: HVL stakeholders' recommendations to improve the sustainability of HVL. The questionnaire is innovative as it is the first study to research these areas at HVL, and is one of the few studies that includes *all* members of the HEI community, not just students, and gives focus to communication and provide a space for HEIs stakeholders' voice.

The results of the questionnaire will be used to map where HVL stakeholders stand regarding the main factors that influence the engagement and operationalisation of SD in HVL. This will allow gap analysis of HVL stakeholders' knowledge, attitudes, HVL level of engagement and communication, and HVL stakeholders' recommendations. Furthermore the results will be used to guide recommendations for the engagement and operationalisation of SD in HVL. The gaps in awareness and knowledge and the understanding of attitudes are crucial in order to understand which policies will be accepted or rejected amongst HVL community members. The level of inclusion and engagement is necessary to gauge the extent policies will have support and a workforce to help carry out the transformative changes. Lastly, the voices gathered in the questionnaire will be used to gain insights and inspiration for recommendations.

This thesis will first provide a structural and functional overview of the case study for this master thesis: HVL, with a focus on HVL Sogndal campus (section B). The history of HVL development will be provided, as well as a description of why this case study was selected. Secondly, in section C, a literature review which will present the relevant literature, the literature gaps and the research questions, The third section D will present the development of a SD framework for HVL, with a focus on the UN SDGs, where a translation of the UN SDGs for HEIs will be provided, the methodology explained and the application discussed. The fourth section, section E, will focus on the questionnaire with HVL stakeholders. In this section the methodology and results of the questionnaire carried will be presented, followed by a discussion. Lastly, in the final section, section F, recommendations will be given to improve the sustainability of HVL based on HVL stakeholders insights.







## B. Presentation of the Study Area: HVL and HVL Sogndal Campus

We chose to use a case study so we could research the application of the SDGs in ‘real-life events’. We place the focus of our thesis on the Western Norway University of Applied Sciences (HVL) and more specifically on the HVL-Sogndal campus, as this is where we both study. Furthermore, HVL Sogndal currently has no holistic sustainability assessment method in place or a holistic sustainability report. Therefore, this case study is of greatest interest to us. In the following we will give a short introduction on the structure of HVL with a specific focus on the Sogndal campus of HVL.

### 1. Western Norway University of Applied Sciences

#### 1.1. Background

HVL was officially established on 1.1.2017, as a result of the merging of several smaller university colleges (Høgskuler). These former university colleges were the Bergen University College (HiB), the Sogn og Fjordane University College (HiSF)<sup>1</sup> and the Stord/Haugesund University College (HSH) (fig. 1). After the merge, HVL had 16 637 students (HVL, 2017A) and 2175 employees (HVL, 2018d). With approximately 9200 students and 1200 employees, the Bergen campus is the largest one. The second largest is the Sogndal campus (not including Førde), with approximately 3200 students (HVL, 2017A) and 400 employees (HVL, 2018d). In 2017 HVL had a total budget of 1 791 billion NOK (HVL, 2017A).

HVL offers a variety of courses on different education levels. Currently there are 2 PhD programmes, 45 master programmes, 38 bachelor programmes and 13 one-year or semester programmes. These are offered in the following four faculties (HVL, 2018f, 2018g):



Fig. 1: Campuses of HVL; Source (HVL, 2017A)

<sup>1</sup> HiSF itself contains two campuses, one in Sogndal and one in Førde

- Faculty of Education, Arts and Sports (FLKI)
- Faculty of Health and Social Sciences (FHS)
- Faculty of Engineering and Science (FIN)
- Faculty on Business Administration and Social Sciences (FØS)

HVL is closely linked to Studentsamskipnaden i Vestlandet (SAMAN<sup>2</sup>) and Studenttinget på Vestlandet (STVL). SAMAN is the student welfare organization and provides student services at each campus, including student housing, canteens, health services, child care facilities for students' children, sports centres and more (SAMAN, 2018A). SAMAN's board consists of both students and employees of SAMAN. The student representatives, however, are not all students of HVL. There are each two student representatives from HVL, the Norwegian School of Economics (NHH) and UiB (SAMAN, 2018B). SAMAN also provides services to students of these institutions. STVL is the Western Norwegian Student Council and it is the advocate for all students at HVL. The student council consists of 20 representatives, based on all campuses of HVL (STVL, 2018B)

## 1.2. Comparison to other Higher Education Institutions

HVLs structure, with its multiple campuses, is spread over a large area. In the Norwegian, Scandinavian and international context, this is common for rural HEIs. For example, NTNU with its main campus in Trondheim, also has campuses in Ålesund and Gjøvik which are ca. 300 km and 400 km from NTNU's main campus, respectively (NTNU, 2018c). In Sweden, the Swedish University of Agricultural Sciences (SLU) has four main campuses in Alnarp, Skara, Umeå, and Uppsala and several smaller ones spread throughout Sweden (SLU, 2017). In Scotland, UK, the Highlands and the Islands University (UHU) has 13 colleges and research centres located in rural regions of Scotland.

## 2. HVL-Sogndal

### 2.1. Background

As stated above, the Sogndal campus is now the second biggest campus of HVL, with approximately 3200 students and 400 employees. Combined with the campus in Førde, the two campuses had a total budget of approximately 430 million NOK (HVL, 2017A) in 2017<sup>3</sup>. At the Sogndal campus, a total of 34 study programs are offered, of which 7 are master programmes, 17 are bachelor programmes and 10 are one-year or semester programmes (HVL, 2018f). HVL-Sogndal offers courses mostly related to

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<sup>2</sup> Also called sammen, depending on nynorsk or bokmål spelling

<sup>3</sup> Information on the budget of the Sogndal campus alone was not available

health and social sciences, teacher education, outdoor and physical education, economics and administration, and environmental sciences (HVL, 2018f).

The Sogndal Campus of HVL is located in Sogndal, which is the administrative center of the Sogndal municipality. Sogndal municipality lies within Sogn og Fjordane county, Vestlandet (West-region), Norway. Vestlandet is known for its characteristic landscape of fjords and mountains. The Sogndal municipality has about 8000 inhabitants (SOGNDAL KOMMUNE, 2018). The Sogndal campus with its 3200 students and 400 employees therefore plays a major role in the municipality, being directly linked to almost half of the population in the Sogndal municipality. The campus has an even greater impact when accounting for all external stakeholders associated with the campus, such as local companies and governmental institutions.

HVL-Sogndal campus is situated on the Fosshaugane Campus, five minutes walking distance to Sogndal town center and consists of six buildings, (fig. 2, building nr. 1 – 6). The newest building of the HVL-campus is Høgskulebygget, which opened in 2012. Building 2, Gymnaset is currently under construction and will be an additional building for HVL-Sogndal. Fosshaugane campus is also home to Sogndal Football, Sogndal high school Sogndal vidaregåande skule (Sogndal high school), Vestlandsfoskning (Western Norway Research Institute), and a number of local businesses. The development of the Fosshaugane campus, including the development of HVL-Sogndal, was highly influenced by the presence of Sogndal Fotball. In 2011, the men's football team was promoted to the Norwegian Premier League and therefore has strong national standing. Due to the presence of Sogndal Fotball, close to 1.8 billion kroner has been invested in the Fosshaugane campus since the year 2000 (ENITCH, 2017).



Fig. 2: Fosshaugane Campus; Source (FOSSHAUGANE CAMPUS, 2018)

Fosshaugane campus has been an educational hub dating back to the 1960s. Before the merge, HVL-Sogndal belonged to HiSF which was founded in 1994 as a result of the merge between various HEIs in

Sogn og Fjordane including, 'Sogndal Lærerskole' and 'Sogn og Fjordane distriktshøgskule'. HISF consisted of students and staff distributed in Sogndal, Førde and Sandane. From 1995, HISF administration was located at the Fosshaugane campus. Initially, sport primary education was the main study offered at HISF. This was due to the presence of Sogndal Fotball and the opportunities presented by the surrounding western Norwegian fjord and mountain landscape. Since then, the study programmes offered at HVL-Sogndal have grown in number and diversity (ENITCH, 2017).

## 2.2. Ties to local community

As stated above, the Sogndal Campus plays a major role in the local community. Before the merge, the former HISF defined the collaboration with local authorities and businesses as a focus area in their strategic plan for 2014 to 2018 (HVL, 2017A). It is inferred in the 'Årsrapport 2016 – 2017' (HVL, 2017A) that this focus area will continue for HVL-Sogndal after the merge. As an example, HVL-Sogndal is involved in the organization of the yearly climate conference, together with the local authorities such as the Fylkesmannen i Sogn og Fjordane, and local research centers such as Vestlandsforskning (FYLKESMANNEN I SOGN OG FJORDANE, 2018). Furthermore, HVL-Sogndal has links to local businesses, e.g. Rocketfarm, Innovation Norway, SGN, Furberg, and public radio and television broadcasting companies (e.g. NRK). These links are strong as the mentioned companies have a presence at the Fosshaugane Campus.

## 2.3. International Links

In addition to the links to local authorities and businesses, HVL-Sogndal, and in this case the whole HVL, is involved in a number of international collaborations. These include collaborations in the Nordic countries, such as the 'Nordplus' programme for student and teacher mobility. On the European scale, HVL is involved in the ERASMUS+ programme and collaborates with other institutions in respect to Horizon 2020 research programmes. On a global scale, HVL is, for instance, in research collaborations with institutions in India, and China. A more complete list of collaborations can be found on the HVL webpage (HVL, 2018c).

HVL furthermore collaborates with a number of institutions to ensure student mobility. According to the administration staff at HVL-Sogndal, HVL has around 300 partner universities that offer student exchange programmes. In Europe these include, but are not limited to universities in Germany, Netherlands, Spain, Poland and the Czech Republic. HVL-Sogndal has additional partnerships with universities in Australia (James Cook University & University Sunshine Coast), the US and Canada. Details on opportunities for exchange programmes can be found in the description of each course on the HVL-website (HVL, 2018f). According to the administration staff, students from HVL-Sogndal most

commonly apply for exchange programmes with Australia. Exchange students that come to Sogndal are mostly from Germany and the Netherlands. HVL-Sogndal also had an exchange programme with the Livingstone School of Nursing in Livingstone, Zambia, which provided Zambian students the opportunity to study in Norway, yet this programme was cancelled a few years ago. However, a new exchange programme with the University of KwaZulu-Natal in Durban, South Africa is in development. Lastly, HVL-Sogndal also employs a number of foreign staff, for example from Germany, France or Britain.

#### 2.4. HVL-Sogndal's engagement in SD

As stated in chapter 3.5, Norwegian HEIs are lagging behind their Scandinavian neighbours, such as Sweden. HVL does not currently have a stand-alone concrete sustainability assessment system to monitor its sustainability performance, a plan that aims to improve their sustainability, or a report to communicate their effort for SD. HVL is however certified Miljøfyrtårn, which is a Norwegian environmental certificate. It mainly assesses an institution's or company's environmental performance, relating to energy consumption, greenhouse gas emissions, waste management and amount of purchased goods that are certified as well, for example through Miljøfyrtårn or the European Eco-Management and Audit Scheme (EMAS) (HVL & MILJØFYRTÅRN, 2018).

The most notable and most recent milestones for HVL engagement in SD have occurred in 2018. In February, 2018, HVL formed a sustainability team consisting of twelve employees<sup>4</sup>. They organised an internal sustainability conference, held 18<sup>th</sup> and 19<sup>th</sup> April, 2018, called 'Sustainable development of HVL – where do we stand, where do we go?' (HVL, 2018b). The conference covered what HVL students learn, what is being done in HVL research, how HVL works towards new innovations, in regards to SD, and lastly how HVL lives up to the SDGs within operations and administration. The conference formed the basis for further ideas and collaboration across the institution, both across campus and across faculties. Together with Valeria Jana Schwanitz, a member of the HVL sustainability team and conference organiser, we summarised areas of action that were identified at the conference:

- **Strategy:** The need to transform and establish a sustainable development framework with measurable goals.
- **Monitoring:** The need to monitor and assess HVL's performance with respect to the SDGs.
- **Data policy:** The need to work out an overarching data policy, handling the access to data and publishing standards (e.g. open access to data and publishing).

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<sup>4</sup> Anne Marie Møller Vigeland, Knut Vindenes, Berit Natalie Krogh Bareksten, Valeria Jana Schwanitz, Inger Auestad, Alf Harald Aronsen, Knut Steinar Engelsen Carsten, Gunnar Helgesen, Marit Vassbotten Olsen, Marcin Fojcik, Lisa Steffensen, and Bodil Moss

- **Communication:** The need to improve communication channels in order to enable staff and students to actively participate in sustainable development.
- **Education:** The need to educate staff and students on sustainable development through implementing sustainable development education in all courses and at all levels.
- **Research:** The need to strengthen and foster research on sustainable development, focusing on the transformative capacity the university holds within their regions.
- **Operation:** The need to set measurable goals that will help to steer operational activities.
- **Outreach:** The need to commit to and report on sustainable development to partners in the public and private sector, in Norway and abroad.

At current, there has been no assessment of the inclusion of education for sustainable development in HVL courses. To research HVLs engagement with SD and the SDGs we searched on HVLs' main website using the terms 'berekraftig utvikling' and 'sustainable development' (HVL, 2018e). Specifically for HVL-Sogndal, we are aware that some courses are focused on specific aspects of SD, e.g. the new masters in 'Climate Change Management', that started in 2016 and the bachelors, 'Renewable Energy', in the institute of environmental and natural science. Elements of SD are also taught in other courses, such as landscape planning with landscape architecture, and geology, but the extent is limited. We are aware of one course taught at HVL-Bergen, 'Sustainable Development by Involvement', which is a preschool teacher training 30 credit course available for 'Early Childhood Education and Teacher Education' students. By searching the HVL website for the terms 'berekraftig utvikling' and 'sustainable development', we found that sustainable development is taught in other courses offered at other HVL campuses including courses within the Institute for Civil Engineering (courses unspecified) offered at HVL-Bergen and HVL-Førde, the 'Natural Sciences 2, 1.-7. Steps' course offered at HVL-Bergen, and the 'Chemical Engineering' course offered at HVL-Bergen (HVL, 2018j). We are aware of six HVL-Sogndal staff members that carry out research for sustainable development: Carlo Aall (researcher at Vestlandsforskning), Valeria Jana Schwanitz (associate professor in the Institute of Environmental and Natural Science), Andrea Synnøve Blomsø Eikset (lecturer on kindergarten teaching), Erling Holden (professor in the Institute of Environmental and Natural Science) and Lars Leer (associate professor at the Department of Social Sciences).

HVL has included SD in their main mission statements and made this visible on the Norwegian version of the HVL website. Their mission is translated as *"We support growth for a sustainable development of the social, work and business sectors and for the individual"* (HVL, 2018i). However, SD is not mentioned on the English translation of the website (HVL, 2018a). SD is also included in the strategy plan for HVL, which states that SD is proposed as one of the three transversal synergy areas in the



strategy plan, along with ICT and responsible innovation and regional change to *“develop educators and professionals with the aim of contributing to sustainable development”* (HVL, 2017b, p. 5, 2018h).

No information was found if SAMAN engages with SD or the SDGs when searching their website (SAMAN, 2018A). The only action we found is that they have the miljøfyrtan certificate. Studenttinget, the student council for HVL, supports SD in their action plan as they state *“The Student Parliament shall [...] Work for the University College to contribute to a sustainable development of society [...] [and] to create climate change cabinets, and the miljøfyrtårn certification [of] all campuses”* (STVL, 2018A, p. 2). They also state in their policy paper *“HVL must have sustainable, environmentally conscious and future-oriented operations”* (STVL, 2017, p. 7). Their reports are written in Norwegian so the statements are English-translations from the reports.

## 2.5. Summary

The information on HVL we present above is perhaps limited as the HVL website and the HVL documents are written in Norwegian. HVL is in the process of creating a translated English version of the website and their documents, but at current they are not complete. We provide information where we found SD being mentioned on their website. However, we would like to give recognition that HVL is taking several actions for SD, but they are not acknowledged by HVL to be under the SD umbrella. Overall, this case study is interesting for our theses to focus on as HVL does not have a holistic SD assessment methodology or report at current. HVL-Sogndal is specifically interesting to focus on as HVL-Sogndal has a dense environment for students and employees and almost half of Sogndals population is directly involved in HVL-Sogndal (ENITCH, 2017). In this way, if HVL fully engages in SD and the SDGs throughout their entire system, they have great transformative power to influence the Sogndal region.

## C: Related Literature

### 1. Sustainable Development Definition

#### 1.1. The Brundtland Commission's Definition of Sustainable Development

The SD discourse has a long history<sup>5</sup>. Throughout most of this history, only the term 'sustainability' existed, which refers almost exclusively to environmental issues. The term 'sustainable development' encompasses environmental, social and economic issues and was only introduced by the Brundtland Commission in their report 'Our Common Future' in 1987 (DU PISANI, 2006; LAFFERTY & LANGHELLE, 1999). Today, within the SD discourse the terms 'sustainability' and 'sustainable development' are mostly used interchangeably. For this thesis, the terms 'sustainability' and 'sustainable development' will also be used interchangeably, since today the necessary societal actions and policy implications are the same (HOLDEN, LINNERRUD, BANISTER, SCHWANITZ, & WIERLING, 2018).

Today the definition provided by the Brundtland Commission is the most widely accepted and operationalized definition, stating:

*"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:*

- *the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and*
- *the idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future needs.*<sup>6</sup> (WCED, 1987, CHAPTER 2)

The two key concepts of the Brundtland report point out the three main aspects of SD. The first key concept refers to the social and economic aspects and the second key concept refers to the environmental aspect. It is especially interesting that the first concept is given 'overriding priority'. The report acknowledges that a certain degree of economic growth is necessary to reach a certain living standard in a society. In the developing countries, this economic growth should therefore be the first priority.

The Brundtland report was in response to a call by the UN General Assembly to formulate a "*global agenda for change*" (WCED, 1987, p. 6), and aimed to address the most pressing issues of the time. Leading up to the call by the UN General Assembly, there was a growing discourse on environmental

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<sup>5</sup> Historical authors discussing sustainability: (JEVONS, 1865; KAPP, 1950; MALTHUS, 1798; MARSH, 1864; MILL, 1848; VON CARLOWITZ, 1732; WALLACE, 1898)

<sup>6</sup> The Brundtland report also describes this second concept as 'carrying capacity' (WCED, 1987)

and socio-economic challenges (DU PISANI, 2006). A few examples are Rachel Carson's 'Silent spring' (CARSON, 1962), the Club of Rome's 'Limits to Growth' (MEADOWS, 1972) and the 'Declaration on the Human Environment' by the UN (UN, 1972). Rachel Carson's Book is considered to be *"the catalyst for the rise in large scale public environmental campaigns"* (UNESCO, 2014, p. 140). The Club of Rome states that our momentary trend of growth (of population and consumption) cannot be sustained. Lastly, the UN acknowledged the environmental crisis by drafting their 'Declaration on the Human Environment' at the Stockholm Conference, which stated that:

*"A point has been reached in history when we must shape our actions throughout the world with a more prudent care for their environmental consequences."* (UN, 1972, p. 3)

The Brundtland report emphasises the importance of *"cutting across the divides of national sovereignty, of limited strategies for economic gain, and of separate disciplines of science"* to achieve SD (WCED, 1987, SEC. CHAIRMAN'S FORWARD). The importance of such a transdisciplinary approach is further emphasised in the outcome document of the UN conference on sustainable development from 2012, which stresses that it is important to *"Enhance integration of the three dimensions of sustainable development in a holistic and cross-sectoral manner at all levels"* (UN, 2012, p. 29).

## 1.2. Discussion of the Brundtland Definition

LÉLÉ (1991) argued that the concept of SD will become the *"developmental paradigm of the 1990s"* (LÉLÉ, 1991, p. 607). Today we know that the idea would not only be the paradigm of the 1990s, as predicted by LÉLÉ, but that it would become even more important in the following two decades. LÉLÉ (1991) also argues that the reason for the broad acceptance of the concept is its vague definition. This vagueness allows people with different opinions and different agendas to find common ground, which is an attribute that can be especially valuable in the political discourse. To illustrate this, he states:

*"In short, SD is a "metafix" that will unite everybody from the profit-minded industrialist and risk-minimizing subsistence farmer to the equity-seeking social worker, the pollution-concerned or wildlife-loving First Worlder, the growth-maximizing policy maker, the goal-oriented bureaucrat, and therefore, the vote-counting politician."* (Lélé, 1991, p. 60)

HOPWOOD, MELLOR & O'BRIEN (2005) and ROBINSON (2004) further support this by arguing that the vagueness allows for the definition to develop alongside society as society faces new challenges, instead of staying stagnant.

Contrary to this, others believe the vagueness to be the definition's weakness. ROBÈRT, EVERARD, JOHNSTON, & SANTILLO (2007) argue that the vagueness of the definition exposes the term to be exploited as a tool for 'greenwashing'. They claim that:

*“As a result, there are many constituencies which perceive the term 'sustainable development' as a vehicle to perpetuate many and varied corporate and institutional interests whilst giving the impression of adherence to, and observance of, environmentally-sound principles.” (ROBERT ET AL., 2007, P. 60)*

Others have criticised it as reducing our potential for progress and thereby hindering us to meet the demands of the growing population (DU PISANI, 2006). It was further criticized that, although the definition endorses the idea that environmental, social and economic issues are all connected, it still separates these issues into the socio-economic aspect and the environmental aspect. Therefore the interlinkages between the social and environmental, and the economic and environmental aspects are not emphasised. As a result, cross-sectoral thinking is not promoted (SCOTT, 2015).

The controversy over the definition's vagueness has led to a large number of different interpretations of the Brundtland definition, many of which are difficult to compare and often contradictory (BOLIS, MORIOKA, & SZNELWAR, 2014). According to ROBERT ET AL. (2007) there have been ca. 300 interpretations at the time they published their article.

### 1.3. The United Nations Sustainable Development Agendas

The Brundtland Report emphasized the need to establish global SD goals to guide society how to become more sustainable. However, it does not provide such guidance. Below, we present the efforts of the UN to establish such goals.

In 1992, the UN established the Agenda 21 which stated that SD should be prioritised for international communities. The Agenda 21 consisted of 40 goals, divided into four sections<sup>7</sup> (UNCED, 1992) and was signed by 178 governments. DODDS, SCHNEEBERGER, & ULLAR (2012) state that the Agenda 21 was most successful in raising the awareness of SD, specifically within NGOs, local authorities, science, international institutional arrangements, and international legal instruments and mechanisms. However, the Agenda 21 was considered incomplete as no indicators were provided to monitor progress towards each goal; only advice on how to achieve the goals was given. Furthermore, the fragmentation of the goals into sectors promoted an isolated approach, contradicting the need for cross-sectoral solutions (DODDS ET AL., 2012).

In 2000, the Millennium Development Goals (MDGs) were established and ended in 2015 (UN, 2015A). The MDGs consisted of eight goals that focussed mainly on poverty reduction in developing countries. The MDGs gave specific goals that were to be achieved within a certain timeframe, by 2015. This is in

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<sup>7</sup> Section 1: Social and Economic Dimensions, Section 2: Conservation and Management of resources for Development, Section 3: Strengthening the Role of Major Groups, Section 4: Means of Implementation

contrast to the agenda 21 which had not timeframe. Additionally, the MDGs also provided quantitative values e.g. to reduce extreme poverty by 50%. Yet, they lacked the necessary global focus as the MDGs aimed to reduce poverty specifically in developing countries. They also did not place enough importance on other aspects of SD, such as environmental issues, economic development of all, human rights and child welfare (UoE, 2017).

In 2015, the Sustainable Development Goals (SDGs) were established as a part of the Agenda 2030 (UN, 2015b). They are a continuation and an improvement of the MDGs. The SDGs consist of 17 goals, 169 targets and 232 indicators, and aim to guide all nations' agendas and political policies to achieve a sustainable state by 2030. The indicators aim to measure the progress towards achieving each associated target and goal. The 17 SDGs are strongly interlinked as working towards one of the goals impacts the progress towards the others; there are synergies and barriers between the goals (GRIGGS ET AL., 2013; UN, 2015b). By the end of 2015, more than 150 state leaders had adopted the SDGs (UNDP, 2015).

BIERMANN, KANIE & KIM (2017, p. 29) states the SDGs are *“one of the most intriguing new global initiatives in the area of sustainable development [...]”*. The SDGs are considered a novel approach to global governance because, at current, they are the most holistic description of SD. The SDGs aim to balance the social, economic and environmental dimensions by including including them in each of the 17 goals. The SDGs are also globally and democratically written as their formulation included 5 million people from 88 countries (THOMSON, 2015). With the necessary translation, they can be applied to levels other than global, i.e. nationally, regionally, locally, personally (BIERMANN ET AL., 2017). Finally, while the MDGs mainly targeted eradicating extreme poverty in developing countries, the SDGs give targets for all countries to work towards SD (UN, 2018).

#### 1.4. Discussing the SDGs

Although the SDGs are considered the most holistic and inclusive approach to guide society, they are still in their infancy. A review of the SDG targets states that *“Out of 169 targets, 49 (29 %) are considered well developed, 91 targets (54 %) could be strengthened by being more specific, and 29 (17 %) require significant work”* (ICSU & ISSC, 2015, p. 6). Similarly, 60% of the SDG indicators are not well defined (MUKHERJEE, 2018). The indicators are often not viable because they are considered imprecise and there is a lack of required data, tools, or methodologies, to monitor their implementation (FENTON, GUSTAFSSON, BRONDIZIO, LEEMANS, & SOLECKI, 2017; HÁK, JANOUŠKOVÁ, & MOLDAN, 2016; ICSU & ISSC, 2015).

Given that the SDGs were designed with a global focus, they require an effective translation to tailor the SDGs specifically to the different levels and sectors (BIERMANN ET AL., 2017; FENTON ET AL., 2017).

However, the translation is difficult due to the diversity of circumstances and roles in the different levels and sectors. At current, the global SDGs declare that everyone has a responsibility to implement the SDGs. In practice, this may lead stakeholders to leave the responsibility to others as key roles are not clearly defined. The translation would therefore clarify the accountability and responsibility for the stakeholders (ENGBRETSSEN, HEGGEN, & OTTERSEN, 2017).

Lastly, even though the overarching principle of the SDGs is to “*leave no-one behind*”, the SDGs do not adequately address specific vulnerable groups such as refugees, migrants, non-citizens, foreign workers (EL-ZEIN ET AL., 2016; UN, 2016). Furthermore certain issues, such as the effect of militarisation, war driven displacement and labour migration on development, are not adequately addressed either (EL-ZEIN ET AL., 2016).

## 2. Sustainable Development Assessments, Reporting and Monitoring

Coinciding with the increase in the popularity of SD and the development of the different UN-Agendas (Agenda 21, MDGs, Agenda 2030 & SDGs) after the release of the Brundtland report in 1987, there was an increase in the number of sustainability initiatives, such as certifications schemes and standards, networks, organisations and associations (MEBRATU, 1998). The initiatives aim to promote SD and attempt to assess actions taken towards sustainability. It is well documented that sustainability assessments and reporting is key to monitor progress towards SD (SINGH, MURTY, GUPTA, & DIKSHIT, 2009). Assessment and reporting allows transparency, accountability and comparability (DAUB, 2007). They can serve as guide for policy making, public communication on sustainability performance (SINGH ET AL., 2009).

Ecolabels are important examples of such initiatives and fig. 3 shows a steady increase in their number since 1987. Ecolabels evolved from small-scale local bottom-up initiatives and they vary considerably in their SD-related guidelines. Some ecolabels aim to assess a single environmental or social impact of a single product. Conversely, others provide a holistic assessment of a company’s or an institution’s management strategy. The standards also vary in their applied methods and whether they are publically or privately instigated (UNFSS, 2015).

Today, the ecolabels are an integral part of governments’ monitoring of the progress towards SD. Governments increasingly rely on certain ecolabels in their sustainability strategies (KOMIVES & JACKSON, 2014; POTTS ET AL., 2014) because many provide very detailed assessment methods for specific sectors. However, the great variety of ecolabels may also hinder comparability, as there is no uniform methodology. Furthermore, the great variety may pose as a barrier for businesses or organizations to

engage in SD, as choosing the right ecolabel or framework may seem overwhelming (FIORINI, SCHLEIFER, & TAIMASOVA, 2017).

For these reasons, there is great potential to synergize the ecolabels with the SDGs. The SDGs serve as a broad, universally applicable, and globally accepted overarching framework. But, as previously discussed in chapter 1.4, many indicators are not well defined and the indicators have not been fully translated to other than a global level. Linking the ecolabels to the associated SDG targets and indicators has the potential to provide such translated indicators as the ecolabels often take into account the special circumstances in different sectors and local settings.

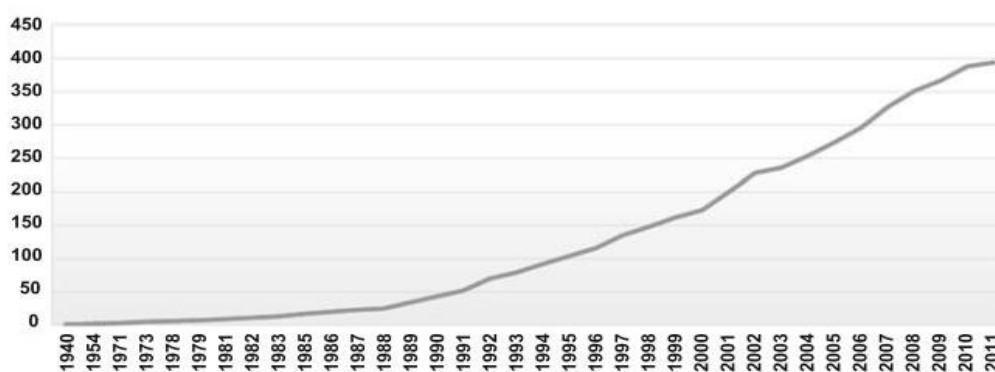


Fig. 3: Number of Ecolabels established each year from 1940-2011; Source: (KOMIVES & JACKSON, 2014)

### 3. Higher Education Institutions Role in Sustainable Development and the Sustainable Development Goals

#### 3.1. Higher education institutions' Role in Sustainable Development

The important role of higher education institutions (HEIs) regarding SD, specifically environmental protection, was first acknowledged at the Stockholm Conference in 1972 (LOZANO ET AL., 2015). It was stated that the UN should “[...] take the necessary steps to establish an international programme in environmental education, interdisciplinary in approach, in school and out of school, encompassing all levels of education and directed towards the general public, [...]” (UN, 1972, p. 24). The critical role of HEIs in SD was most notably furthered in the UN Decade of Education for Sustainable Development (DESD) 2005-2014, which was led by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) (UNESCO, 2005A, 2005B, 2014).

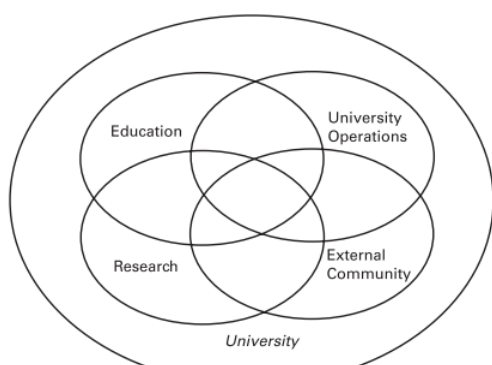
HEIs, such as universities, have the potential to be key actors and leaders to transform society towards SD (M. d. M. Alonso-Almeida, Marimon, Casani, & Rodriguez-Pomeda, 2015; von Hauff & Nguyen, 2014). It is estimated that there are over 20 000 HEIs globally (BERZOSA, BERNALDO, & FERNÁNDEZ-SANCHEZ, 2017). In 2015, ca. 13 million people were employed and ca. 212 million students were enrolled in the



global higher education sector (WORLD BANK, 2018). Additionally, the large number of people that are indirectly linked to HEIs, for instance through cooperation with private companies or government institutions, further emphasises the transformative power of HEIs. To “*catalyze and/or accelerate a societal transition toward sustainability*” (STEPHENS, HERNANDEZ, ROMÁN, GRAHAM, & SCHOLZ, 2008, P. 320), HEIs should educate sustainability-literate citizens (JONES ET AL., 2008), and “*lead by example*” (AMARAL, MARTINS, & GOUVEIA, 2015, P. 156).

For HEIs to lead by example and fulfil their transformative power they must be a ‘sustainable university’. VELAZQUEZ, MUNGUÍA, PLATT, & TADDEI (2006a, p. 812) define a sustainable university to be “*a HEI [...] that addresses, involves and promotes, on a regional or a global level, the minimization of negative environmental, economic, social, and health effects generated in the use of their resources in order to fulfil its functions of teaching, research, outreach and partnership, and stewardship in ways to help society make the transition to sustainable life-styles*”. HEIs must incorporate SD into all university functions; meaning that a ‘whole system approach’ and must be applied (KOESTER, EFLIN, & VANN, 2006).

To do this, it is useful to describe HEIs by their core functions (fig. 4), or functional boundaries:



**Fig. 4: HEIs’ core functions: education, research, operations and administration (university operations) and community outreach (external community); Source: (CORTESE, 2003, FIG. 1)**

education (curricula and competences); research; campus operations and administration; and community outreach. SD must be implemented in all of these core functions to achieve the necessary transformative change in society (Cortese, 2003; Dagiliūtė, Liobikienė, & Minelgaitė, 2018; Karatzoglou, 2013; Lozano et al., 2015; van Weenen, 2000; Velazquez et al., 2006a).

### 3.1.1. Higher Education Institutions’ Role in Education

The primary responsibility of HEIs is to provide students with the necessary knowledge and skills to be able to go on to work in society. Most graduates go on to be professionals, such as entrepreneurs, managers or decision-makers (M. d. M. Alonso-Almeida et al., 2015; von Hauff & Nguyen, 2014), who work to develop, lead, manage, and influence societal development (CORTESE, 2003). GORNITZKA (2018) states “*Graduates are the long-term impact of university on society: on the economy; on civil society; on public society; and on political institutions*”. Therefore, it is vital that HEI graduates have knowledge of SD and the necessary skills and values (such as critical, holistic and trans-disciplinary thinking) to tackle the challenges of SD (CORTESE, 2003). The critical role of education in SD is reflected by the DESD (UNESCO, 2005A, 2005B, 2014). The DESD guided various global education programs to emphasize the



critical role of education in pursuing SD and has been reviewed by an array of literature<sup>8</sup>. Continuing on from the DESD, UN member states committed to further the efforts (UN, 2012, PARA. 233). The latest reinforcement of the role of education is stated in SDG 4, 'Quality education', in target 4.7, "By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development [...]" (UN ECOSOC, 2016, p. 20).

### *3.1.2. Higher education institutions' role in Research*

Secondary to education, HEIs have a responsibility to shape, mediate and create knowledge to help improve society. HEIs must research transition pathways for HEIs and wider society to become more sustainable (Waas, Verbruggen, & Wright, 2010). As pointed out by ROBERT ET AL. (2007), there are over 300 interpretations of the definition of SD (chapter 1.2). This indicates that a large amount of research has been dedicated to the definition of SD in the past. Now research is needed on the implementation and operationalization of SD and the SDGs, for instance to address the issues associated with the SDGs, as outlined in chapter 1.4. Currently in HEIs, research and education is mostly organised into distinct disciplines, often referred to as 'silos'. HEIs need to develop research and curricula that work across the disciplines in a transdisciplinary manner (BIERMANN ET AL., 2017)

### *3.1.3. Higher education institutions' role in operations and administration*

To "lead by example", as pointed out by AMARAL, MARTINS & GOUVEIA (2015, p. 156), HEIs must integrate SD into campus operations and administration (SHIEL, LEAL FILHO, DO PAÇO, & BRANDLI, 2016). Sustainable practices within operation and administration must, for instance, address the HEI's energy and material consumption, emissions, waste management, and transport strategy. From our perspective as students, HEIs must engage in SD in their operations and administration, not only in education, research or outreach. Otherwise the HEI's efforts are hypocritical and this may lead to a loss of credibility. Our view is supported by GÓMEZ, CADARSO, & MONSALVE (2016).

### *3.1.4. HEIs role in Community Outreach*

Lastly, HEIs have a role to lead and be key partners in contributing to SD by collaborating with the external community, such as government, industry, and civil organisation, to advance sustainable societal transformation (TRENCHER, BAI, EVANS, MCCORMICK, & YARIME, 2014; TRENCHER, YARIME, & KHARRAZI, 2013; TRENCHER, YARIME, MCCORMICK, DOLL, & KRAINES, 2014). HEIs have a unique position within society to influence the external community as they are institutions that "are trusted by the public and are

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<sup>8</sup> Examples of literature reviewing the DESD: (FILHO, 2014; SINAKOU, BOEVE-DE PAUW, & VAN PETEGEM, 2017; TILBURY, 2009; WALSH, 2014)

*seen as neutral actors by other sectors”* (TAHL ET AL., 2017, p. 8). HEIs have a role in local, regional, national, and international communities to carry out activities aimed at building capacity to understand SD and implement new actions towards SD (KARATZOGLOU, 2013; SEDLACEK, 2013; SHIEL ET AL., 2016).

### 3.1.5. *Linking the core functions: HEIs as “Living Labs”*

An attempt to operationalise the ‘whole system approach’ of SD in HEIs is the ‘Living Lab’ approach. Living Labs provide applied research and teaching opportunities for SD, as Living Labs link research and education to the operations and administration of HEIs (EVANS, JONES, KARVONEN, MILLARD, & WENDLER, 2015). The concept of Living Labs acknowledges that the different functions of a HEI are interlinked and affect each other, and tries to identify synergies between the functional areas. HEIs have been compared to be the size of and function as small cities (TAHL ET AL., 2017) or towns (EVANS ET AL., 2015). Due to this similarity, HEIs offer an ideal platform to design, test, and evaluate the ‘real world’ performance of theoretical innovative SD theories (Adams, Martin, & Boom, 2018; Emanuel & Adams, 2011). EVANS ET AL.(2015, p. 1) highlight that *“Living labs promise to bring researchers, students, external stakeholders [...] and university estates and facilities staff together to co-produce knowledge about new sustainability technologies and services in real world settings”*. Examples of such approaches are the Edinburgh University Living Lab (GRACZYK PATRYCJA, 2015) and the University of Manchester Living Lab (EVANS ET AL., 2015).

## 3.2. The Relation of HEIs and the SDGs

The relationship between HEIs and the SDGs can be described as symbiotic (fig. 5). Firstly, HEIs have a role to further the SDGs by engaging with the SDGs in all the HEI’s core functions. In this way, the role of HEIs in relation to the SDGs is the same as the HEIs role in SD. Secondly, HEIs benefit from the SDGs, as the SDGs provide a holistic framework to engage in SD, create a common language and methodology to assess sustainability performance, provide new funding streams, and increases the HEIs reputation.

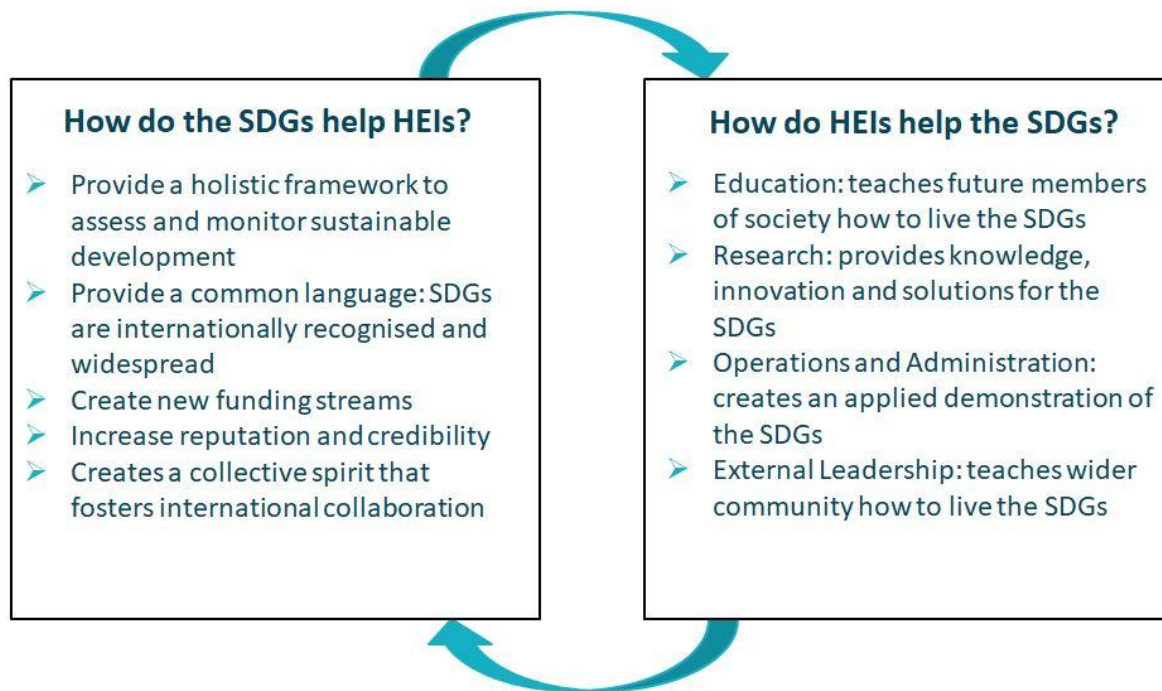


Fig. 5: The symbiotic relationship between the SDGs and HEIs; Adapted from (TAHL ET AL., 2017, FIG. 1)

#### 4. Engaging Higher Education Institutes in Sustainable Development and the Sustainable Development Goals

##### 4.1. Sustainability Networks and Associated Assessment Tools for Higher Education Institutions

Similarly to the development of the numerous ecolabels to assess and certify sustainable practices of businesses (chapter 2), there are a number of initiatives, including charters, declarations, partnerships and networks, that aim to promote, assess and certify sustainable practices at HEIs. Most of these were established after the release of the Brundtland report in 1987.

Sustainability assessment and reporting is also a highly useful tool for HEIs, for the same reasons as the importance of SD assessment and reporting for society. Also in regards to HEIs, the importance of sustainability assessments and reporting is written about extensively in research<sup>9</sup>. It is vital that HEIs follow a standardized assessment framework, as it provides the necessary information to develop systematic implementation strategies and plans. Furthermore, if several HEIs use the same standardized assessment framework, it allows for the sharing of successes, failures and challenges (VON HAUFF & NGUYEN, 2014).

<sup>9</sup> E.g. (M. d. M. Alonso-Almeida et al., 2015; Berzosa et al., 2017; Ceulemans et al., 2015)

Table 1 provides a summary of a selection of networks, organisations, and their associated assessment frameworks. As this thesis is focused on HVL, only those networks and frameworks that are most relevant for HVL are listed<sup>10</sup>. Except from the ISO<sup>11</sup>, the GRI<sup>12</sup>, and the SDSN<sup>13</sup>, all listed networks and organizations focus specifically on HEIs. While the GRI and ISO focus more on the business sector, the assessment frameworks provided by these organisations are commonly used in HEIs' sustainability assessments. For this reason, they are included in the list. The SDSN is also included as they released one of the first guides on how HEIs can engage in the SDGs (chapter 3.4.2.). PRME<sup>14</sup>, which only applies to management related HEIs, is also included as they require their HEI signatories to submit 'Sharing Information on Progress (SIP)' reports where they must specifically document their actions towards fulfilling SDGs. PRME does not provide a guide or framework for HEIs to engage in the SDGs but they have a blog named 'PRIMEtime' (WEYBRECHT, 2017A, 2017B) which communicates advice how to mainstream SDG into management-related HEIs based on HEI case studies.

The networks and organizations presented in table 1 vary in the level of commitment required from their member institutions. Some simply aim to provide a platform for knowledge sharing related to sustainability issues (e.g. IAU<sup>15</sup>), while others require their members to sign a declaration, pledging to engage in SD (e.g. ULSF<sup>16</sup>, COPERNICUS<sup>17</sup> Alliance, ISCN<sup>18</sup>). A few networks and organizations furthermore require their member institutions to provide regular reports on their sustainability performance (e.g. ISCN, EAUC<sup>19</sup>, PRME) and in some cases they also provide tools and frameworks to guide institutions in the process of assessing their sustainability performance (e.g. AASHE<sup>20</sup>, ULSF).

The assessment frameworks provided by the different networks and organizations vary in their focus and methodology (BERZOSA ET AL., 2017). Some frameworks, such as the SAQ<sup>21</sup>, use qualitative indicators to show the subjective opinions of how HEI stakeholders believe their institutions' to be performing. Others, such as the STARS<sup>22</sup> and the GRI standards, provide a wide array of quantitative indicators. Specifically, STARS uses complex calculations to attribute credit points to each assessed category and ranks each institution depending on their sustainability performance. The GRI and STARS frameworks are the most detailed, competent and prescriptive (M. d. M. Alonso-Almeida et al., 2015; Berzosa et

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<sup>10</sup> Additionally, the rootAbility Webpage (ROOTABILITY, 2018) provides a more complete list of sustainability initiatives for HEIs

<sup>11</sup> ISO: International Organisation for Standardisation

<sup>12</sup> GRI: Global Reporting Initiative

<sup>13</sup> SDSN: Sustainable Development Solutions Network

<sup>14</sup> Principles of Responsible Management Education

<sup>15</sup> IAU: International Association of Universities

<sup>16</sup> ULSF: University Leaders for a Sustainable Future

<sup>17</sup> COPERNICUS: Co-operation Programme in Europe for Research on Nature and Industry through Coordinated University Studies

<sup>18</sup> ISCN: International Sustainable Campus Network

<sup>19</sup> EAUC: Environmental Association for Universities and Colleges

<sup>20</sup> AASHE: Association for the Advancement of Sustainability in Higher Education

<sup>21</sup> SAQ: Sustainability Assessment Questionnaire

<sup>22</sup> STARS: Sustainability Tracking, Assessment & Rating System

al., 2017). STARS is specifically designed for HEIs, while the GRI standards are not. The ISO standards are also very extensive, yet they are not publicly accessible. Therefore, the ISO standards will not be further discussed in this thesis.

**Table 1: Summary of a selection of networks, organisations, and the associated assessment frameworks;**

adapted from (CEULEMANS ET AL., 2015B; HAUFF & NGUYEN, 2014; LOZANO, LUKMAN, LOZANO, HUISINGH, & LAMBRECHTS, 2011, TABLE 1)

Network/ Organization	Associated Declaration	Declaration/ Network/ Organisation Characteristics	Signing Declaration required?	Assessment framework	Assessment framework characteristics	Regular reporting required?	References
AASHE  <i>Established 2005</i>	N/A	<b>Network</b> - North American Focus - Aims to provide information and guidance for institutions engaging in SD	NO	STARS	<b>STARS:</b> - Indicator based standardized assessment including ranking system - Focus areas: (1) Academics, (2) Operations, (3) Planning, Administration, and (4) Engagement - Each focus area rewards a specific amount of credits, used for the sustainability ranking	NO	(AASHE, 2017A, 2017B)
ACTS <sup>23</sup>  <i>Established 2006</i>	N/A	<b>Network:</b> - Australian Focus - collaborated with SDSN Australia/Pacific in developing the guide 'Getting started with the SDGs in universities'	NO	LiFE-Index (in collaboration with EAUC) 'Getting started with the SDGs [...]'- guide	<b>LiFE-Index focus areas:</b> - (1) Leadership and Governance, (2) Operations and Estate, (3) Partnership and Engagement and (4) Learning, Teaching and research <b>'Getting started with the SDGs [...]'-guide:</b> - Not an assessment tool, but it provides recommendations for HEIs on how to engage in the SDGs	NO	(ACTS, 2017; EAUC, N.D.; TAHL ET AL., 2017)
COPERNICUS Alliance  <i>Established 1993</i>	COPERNICUS Charter  <i>Created 1993</i>	<b>Network:</b> - European Focus <b>Declaration:</b> - Environmental sustainability - Knowledge sharing related to environmental issues Multidisciplinary	YES	NO	N/A	NO	(COPERNICUS ALLIANCE, 2018; CRE, 1994)
EAUC  <i>Established 1996</i>	SDG-Accord  <i>Created 2017</i>	<b>Network:</b> British focus <b>Declaration:</b> Commitment to SDGs	NO	SDG-Accord (In Development) LiFE <sup>24</sup> -Index	<b>LiFE-Index focus areas:</b> (1) Leadership and Governance, (2) Operations and Estate, (3) Partnership and Engagement and (4) Learning, Teaching and research	YES, if SDG- Accord is signed	(EAUC, N.D., 2017, 2018A)

<sup>23</sup> ACTS:

<sup>24</sup> LiFE: Learning in Future Environments

GRI  <i>Established 1997</i>	N/A	<b>Organization:</b> - International organisation providing standards specifically for sustainability reporting frameworks - Runs the SDG-Compass Website, a database linking standards from different institutions to the SDGs	NO	GRI Standards	- extensive standards for social, economic and environmental sustainability - Recently, released a document linking the GRI standards to the SDGs - Standards are designed for private businesses, but can also be applied to higher education institutions	YES,  but timeframe can be chosen by reporting institution	(GRI, 2015, 2016, 2018A; GRI, UN GLOBAL COMPACT, & WBCSD, 2015)
IAU  <i>Established 1950</i>	Kyoto Declaration  <i>Created 1993</i>	<b>Network:</b> - International focus - initial focus on providing global forum for university leaders and providing communication channel to high level political institutions - Runs SDG dashboard <b>Declaration:</b> - Knowledge sharing - Environmental education and operations Interdisciplinarity - North-South Disparities - Inter-generational Inequities	NO  Declaration only signed by IAU as statement to promote SD within their network	NO	N/A	NO	(IAU, 1993, 2016, 2018)
ISCN  <i>Established 2007</i>	Sustainable Campus Charter  <i>Created 2010</i>	<b>Network</b> - International focus <b>Declaration:</b> - sustainable operations - sustainable campus planning - 'Living Lab': linking research, education and operations	YES	NO, Refers to STARS, GRI and ISO.	N/A	YES	(ISCN, 2010, 2016, 2018)
ISO  <i>Established 1947</i>	N/A	<b>Organization:</b> - provides standards for a variety of different economic sectors - standards range from product level to organisation level	N/A	ISO-Standards	<b>ISO standards related to sustainability:</b> - ISO 14 000 series on environmental management - ISO 26 000 series on social responsibility	YES,  Re- certificati on every 3 years	(ISO, 2018; ISOREADY, 2018)

PRME <i>Established 2007</i>	Membership declaration  <i>Created 2007</i>	<b>Network:</b> - Focus on realising the SDGs in management-related HEIs <b>Declaration:</b> - 6 principles focused on commitment to and advancement of the SDGs	YES	- SIP  - PRIMEtime	<b>- SIP:</b> Not an assessment tool, but a guide on how to share Information on progress towards the six principles of the declaration <b>- PRIMEtime:</b> Not an assessment tool, but a blog providing advice on how to implement the 6 principles of the declaration	YES,  at least every 24 months	(PRME, 2018b; WEYBRECHT, 2017A, 2017B)
SDSN  <i>Established 2012</i>	N/A	<b>Network:</b> - Under patronage of the UN Secretary General - Focus on promoting practical solutions for SD (e.g. implementation of SDGs and Paris Agreement)	NO	'Getting started with the SDGs [...]'-guide	Not an assessment tool, but it provides recommendations for HEIs on how to engage in the SDGs	N/A	(SDSN, 2018; TAHL ET AL., 2017)
ULSF  <i>Established 1990</i>	Talloires Declaration  <i>Created 1990</i>	<b>Network:</b> - European focus <b>Declaration:</b> - Environmental sustainability - Outreach: stakeholder involvement, partnerships - interdisciplinarity	YES	SAQ	<b>SAQ:</b> - Qualitative survey for stakeholders to rate sustainability performance of the Institution - Topics: (1) Curriculum, (2) Research and Scholarship, (3) Operations, (4) Faculty and Staff Development and Rewards, (5) Outreach and Service, (6) Student Opportunities, and (7) Administration, Mission and Planning.	NO	(ULSF, 1990, 2009, 2015)



#### 4.2. History of Engagement of Higher Education Institutes in Sustainable Development

As the number of networks and declaration grew, so did the number of HEIs that are members of such networks or have signed one or several of the declarations. WAAS ET AL. (2010) state that, globally, more than 1000 universities have signed international declarations, pledging to implement SD into their functions. Despite these memberships and pledges very few HEIs have actually carried out SD assessments and reporting. (CEULEMANS ET AL., 2015) found that, in 2012, only 33 HEIs had reported their sustainability performance to the GRI Disclosure Database. Today, the GRI Disclosure Database lists 136 HEI (GRI, 2018B) and STARS lists ca. 300 HEIs<sup>25</sup> (AASHE, 2018) that have reported their sustainability performance. As a comparison, in the business sector, 93% of the world's 250 largest companies produced sustainability reports in 2013 (KPMG, 2013) and in 2012 the GRI Disclosure database listed total 3513 companies that had reported their sustainability performance. Today the GRI Disclosure Database lists 12150 businesses (GRI, 2018B).

HEIs have primarily focussed on the environmental dimension of SD, specifically in education, and have focussed far less on the economic and social dimensions (M. d. M. Alonso-Almeida et al., 2015). This evidently shows that SD and sustainability assessment and reporting in the HEI sector is lagging far behind (LOZANO ET AL., 2015).

#### 4.3. History of Engagement in the Sustainable Development Goals

The state of the SDG implementation is similar to the engagement in SD. The applications of the SDGs in HEIs is still in its infancy (LOZANO ET AL., 2015). Several of the networks and organisations mentioned in table 1 state that it is important for HEIs to engage in the SDGs. Most of the aforementioned networks, as well as a number of individual HEIs, also endorsed the SDG-Accord, where they declare that they will align all functions of their institution with the SDGs. As the SDGs were only developed in 2015, no organisation provides specific indicators to measure HEIs' efforts to work towards the SDGs. The GRI provides SDG-specific indicators, however these focus on the business sector (GRI, 2015; GRI ET AL., 2015). This shows once more, that the HEIs are lagging behind the business sector in regards to the assessment and reporting on the SDGs.

HEIs are starting to develop strategies and frameworks for the implementation of the SDGs (TAHL ET AL., 2017). In 2017, the UN-supported SDSN Australia/ Pacific, in collaboration with the ACTS, released the first and most exhaustive guide on how to integrate the SDGs into HEIs (TAHL ET AL., 2017). The guide provides

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<sup>25</sup> Number of STARS reports only accounts for those that reported in the last 3 years, as older ones are considered expired

advice for each of the 5 steps (fig. 4), listing useful tools and referring to other organizations, such as the GRI, for additional guidance. In relation to the SDGs, the guide presents how universities can contribute to the SDGs in each core functional area of a HEI. For education and research separately, the SDSN guide presents the targets that are considered to be relevant, but it does not present associated indicators. For education, original SDG targets are select from goal 4 (TAHL ET AL., 2017, P. 11). For research, targets from SDG 2, 3, 7, 9, 12, 14, and 17 are presented (TAHL ET AL., 2017, P. 16). For operations, each SDG is listed, and examples are given for actions that HEIs can take to work towards the goals (TAHL ET AL., 2017, PP. 24–26). The recommended actions are, however, only linked to the goals and not to specific targets or indicators. For community outreach, only general advice is given, that is not linked to specific SDGs, targets or indicators (TAHL ET AL., 2017, P. 28).



Fig. 6: 5 steps of engaging in the SDGs; Source: (TAHL ET AL., 2017, FIG. 3)

PRME, founded in 2007, is another UN-supported initiative that engages in the implementation of the SDGs in management-related HEIs. It is a voluntary initiative with ca. 650 global signatories (PRME, 2018A). As stated in chapter 3.3, PRME does not provide a guide or a framework for HEIs to engage in the SDGs but they have a blog named 'PRiMETIME' (WEYBRECHT, 2017A, 2017B) which communicates advice on how to mainstream the SDGs into management-related HEIs based on HEI case studies. Lastly, the IAU's HESD<sup>26</sup>-Website has a dashboard database which lists HEIs that are taking actions towards each goal.

The development reports of the few SDSN and PRME signatories or members, that have begun to engage in the SDGs, show general characteristics:

<sup>26</sup> IAU HESD: IAU Higher Education and Research for Sustainable Development

1. An acknowledgement is given by the institutions' leaders in a welcome letter within the report, stating that the HEI commits to work towards the SDGs. For example, the Copenhagen Business School states, "We acknowledge our responsibility in relation to the SDGs[...]" (CBS, 2017, pp. 4–5). 7 of 48 PRME Nordic HEI signatories have done this.
2. Previous and current actions HEIs have taken towards each SDG are mapped out and clustered according to the corresponding SDGs. This was done, among others, by the Copenhagen Business School (CBS, 2017), the Bologna University (ALMA MATER STUDIORUM, 2016), and Rotterdam School of Management (RSM, 2017, pp. 26–59). Some HEIs have only presented the SDGs in which they have prioritised, e.g. Deakin University (DEAKIN UNIVERSITY, 2016) and therefore do not address certain goals. 3 of 48 PRME Nordic HEI signatories did this.
3. The reporting of their actions towards the SDGs is not organised into the different HEI core functions.

Lastly, although not yet engaging with the SDGs in their development reports, some HEIs have stated their intention to engage their whole HEI with the SDGs in future, e.g. King's College London's (KCL) sustainability team is carrying out a baseline survey to identify how KCL can contribute to achieve the SDGs and is writing a baseline report (KCL, 2018). HEIs are holding conferences and workshops to understand how their institutions, or HEIs in general, can become engaged, e.g. SDG Conference Bergen 2018 (UiB, 2018A), Sustainability Science Conference 2017 (NTNU, 2018e), the HVL internal conference (HVL, 2018b), and the University of Manchester Symposium (EAUC, 2018b). The University of Oslo (UiO) has also established the 'The Oslo SDG initiative' which will be a platform for education, research, community outreach and dissemination for the SDGs to inform policymakers and the wider community of the institutes' actions (UiO, 2018).

#### 4.4. Higher Education Institutions' Engagement in Sustainable Development: where is Norway?

Relating to education for sustainable development, a general misconception can be observed in Norway. Internationally, Norway's education system is often considered to have a high standard. Yet the actual implementation of sustainability related issues into educational curricula is not very well established in Norway. Several reasons for this are mentioned in the literature. Firstly, it is argued that Norway's close ties to the oil industry is a barrier (STRAUME, 2016). Secondly, education in Norway traditionally had a strong focus on outdoor education. This is often falsely considered to be the same as education for sustainable development (ESD). Consequently, the public perception often views ESD as well established in the

education system (ANDRESEN, HØGMO, & SANDÅS, 2015; STRAUME, 2016). Lastly, it is argued, that Norway has a far greater focus on advancing SD in other countries than in Norway itself (STRAUME, 2016).

Specifically relating to higher (tertiary) education in Norway, there are ten universities, nine specialised university colleges, 14 university colleges/universities of applied sciences, and 18 university colleges with accredited study programmes. Norwegian HEIs are beginning to engage in the SDGs. Norwegian HEIs have held a number of conferences to determine how Norwegian HEIs can contribute to the SDG, such as the “SDG Conference Bergen”, held by the University of Bergen in February 2018, the recent internal conference of HVL regarding HVL’s commitment to the SDGs in April 2018, and the Sustainability Science Conference in 2017 which was held by the Norwegian University for Science and Technology (NTNU).

Out of the Norwegian HEIs, NTNU appears to be the most engaged as they have fully embedded their institutions’ strategy and report in line with the SDGs and their contributions are very visible on their website (NTNU, 2018b). They have created an SDG dashboard *“From vision to action: Explore NTNU in light of the UN’s sustainability goals”* where they state their actions in research and education for each SDG. For this, they believe *“Research and education to be central”* (NTNU, 2018b). Their research includes several national and international projects. Sustainability is also one of their four ‘Strategic Research Areas’ from 2014 to 2023 as stated in the institutions’ main missions (NTNU, 2018a). NTNU claims that their *“research on sustainable development of society includes environmental, economic and social aspects in the broadest sense.”*; they have four main SD research areas (NTNU, 2018d). However, they do not state if they are taking actions to improve their operations. Although, we are aware they have carried out a carbon footprint assessment (LARSEN, PETTERSEN, SOLLI, & HERTWICH, 2013). NTNU also has three courses offered in three departments<sup>27</sup> that pertain to the SDGs.

When researching other Norwegian HEIs, their actions for the SDGs were not as visible as for NTNU. No other HEIs have mentioned the SDGs in their mission statements. However, some Norwegian HEIs are carrying out research and education for the SDGs. For example, when searching the University of Oslo’s website, 62 studies, 12 research projects, and 17 articles from employees, were found that mention the SDGs. The University of Oslo has also established ‘The Oslo SDG initiative’ which will be a platform for education, research, community outreach and dissemination for the SDGs to inform policymakers and the wider community of the institutes’ actions (UiO, 2018). Despite not mentioning the SDGs in their strategy, UiO recently stated *“When we develop a new strategy for the University of Oslo this fall the SDGs will be a*

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<sup>27</sup> Department of Public Health and Nursing; Department of Architecture and Planning; Department of Industrial Economics and Technology Management

*main frame of reference*". They place importance on the fact that they *"will seek to strengthen the ties between research and education"* and improve their community outreach: *"We also aim to be even more outward looking through better and more cooperation with businesses and societies"*. UiO was found to be the only Norwegian HEI that pledges to address their campus operations: *"So how we manage it, [UiO] makes a difference. Recycling projects, green investments, and are all important [...]. We are working hard to make sure that the money we spend goes to suppliers that act sustainably and fair – but we need to do more"* (GORNITZKA & BJØRNERUD, 2018).

At UiB, only one study course was found that relates to the SDGs. UiB also has a summer research schools that focuses on the SDGs and how they should be used to promote excellence in research and education. They state that *"this year the new SDG get full attention"* at the summer school of 2018 (UiB, 2018A). UiB has many research initiatives linked to topics of SD<sup>28</sup>, although they do not mentioned the SDGs specifically. Their main initiatives in relation to the SDGs include the new 'Ocean Sustainability Centre' as they state the center *"aims to make research and science diplomacy a key part of Norway's contribution towards a sustainable ocean, one of the UN's 17 ...(SDGs) in Agenda 2030"* (UiB, 2018c). They also have a research group called 'The Global Sustainable Development Group' which focuses *"on the goals that activate the need for knowledge and relation between economics and politics"* (UiB, 2018B). Even though the SDGs are not mentioned in their current strategy, they place importance on education and research for SD, *"through research and education, we shall contribute towards [...] a diversified and sustainable society"* (UiB, 2016). They do not mention how they wish to improve the sustainability of their institutions' operations. Recently, UiB has pledged to work towards SDG 14 as the rector changed the institutions' strategy to be in line with Norwegian national policy; to be 'carbon neutral' by 2030 (UiB, 2018A).

A few Norwegian HEIs are also members of international and national networks. The Norwegian Business School (BI) and the Norwegian University of Life Sciences (NMBU) are members of PRME, and NTNU, UiB and Hedmark Universty College (HiH) are members of SDSN. NMBU, NTNU collaborate, among others, with the Norwegian Agency for Development Cooperation (NORAD), aiming to ensure Norwegian development aid funds are spent in the best way, and to report on project successes and failures, and the Southern Africa-Nordic Center (SANORD), addressing issues of global sustainability.

The information we present here may not be fully representative of Norwegian HEIs actions as we were not able to find publications that summarise recent efforts of Norwegian HEIs for the SDGs. We gained

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<sup>28</sup> Climate, Culture and society, Ecology, Education, Gender, Governance, Health, Human Rights, Migration, Poverty

much of the information from the Norwegian HEIs' websites and from the UiB SDG conference (UiB, 2018A). To the best of our efforts, we have summarised examples. Fully researching this topic, however, is beyond the scope of this thesis. We merely provide examples of Norwegian HEIs' engagement in SD and the SDGs.

#### 4.5. The Barriers and Drivers of Engaging Higher Education Institutes in Sustainable Development

Various barriers (obstacles), and the strongly intrinsically related drivers (success factors), for the integration of SD in HEIs are well documented (table 2). Verhulst & Lambrechts (2015) provides an extensive summary of twenty two barriers from an organisational change perspective, with a focus on human factors (Verhulst & Lambrechts, 2015, fig. 1). They present a model of the integration process of SD in HEIs where the drivers are outlined (Verhulst & Lambrechts, 2015, figs. 1 & 2). (Aleixo, Leal, & Azeiteiro, 2018a) furthered this work and presents six barriers that they consider to be most important and provides a comprehensive summary of drivers of SD in HEIs (Aleixo et al., 2018a, sec. 2.3). The barriers and drivers were identified by the associated authors (table 2) through a number of approaches by HEIs to incorporate SD in their institutions. Approaches include: defining implementation models specifically for a single university; the level of education within a HEI related to SD; the development and application of sustainability tools; and modelling the process of organisational change.

The list of barriers and drivers and authors (table 2), are not exhaustive. The barriers and drivers for HEI engagement in SD provided are those that are addressed in this thesis in relation to HVL. Other barriers presented by the given authors in table 2 include: lack of financial resources and funding; lack of professionalism of teachers; SD is seen as a threat to academic freedom and credibility; SD is not seen as relevant to a certain course or discipline; focus on short-term profit as a result of managerial-thinking and policy-making; overcrowded curriculum; focus on content-based learning; high work-pressure and lack of time; technical problems; and lack of physical place. These barriers also have closely linked drivers. These barriers and their associated drivers are not directly addressed in this thesis due to lack of time for the thesis, and to limit the length of the questionnaire.

I group the barriers and drivers into overarching topics:

1. The standardisation of the definition of SD and SD framework for HEIs
2. HEI stakeholders' level of knowledge of SD.
3. HEI stakeholders' attitudes towards SD

4. The level of communication and engagement of HEI stakeholders regarding SD-related decision-making and/or activities.
5. HEI stakeholders' recommendations to improve SD at the HEI

All but the first topic listed above are primarily considered 'human factors'- factors related to people. Topic one is primarily an 'organisational factor'- it is controlled by the HEI administration, i.e. whether the HEI adopts a standardised SD definition or framework. However, Topic 4 is also considered a 'organisational structure factor'- it is controlled by how the HEI is structured i.e. whether communication and engagement is 'top-down' or 'bottom-up' (Verhulst & Lambrechts, 2015).

As presented in section C4 most HEIs do not follow structured models or processes to engage in SD (Verhulst & Lambrechts, 2015). For HEIs to fully engage in SD in their entire system, it is key that they follow a structured definition of SD and a SD framework. The definition and framework must also be standardised (driver 1, table 2). The full reasoning for this is presented in section C3 and 4. In summary, having a standardised definition and framework for HEI engagement in SD allows for collective action for SD. This is considered the most important driver in this thesis because drivers 2-9 (table 2) stem from this driver.

Human factors are key factors of success in transforming HEIs to fully engage in SD (Verhulst & Lambrechts, 2015). The human factors are tightly interconnected. Knowledge includes awareness and understanding. Awareness is defined as "*knowledge or perception of a situation or fact*" (Oxford Dictionaries, 2018a) and therefore differs to having understanding as understanding is defined as "*The ability to understand something; comprehension*" (Oxford Dictionaries, 2018b). One must therefore have awareness of a 'situation or fact' in order to have an understanding. Attitudes include values, opinions and willingness to act (Derhim, N., Hashim H. S., Ali, N., and Aziz, 2012; Howell et al., 2012). Attitude is defined as "*Evaluation and action tendencies with regard to attitude objects. Usually stable in medium-term*" (Häcker & Stapf, 2004), values is defined as "*A shared perception of something worth having or striving for regardless of the situational context*" (Kluckhohn, 1951). Attitudes are therefore based on values. Opinions is defined as the "*Verbalisation of attitudes and values*" (Rokeach, 1968).

Tang, 2018, p. (466) stress that "*Knowledge is instrumental to formation of positive attitudes towards sustainability*". Together, knowledge and attitudes are 'perceptions' (Emanuel & Adams, 2011; Kagawa, 2007). Although, knowledge of a topic does not mean that one will have positive attitudes towards the topic. For HEIs to fully engage in the whole HEI system, into all core functions, it is fundamental for all



HEI key stakeholders to have knowledge (Mckeown & Hopkins, 2003) and positive attitudes towards SD (Tilbury, 2009; Velazquez, Munguia, Platt, & Taddei, 2006b), specifically the standardised definition. Continuing on from this, HEI stakeholders' knowledge of and positive attitudes towards SD is a main precondition for behaviour and willingness to act for SD (Bahae, Perez-Batres, Pisani, Miller, & Saremi, 2014), i.e. a shift to creating a sustainability culture among HEI stakeholders (Too & Bajracharya, 2015). However, an increase in knowledge and positive attitudes are not directly correspond to behavioural change (Azucena Vicente-Molina, Fernández-Sáinz, & Izagirre-Olaizola, 2013).

Furthermore, perceptions, communication and engagement are closely linked. Engagement and participation in HEI decision-making is a prerequisite for SD education in HEIs and are also essential for a democratic, legitimate institutions (Dagiliūtė et al., 2018). This study considers the terms 'participation' and 'engagement' to be the same as public participation refers to *"to the practice of consulting and involving members of the public into agenda settings, decision- and policy making of organisations or institutions which is nowadays associated with stakeholder engagement"* (Dagiliūtė et al., 2018, p. 12). (Disterheft et al., 2015) further elaborates the several advantages of engaging HEI stakeholders, such as capturing knowledge, increasing ownership, reducing conflict, encouraging innovation, inclusive decision-making, promotion of equity, and building of social capital, more dialogue, reflection of own values and attitudes, and development of shared visions and objectives. Communication underpins the perceptions of and engagement in SD at HEIs and is considered a "critical success factor" (Disterheft, Caeiro, Azeiteiro, & Filho, 2015). Clear communication of SD and HEI SD-related activities and decision-making is needed between all HEI key stakeholders to ensure good perceptions of and engagement in SD (Dagiliūtė et al., 2018). Clear communication of HEI SD-related activities can strengthen the ability of the HEI to change, i.e. to transform to become sustainable (Brinkhurst, Rose, Maurice, & Ackerman, 2011). R. Emanuel & Adams, (2011) places the importance of clear and consistent communication of SD in HEIs of the management or administration.

Engagement (or involvement), and communication of HEI stakeholders in SD activities is classified often to be either 'top-down', 'bottom-up', or 'middle ground'. Top-down engagement in SD or communication of SD means that the engagement or communication comes from HEI high administration levels, i.e. the HEI leaders, who create SD-related actions or communicate SD-related actions and spread them to other the other HEI stakeholders. 'Bottom-up' is the opposite and includes student HEI stakeholders who create SD-related actions or communicate SD-related actions and spread



them to the other HEI stakeholders. Bottom-up initiatives often lobby the administration staff. Middle ground includes academic and lower administration staff, who create SD-related actions or communicate SD-related actions and spread them 'down' to students or 'up' to the higher levels of administration. Linked to communication, (Disterheft et al., 2015) also stresses the importance that all HEI stakeholders have a voice, insinuating that a balance top-down, middle-ground, and bottom-up, communication and engagement is crucial. However, the inclusion of all HEI stakeholders, in particular students, is considered to usually be limited in HEIs due to their "top-down" dominated structures with poor engagement in regards to SD from the higher level of administration (Avila et al., 2017)

Overall, as the human factors are all interlinked, (Filho, 2011) stresses that HEIs can only achieve becoming a 'sustainable HEI' once the perceptions of key HEI stakeholders towards SD is known. Given that they are all interlinked, it is also necessary to know HEI stakeholders level of engagement, the level of communication channels, both bottom-up and top-down, in HEI SD-related activities.

Table 2. Barriers and Drivers for HEI engagement in sustainable development.

Factor	Barriers for HEI engagement in SD sustainable development	Author(s)	Drivers for HEI engagement in sustainable development	Author(s)	Related Topic
1	Lack of a standard definition, a non-ambiguous concept, and understanding and awareness by all stakeholders of SD in general and the role of HEIs in SD	(Aleixo, Leal, & Azeiteiro, 2018b; Filho, 2000, 2011; Shriberg & Harris, 2012; Verhulst & Lambrechts, 2015; Wright & Horst, 2013)	Standardised definition and unambiguous general concepts of SD and SD in HEIs, where there is good understanding and awareness by all stakeholders	(Filho, 2000, 2011; Shriberg & Harris, 2012; Verhulst & Lambrechts, 2015; Wright & Horst, 2013)	1. The standardisation of the definition of SD and SD framework for HEIs 2. HEI stakeholders' level of knowledge of SD
2	Lack of agreed upon and access to qualitative and quantitative performance indicators for SD in HEIs	(Exter, Grayson, & Maher, 2013; Holm, Sammalisto, Grindsted, & Vuorisalo, 2015; Verhulst & Lambrechts, 2015)	Agreed upon and open access to information regarding qualitative and quantitative performance indicators	Exter, Grayson, & Maher, 2013; Holm, Sammalisto, Grindsted, & Vuorisalo, 2015; Verhulst & Lambrechts, 2015)	1. The standardisation of the definition of SD and SD framework for HEIs 4. The level of communication and engagement of HEI stakeholders regarding SD-related decision-making and/or activities.
3	Lack of training and specialisation in SD of academic staff	(Aleixo et al., 2018b; Larr an Jorge, Herrera Madue, Yolanda Calzado Cejas, & Javier Andrades Pe, 2015; Verhulst & Lambrechts, 2015)	Academic staff are highly trained in SD	(Aleixo et al., 2018b; Larr an Jorge et al., 2015; Verhulst & Lambrechts, 2015)	2. HEI stakeholders' knowledge of SD
4	Lack of support, interest, involvement, willingness, commitment, participation, engagement, and empowerment of the majority of HEI stakeholders	Aleixo et. al., 2018; Verhulst and Lambrechts, 2015; Weber and Duderstadt, 2012; Waas et al., 2012; Adams, 2013; Jorge et	The majority of HEI stakeholders are supportive, interested, involved, committed, engaged, willing, empowered and participate	(Adams et al., 2018; Aleixo et al., 2018b; Barth, Godemann, Rieckmann, & Stoltenberg, 2007; Dagiliūtė et al., 2018; Filho, 2011; Mader, 2013;	3. HEI stakeholders' attitudes towards SD 4. The level of communication and engagement of HEI stakeholders regarding SD-related decision-making and/or activities.

		al., 2015; Milutinovi and Nikoli, 2014  (Aleixo et al., 2018b; Emanuel & Adams, 2011; Milutinović & Nikolić, 2014; Velazquez et al., 2006b; Verhulst & Lambrechts, 2015; Waas et al., 2010)		Verhulst & Lambrechts, 2015)	
5	Lack of policy-making, support of policy-making and consistency of legislation by leadership to promote SD, where SD is not given importance/priority	(Aleixo et al., 2018b; Verhulst & Lambrechts, 2015)	Policies and consistent legislation are developed and supported by proactive leadership to promote sustainability in curricula, research, campus operations where SD is given importance/priority	(Adams et al., 2018; Aleixo et al., 2018b; Barth, Lang, Luthardt, & Vilsmaier, 2017; Mader, 2013; Verhulst & Lambrechts, 2015)	2. HEI stakeholders' level of knowledge of SD  3. HEI stakeholders' attitudes towards SD  4. The level of communication and engagement with HEI stakeholders regarding SD
6	Inefficient information and collaboration due to lack of communication (bottom-up and top-down) of SD in HEIs	(Aleixo et al., 2018b; Verhulst & Lambrechts, 2015)	Efficient, clear and consistent information and collaboration due to good communication (bottom-up and top-down)	(Adams et al., 2018; Aleixo et al., 2018b; Barth et al., 2017; Lewis, Schmisser, Stephens, & Weir, 2006; Mader, 2013)	4. The level of communication and engagement of HEI stakeholders regarding SD-related decision-making and/or activities.
7	Lack of recognition of change agents for SD and are not taken seriously	(Verhulst & Lambrechts, 2015)	Change agents for SD are recognised and taken seriously	(Disterheft et al., 2015; Verhulst & Lambrechts, 2015)	4. The level of communication and engagement of HEI stakeholders regarding SD-related decision-making and/or activities.  5. HEI stakeholders' recommendations to improve SD at the HEI

8	Resistance to change associated to behaviours, practices or initiatives regarding SD	(Aleixo et al., 2018b; Verhulst & Lambrechts, 2015)	Open to change associated to behaviours, practices or initiatives	(Aleixo et al., 2018b)	3. HEI stakeholders' attitudes towards SD
9	Multidisciplinary (conservative, traditional and conventional disciplinary) organisational structure and courses of HEIs barely open new paradigms	(Aleixo et al., 2018b; Verhulst & Lambrechts, 2015)	Trans- and interdisciplinary organisational structure and courses of HEIs opens new paradigms	(Aleixo et al., 2018b; Annan-Diab & Molinari, 2017; Barth et al., 2017; Cebrián, Grace, & Humphris, 2015; Soini, Jurgilevich, Pietikäinen, & Korhonen-Kurki, 2018; Verhulst & Lambrechts, 2015; Waas et al., 2010)	2. HEI stakeholders' level of knowledge of SD

## 6. Addressing the Challenges and Drivers: Presenting the Research Questions

In the following section, it will be presented how this thesis addresses the challenges and drivers to HEIs engaging in the SD and therefore the SDGs for HVL (table 2). This thesis address the challenges and drivers through following the SDSN guide (Tahl et al., 2017). Firstly, we add an extra step is added for their step-by-step guide (fig. 6). This is explained in this section in 6.1. Secondly steps 1, 2, 3 and 4 are implemented. This will be explained in this section in 6.3 and 6.4.

### 6.1. The Standardisation of the Definition of Sustainable and Sustainable Development Framework for HEIs: the UN Sustainable Development Goals

A standardised definition and unambiguous general concepts of SD and SD in HEIs, where there is good understanding and awareness by all stakeholders is needed (table 2, factor 1). This study considers the Brudtland SD definition to be the standardised definition on SD and the SDGs to be the ideal standardised framework for HEIs to fully engage in SD within their whole system. An in depth reasoning for this is provided in section C1.

In summary, in the last few decades an increasing number of HEIs have acknowledged their role in advancing SD. A standardized and internationally recognized framework can be of great help for HEIs to engage in SD (TAHL ET AL., 2017). A wide array of different frameworks have been developed to assess the sustainability performance of HEIs, each one with a slightly different focus and weight on the different aspects of SD and functional areas of HEIs. However, at current, there is no internationally recognised and standardised framework for sustainability assessments and reporting (TAHL ET AL., 2017; VON HAUFF & NGUYEN, 2014) that holistically assesses HEIs progress towards SD in regards to all dimensions of SD (economic, social and environmental) across all HEI core functions (education, research, campus operations and administration, community outreach).

The difficulty in creating such a framework lies in the fact that the framework would have to be standardised and widely applicable, yet at the same time adaptable to the specific circumstances of each HEI. The SDGs, which are a globally accepted and holistic framework, have the potential to serve as such a framework, if adequately translated and implemented. The translated SDGs would provide precise and measurable targets and indicators, and also provide the freedom for every HEI to choose actions that are in line with the specific circumstances of each HEI. The SDSN guide 'Getting Started with the SDGs in Universities' (TAHL ET AL., 2017) is the most extensive guide so far for HEIs that aim to engage in the SDGs, and if it would adopt a translation of the SDGs for HEIs, it would be the ideal guide in our opinion.

***Therefore, to address the first overarching challenge and driver of HVL engaging in SD and the SDGs, the standardisation of the definition of SD and SD framework for HEIs, the first research question (RQ1) is:***

*“How can the UN Sustainable Development Goals be translated to be the universal standardised sustainable development framework for higher education institutes and therefore for HVL?”*

This adds a ‘step 0’ for the SDSN guide as they do not provide such a translation. This research question is answered in Section D.

## 6.2. Identifying the Key Stakeholders and their Role in Sustainable Development and Higher Education Institutions’

As the HEI stakeholders’ perceptions (knowledge and attitudes) towards SD and the SDGs and the level of engagement and communication (both bottom-up and top-down), of HEIs stakeholders in HEI SD-related activities must be known for HEIs to achieve becoming a ‘sustainable HEI’. The key stakeholders must be identified before steps 1, 2, 3 and 5 (fig. 6) can be carried out because HVL stakeholders must be involved in the whole process.

The key HEI stakeholders include students, leaders and administrative staff, academic staff and external stakeholders (Aleixo et al., 2018b). Their role in HEIs engagement in SD is presented here and is similar to the description of the importance of each core functional area of HEIs (section C3.1)

Students are considered one of the most important stakeholders in societal SD (Aleixo et al., 2018b; Wachholz, Artz, & Chene, 2014; Zeegers & Francis Clark, 2014) as many students go on to be professionals who will influence future societal development (M. del M. Alonso-Almeida, Marimon, Casani, & Rodriguez-Pomeda, 2015; Cortese, 2003; von Hauff & Nguyen, 2014). Students also have the potential to provide innovative ideas to improve the engagement of HEIs in SD (Dagiliūtė et al., 2018). Student-led initiatives are considered an important driver for organisational change in university policy and operations (Brinkhurst et al., 2011). For example, several universities divested their holdings in apartheid South Africa in the 1980s due to student-led campaigns (Stephenson, 2013). During the European Revolt of 1968, the Swedish student-led revolt brought democratising of Swedish universities (Ekman Jørgensen, 2008). Several HEIs worldwide have also divested from fossil fuels due to several

student-led campaigns as a part of the student-led global divestment movement that began with the 'Divest for Our Future' campaign<sup>29</sup> (Stephenson, 2013).

Leaders and administration staff, often referred to as 'non-academic' staff, have a critical role in HEI engagement in SD. Support from leaders is vital as leadership can promote SD through introducing SD into HEIs' policies and legislations in alignment with national and global policy. In this way, they would set a good example to inspire other HEI stakeholders. Leaders must support SD to allow success of bottom-up SD-related activities developed by other HEI stakeholders (Avila et al., 2017; Kościelniak, 2014). Similarly, administrative staff must be engaged to allow inclusion of all HEI stakeholders in policy-making or activities (Dagiliūtė et al., 2018). The administration staff can "help leaders, faculty [academic staff], and students, to implement the sustainability practices of day-to-day life" (Aleixo et al., 2018a). Administration staff are also key for researchers as they are involved in obtaining research grants (Kościelniak, 2014), of which SD should be a priority as discussed below.

Academic staff- researchers and lecturers, are responsible for the SD education of students, (Sinakou, Boeve-de Pauw, Goossens, & Van Petegem, 2018) and they influence in the organisation of the HEI (Aleixo et al., 2018a; Barth & Rieckmann, 2012; Christie et al., 2015). Academic staff are also critical to develop SD competencies in students (Cebrián et al., 2015) as lecturers control the pedagogical approaches for education in SD (Cebrián et al., 2015; Cotton, Warren, Maiboroda, & Bailey, 2007) the extent to which SD is included in HEI course curricula (Annan-Diab & Molinari, 2017; Lambrechts, Mulà, Ceulemans, Molderez, & Gaeremynck, 2013; Lozano, Lozano, Mulder, Huisingh, & Waas, 2013). Teachers are also considered mentors, role models and leaders for students (Lunenberg, Korthagen, & Swennen, 2007); the reasoning of the importance of this is similar to that discussed above for the role of HEI leaders. Researchers shape, meditate and create knowledge to transform and better society. Therefore, researchers at HEIs must find conduct their research to SD by linking their research to and (re)orientating their research towards the issues surrounding societal SD (Waas et al., 2010), and equally SD in HEIs (UiB, 2018a).

Lastly, HEIs have a key role to include external stakeholders, e.g. governments, organisations, customers, research partners, university services, local communities, and local businesses (Karatzoglou, 2013; Kościelniak, 2014) in their SD activities. They can transfer their knowledge to help support external stakeholders engage with SD, e.g. transfer SD knowledge to support policy-making, business

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<sup>29</sup> Campaign led by New England campuses in the United States (Stephenson, 2013)

development and land-use planning. HEIs have greatest influence on and the potential to lead local and regional society due to their close connections with civil society where they are located (Sedlacek, 2013).

A review of literature that researchers HEI stakeholders' perceptions (knowledge and attitudes) towards SD and the SDGs, level of engagement of, and the level of communication channels, both bottom-up and top-down, of HEIs in HEI SD-related activities is provided in the following sections.

### 6.3. The Perceptions of Key HEI Stakeholders

The second and third overarching barriers and drivers of HEI engagement in SD are the HEI stakeholders' level of knowledge of and attitudes towards SD (table 3). There is a vast array of literature that researchers key HEI stakeholders' perceptions (knowledge and attitudes) towards SD. (Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, 2017, p. 670) summarises the importance of knowing HEI stakeholders' perceptions: *"it is imperative that the level of awareness and knowledge, [perceptions] about the SDGs should be explored in a university setting so that possible gaps can be identified and addressed"*

A summary of papers is given in 3 and only presents studies related to HEI. In this section I summaries previous findings for the different key HEI stakeholders and only papers that include all three dimensions of SD. A few studies group 'student teachers' as teachers, however consider 'student teachers' to be in the 'student' HEI stakeholder group.

The greatest number of studies focused on students' perceptions of SD at a general level. Most authors gave equal weight to environmental, social and economic dimensions in their research. A few gave greatest weight to the environmental dimension, but no studies placed greater weight on the economic or social dimensions. Focus was given on surveying students in particular courses: student teachers (e.g. Birdsall, 2014)) and engineering student (e.g. Tang, (2018), although many papers surveyed across disciplines (e.g. Yuan, Zuo, & Huisingsh, 2013). Most studies focused on surveying singular HEIs except a few (e.g. Kagawa, 2007b; Nejati & Nejati, 2013) Only one study focused on student perceptions of the SDGs (Omisore et al. 2018,). The findings of the papers are consistent and include:

- Students have insufficient knowledge of the definition and concepts of SD, e.g. (Bahae et al., 2014) found that students *"are not sufficiently familiar with the concept and its dimensions"*.
- Students have greatest understanding of the environmental concepts (e.g. Kilinc & Aydin, 2013) observed 36%, and Summers, M., Corney, G., Childs, (2004)) observed 87%. However, their understanding of social concepts compared to economic concepts of SD differ. Kilinc & Aydin,



(2013) found students have greater understanding of social concepts compared to economic concepts (25% compared to 8%). Whereas, for example, Summers, M., Corney, G., Childs, (2004) the opposite less on the economical concepts. They found that 69% recognised economic concepts and 49% recognised social concepts of SD.

- Students believe that environmental concepts should be given greatest focus (e.g. Tuncer, 2008).
- The majority of students show positive, or 'pro-sustainability' attitudes towards SD, e.g. (Emanuel & Adams, 2011) found that students are willingness to support and participate in actions to improve the sustainability of their HEI, Kagawa (2007) and Bahae et al., (2014) found students were willing to change personal behaviours to promote sustainability, Azapagic & Perdan, (2005) found that students believed SD to be important, and Tang (2018, p. 463) found *"a generally agreeing climate for the beliefs, attitudes and intentions"* of students, and *"the majority of respondents agreed that they felt morally obliged to SD and alleviation of environmental and social problems"*.
- In the one study that addressed the SDGs, (Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, 2017) found that 27.2% of students had awareness of the SDGs, 2.4% had 'relatively good knowledge' of the SDGs, and 79.0% had positive attitudes towards the SDGs.
- Studies show that factors affecting perceptions of SD include, but not limited to, gender, level of study, age, previous education, peer influence, area of study, monthly household income (Bahae et al., 2014; Tang, 2018).
- The general themes outlined above of the attitudes and the level of knowledge has been fairly consistent throughout previous research. However, Tang, (2018) perceived that students had fundamental knowledge of SD. This could indicate that the general knowledge of students may have increased recently. However, the students in this study had been specifically given a course in SD, which has been shown to be variable on students' knowledge.

In the vast array of research, there is a lack of research in students' perceptions specifically towards SD in HEIs. This was also found by Dagiliūtė et al., (2018). I also found there to be a lack of inclusion of students' perceptions of the SDGs, except for (Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, 2017). Many papers were written at the beginning, during and after the UN DESD. Given that three years have passed since the formulation of the SDGs, relatively little research has been carried out compared to the number of papers that were sparked by the UN DESD.

There are several papers which research academic staff (teachers and researchers) perceptions of SD, but less so than for students (table 4). Research focussed on a variety of different SD aspects. The papers explored the perceptions of: what types of skills teachers thought they needed to educate their students in SD; whether education for SD was important and applicable for their or others' courses; whether education for SD should be in their or others' courses; their willingness to act; what the barriers to implementing SD in education are; and the solutions to include SD in education (Christie et al., 2015). Many studies focused on surveying singular HEIs (e.g. Cebrián et al., 2015; Jones, Trier, & Richards, 2008) and only two surveyed across several HEIs (e.g. Christie et al., 2015; Christie, Miller, Cooke, & White, 2013). Many papers give focus to the knowledge and attitudes of teachers and lecturers in relation to 'education for SD'<sup>30</sup> (e.g. Albareda-Tiana, S., Vidal-Raméntol, S., Fernández-Morilla, 2018; Cebrián et al., 2015). Focus was also on academics who teach 'education for SD' (e.g. Sinakou et al., 2018). Very few have focused on 'general teachers' (e.g. Cotton et al., 2007). Very few research academic staff's perceptions on the role of HEIs in SD (e.g. Albareda-Tiana, S., Vidal-Raméntol, S., Fernández-Morilla, 2018; Derahim, Hashim, Ali, Abdul, & Aziz, 2012). This is logical since their knowledge of and attitudes towards SD in general is not only important; it is also necessary to have a knowledge of how SD is relevant to the courses they are teaching, and their attitudes towards their pedagogical methods. Few papers surveyed across departments (e.g. Albareda-Tiana, S., Vidal-Raméntol, S., Fernández-Morilla, 2018; Christie et al., 2015). Only one study was found on the perceptions of academic staff in relation to the SDGs (Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, 2017). There is less consistency of the findings of academic staffs' perceptions compared to students' perceptions. The main findings include:

- The knowledge of academic staff varies in the studies. Many studies found that academic staff do not understand the holistic nature of SD. Sinakou et al., (2018) states that academics tend to know the most about the environmental dimension (e.g. Cotton et al., 2007)
- However, Sinakou et al., (2018) found academics knew more about the social and economic dimensions. Conversely, some studies found that some academics do have a holistic understanding. Christie et al., (2015) found the difference between the knowledge of the three dimensions to small, with academics knowing slightly less about economic sustainability. (Albareda-Tiana, S., Vidal-Raméntol, S., Fernández-Morilla, 2018) found that academics have a full understanding of the SD definition.

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<sup>30</sup> In reference to the UN DESD.

- Academics' knowledge of the skills needed for SD varied. Some studies found that academics had good knowledge of the skills needed to work towards SD, such as "*holistic thinking, critical thinking, project based tasks*" (Albareda-Tiana, S., Vidal-Raméntol, S., Fernández-Morilla, 2018). However, Christie et al., (2015) found that very few had good understanding of skills
- Overall, academic staff show positive attitudes for education for, such as that education in SD is important, SD should be included in all course curricula (e.g. Christie et al., 2015; Filho, 2000; Minguet, Martinez-Agut, Palacios, Piñero, & Ull M. Angeles, 2011). However, Christie et al., (2015) found there is lack of willingness of academic staff to take action themselves to incorporate SD in their teaching.
- There is a discrepancy of academic staffs' attitude as to whether SD is relevant for or directly linked to their course. Many studies have reported that academic staff believe SD to be irrelevant for their courses (Christie et al., 2015). However, (Cotton et al., 2007) found that 55% of academic staff believed SD to be directly linked to their courses, whereas Christie et al., (2015) found that 41.9% believe it was indirectly related and 19.3% believe it not applicable to their courses.
- Studies show that academics believe that HEI-wide policy and support is needed for SD, such as that SD should be in the main mission statement of the HEI. They also believe that more time and financial resources is needed, and curricula structures and delivery need to change include SD, (e.g. Albareda-Tiana, S., Vidal-Raméntol, S., Fernández-Morilla, 2018; Cebrián et al., 2015; Christie et al., 2015))
- In the one study that focused on the SDGs, Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, (2017) found that most academic staff were aware of the SDGs (87.3%) but very few had 'good knowledge' of the SDGs (9.7%). They also found that most academic staff had a positive attitudes towards the SDGs (79.0%).

The above findings may differ because of the different variety of focuses, i.e. multiple or single HEIs studied, multiple or single departments studied, and whether academics have an invested interest in SD, e.g. they teach academics of SD in education.

In the vast array of research, there is a lack of research in 'general teachers' perceptions of SD. There are more studies that research academic staffs' attitudes towards SD in HEIs (e.g. Albareda-Tiana, S., Vidal-Raméntol, S., Fernández-Morilla, 2018), however, there is still a lack of research in this area. Similar to studies on students' perceptions, there is a lack of research that focuses on the SDGs, except for

(Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, 2017). Greatest focus on 'education for SD', linked to the UN DESD, and similar to the student-focused studies, relatively little research has been carried out on the SDGs compared to the number of papers that were sparked by the UN DESD.

Only two studies were found that assess administration staffs' (non-academic staff) perceptions on SD. Non-academic staffs' perceptions are important for HEIs to engage with they must have knowledge of how their HEIs can engage in SD in order to become sustainable, their attitudes towards SD impacts the culture of a HEI, and negative attitudes of non-academic staff negatively affects their HEIs' engaging in SD (Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, 2017). Davies et. al 2009 focuses on academic staffs' attitudes and behaviours towards SD and found that non-academic staff had the attitude that they were satisfied with Griffith University's efforts to become more sustainable. Academic staffs' knowledge was not assessed. Davies et. al 2009 also points out a number of barriers that should be addressed to engage non-academic staff in SD. Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, (2017) assessed both knowledge and attitudes and he found that ca. two-thirds of non-academic staff at Osun State University have awareness of the SDGs (61.5%), none have 'good knowledge' of the SDGs, and just over half had positive attitudes towards the SDGs 54.2%.

Lastly, no studies were found that assess external stakeholder perceptions of SD in relation to their relationship with SD in HEIs. Despite this, it is well reported that perceptions of external stakeholders are key as HEIs must consider the views of external stakeholders in order for HEIs to adapt to and consider them in their SD activities. As discussed previously, HEIs coordinate and involve external stakeholders in SD (Filho, 2011; Karatzoglou, 2013; Waas et al., 2010) (adapting the role of universities).

***Therefore, to address the second and third barriers and drivers of HVL engaging in SD and the SDGs (table) the second and third research question (RQ2 and RQ3) is:***

*RQ2: What is HVL stakeholders' level of knowledge of SD and the SDGs?*

*RQ3: What are HVL stakeholders' level of attitudes towards SD and the SDGs?*

These research questions will be answered in Section E through an online questionnaire. The research question addresses the second and third barriers (table 3) because once their knowledge is known, their gaps of knowledge can be mapped and so it is known which area HVL stakeholders need to be educated in order to have good understanding and awareness. Knowing the HVL stakeholders attitudes will be useful to know if the majority of HVL stakeholders are supportive, willing, interested, involved, committed, and empowered and to participate to improve the sustainability of HVL. Incorporated in

knowledge is also whether HVL courses are considered interdisciplinary. This is because it is well-documented that a interdisciplinary courses are needed to open new paradigms (table 3, factor 9), e.g. Annan-Diab & Molinari (2017). These RQs address the first step in [fig. 6](#) as the current perceptions of HVL stakeholders' are mapped. This will provide useful information for step 3, to identify gaps in knowledge and opportunities for education.

**Table 3. Literature on HEI stakeholders' perceptions of SD and the SDGs**

Author(s) and year	Title of research	HEI stakeholder focus	Research questions/Main Objectives	Survey Method
(Summers, M., Corney, G., Childs, 2004)	Student teachers' conceptions of sustainable development: an empirical study of three postgraduate training cohorts	Students (geography and science, University of Oxford Postgraduate Certificate in Education)	<ol style="list-style-type: none"> <li>1. What is the existing knowledge and understanding of SD possessed by geography and science students when they commence the University of Oxford Postgraduate Certificate in Education course?</li> <li>2. What are their perceptions of education for SD in relation to environmental education?</li> </ol>	Qualitative and Quantitative: questionnaire
(Azapagic & Perdan, 2005)	How much do engineering students know about sustainable development? The findings of an international survey and possible implications for engineering curriculum	Students (world-wide survey of undergraduate engineering students)	<ol style="list-style-type: none"> <li>1. Assess the level of students' knowledge and understanding of SD;</li> <li>3. Identify if and how different variables, including the type of engineering programme and level of study, influence the level of knowledge</li> <li>3. Find out whether students are interested in SD and if they find it relevant to the engineering profession;</li> <li>4. Identify knowledge gaps</li> </ol>	Quantitative: questionnaire
(Carew & Mitchell, 2006)	Metaphors used by some engineering academics in Australia for understanding and explaining sustainability	Engineering academics (8 Australian academics)	<ol style="list-style-type: none"> <li>1. 'What do you mean by sustainability?'</li> </ol>	Qualitative in-depth interviews
(Stir, 2006)	Restructuring teacher education for sustainability: student involvement through a "strengths model"	Students (primary teacher education programme, Griffith University in Queensland, Australia)	<ol style="list-style-type: none"> <li>1. To determine students' knowledge, general environmental attitudes, specific practices and perceptions of a need to change.</li> <li>2. To determine perceptions of what aspects of education for SD should be included in their preparation as teachers.</li> </ol>	Quantitative and qualitative: questionnaire
(Kagawa, 2007)	Dissonance in students' perceptions of sustainable development and sustainability	Students (University of Plymouth)	<ol style="list-style-type: none"> <li>1. What are students' understanding of sustainable development and sustainability?</li> <li>2. What are students' attitudes towards and concerns with respect to sustainability-oriented challenges?</li> <li>3. What actions are students prepared to take towards realizing a more sustainable lifestyle?</li> </ol>	Qualitative and quantitative: questionnaire

(Cotton et al., 2007)	Sustainable development, higher education and pedagogy: A study of lecturers' beliefs and attitudes	Academic staff (all disciplines)	<ol style="list-style-type: none"> <li>1. What are lecturers' current understandings of SD?</li> <li>2. What are their current attitudes towards SD?</li> <li>3. What are they beliefs about incorporating SD into the higher education curriculum?</li> </ol>	<p>Quantitative: questionnaire</p> <p>Qualitative: semi-structured interviews</p>
(Tuncer, 2008)	University Students' Perception on Sustainable Development: A Case Study from Turkey	Students (all departments but Schools of Engineering and Architecture, Middle East Technical University, Turkey)	<ol style="list-style-type: none"> <li>1. What are university students' perceptions on SD?</li> <li>2. To what extent do gender and enrollment on environment-related courses affect the perceptions of students towards SD?</li> </ol>	Quantitative: Environmental Attitude Questionnaire (EAQ)
(Jones et al., 2008)	Embedding Education for Sustainable Development in higher education: A case study examining common challenges and opportunities for undergraduate programmes	<p>Students (Chemistry, Geology and Physical Geography, Marine Science and Surf Science) and</p> <p>Academic staff (Head of School, Associate Heads and Module Leaders for the core modules of the Geosciences degree programmes),</p>	<ol style="list-style-type: none"> <li>1. Understanding and perception of SD.</li> <li>2. Understanding the obstacles to embedding education for SD</li> </ol>	Qualitative: semi-structured interviews and focus group discussions
(Cotton et al., 2009)	Revolutions and second-best solutions: education for sustainable development in higher education	Academic staff (all faculties, University of Plymouth)	<ol style="list-style-type: none"> <li>1. What are lecturers' current understandings of SD</li> <li>2. What are their current attitudes towards SD?</li> <li>3. What are their beliefs about incorporating SD into the higher education curriculum?</li> </ol>	Qualitative and quantitative: questionnaire
Davies et al. 2009	Sustainable attitudes and behaviours amongst a sample of non-academic staff: A case from an Information Services Department, Griffith University, Brisbane	Administration staff (Non-academic staff) (cross-sectoral sample from one department at Griffith University, Queensland)	<ol style="list-style-type: none"> <li>1. To categorise sustainable attitudes and behaviours amongst non-academic staff</li> </ol>	Quantitative: questionnaire
(Emanuel & Adams, 2011)	College students' perceptions of campus sustainability	Students (undergraduate students two public universities in Alabama and at one community college in Hawaii)	<ol style="list-style-type: none"> <li>1. Are students concerned about the present/future?</li> <li>2. What do students know about sustainability?</li> </ol>	Quantitative: questionnaire

			3. Who is responsible for sustainability?	
(Minget et al., 2011)	Introducing Sustainability into University Curricula: An Indicator and Baseline Survey of the Views of University Teachers at the University of Valencia	Academic staff	<p>1. To report on the current baseline situation for introducing sustainability across the university's curricula.</p> <p>2. To report on a measure to periodically review the situation, including progress of and/or decline in introducing sustainability into diverse subject areas.</p> <p>Maps focus on knowledge, values, attitudes and behaviors of teachers.</p>	Qualitative questionnaire
(Derahim et al., 2012)	UKM's Staff Perspective on Sustainability and Its Contribution Towards a Sustainable University	Academic staff (Universiti Kebangsaan Malaysia)	<p>1. UKM staff's current knowledge, awareness, attitude and willingness to participate towards sustainable campus implementation</p> <p>2. UKM's staff's perception about UKM's sustainability initiative.</p>	Quantitative survey: questionnaire
(Barth & Rieckman, 2012)	Academic staff development as a catalyst for curriculum change towards education for sustainable development: an output perspective	Academic staff	The qualitative analysis of the data, oriented to the understanding and reconstruction of the processes of individual competence development, changes in the professional performance, and organisational development, was carried out based on the coding paradigm of the qualitative content analysis developed by Mayring (2000).	Qualitative: three focus group discussions
(Nejati & Nejati, 2013)	Assessment of sustainable university factor from the perspective of university students	Students (Universiti Sains Malaysia, international students from countries of the Association of Southeast Asian Nations)	1. To investigate the perceptions of university students towards factors of a sustainable university	Quantitative survey
(Yuan et al., 2013)	A critical assessment of the Higher Education For Sustainable Development from student's perspectives - a Chinese study	Students (undergraduate and postgraduate, all departments, Shandong University, China)	<p>To investigate the awareness of students on sustainability and their perceptions on higher education for SD.</p> <p>Particular focus was placed on university students' perceptions of factors that contribute towards the higher education for SD</p>	Quantitative: Graphical Assessment of Sustainability in Universities tool
(Jones et al., 2013)	Students' perceptions on environmental management of HEIs and the role of social capital	Students and Academic staff (Geosciences department, University of Plymouth)	1. To explore the perception and understanding of education for SD by academic staff within one course subject area;	Qualitative: document analysis, structured interviews with academic staff and



			<p>2. To explore the current form education for SD is taking (course content and pedagogy) in this subject area;</p> <p>3. the perceived opportunities for and barriers to enhancing ESD in the curriculum of core modules across all stages of the Geosciences undergraduate degree programmes.</p>	student focus group discussions
(Kilinc & Aydin, 2013)	Turkish student science teachers' conceptions of sustainable development: A phenomenography	Students (student science teachers, Ahi Evran University, Turkey)	<p>1. What are Turkish student science teachers' conceptions of SD?</p> <p>2. Does gender have any effect on Turkish student science teachers' conceptions of SD</p>	Qualitative: Phenomenography
(Christie et al., 2013)	Environmental sustainability in higher education: how do academics teach?	Academic staff (all departments, all Australian universities)	<p>1. To determine which teaching methods academics use and why</p> <p>2. To determine which teaching methods are used when teaching education for sustainability</p> <p>3. To identify differences between disciplines</p> <p>4. To determine the most realistic teaching methods to promote for education for sustainability.</p>	Quantitative and qualitative questionnaire
(Birdsall, 2014)	Measuring student teachers' understandings and self-awareness of sustainability	Students (undergraduate primary education, New Zealand)	To map student teachers' understanding of sustainability in regards to the range of ideas about sustainability found in their definitions, the level of complexity of their definitions and their level of self-awareness of their definitions.	Quantitative and qualitative questionnaire, adapted from Summers and Childs, 2007; Summers, Corney and Childs, 2004.
(Bahaei et al., 2014)	Sustainable development in Iran: An exploratory study of university students' attitudes and knowledge about sustainable development	Students (undergraduate, public university in Iran).	To explore the perception (i.e. attitudes and knowledge) of Iranian students toward sustainable development concepts	Quantitative: based on Azapagic et. al., 2005
(Christie et al., 2015)	Environmental sustainability in higher education: What do academic think?	Academic staff (all disciplines, all Australian universities but one)	<p>1. To determine teaching academics' current conceptions of education for sustainability</p> <p>2. To determine teaching academics' current attitudes towards implementing education for sustainability</p>	Qualitative and quantitative

			<p>3. To determine teaching academics' encountered problems and solutions when implementing education for sustainability in their classrooms</p> <p>4. To identify the differences between the disciplines in higher education in regard to the first three aims.</p>	
(Disterheft et al., 2015)	Sustainable universities - a study of critical success factors for participatory approaches	Different stakeholder groups: , Experts, like sustainability coordinators, professors and students engaged in activities directed towards to the transition to more sustainable universities, with a minimum of a two-years working experience in campus sustainability.	the study does not focus on the different perceptions and understandings related to participation, but aims to identify critical aspects for effective participation in sustainability efforts at university level	Qualitative: semi-structured interviews and focus group discussions
(Cebrián et al., 2015)	Academic staff engagement in education for sustainable development	Academic staff (University of Southampton)	<p>1. To explore a deep understanding of academic staffs' experiences, understandings and view on education for SD</p> <p>2. To explore the factors influencing academic staff engagement in education for SD</p> <p>2. To explore the views and vision of academic staff in relation to education for SD at the University of Southampton.</p>	Qualitative: Semi-structured interviews, action learning conversations
(Watson, Pelkey, Noyes, & Rodgers, 2016)	Assessing impacts of a learning-cycle-based module on students' conceptual sustainability knowledge using concept maps and surveys	Students (unspecified southeastern university, USA)	To examine the impacts of a learning-cycle-based sustainability module on students' conceptual understanding of sustainability	Quantitative: concept maps
(Al-Naqbi, A., Alshannag, 2017)	The status of education for sustainable development and sustainability knowledge, attitudes, and behaviors of UAE University students	Students (undergraduates, all departments, United Arab Emirates University)	<p>1. What is the knowledge of students regarding education for SD?</p> <p>2. What are the students' attitudes towards sustainability-oriented challenges?</p> <p>3. What behaviors are the students prepared to practice toward realizing a more sustainable lifestyle?</p>	Quantitative: online questionnaire
(Estrada-Vidal & Tójar-Hurtado, 2017)	College Student Knowledge and Attitudes Related to	Students (undergraduates, all departments, university of Granada, Spain)	To gather information on the knowledge the students had regarding aspects developed by sustainable education	Quantitative: questionnaire

	Sustainability Education and Environmental Health		To gather information on the degree of agreement (attitudes) on whether education should be provided under those aspects.	
(Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, 2017)	Awareness and knowledge of the sustainable development goals in a university community in Southwestern Nigeria	Students and staff: academic and non-academic (Osun State University, Southwestern Nigeria)	1. To assess the level of awareness, knowledge of, and attitudes towards the SDGs among members of a university community	Quantitative and qualitative: questionnaire and semi-structured questionnaire
(Dagiliūtė et al., 2018)	Sustainability at universities: Students' perceptions from Green and Non-Green universities	Students (Vytautas Magnus University and Kaunas University of Technology, Lithuania)	1. To compare students' attitudes towards sustainability in Vytautas Magnus University Kaunas University of Technology in regards to the differences in: campus sustainability; the University role in SD and campus operations; environmental information and attitudes towards a university's self-preservation as green; students involvement in sustainability and its determinants.	Quantitative: questionnaire and factor analysis
(Schweizer, A., Miserez, S., Rio Carral, M., Santiago-Delefosse, 2018)	Students' experience of sustainability: health as a lever for action	Students (undergraduates, all departments, unspecified Swiss university)	1. To deep the understanding of higher education students' perceptions about sustainability issues by focusing on their motivations to adopt (or no adopt) sustainability practices in their lives.	Qualitative: semi-structured interviews

#### 6.4. The Level of Engagement of HEI Stakeholders in HEI SD-related Activities

The fourth and fifth barriers and challenges of HEIs engaging in SD and therefore the SDGs is the level of engagement and communication of HEI stakeholders' in HEI SD-related activities and HEI stakeholders' recommendations to improve the HEI (Table 3). There are several advantages of engaging HEI stakeholders, such as capturing knowledge, increasing ownership, reducing conflict, encouraging innovation, inclusive decision-making, promotion of equity, and building of social capital, more dialogue, reflection of own values and attitudes, and development of shared visions and objectives (Disterheft et al., 2015). Nejati & Nejati (2013) states that it is therefore vital to gain an understanding of students' perceptions of how sustainable they evaluate their HEI to as this provides "a good picture of the university's performance" (Nejati & Nejati, 2013, p. 102) as this informs decision-makers, i.e. the higher levels of administration and leaders. Asking the students opinion allows for their involvement in HEI-related SD initiatives and also provides a means to facilitate HEI-sustainability. Given that all HEI stakeholders should be included in improving the sustainability in their HEI, a similar important should be placed on gaining understanding of all other HEI stakeholders. In this way, their recommendations are critical. Furthermore, for this engagement to be possible, good communication, both top-down and bottom-up, is critical as communication underpins consulting and involving members of the HEI into agenda settings, decision- and policy making of the HEI. Without communication, the HEI would be an undemocratic institution (Lozano, 2006; Nejati & Nejati, 2013).

Despite the importance of engagement and communication (table 3), only a few studies were found that research how to improve the sustainability of HEIs based on all HEI stakeholders' perceptions. Abd-Razak, Mustafa, Che-Ani, Abdullah, & Mohd-Nor (2011) assessed and evaluated students' towards the physical development planning of their campus to improve the sustainability of the campus. Specifically, they researched students' perceptions about the environment and life on their campus to assess if 'compact development planning' can support the sustainability of the campus. Students gave recommendations as to the areas in the development plan that could be improved as they stated "weak" areas that should be improved. Nejati & Nejati (2013) also explored students' perceptions towards factors of a sustainable university in general but the study did not assess the students' attitudes towards their own campus-sustainability or the role of their HEI in SD. Disterheft et al. (2015) involves different HEI stakeholder groups to find out the success and failures of participatory-related initiatives to find the critical success factors for stakeholders' engagement in SD. His results show that these critical success

factors are factors that the HEI stakeholders' believed needed to be improved in order for HEIs to fully engage in SD (Disterheft et al., 2015, fig. 1)

***Therefore, to address the fourth and fifth barriers and drivers of HVL engaging in SD and the SDGs (table 3) the fourth and fifth research question (RQ4 and RQ5) is:***

*RQ4: What is the level of engagement and communication of HVL SD-related activities?*

*RQ5: What is the voice of HVL stakeholders regarding their recommendations to improve the sustainability of HVL?*

These research questions will be answered in Section E through an online questionnaire. The research question addresses the fourth and fifth barriers (table 3) because once mapping the level of engagement and communication will provide insight whether HVL stakeholders are engaged to participate in improving the sustainable of HVL. Mapping communication will give insight if there is open access to information, if there is efficient, clear and consistent information and collaboration due to good communication (both top-down, bottom-up and middle ground). The latter research question will give voice to HVL stakeholders, i.e. change agents for SD, and they will be recognised and taken seriously. The results of these research questions are presented in section E3.3. These RQs will provide valuable findings for steps 1 as the questions maps SD-related activities HVL is doing. It also provides information for step 2 as it will be possible to identify gaps in their SD-related activities. These RQs will also provide useful information as the level of engagement will reflect the opportunities for capacity building and ownership. Furthermore insight for step 5 will given as the communication channels will be assessed (fig. 4).

## D: Research Question 1: Presenting a Universal Standardised SD framework for HVL: The UN Sustainable Development Goals

### 1. Purpose

We gained inspiration for our translation from the SDSN guide (TAHL ET AL., 2017) and other HEIs which are in the process of implementing the SDGs (chapter 3.4.2). The SDSN guide stresses the importance of having clear objectives, methodologies and data sources to “Map what you are already doing” (TAHL ET AL., 2017, FIG. 3). A standardized and internationally recognized framework can therefore be of great help for the mapping process. However, the guide also states that such a comprehensive framework does not yet exist

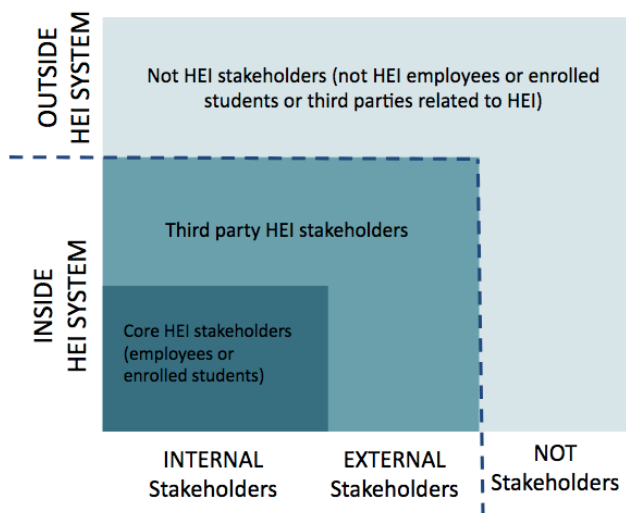


Fig. 3: Definition of HEI-Stakeholders

for HEIs. The guide mostly only provides targets and actions that can be taken to engage in the SDGs. It does not provide any indicators to measure the progress. Furthermore, not all SDGs are covered. For example, in the HEI functional area ‘Education’ the SDSN guide only lists targets for SDG 4. Yet, it is important to incorporate all goals into education. Lastly, the provided targets are not translated to apply specifically to HEIs.

For this reason, we translated the SDGs’ targets and indicators to apply specifically to HEIs for each core functional area. In the following sections, we present our methodology that we followed to translate the UN SDGs’ targets and indicators to apply specifically for HEIs, followed by our resulting translation, and lastly, our discussion of our methodology and final translation.

### 2. Methods

#### 2.1. Setting the boundaries of a higher education institution

Before we began the translation of the SDGs to apply to HEIs, we defined the HEI system boundaries. Firstly, we defined who we believed to be internal and external stakeholders (fig. 7). The core HEI stakeholders (employees of the HEI or enrolled students at the HEI) were defined as internal stakeholders.

Third parties were defined as external stakeholders if they have relevant ties to the HEI. Whether they have relevant ties depends on whether the third party either has an effect on (control over) the internal stakeholders or is affected by the internal stakeholders. The natural environment is, in this definition, also seen as a third party, that can be an external stakeholder, if it effects or is affected by the internal stakeholders. An example for such external stakeholders could be the student welfare organizations such as SAMAN. While SAMAN is governed and funded independently of HVL, its main purpose is to provide services for the students, thereby having an effect on the internal stakeholders. Third parties are not considered stakeholders of HEIs if they do not have relevant ties to the HEI.

From this the HEI system boundaries were defined. The HEI system encompasses all internal and external stakeholders, including any kind of physical, economic and social infrastructure associated with these stakeholders. Therefore every entity that is effected by or has an effect on (controls) the internal stakeholders is defined as being within the HEI system. Explicitly, the following is defined to be within the HEI system: the control and effect of an action are internal; the control of an action is internal and the effect of an action is external; the control of an action is external and the effect of an action is internal. Entities that do not control the internal stakeholders or are affected by the internal stakeholders are considered outside of the HEI system (fig. 8).

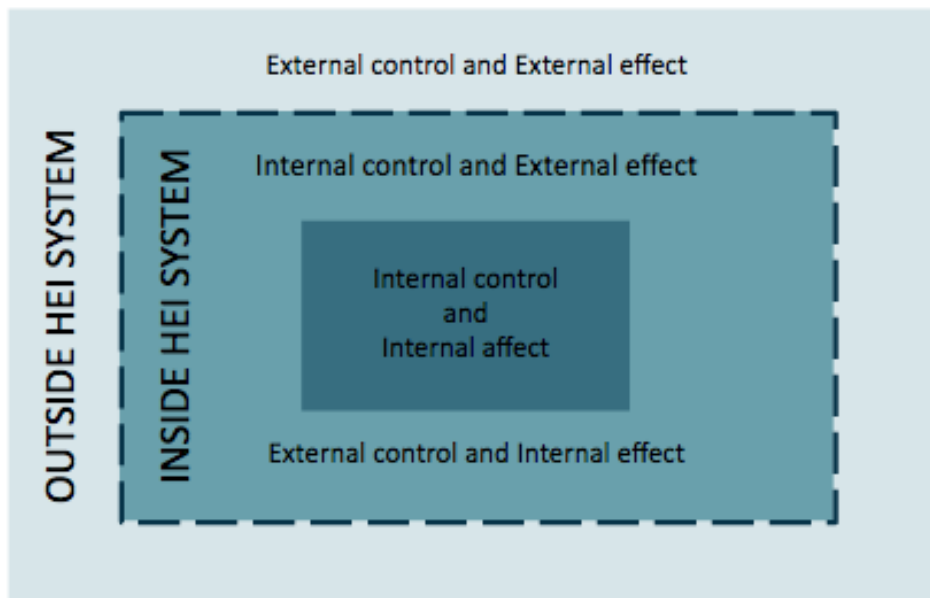


Fig. 8: Definition of the HEI System boundaries

## 2.2. Defining the functional areas

For the translation of the SDGs to the HEIs the most common categorization of the functional areas of HEI was used: education; research; operations and administration; community outreach<sup>31</sup>. We provide a definition of the four core functions of the HEIs below. Additionally to the definitions, we provide a list of examples for each core function (table 5).

Research is defined according to the OXFORD DICTIONARY (2018) as, *“The systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions”*. In the context of HEIs, this relates to any research activities of students and staff that are internally or externally funded, or have the aim to be published internally or externally.

Education is defined according to the OXFORD DICTIONARY (2018) as, *“The process of receiving or giving systematic instruction, especially at a school or university.”* For the HEIs, this includes all activities directly linked to the HEIs’ curriculum.

Operations and administration is defined according to the OXFORD DICTIONARY (2018) as, *“the action of functioning”, or “an organized activity involving a number of people” and “the process [...] of running an organization”*. For HEIs this relates to the action of functioning of the HEI and the process of running the HEI.

Outreach is defined according to the OXFORD DICTIONARY (2018) as, *“An organization’s involvement or influence in the community [...]”*. For HEIs this relates to any actions taken by the HEI to involve and influence the internal and external stakeholders and actions taken that go beyond the functions outlined above.

<b>Table 5: Examples for each core functional area;</b> adapted from (LOZANO ET AL., 2015)			
Education	Research	Operations & Administration	Outreach
<ul style="list-style-type: none"> <li>- courses</li> <li>- programmes'</li> <li>transdisciplinarity</li> <li>- 'Educate-the-Educators' programmes</li> <li>- curricular reviews</li> </ul>	<ul style="list-style-type: none"> <li>- research centres</li> <li>- holistic thinking</li> <li>- inter-linkages between research and teaching</li> <li>- publications</li> <li>- patents</li> <li>- new knowledge and technologies</li> <li>- transdisciplinarity</li> </ul>	<ul style="list-style-type: none"> <li>- energy consumption</li> <li>- waste management</li> <li>- water management</li> <li>- food</li> <li>- purchasing</li> <li>- transport</li> <li>- accessibility for disabled people</li> <li>- equality and diversity</li> <li>- greenhouse gas emissions</li> </ul>	<ul style="list-style-type: none"> <li>- collaboration with other higher education institutions and non-academic stakeholders</li> </ul>

<sup>31</sup> Examples of literature using this categorization: (AASHE, 2017B; LOZANO ET AL., 2015; TAHL ET AL., 2017; YARIME & TANAKA, 2012)



### 2.3. Selection and translation of relevant targets and indicators

Initially, the most relevant original SDG targets were identified for each core functional area of HEIs. If necessary, the relevant targets were then translated to specifically apply to each core functional area. In some cases, several of the original SDG targets were combined to a single translated target. This step also included adopting and, if necessary, translating the original indicator(s) associated with each target. If none of the original indicator(s) were applicable to the translated target, new indicator(s) were developed. As shown in appendix 1, for each translated target and indicator, associated original target(s) and indicator(s) were listed. It is furthermore specified, whether the translated indicator is qualitative or quantitative. Some of the translated indicators are used for several targets. This is also done in the original SDGs. If this is the case, a reference to the target with the same indicator is provided. It is specified if the link occurs within the same core function or across different core functions.

In the last step the translated indicators were classified according to whether the performance measured by the given indicator: (i) is controlled by internal or external stakeholders; and (ii) affects internal or external stakeholders.

## 3. Results

Our full translation is presented in appendix 1. The full translation includes six spreadsheets: (i) SDSN recommendations; (ii) Original UN SDGs; (iii) Education; (iv) Research; (v) Operations and Administration; and (vi) Community Outreach. The first spreadsheet shows the SDSN recommendations, copied from TAHL ET AL. (2017), which were used as inspiration for the translation of the SDGs. The recommendations are displayed for each SDG and each of the core functional areas of an HEI. Grey fields indicate that no recommendations were given for this specific combination of SDG and core functional area. The second spreadsheet provides a list of the original SDG targets and indicators (UN ECOSOC, 2016). The last four spreadsheets provide our translated targets and indicators, for each core functional area of an HEI. Each of the four spreadsheets initially names the goal, which is not translated, as the goals are final. It then lists the translated target, the related SDG target, the translated indicator, the related SDG indicator, the indicator type, the link to other targets and indicators (if repeated) in the same core function, the link to other targets and indicators (if repeated) across different core functions, and lastly whether the performance measured by the given indicator: (i) is controlled by internal or external stakeholders; and (ii)

affects internal or external stakeholders. In our translation, at least one target for each goal in each core functional area is presented, with at least one indicator per associated target.

For all core functions, we have provided both quantitative and qualitative indicators, most of which are quantitative. For education, the translated indicators mostly refer to the amount of courses or education programmes related to each associated targets and SDG. All indicators for education are classified as 'internal control' and 'internal effect'. For research, the translated indicators mostly refer to the number of research activities related to the associated targets and SDG. All indicators are classified as 'internal control', but are either classified as 'internal effect' or 'external effect'. For outreach, the translated indicators mostly refer to the number of outreach activities related to the associated targets and SDG. All indicators are classified as 'internal control' and 'external effect'. Operations and administration includes the largest number of indicators. Most of the indicators are classified as 'internal control' and 'internal effect', but many are also classified under the different categories.

For education, research, and outreach, our targets and indicators are more precise if the original SDG targets and indicators specifically mentioned higher education, research or outreach activities, respectively.

No indicators are classified as external control and external effect as this combination is considered to be outside of the HEI system boundaries, as explained above (fig 8).

#### 4. Discussion

The purpose of this translation is to provide initial inspiration on how the SDGs can be fully translated to apply to HEIs. Specifically, it shows that each SDG goal can, in fact, be applied to each core function of HEIs. In this way, our translation is innovative compared to other efforts, e.g. the SDSN guide (TAHL ET AL., 2017). The translation, however, is not the ideal final framework and it needs further improvements if it is to be accepted as a standardised universal framework for the application of the SDGs to HEIs.

The applied methods and results will be discussed in three sections. Firstly, the definition of the HEIs' system boundaries and the categorisation of the HEIs' core functions will be discussed. Secondly, the process of the translation itself will be discussed. Thirdly, the classification of the translated indicators into internal or external control and internal or external effect will be discussed.

#### 4.1. The definition of the HEIs' system boundaries and the categorisation of the HEIs' core functions

For the purpose of our translation, our definition of the HEIs' system boundaries is reasonable. It defines the internal and external stakeholders of an HEI, and those who are not stakeholders of an HEI. The applied categorisation of the functional areas of HEIs, i.e. education, research, operations and administration, and community outreach, is well-established and commonly used. However, the boundaries between the categories cannot be clearly defined as they are all closely interlinked, as discussed in chapter 3.1.1 – 3.1.5. As no clear definitions of the categories were found in previous work, we provide our own subjective definitions. A clear definition of the different functions of an HEI was necessary in order to carry out our translation.

#### 4.2. The process of the translation

Even though the applied definitions of the core functional areas are well defined, we found that several targets could be assigned to multiple core functions due to the cross-sectoral nature of the SDGs. For example, the following target was attributed to both the education function (appendix 1, Education 16.1) and outreach function (appendix 1, Operations 16.1.): *“Support and/or work to promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels, with a focus to raise awareness and knowledge on global and local issues”*. This target was attributed to both functions as it is equally important to educate students and staff, as well as the wider community on these issues. In almost all cases, the targets listed under the assigned core function overlap with the other core functions. For example, for all the indicators in appendix 1, Education, where the indicator specifies *“Amount of courses offered at the university that deal with topics mentioned in target, categorized by type of course (undergraduate, postgraduate, staff training, etc.)”*, this is primarily attributed to education as it is related to the course curricula offered at the HEI. Yet, the number of courses offered at the HEI depends on the funding available for education, which is governed by the operations and administration function. This was not classified under operations and administration in order to minimise the complexity of the framework.

The translation of the original SDG targets and indicators to apply specifically to a core functional area was subjective as we formulated a translation that we believed to be most applicable for HEIs. The subjectivity of the whole translation processes, allocating the SDGs' targets and indicators to a core function and the

translation of the original SDGs' targets and indicators, cannot be removed completely. This means that, if other HEIs carry out the same methodology as presented above, different HEIs are likely to formulate different versions of a SDG translation for HEIs. Therefore, in order to create a standardised universal framework for all HEIs, we advise that several HEIs worldwide carry out the presented process, and combine their efforts in a democratic process. The formulation process of the original SDGs, targets, and indicators is considered one of the *"most transparent and inclusive process in UN history"*, as stated by the former UN Secretary General Ban Ki-moon (THOMSON, 2015). Therefore, their application for HEIs must also be performed in a democratic and participative way.

#### 4.3. The classification of the translated indicators into either internal or external control and internal or external effect

The translated indicators were classified into internal or external control and internal or external effect in order to allow a classification of the relevance of the indicators for HEIs. Firstly, the most relevant indicators are those with internal control and internal effect (fig. 9). The internal HEI stakeholders have the authority to address the indicator and the indicator directly affects the internal HEI stakeholders. These indicators are the easiest to work towards as they only involve the core HEI system. This is key for the formulation of recommendations to improve the sustainability of a HEI. For example, indicator 5.1.3. for operations and administration (appendix 1, Operations and Administration, 5.1.3.), is controlled by internal HEI stakeholders, i.e. those employing staff in decision-making positions, and has an effect on internal HEI stakeholders, i.e. the ratio of male and female staff employed in decision-making positions. This example is mainly 'internal control' and 'internal effect'.

Second to this, the indicators that are classified as either 'external control' and 'internal effect', or 'internal control' and 'external effect', are also relevant for HEIs. In the former case, the internal HEI stakeholders do not have the authority to address the indicator but the indicator directly affects the internal HEI stakeholders. In the latter case, the internal HEI stakeholders have the authority to address the indicator, but their actions affect the external stakeholders. These indicators are less easy to work towards as it involves the wider HEI system. The former case can be illustrated by indicator 1.1.2 in the operation and administration section (appendix 1, Operations and Administration, 1.1.2). The availability of state funded student support systems (loans, scholarships, etc.) is controlled by external HEI stakeholders (i.e. the government), but affects the internal HEI stakeholders. This example is mainly 'external control' and

‘internal effect’. The latter case can be illustrated by Indicator 1.1.1 in the operations and administration section (appendix 1, Operations and Administration, 1.1.1), which measures the amount of fair trade goods used in the HEI. The performance of this indicator may be controlled by the internal HEI stakeholders (i.e amount of fair trade goods purchased), yet the performance primarily affects the external HEI stakeholders (i.e. the producers of the goods). The aim of this indicator is therefore to ensure better wages and working conditions for the producers, and it does not primarily affect the internal HEI stakeholders. This example is mainly ‘internal control’ and ‘external effect’.

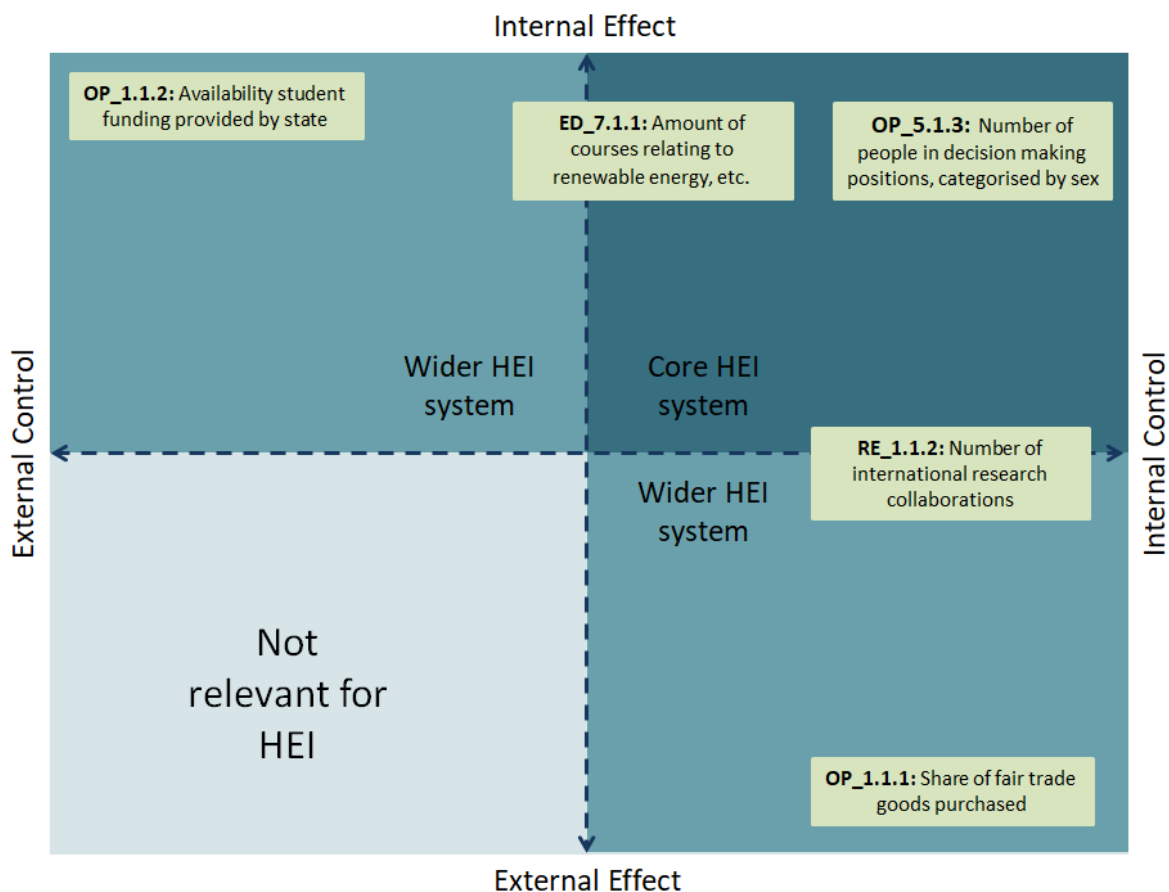


Fig. 9: Examples of Indicator classifications into internal effect, external effect, internal control and external control

The examples presented so far do not overlap into other categories. However, in some cases indicators overlap into other categories. For example, indicator 7.1.1. for education (appendix 1, Education, 7.1.1) is primarily controlled by internal HEI stakeholders as they create the course curricula. Yet, this is also controlled by external stakeholders, as the amount of government funding determines the number of courses the HEI is able to offer. Another example includes indicator 1.1.2. for research (appendix 1, Research, 1.1.2). The number of international research collaboration is controlled by internal HEI stakeholders. The performance in this indicator primarily affects the external HEI stakeholders, e.g.

researchers at other HEIs, as the aim of this indicator is to share internal resources with those stakeholders. However, the international research collaboration will also affect the internal HEI stakeholders as the collaboration is not a one-way partnership. In our translation, we have categorised the indicators according to their primary control and effect to minimise the complexity of the translation.

Lastly, it is important to note that the categorisation described above may differ depending on the HEI following the framework. The categorisation is dependent on the individual circumstances of each HEI, such as the organizational structure. This classification was based on the structure of HVL. For example, all indicators relating to student welfare (e.g. student housing services, food services, health services, etc) were classified as externally controlled. As explained in chapter 5.1, these services are provided by an external stakeholder, SAMAN. However, if these services are provided by the internal HEI stakeholders directly, the HEI would categorise these indicators to be internally controlled.

## E: Questionnaire with HVL Stakeholders: their Perceptions of SD and the SDGs, engagement in HVL SD-related activities and Recommendations for HVL-sustainability

### 1. Questionnaire Design

In order to answer RQ2, 3, 4 and 5, a quantitative and qualitative questionnaire was designed during March and April 2018. The questionnaire consisted of an online questionnaire performed via the software “Typeform”<sup>32</sup>. This software was chosen specifically because the software allowed question logic, provided a variety of formats for the questions (e.g. photo selection, ‘Yes/No’, Likert scales etc.), and the software allowed the respondents to answer the questionnaire on computers, smartphones and tablets.

The questions were designed to gather demographic and background information about the respondents (table 6), gain insights to answer the RQs (fig. 10), and also as a means to educate those who take the questionnaire. During the design process, several pilot questionnaires were carried out with randomly selected HVL-Sogndal students and academic staff to improve and refine the questionnaire. Given their feedback, the final questionnaire was created and finalised on 10<sup>th</sup> April, 2018. The original version of the questionnaire was written in English. A Norwegian translation was then created through help of HVL-Sogndal students, and checked over by Carlo Aall, professor and researcher at Western Norway Research Institute and co-supervisor for this Master’s thesis. The Norwegian-translated version of the questionnaire is believed to be a true translation of the original English version. Respondents had the choice to answer the English or Norwegian version of the questionnaire.

The questionnaire was carried out from 10<sup>th</sup> April to 8<sup>th</sup> May, 2018. The questionnaire consists of multiple choice selection, discrete choice experiments, Likert scale (0-4), yes/no selection, and open-ended answers. The online questionnaire was closed on 8<sup>th</sup> May and is no longer available online for public access. Below I present the structure of the questionnaire, each question according to the RQ it aims to gather information for, followed by an explanation for my choice of questions and a discussion surrounding the question design. The questions presented below were compulsory unless stated otherwise.

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<sup>32</sup> <https://www.typeform.com>

*The questionnaire consisted of four sections which were attributed to specific RQs:*

1. Background Information About You: RQ3
2. Your Knowledge of Sustainable Development
  - a. Knowledge of general concepts of Sustainable Development: RQ2
  - b. Judgements of general Sustainable Development scenarios: RQ2
  - c. Judgements of Sustainable Development scenarios for HVL: RQ2
3. Your Attitudes towards Sustainable Development at HVL': RQ3 & 5
4. Your Engagement in HVL activities and Recommendations to Improve the Sustainability of HVL: RQ3, 4, 5'

### 1.1. Capturing HVL Stakeholders' Background Information

The questions shown in (table 6) were designed to capture demographic and background information about the respondents. The questions followed question logic so that respondents were directed to specific questions depending on which role they have at HVL, i.e. if respondent answered 'Student', 'Researcher/Lecturer, Administration/Leader/Library staff' or 'SAMAN staff', they were directed to specific questions concern their role. The questions presented in table 6 were designed because it has been shown that the following variables affect HEI stakeholders perceptions of SD and level of engagement in SD activities: the HVL stakeholders' (i) role; (ii) course studying/teaching; (iii) age; (iv) year of study/length of time in staff position; (v) other levels and courses of education; (vi) previous work experience; (vii) previous education or research in SD; and (viii) personal interest/self-education in SD. I also included the variables: (i) whether respondents are from Sogn og Fjordane, other region in Norway, or abroad; and (ii) which HVL campus they are based at, as this may also affect respondents' answers of the questionnaire. The variables previously listed may also affect the potential for engagement with HVL stakeholders and their recommendations to improve the sustainability of HVL as these topics are inter-related to perceptions and engagement. Although the former variables are known to affect respondents' perceptions and engagement, they will not be used in this study to explore if they also affect HVL stakeholders. Similarly, the latter variables will also not be explored. It is beyond this Master's thesis to research the effect of the variables on HVL stakeholders' responses as this study is the first of its kind at HVL and the main aim to present an overview of HVL stakeholders' responses. The questions (table 6) were asked to obtain data for potential use in further studies which can explore these variables.



Table 6. Questions and answer options for each question in Section 1 of the questionnaire, 'Background Information About You'. Bold shows conditions for whether the questions were asked to the respondent. Italics show answer type (multiple choice or 'yes/no').

Question	Answer options
<b>All stakeholders:</b> Please state your age	<i>Multiple choice:</i> 18-25; 26-33; 34-41; 42-49; 50-57; 58-65; 65+
<b>All stakeholders:</b> Where are you from?	<i>Multiple choice:</i> Sogn og Fjordane; Other region in Norway; Abroad
<b>All stakeholders:</b> Which campus are you based at?	<i>Multiple choice:</i> Sogndal; Førde; Bergen; Stord; Haugesund
<b>All stakeholders:</b> What is your current affiliation with HVL?	<i>Multiple choice:</i> Student; Researcher/Lecturer; Management/Administration/Libraries; SAMAN
<b>If student:</b> Which faculty are you currently studying in at HVL?	<i>Multiple choice:</i> Education, Arts and Sports; Health and Social Science; Engineering and Science; Business Administration and Social Sciences
<b>If student:</b> Which year of study are you currently studying in?	<i>Multiple choice:</i> 1 (Bachelor); 2 (Bachelor); 3 (Bachelor); 1 (Master); 2 (Master); PhD; 1 year programme; 1 semester programme; Other Multiple
<b>If student:</b> Are you currently or have you previously been a student representative at HVL?	Yes/No
<b>If student:</b> Do you have any other higher education qualifications?	Yes/No
<b>If student:</b> Please select your other higher education qualification(s).	Multiple choice: Bachelors of natural sciences; Bachelors of social sciences; Bachelors of arts; Masters of natural sciences; Masters of social sciences; Masters of arts; PhD in natural sciences; PhD in social sciences; PhD in arts
<b>If student:</b> Are any of these other qualifications from HVL?	Yes/No
<b>If Researcher/Lecturer:</b> Which position(s) are you currently working as at HVL?	<i>Multiple choice:</i> Researcher; Lecturer; Head of faculty; Head of department; Head of programme
<b>If Researcher/Lecturer:</b> Which faculty are you currently working in at HVL?	<i>Multiple choice:</i> Education, Arts and Sports; Health and Social Science; Engineering and Science; Business Administration and Social Sciences
<b>If Researcher/Lecturer:</b> What is your position at HVL?	<i>Multiple choice:</i> Permanent (full- or part-time); Temporary; As a guest
<b>If Management/Administration/Libraries:</b> Which position(s) are you currently working as at HVL?	<i>Multiple choice:</i> Rector; Vice-rector; Director; Dean; Education (incl. student parliament); Finance; Library staff or researcher; Human resources; ICT
<b>If Researcher/Lecturer or Management/Administration/Libraries:</b> How long have you worked at HVL?	<i>Multiple choice:</i> Less than 2 years; 2-5 years; 6-9 years; 10+ years
<b>If SAMAN:</b> How long have you worked for SAMAN?	<i>Multiple choice:</i> Less than 2 years; 2-5 years; 6-9 years; 10+ years

<b>If Student, Researcher/Lecturer, Management/Administration/Libraries or SAMAN:</b> Do you have any work experience?	Yes/No
<b>If Student, Researcher/Lecturer, Management/Administration/Libraries or SAMAN and yes to to the above:</b> Which area(s) have you worked in?	<i>Multiple choice:</i> Education/research at HVL; Management/administration/library at HVL; SAMAN; Education/research (other higher education institute); Management/administration/library (other higher education institute); Other public sector (incl. Governmental and Non-Governmental organisations); Private sector
<b>All stakeholders:</b> Have you ever attended a course on sustainable development?	Yes/No
<b>All stakeholders:</b> If yes, please state where you took the course.	<i>Multiple selection:</i> Primary school (or equivalent); High school (or equivalent); HVL course in study programme; HVL course in staff training; Other HVL course; Another University College or University
<b>All stakeholders:</b> Have you ever carried out research in sustainable development?	Yes/No
<b>All stakeholders:</b> Do you educate yourself in the topic 'sustainable development'? E.g. through friends, the internet, films, books, activism groups etc.	Yes/No
<b>If Student or Researcher/Lecture:</b> Do you consider your current research/course curricula to be interdisciplinary?	<i>Likert scale 0-1 (0: Not interdisciplinary; 4: Very interdisciplinary)</i>

## 1.2. Capturing HVL Stakeholders' Knowledge of Sustainable Development and the Sustainable Development Goals (RQ2)

To answer RQ2, HVL stakeholders' knowledge was captured by asking seven questions (fig. 10). The seven questions presented are most strongly attributed to RQ2, but those presented in blue may also be attributed to RQ3. Below, the design of each question is presented and reasoned in the order they appear in fig 10. The number given in bold and underlined is the question number presented in fig. 10 under the 'RQ2: KNOWLEDGE' questions.

1. As explained in section C4.5 knowledge can be split up into awareness and understanding. Awareness was measured by asking the first question, "Have you previously seen or heard of the Sustainable Development Goals?". Respondents awareness was measured by asking them to select either 'Yes' (have awareness) or 'No' (do not have awareness).

2 and 3. Self-rated understanding of SD and the SDGs was captured by asking the first two questions "How would you rate your level of knowledge of SD", and "How would you rate you level of knowledge of the SDGs". The questions were designed according to a similar method as used by (Summers, M., Corney,

G., Childs, 2004, Appendix, q.2), who used 'one five- point scale self-rating item'. Respondents self-rated understand was measured on a five-point Likert scale of 0: 'None' to 4: 'I am an expert'. These questions determine the self-rated level of understanding rather than understanding because the response only reflects their own opinion on their level of knowledge; their actual understanding is not being tested. For example, a participant may select that they are an expert because they wish to appear they have good understanding, but they may not be an expert.

4 and 5. The two questions, "*Which scenario is more sustainable?*" and "*Which scenario is more sustainable for HVL?*" were designed based on the 'discrete choice experiment' methodology. Typically in a discrete choice experiment, participants are presented with hypothetical scenarios (choice sets), comprised of two or more alternatives. The choice sets vary in characteristics or attributes related to the topic being studied, and participants must choose between the alternatives in the choice set (Ryan, Gerard, & Amaya-Amaya, 2008, p. 13). Discrete choice analysis has been applied to a variety of disciplines in the social sciences, e.g. for: consumer behavior (Jaffry, Pickering, Ghulam, Whitmarsh, & Wattage, 2004; Sammer & Wüstenhagen, 2006); healthcare (Lancsar et al., 2007; Ryan et al., 2008); and energy-related issues (Rivers & Jaccard, 2005).

For the question, "*Which scenario is more sustainable?*", seven choice sets, comprised of two photo alternatives were chosen that reflect 'general' concepts of SD. For the question "*Which scenario is more sustainable for HVL?*", twelve choice sets, comprised of two photo alternatives were chosen that reflect HVL-Sogndal-specific SD concepts. Participants knowledge was measured by asking them to select one photo from the choice set that they believe to be 'more' sustainable (have knowledge). The choice sets, along with the main topic(s) of the choice sets, the dominant SD dimension(s) reflected in the choice sets, the hypothesis of the choice sets, and the results of the choice set, are shown in Appendix B. In all choice sets, except from three, one photo is determined to be more sustainable (only photo A or only photo B). Either photo alternatives (photo A or B) could be considered more sustainable for choice sets including: section 2B, question 3; Section 2C, question 8 and 12. The reasoning for this is presented in Appendix B, under the hypothesis for the associated choice sets. These photos do not necessarily measure HVL stakeholder's knowledge, but reflect respondents attitudes towards SD. Given that neither photo is the 'correct' more sustainable photo, the photo they select may represent which concept of SD they consider to be more important.

The photo alternatives were randomly assigned 'photo A' or 'photo B' in the choice set to limit respondents consciously or subconsciously noticing a pattern in the position of the more sustainable photo.

The discrete choice experiment methodology is appropriate method to test the participant's level of understanding of SD, rather than using written statement concerning SD, because people tend to have an innate understanding (general knowledge) of concepts which are 'more' or 'less' sustainable, despite not knowing the academic terminology or reasoning associated to SD concepts. However, an in-depth understanding of respondent's knowledge is not gathered. Participants can only select a photo that they believe to be more sustainable; they cannot provide a reason *why* they selected a particular photograph.

[6 and 7](#). The two questions attributed to RQ2, "*Select the following statements that you believe to be true. "SD concerns..." and "Who do you think the SDGs are important for?"*", measure HVL stakeholders' knowledge of the UN definition of SD and concepts presented in section C1. Their knowledge was measured by asking participants to select true statement(s) concerning the definition of SD and concepts of the SDGs.

The latter four questions (4 to 7) described above were designed to improve respondents' level of knowledge of SD and the SDGs through educating them. For the discrete choice experiment questions, widespread concepts of SD were chosen in the hope to educate participants of SD concepts they may not have previously considered. As described in section C6.2 previous studies have found that generally HEI stakeholders have less knowledge of the social and economic dimensions of SD, so it was ensured that all three dimensions of were represented in the discrete choice sets. For the multiple choice selection, true statements were chosen in the hope that respondents realise that all statements are true, and they learn more about the definition of SD and concepts of the SDGs.

### 1.3. Capturing HVL Stakeholders' Attitudes Towards Sustainable Development and the Sustainable Development Goals (RQ3)

To answer RQ3, attitudes towards general concepts and regarding SD and the SDGs and HVL-specific SD and SDGs were captured by asking nine questions (fig. 10). As explained in the literature review (section C4.5) attitudes can comprise of values, opinions and willingness to act. In fig. 10 values and opinions are separated from willingness to act (WTA). Seven questions were formulated for the former, and two for the latter. This separation was made because WTA is the strongest form of attitude, and strongly influences the potential for engagement of HVL SD activities (RQ4b). Capturing WTA is key for the success of recommendations to improve the sustainability of HVL.

1, 2, 3, and 4. HVL stakeholders' attitudes toward HVL-sustainability were captured by asking respondents "How sustainable do you believe HVL is today", and to rate to the statement: "It is extremely important that HVL becomes more sustainable". The third question captured whether participants believe there is a link between HVL-sustainability and the sustainability of external communities by asking respondents to rate the statement "Improving the sustainability of HVL can additionally improve the sustainability of communities outside of HVL". As presented in section C3 and C4, it is agreed upon that HEIs have a role to educate, be role models, and build capacity in the external communities (e.g. Shiel et al., 2016) The fourth question captured the HVL stakeholders' attitude towards whether they believe the SDGs can be useful for HVL by asking respondents to rate the statement "The Sustainable Development Goals can be used to guide HVL to become more sustainable". For these questions, the attitudes were measured on a five-point Likert scale of 0: 'I strongly disagree' to 4: 'I strongly agree'. The latter question is also associated to RQ5 (section) as the result provide the HVL stakeholders' attitudes towards whether they believe the SDGs can be used to guide HVL to become more sustainable.

5, 6, and 7. The remaining three questions, "Which aspects should HVL focus on?", "Select the following statements which you believe to be true concerning the Sustainable Development Goals:", and "Select the SDGs which you believe to be more important to focus on:", were designed to capture the attitudes towards the aspects which are most important to focus on to become more sustainable. The first question captures the attitude towards the aspects respondents believe HVL should focus on by asking respondents to select one or more true statements concerning SD concepts. The second question captures the attitude which societal level they believe the SDGs can be applied to by asking them to select one statement they believe to be true concerning the SDGs. The last question captures the attitude towards which SDG respondents believe to be most important to focus on. The first question is also attributed to RQ5 (E3.5) as the results provide the HVL stakeholders' attitudes towards which aspects of SD HVL should focus on to become more sustainable.

8 and 9. To capture HVL stakeholders' willingness to act (WTA), two questions were designed. WTA to improve the sustainability of HVL was captured by asking "Are you willing to support and participate in actions to improve the sustainability of HVL". WTA regarding whether HVL stakeholders' would like to learn more was captured by asking "Would you like the opportunity to learn more about SD at HVL". Respondents WTA was measured by asking them to select either 'Yes' (willing to act) or 'No' (not willing to act). These questions are also attributed to RQ4 (Section 5.1.4) and therefore are repeated in fig. 11 as the response captures the potential for engagement with the HVL stakeholder

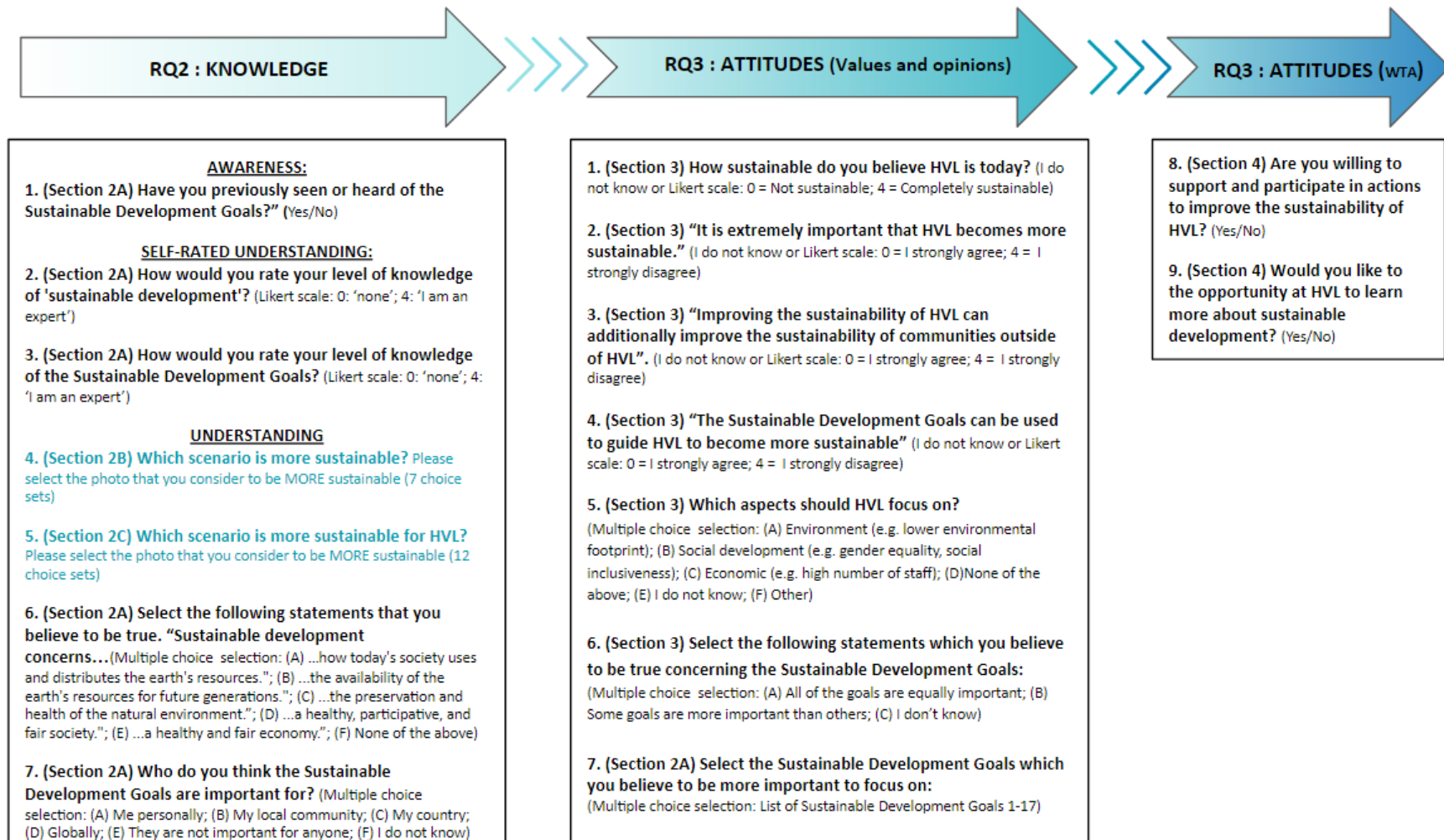


Figure 10. Questions asked to capture RQ2 and RQ3. Research question number is shown in blue arrows: research question 2 (RQ2); research question 3 (RQ3); willingness to act (WTA). Questionnaire questions (bold) and question type and selection options for answers (brackets) are shown in the boxes. Questions that could also be in 'RQ3: Attitudes (Values and opinions)' (blue text). All questions were compulsory.

#### 1.4. Capturing the Level of Engagement and Communication of HVL Sustainable Development-related Activities from the HVL Stakeholders' Perspective (RQ4)

Nine questions were designed to capture the engagement and the potential for engagement, and the level of communication of HVL SD-related activities.

To answer RQ4a, seven questions were formulated to capture the level of engagement communication of HVL activities and decision-making. Three questions were formulated to capture the potential for engagement of HVL SD-related activities.

1 and 2. The first two questions, “How would you rate the level of communication to you about HVL activities?”, and “I believe that my voice can be heard to influence decision-making at and the sustainability of HVL” were designed to gauge the level of communication of HVL with participants. The former questions captures the level of top-down communication, and the latter the level of bottom-up communication. The level of communication was measured on a five-point Likert scale 0: Very poor to 4: Very good.

3, 4, 5, and 6. The next four questions, “Are you aware of...”, captured the engagement of and level of communication HVL activities and decision-making regarding the SD of HVL. The engagement was measure by asking participants to select either ‘Yes’ (engagement or good communication) or ‘No’ (no engagement or communication), and if ‘Yes’, to provide what they are aware of (level of communication/engagement). The latter question was not compulsory to allow respondents the choice to elaborate on their answers. The answers for these questions will also provide information on SD-related activities of HVL.

7, 8, 9. To answer RQ4b, three questions were formulated to capture the potential for engagement of HVL SD-related activities. The first two questions, “Are you willing to support and participate in actions to improve the sustainability of HVL”, and “Would you like the opportunity to learn more about SD at HVL”, are the same questions as discussed in Section E1.3. However, when attributed to this RQ, HVL stakeholders’ WTA was measured by asking them to select either ‘Yes’ , reflecting potential for engagement or ‘No’, reflecting no potential for engagement. The third question measure the potential for engagement “If you would like to be contacted about sustainable development activities at HVL, please provide your email” by the number of people that provide their email. This question was not compulsory to give people the choice to show their willingness to be engaged, or to remain anonymous in their responses.



## 1.5. Capturing HVL Stakeholders' Recommendations to Improve the Sustainability of HVL (RQ5)

1, 2 and 3. Finally, three questions were designed to capture HVL stakeholders' recommendations to improve the sustainability of HVL. The first two questions, "Which aspects should HVL focus on?" and "Select the UN SDGs which you believe to be more important to focus on:", are the same as those discussed in section C1.3. The former question captures direct recommendations of the aspects the respondents believe HVL should focus on. The recommendations are the aspect(s) that the HVL stakeholders' select. The latter question provides recommendation whether the SDGs can guide HVL to become more sustainable. HVL stakeholders do not recommend the SDGs for HVL if they select low on the Likert scale, and they do if they select high on the Likert scale. The last question, "If you could change anything to improve the sustainability of HVL, what would you do?", was designed to provide a space for HVL stakeholders' to openly their recommendations for HVL. This question was not compulsory to allow the respondents freedom to give their own recommendations.



RQ4: ENGAGEMENT of HVL	
<p style="text-align: center;"><b>(a) LEVEL OF COMMUNICATION/ENGAGEMENT:</b></p> <p><b>1. (Section 4) How do you rate the level of communication to you about HVL activities?</b> (Likert scale: 0= Very poor; 4= Very good)</p> <p><b>2. (Section 4) "I believe that my voice can be heard to influence decision-making at and the sustainability of HVL."</b> (Likert scale: 0= I strongly agree; 4= I strongly disagree)</p> <p><b>3. (Section 4) Are you aware of anything at HVL that HVL is doing to become more sustainable?</b> (Yes/No)</p> <p><b>4. (Section 4) Are you aware of anything at HVL that HVL is doing to help communities outside of the institution become more sustainable?</b> (Yes/No)</p> <p><b>5. (Section 4) Are you aware of any opportunities at HVL to learn about sustainable development?</b> (Yes/No)</p> <p><b>6. (Section 4) Are you aware of any opportunities at HVL to take action towards sustainable development at HVL or in communities outside of the institution?</b>(Yes/No)</p> <p><b>7. (Section 4) If yes to the above 4 questions, please state what you know of.</b> (Open answer, optional)</p>	<p style="text-align: center;"><b>(b) POTENTIAL FOR ENGAGEMENT:</b></p> <p><b>8. (Section 4) Would like the opportunity at HVL to learn more about SD?</b> (Yes/No)</p> <p><b>9. (Section 4) Are you willing to support and participate in actions to improve the sustainability of HVL?</b> (Yes/No)</p> <p><b>10. (Section 4) If you would like to be contacted about sustainable development activities at HVL, please provide your email.</b> (Open answer, optional)</p>
RQ5: RECOMMENDATIONS	
<p><b>1. (Section 3) Which aspects should HVL focus on?</b> (Multiple choice selection: (A) Environment (e.g. lower environmental footprint); (B) Social development (e.g. gender equality, social inclusiveness); (C) Economic (e.g. high number of staff); (D)None of the above; (E) I do not know; (F) Other)</p> <p><b>2. (Section 3) "The UN Sustainable Development Goals can be used to guide HVL to become more sustainable"</b> (I do not know or Likert scale: 0 = I strongly agree; 4 = I strongly disagree)</p> <p><b>3. (Section 4) If you could change anything to improve HVL sustainability, what would you do?</b> (Open answer, optional)</p>	

Figure 11. Questions asked to capture RQ4 and RQ5. Research question number is shown in blue box: research question 4 (RQ4); research question 5 (RQ5). Questionnaire questions (bold) and question type and selection options for answers (brackets) are shown in the boxes. Questions that are also associated with RQ3 (brown text). All questions were compulsory unless stated 'optional'



## 2. Recruitment for Questionnaire

Firstly, I mapped all HVL stakeholders to map out who to recruit for the questionnaire. To recruit HVL stakeholders, many methods were used. Emails were sent out to:

- all head of faculties
- all head of departments
- all head of programmes
- All student council members
- all leaders (rector, vice-rectors, directors and deans)
- all library staff at HVL-Sogndal
- All SAMAN staff at HVL-Sogndal
- A random selection of administration, lecturers, and researchers at HVL Sogndal.

Emails invited the stakeholder to take the questionnaire and were asked to forward my invitation within their network. Lecturers were also asked if I could visit their classes to recruit students, or to share the invitation for the questionnaire on the classes' communication channels (i.e. class facebook and fronter pages). The total number of lecturers that shared the invitation on the classes' communication channels is unknown except from the following:

- First, second and third year bachelor students of renewable energy, in engineer and natural sciences (FIN) faculty;
- First and third year bachelor students of landscape planning with landscape architecture, in engineer and natural sciences (FIN) faculty;
- Second year year master students of sports science, in teacher education, culture and sport (FLKI) faculty.

Lecturers that allowed me to visit their classes included:

- Second year bachelor students of landscape planning with landscape architecture, in engineer and natural sciences (FIN) faculty;
- Second year bachelor students of geology in engineer and natural sciences (FIN) faculty;
- First year master students of sports science, in teacher education, culture and sport (FLKI) faculty;
- Third year bachelor students of primary school teacher education (1-7) in teacher education, culture and sport (FLKI) faculty.

A stand was also held in HVL-Sogndal canteen to recruit HVL-Sogndal stakeholders where the online website link was handed out. I also gave a talk at the internal HVL-sustainability conference, “Where do we stand and where do we go” and the link for the questionnaire was also presented on the conference website<sup>33</sup>. At the conference, HVL stakeholders also offered to invite HVL stakeholders in their networks. It is unknown which of how many HVL stakeholders were invited by this method.

A random selection of HVL-Sogndal students were selected to share the questionnaire invitation including:

- Second and third bachelor year students of outdoor life, in teacher education, culture and sport (FLKI) faculty;
- Third year bachelor students of economy, in economics and social sciences (FØS) faculty.

I also personally sent out an invitation for the questionnaire on the following facebook pages:

- HVL;
- HVL-Sogndal;
- Lurkarlaget (HVL-Sogndal outdoor student group);
- Sjøspretten (HVL-Sogndal watersports student group);
- Yggdrasil (HVL-Sogndal natural sciences student group).

In all of the facebook invitations, I asked HVL stakeholders to share the invitation with their networks, therefore, it is unknown how many of which HVL stakeholders were reached through this method.

Overall, the number of HVL stakeholder that were reached by the recruitment processes is unknown due to the random recruitment process outlined above.

Those that were recruited for the questionnaire were asked to follow the website address of the online questionnaire. A prize was offered to recruited participants: a free lunch in canteen on campus, vouchers for the bookstores on HVL campuses, or a free cinema ticket.

The methods used outlined above were the only methods of recruitment. I found the process of recruitment quite difficult and was unable to contact all HVL stakeholders. This was because I found the communication channels to not be very strong. For example, it is not possible to mass-email to all student or staff HVL-email accounts, and most students do not use their HVL-email account.

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<sup>33</sup> <https://blogg.hvl.no/baerekraft/2018-2/omtale-av-plenumsforedragsholderne/>

### 3. Recruitment for Questionnaire

#### 3.1. HVL Stakeholders' Background Information

266 HVL stakeholders completed the questionnaire. A response rate is unknown due to the method of recruitment for the questionnaire (Section E2). The completion rate was 51.5%. Most respondents are from 'Other region in Norway', followed by 'Sogn og Fjordane', and 'Abroad'. Most respondents are aged 18-25, followed by 26-33, 34-41, 50-57, 42-49 and 58-65, and least respondents are aged '65+' (Table ).

Table 7. Frequency of where respondents are from and the age groups of respondents.

Demographics (N=266)	Frequency	Percentage (%)
<b>Location where respondents are from</b>		
Sogn og Fjordane	63	23.7
Other region in Norway	185	59.5
Abroad	18	6.8
<b>Age</b>		
18-25	164	61.7
26-33	44	16.5
34-41	19	7.14
42-49	11	4.1
50-57	15	5.6
58-65	11	4.1
65+	2	0.8

Most respondents are from the HVL campus Sogndal, followed by Bergen, Haugesund, Stord, and fewest respondents are from Førde (table 8 and fig. 12). Most respondents have the role of 'Student', followed by 'Researcher/Lecturer', 'Management/Admin/Library', and least respondents are the role 'SAMAN'. The frequency of the different HVL stakeholder respondents varied at each campus. At HVL-Sogndal and HVL-Bergen, the greatest stakeholder frequency is 'Students'. At HVL-Sogndal, the second stakeholder frequency is 'Researcher/Lecturer', followed by 'Management/Admin/Library' and one respondent is 'SAMAN'. At HVL-Bergen, the second highest stakeholder frequency is 'Management/Admin/Library', followed by 'Researcher/Lecturer' and no respondents are 'SAMAN'. At HVL Haugesund, the highest stakeholder frequency is 'Researcher/Lecturer', followed by 'Management/Admin/Library', 'Student' and

no respondents are 'SAMAN'. At HVL Stord, the highest stakeholder frequency is 'Researcher/Lecturer', followed by 'Student' and 'Management/Admin/Library' which have the same frequency, and no respondents are 'SAMAN'. At HVL Førde, the stakeholder frequencies are the same for 'Student', 'Researcher/Lecturer', and 'Management/Admin/Library', and no respondents are 'SAMAN'.

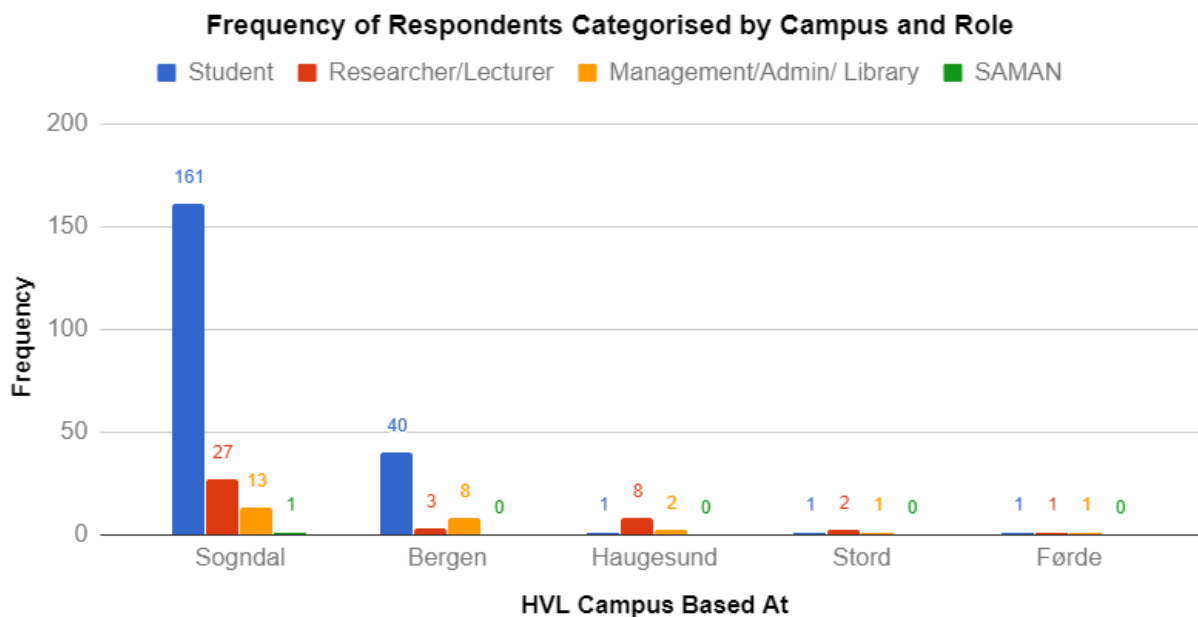
One 'Student' respondent is based at HVL-Sogndal and HVL-Stord, one 'Researcher/Lecture' respondent is based at HVL-Sogndal and HVL-Bergen, and one 'Management/Admin/Library' respondent is based at all HVL campuses but HVL-Førde. To account for these respondents a vale was given to each HVL campus they said they are based at. Therefore, the total number of respondents based at each campus and the total number of the different HVL roles of the respondents at each campus appear greater. Therefore, the total number of respondents appears to be five greater (101.9% of N=266) than the total number of respondents (N=266).

The results presented from here on group the results of all stakeholders from all campuses together. The primary purpose of this thesis is to present findings regarding all HVL stakeholders, and it is beyond this thesis to categorise the following results according to the different variable (i.e. HVL campus). There are all also too few respondents from campuses other than HVL-Sogndal for it to be of value to present the following data according to the different HVL campuses.

Fig. 13 shows the frequency of 'Student' and 'Researcher/Lecturer' stakeholder respondents categorised by the faculty they are at HVL. The greatest frequency of respondents are in the FLKL (38.3%), followed by the FIN (33.3%), FØS (22.6%), and FHS (5.8%). Overall, the frequency of 'Student' is greater than for 'Researcher/Lecturer' in the different faculties. The frequency of 'Student' stakeholders follows the same pattern in each faculty. However, for 'Researcher/Lecturer' stakeholders, the greatest number is in the FØS, followed by FIN, FLKI and lastly FHS.

**Table 8.** The frequency of respondents for each HVL campus they are based at: Sogndal, Bergen, Haugesund, Stord and Førde, categorised by HVL stakeholder role: Student; Researcher/Lecturer; Management/Admin/Library; and SAMAN. Percentages (%) shown are percentages of the total number of respondents ( $N=266$ )

(N=266)		HVL Campus Based At					Total number of stakeholder role (%)
		Sogndal	Bergen	Haugesund	Stord	Førde	
		Frequency (%)					
HVL Stakeholder Role	Student	161 (60.5)	40 (15.0)	1 (0.4)	1 (0.4)	1 (0.4)	204 (76.7)
	Researcher/Lecturer	27 (10.1)	3 (1.1)	8 (3.0)	2 (0.8)	1 (0.4)	41 (15.4)
	Management/Admin/Library	13 (4.9)	8 (3.0)	2 (0.8)	1 (0.4)	1 (0.4)	25 (9.4)
	SAMAN	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.4)
Total number based at each campus (%)		202 (75.9)	51 (19.1)	11 (4.1)	4 (1.5)	3 (1.1)	Total number of stakeholders 271 (101.9)



**Fig. 12.** The frequency of respondents for each HVL campus they are based at: Sogndal, Bergen, Haugesund, Stord and Førde, categorised by HVL stakeholder role: Student (blue); Researcher/Lecturer (red); Management/Admin/Library (orange); and SAMAN (green).

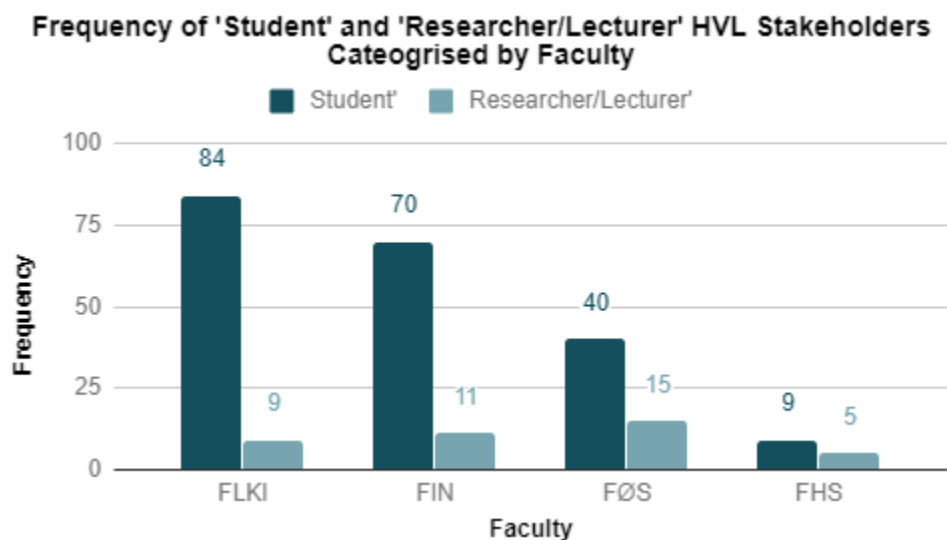


Fig. 12. The frequency of respondents for each HVL faculty categorised by respondent role at HVL, 'Student' (dark blue) or 'Researcher/Lecturer' (light blue). The translation of the faculties from Norwegian to English are: Faculty of Education Arts and Sports (FLKL); Engineering and Science Business (FIN); Faculty of Administration and Social Sciences (FØS); and Faculty of Health and Social Sciences (FHS).

The different position types and contract types of the 'Researcher/Lecturer' HVL role group and the different position types of the 'Management/Admin/Library' HVL role group is shown in table 9. The different roles of the 'SAMAN' HVL role group were not asked and are therefore not presented. 'Researcher/Lecturer', 'Management/Admin/Library', and 'SAMAN' are classed as HVL staff. Many of the respondents who are 'Researcher/Lecturer' respondents have a researcher and lecturer and only lecturer position, fewer have a researcher and head of a programme or faculty position. No respondents are head of a department. Those that are a head of a programme or head of a faculty are also researchers and lecturers. Therefore, the total frequency of 'Researcher/Lecture' respondents (total= 46) is six higher than the total number of respondents (N= 40) (table 9). More 'Researcher/Lecture' respondents are employed on a permanent (full- or part- time) contract (85%) compared to a temporary contract (15%). The response rate for the Head of Programme, Department and Faculty staff can be calculated as these staff were all recruited for the questionnaire. The response rate is 6.25%, 0.0% and 25.0% respectively.

The greatest frequency of the position type of 'Management/Admin/Library' respondents are 'Library staff' (36.4%), followed by 'Education (inc. student parliament' (31.8%), 'Dean' and 'HR' (13.6%), and 'Director' (4.5%). No respondents are 'Rector', 'Vice-Rector', 'Researcher' or 'ICT'. The response rate of the Rector, Vice Rectors, Directors, Deans can be calculated as these staff were all recruited for the questionnaire. The response rate is 0.0%, 0.0%, 50.0%, and 75.0% respectively.



The frequency of the number of years that staff have worked at HVL is fairly spread. Greatest number of staff have worked 10+ years (31.7%), followed by 2-5 years (25.4%), <2 years (22.2%), and 6-9 years (20.6%).

Table. 9. Frequency of position types of HVL staff.

Staff (Total = 63)	Frequency
<b>Researcher/Lecturer Position Type (%) Total = 40</b>	
Researcher & Lecturer	20 (50)
Lecturer	15 (37.5)
Researcher	4 (10.0)
Head of Programme	6 (15.0)
Head of Faculty	1 (2.5)
Head of Department	0 (0.0)
<b>Contract Type</b>	
Permanent (full- or part-)	34 (85.0)
Temporary	6 (15.0)

<b>Length of time staff have worked at HVL in year (%) Total = 63</b>	
<2	14 (22.2)
2-5	16 (25.4)
6-9	13 (20.6)
10+	20 (31.7)

<b>Management/Admin/Library</b>	
<b>Management/Admin/Library Position Type (%) (Total = 22)</b>	
Library staff	8 (36.4)
Education (inc. student parliament) staff	7 (17.5)
Dean	3 (13.6)
HR	3 (13.6)
Director	1 (4.5)
Rector	0 (0.0)
Vice-rector	0 (0.0)
Researcher	0 (0.0)
ICT	0 (0.0)

Fig. 14 shows the frequency of 'Student' stakeholder respondents for each faculty categorised by year of study. The greatest frequency of 'Student' stakeholders study in 'FLKL' (Faculty of Education, Arts and Sports) (41.4%), followed by 'FIN' (Faculty of Engineering and Science Business) (34.5%), 'FØS' (Faculty of Administration and Social Sciences) (19.7%), and 'FHS' (Faculty of Health and Social Sciences) (4.4%). The greatest frequency of the year students are in is 'B3' (32.5%), followed by 'B2' (28.6%), 'M1' (14.3%), 'M2', (6.4%) Other (2.5%). However, within each faculty, the frequency of respondents in the different year groups varied greatly. In FLKI, the frequency of students in the year 'B3' is highest (39.3%), followed

by 'M1' (16.6%), 'B2' (15.5%), '1Y' and 'B1' (9.5%), 'Other' (6.0), and 'M2' (3.6%). In 'FIN', the frequency of students in the year 'B2' is the highest (48.6%), followed by 'B3' (41.2%), 'M1' and 'M2' (12.8%), and 'B1' (1.4%), and no students are 'Other' or '1Y'. In 'FØS', the frequency of students in the year 'B1' is the highest (35.0%), followed by 'B3' (30.0%), 'B2' (17.5%), 'M1' (12.5%), '1Y' and 'M2' (2.5%) and no students are 'Other'. Lastly, in 'FHS', the years 'B2' and 'B3' have the highest frequencies (44.9%), and no students are 'Y1', 'B1', 'M2' or 'Other'. For those that selected 'Other', all respondents stated 'year 4, primary education teaching'.

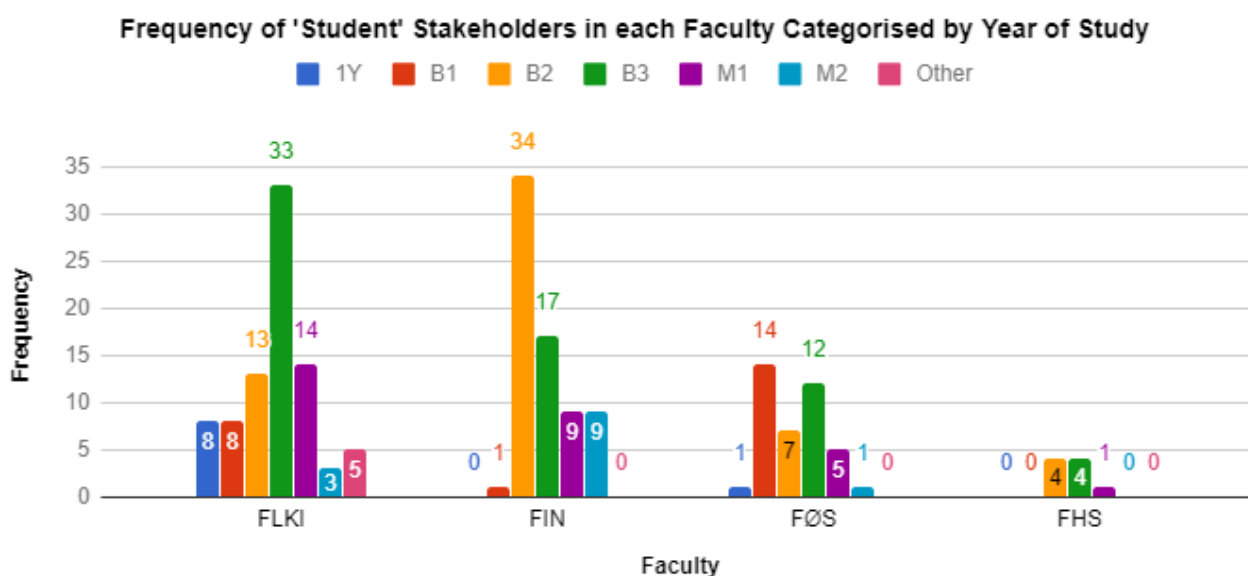


Fig. 14 The frequency of 'Student' HVL stakeholder respondents for each HVL faculty categorised by year of student. The translation of the faculties from Norwegian to English are: Faculty of Education Arts and Sports (FLKL); Engineering and Science Business (FIN ); Faculty of Administration and Social Sciences (FØS); and Faculty of Health and Social Sciences (FHS). Year of study: 1Y: 1-year programme; B1: Bachelor 1<sup>st</sup> year; B2: Bachelor 2<sup>nd</sup> year; B3: Bachelor 2<sup>nd</sup> year; M1: Master 1<sup>st</sup> year; M2: Master 2<sup>nd</sup> year; and Other: Other study programme. Total number of students is 203.

Table 10 and fig 15, 16, 17, 18 shows the answers of HVL stakeholders' to the remaining background information questions. Many of the students have previously been or are student representatives for their programme of study (27.7%). About a quarter have had previous higher education (23.6%), of which 40.9% was from HVL. Most have a previous 'bachelors in natural sciences', followed by 'bachelor social sciences' and 'other'. 'Other included a year study course such as psychology and sport (fig. 15). Most of the HVL stakeholders have had previous work experience (average= 89.5%). Most have previous or other work experience in the private sector, followed by other public sector, research or education at another HEI, other management or admin or library position, or have worked for SAMAN (fig 16). Relatively few HVL stakeholders have attended a course on SD (average= 25.3%). Of those that answered 'yes', most of respondents received the education in their study programmes (31.9%),

followed by 'Another HEI', 'Other', 'High school or equivalent', 'Følkehøgskule or equivalent' and very few at 'Primary school of equivalent'. Fewer HVL stakeholders have carried out research in SD (average= 14.6%). Most of the HVL stakeholders have educated themselves in the topic of SD (average= 97.2%).

**Table 10.** The frequency and percentage of HVL stakeholders that selected yes to the questions presented.

N= 266	Student (Total = 163)	Researcher/Lecturer (Total = 40)	Management/Admin/ Library (Total = 22)	SAMAN (Total = 1)	Average of HVL stakeholders (%)
	Frequency answered 'Yes' (% of total in stakeholder group)				
Have you previously been or are you a student representative?	44 (27.7)	-	-	-	-
Do you have other higher education qualifications?	48 (23.6)	-	-	-	-
If yes, were these from HVL?	18 (40.9)	-	-	-	-
Do you have previous work experience?	150 (73.9)	37 (92.5)	21 (95.5)	1 (100.0)	89.5
Have you previously attended a course on SD?	68 (33.5)	5 (15.0)	6 (27.3)	0 (0.0)	25.3
Have you carried out research on SD?	17 (8.4)	12 (30.9)	1 (4.5)	0 (0.0)	14.6
Do you education yourself in the topic SD?	196 (96.6)	37 (92.5)	22 (100.0)	1 (100.0)	97.2

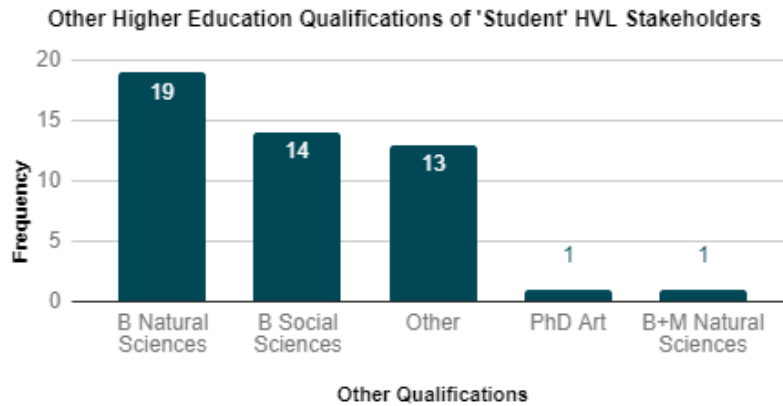


Fig. 15. Other higher education qualifications of students at HVL. 'B Natural Sciences' is bachelor in natural sciences; 'B Social Sciences' is bachelor in social sciences; 'Other' is other higher education qualification; 'PhD Art' is PhD in the Arts; and 'B+M Natural Sciences' is bachelor and master in natural sciences. Total number of students with another higher education qualification is 48.

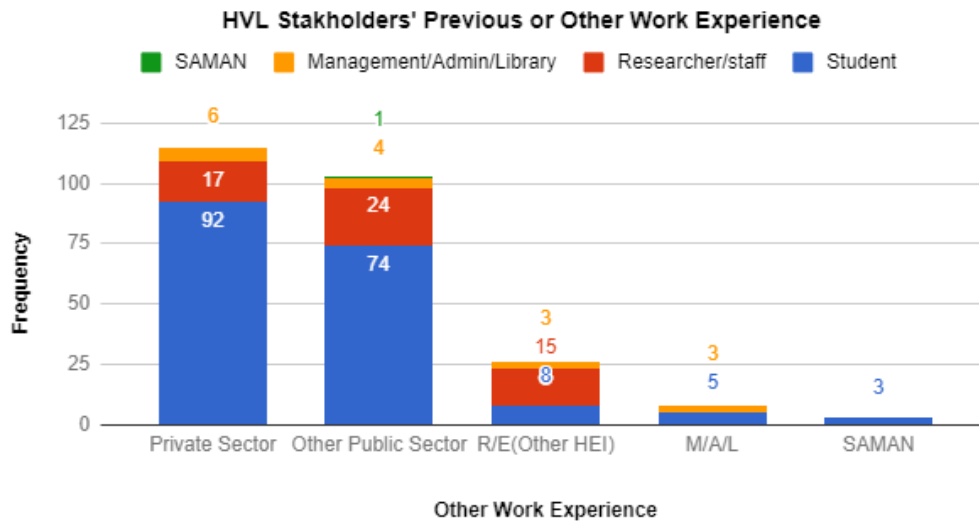


Fig. 16. Previous or other work experience of HVL stakeholders categorized by HVL stakeholder; Student (blue), Researcher/Lecturer (red), Management/Admin/Library (orange), and SAMAN (green). 'R/E (Other HEI)' is researcher or lecturer at another HEI; and 'M/A/L' is management or administration or library position at HVL or another HEI.

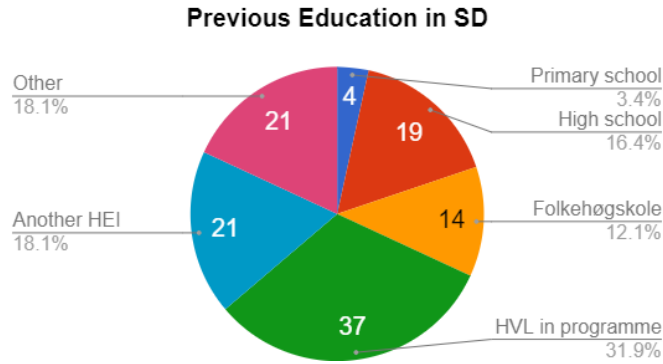


Fig. 17. Where HVL stakeholders have received previous education. All options also stated 'or equivalent'. 'HVL in staff training' is not shown as no respondents selected this option.

Fig. 18. shows that most HVL stakeholders believe HVL programmes to be somewhat interdisciplinary (M=2). However the responses are skewed towards their rating of HVL programmes to be more interdisciplinary than not ( $\bar{X} > M$ ).

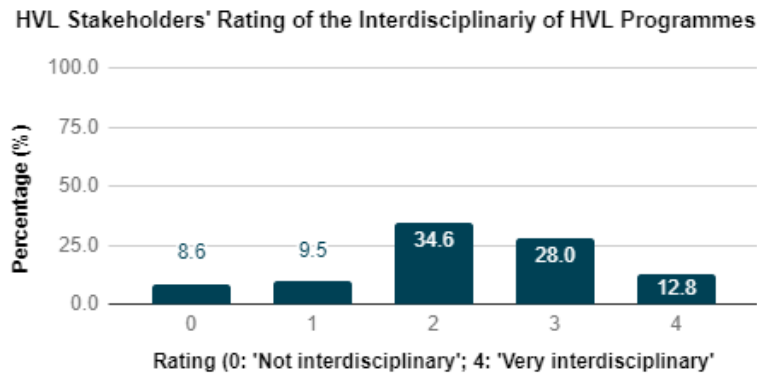


Fig. 18. The percentage of HVL Stakeholders' responses for the question "Do you consider your current research/course curricula to be interdisciplinary?" on a five-point Likert scale, 0: 'not interdisciplinary' to 4: 'very interdisciplinary' or 'I don't know'. N= 266, M= 2,  $\bar{X}$ =2.2. 6.6% responded 'I don't know'.

### 3.2. HVL Stakeholders' Knowledge of Sustainable Development and the Sustainable Development Goals (RQ2)

The following section presents the HVL stakeholders knowledge of SD and the SDGs captured by the questions designed for RQ2 (Fig.10)

1. Most HVL stakeholders have good awareness of the SDGs as 83.0% have heard of or seen the SDGs, whilst 27.0% do not have good awareness as 27.0% said that have not seen or heard of the SDGs.

2 and 3. Most HVL stakeholders self-rated their knowledge of SD and SDGs to be '2' (some knowledge); 59.9% and 49.2% consecutively ( $M_o=2$ ) (Fig. 19). Although the SD and SDG categories have the same range (4), HVL stakeholders have a higher self-rated knowledge of SD (positive skew, and  $\bar{X}=2.2$ ) than their knowledge of the SDGs (negative skew and  $\bar{X}=1.6$ ) (Fig. 19)

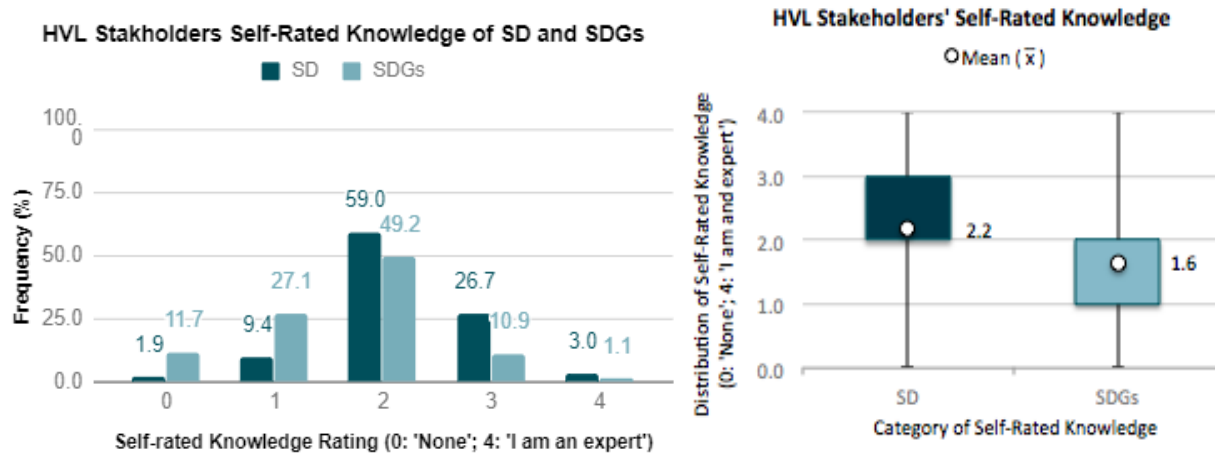


Fig. 19. HVL stakeholders' responses to the questions "How would you rate your level of knowledge of 'sustainable development'?" (dark blue) and "How would you rate your level of knowledge of the Sustainable Development Goals?" (light blue) on a five-point Likert scale, 0: 'none' to 4: 'I am an expert'. (a) The frequency in percent (%) of responses. (b) The distribution of responses.  $N=266$ , range= 4 and 4,  $M=2$  and 2,  $\bar{X}=2.2$  and 1.6, and  $M_o=2$  and 2)

4 and 5. As table 11 and fig. 20 shows, HVL stakeholders have a good understanding of the general concepts of SD and of HVL-Sogndal specific concepts as most HVL stakeholders chose the correct (more sustainable) photo in the choice set for the discrete choice sets that have a determined more sustainable photo ( $\bar{X}=95.9\%$  and  $\bar{X}=93.7\%$  consecutively). However, HVL stakeholders have a greater understanding of general SD concepts ( $M=96.6\%$ ) over HVL-Sogndal specific SD concepts ( $M=95.1\%$ ). The range of the correct photos selection for general concepts of SD is lower and the spread of the responses is lower compared to HVL-Sogndal specific SD concepts (7.1 and 16.5% consecutively). This shows that more respondents were less sure for the latter concept.

For the discrete choice sets where either photo could be more sustainable, respondents showed a skew in their responses. For choice set 3 SD 'Sustainable human settlements', in the general concepts of, many respondents have the attitude that rural settlements are more sustainable than urban settles for the concept as the photo B was selected by 79.7% of respondents. For choice set 8 'Reduced consumption, improved personal economy' and 12 'Electricity -saving, behavioural change, social, reduced inequality, social inclusion' under the HVL-Sogndal specific concepts of SD, most respondents have the attitude that

Covered bicycle storage is more sustainable than uncovered bicycle storage 72.9% chose photo A. Almost all respondents have the attitude that stairs are more sustainable than elevators as 94.0% of respondents selected photo A.

*Table 11. Results of the questionnaire questions: “Which scenario is more sustainable?” (General SD concepts); and “How would you rate your level of knowledge on the SDGs” (HVL Specific SD Concepts). Un-highlighted: percentages (%) of HVL stakeholders’ who chose the correct (photo A or B) for the choice sets that have a determined ‘more’ sustainable photo. Blue highlighted: percentage (%) of HVL stakeholders’ photo selection (photo A or B) for the choice sets that do **not** have a determined ‘more’ sustainable photo; photo is not considered ‘correct’, but has the greatest percentage of selection. The mean ( $\bar{x}$ ) given is the mean of the percentages for the choice sets that have a determined ‘more’ sustainable photo.*

Choice Set Number	Percentage (%) of HVL Stakeholders Correct Photo Selection in Choice Set (Photo selected)
<b>General SD Concepts</b>	
1	99.2 (A)
2	92.1 (A)
3	79.7 (B)
4	93.6 (B)
5	96.6 (B)
6	97.4 (B)
7	96.6 (B)
	$\bar{x}$ = 95.9
<b>HVL-Sogndal specific SD concepts</b>	
1	82.0 (B)
2	88.3 (B)
3	98.5 (A)
4	95.5 (A)
5	95.1 (B)
6	95.1 (B)
7	97.0 (B)
8	72.9 (A)
9	92.9 (A)
10	94.7 (A)
11	97.9 (A)
12	94.0 (A)
	$\bar{x}$ = 93.7

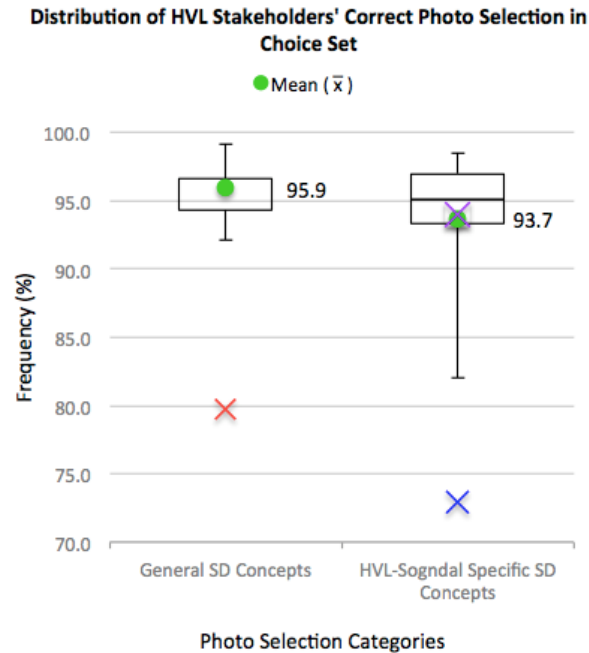
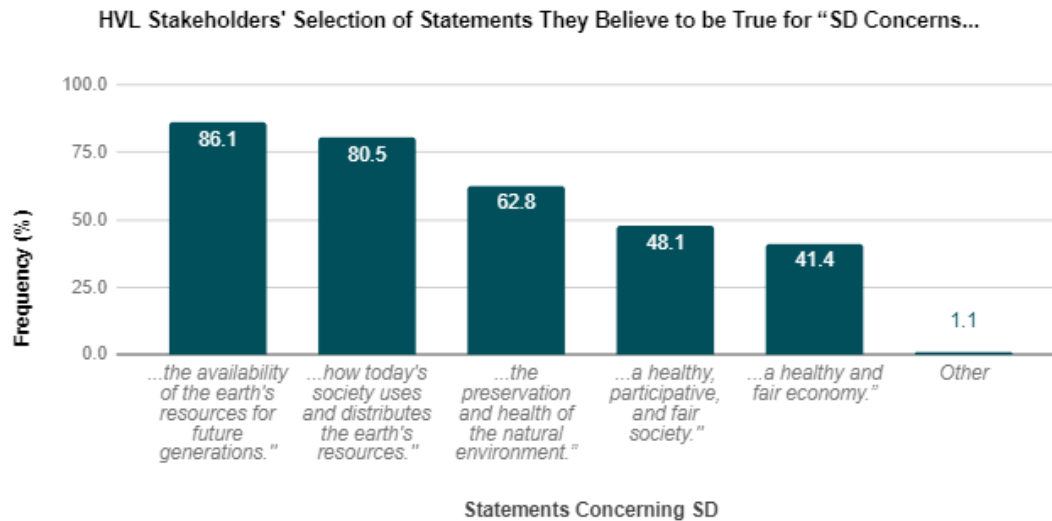


Fig. 20 Results for “Which scenario is more sustainable?” (General SD concepts); and “How would you rate your level of knowledge on the SDGs” (HVL Specific SD Concepts). Percentages (%) of HVL stakeholders’ who chose the correct (photo A or B) for the choice sets that have a determined ‘more’ sustainable photo (black). Frequency in percent (%) of HVL stakeholders’ greatest percentage of photo selection (photo A or B) for the choice sets that do **not** have a determined ‘more’ sustainable photo (red: choice set 3 in general concepts of SD; blue: choice set 8, purple: choice set 12 in HVL-Sogndal specific SD concepts). The mean ( $\bar{x}$ ) given is the mean of the percentages for the choice sets that have a determined ‘more’ sustainable photo.  $N=266$ ,  $M=96.6$  and  $95.1\%$ , and range=  $7.1$  and  $16.5\%$ ).

6. Based on HVL’s rating of statements concerning concepts of SD (fig. 21), respondents have a average understanding of SD. Respondents have greatest knowledge that SD concerns how today’s society uses and distributes the earth’s resources and the availability of the earth’s resources for future generations (80.5 and 86.1%). However, less respondents have an understanding of the environmental, social, and economic aspects of SD. Respondents have a greatest knowledge of the environmental dimension ‘SD concerns the preservation and health of the natural environment’ (62.8%), but less knowledge of the social aspects ‘SD concerns a healthy, participative, and fair society’ (48.1%) and they knew least about the economic aspects ‘SD concern a healthy and fair economy’ (41.4%). 1.1% of respondents selected that SD concerns other concepts. These respondents have the attitude that SD also concerns “Maintain national self-sufficiency”, and “simply thinking 'long term' (i.e. 50 years into the future) whenever something is being planned/developed. No respondent selected ‘None of the above’ meaning that each respondent had knowledge of one of the concepts presented. The percentages add to greater than 100% as this question was multiple choice.



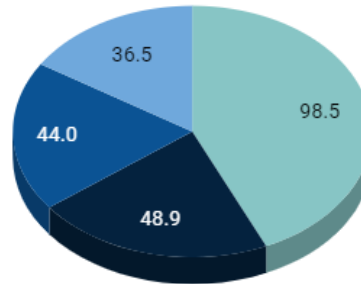


**Figure 21.** Frequency in percent (%) of HVL stakeholders' selection of statements for the question "Select the following statements which you believe to be true. "Sustainable development concerns...". 'Other' includes other SD concepts they believe to be true, and 'None of the above' is not shown as no respondents selected this statement. N= 266.

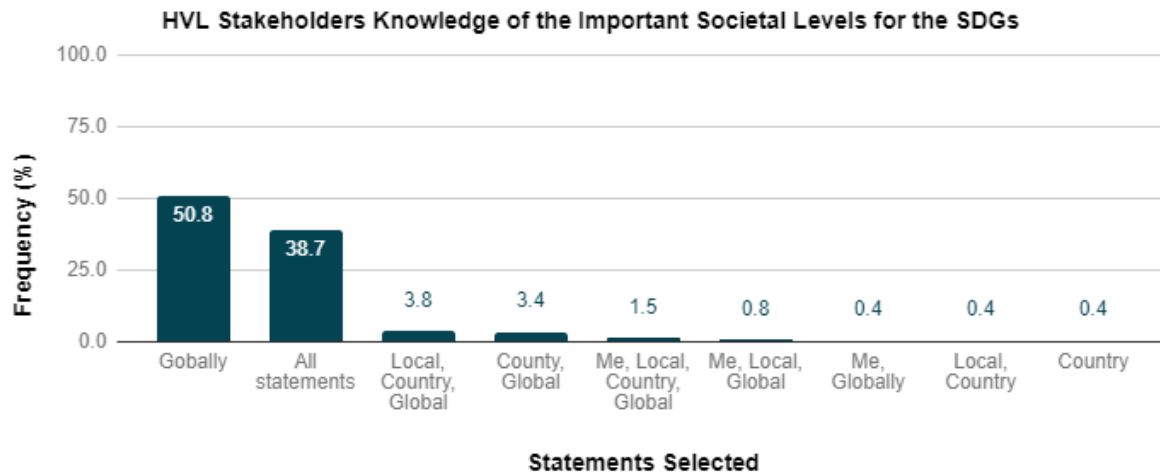
7. Based on fig 22. respondents, almost all respondents have knowledge that the SDGs are important on a global level, 'Globally', (98.5%). However, less respondents have knowledge that the SDGs are important for other than global levels. Approximately half of respondents know that SDGs are important on a national level, 'My country' (48.8%), and fewer have an understanding that SDGs are important on a regional/local level, 'my local community' (44.0%), and individual level 'Me personally'. No respondent selected 'None of the above' meaning that each respondent had knowledge of one of the statements presented. The percentages add to greater than 100% as this question was multiple choice. However, just over a third of respondents have an understanding that the SDGs apply to all levels, i.e. globally, for their country and community, and individually (38.7%). Half of respondents believe the SDGs are only important on a global level (50.8%), whereas very few only selected a combination of the statements other than all statements (0.4 to 3.8%).

**HVL Stakeholders' Selection of Statements they believe to be true for the SDGs**

● Globally ● My country ● My local community  
● Me personally



**Figure 22.** Frequency in percent (%) of HVL stakeholders' selections of the statements for the question "Who do you think the Sustainable Development Goals are important for?". 'Globally' (light green), 'My country' (dark blue), 'My local community' (mid-blue), and 'Me personally' (light blue), and 'I don't know' and 'They are not important for anyone' (not shown as no respondents selected this statement). N= 266.



**Figure 23.** Frequency in percent (%) of HVL stakeholders' selections of the statement combinations for the question "Who do you think the Sustainable Development Goals are important for?". 'All statements': Globally, my country, my community, me individually; 'Country': my country; 'Local': my community; 'Me': me individually. N= 266

### 3.3. HVL Stakeholders' Attitudes Towards Sustainable Development and the Sustainable Development Goals, and Towards Application in HVL (RQ3)

The following section presents HVL stakeholders' attitudes towards SD and the SDGs captured by the questions designed for RQ3 (fig 11).

1 and 2. As fig 24 shows, HVL stakeholders' believe that HVL is not very to mid-way sustainable (negative skew:  $\bar{X} < M$ ,  $\bar{X}= 1.6$  and  $M=2$ ) and most respondents believe that HVL is 'mid-way sustainable' ( $M= 2$ ). 11.4% of HVL stakeholders responded that they did not know how sustainable HVL is today. HVL stakeholders showed strong agreement that it is important that HVL becomes more sustainable (strong positive skew:  $\bar{X} > M$ ,  $\bar{X}= 3.1$ ,  $M=3$ ). Most respondents believe that it is 'very important' that HVL becomes more sustainable ( $M= 4$ ). Less HVL stakeholders (3.4%) responded that they did not know if it's important for HVL to become more sustainable.

3 and 4. Fig. 25 shows that most HVL stakeholders' show agreement that improving the sustainability of HVL can additionally improve the sustainability of communities outside of HVL and that the SDGs can be used to guide HVL to become more sustainable ( $\bar{X}= 3.1$  and  $2.8$ , and  $M= 3$  and  $4$ ). HVL stakeholders show stronger agreement to the first statement (more positive skew:  $\bar{X} > M$ ) than compared to the second statement (more negative skew:  $\bar{X} < M$ ). Less HVL stakeholders responded that they do not know to the first question (1.9%) than compared to the second statement (4.5%).

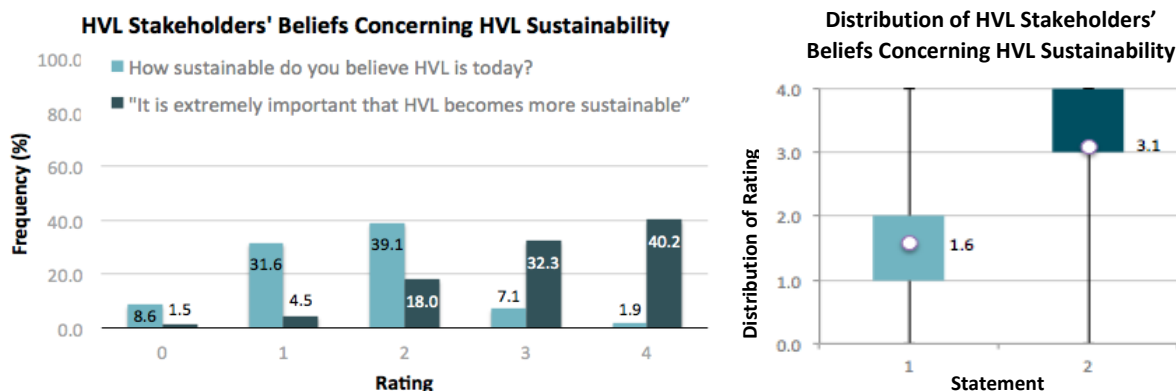


Figure 24. HVL Stakeholders' responses to the questions "How sustainable do you believe HVL is today?": I do not know or five-point Likert scale: 0: 'Not sustainable'; 4: 'Completely sustainable' (light blue) and rate the statement "It is extremely important that HVL becomes more sustainable.": 'I do not know' or five-point Likert scale: 0: 'I strongly agree'; 4: 'I strongly disagree' (dark blue). (a) The frequency of responses in percent (%). (b) The distribution of responses. 11.4% and 3.4% selected 'I don't know'.  $N= 266$ , range= 4 and 4,  $M= 2$  and  $3$ ,  $\bar{X}= 1.6$  and  $3.1$ , and  $M= 2$  and  $4$ .

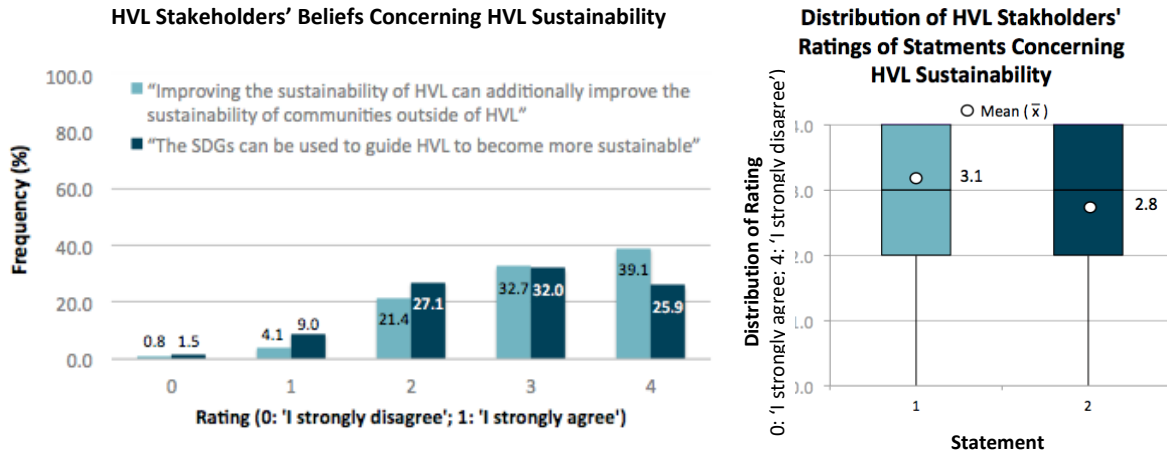


Figure 25. HVL Stakeholders' responses to the questions rate the statements "Improving the sustainability of HVL can additionally improve the sustainability of communities outside of HVL" (light blue) and "The SDGs can be used to guide HVL to become more sustainable" (dark blue): 'I don't know' or a five-point Likert scale: 0: 'I strongly agree'; 4: 'I strongly disagree'. (a) The frequency of responses in percent (%). (b) The distribution of responses. 1.9% and 4.5% selected 'I don't know'.  $N=266$ , range= 4 and 4,  $M=3$  and 3,  $\bar{X}=3.1$  and 2.8, and  $Mo=4$  and 3.

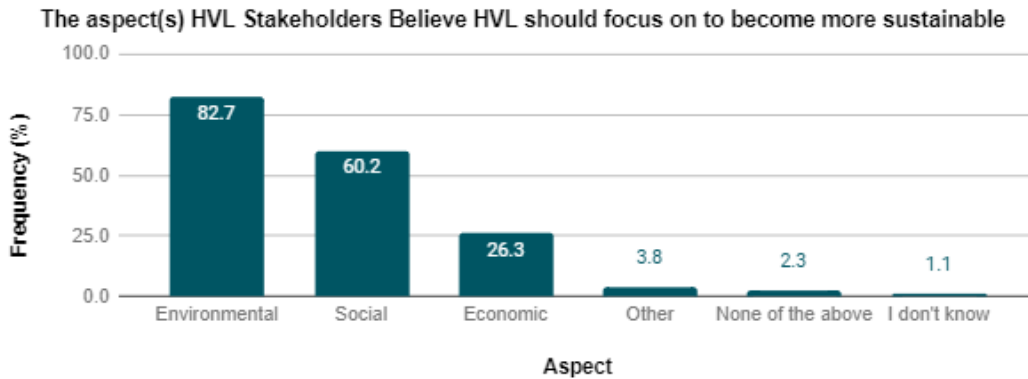


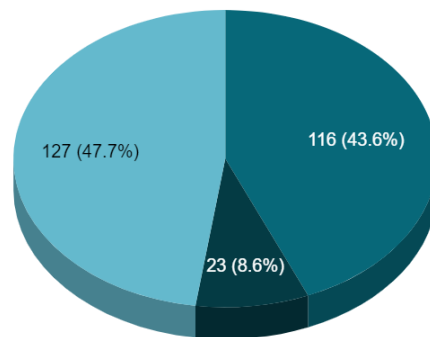
Figure 26. Frequency (%) of HVL Stakeholders' response to the question "Which aspects should HVL focus on?". Environment: e.g. lower environmental footprint; Social development e.g. gender equality, social inclusiveness; Economic e.g. high number of staff; none of the above (none of the aspects); I do not know; other (other aspect(s)).  $N=266$ .

5. Fig. 26 shows that HVL stakeholders believe that HVL should focus most on environmental aspects of SD to become more sustainable (82.7%), followed by the social aspects (60.2%) and the economic aspects (26.3). 3.8% of HVL stakeholders believe that HVL should focus on 'Other aspects'. These include "Relevant studies to get students in sustainable jobs", "More trash bins with sorting", and "Vegan food in the canteen. Few stakeholders believe that HVL should focus on neither the environmental, social, or economic aspects of SD (2.3%) and only 1.1% did not know. The total percentage is greater than 100% because the question was multiple choice selection.

**6 and 7.** Fig. 27 shows that almost half of HVL stakeholders’ believe that all of the SDGs are equally important, ‘All goals are equally important’ (47.7%) but almost half also believe that some of the SDGs are more important than others, ‘Some of the goals are more important than others’ (43.6%). A small number of stakeholders responded that they do know (8.6%). Of the respondents that selected ‘Some of the goals are more important that others’, most believe SDG 7 ‘Affordable and Clean Energy’ to be the most important to goal to focus on and SDG 9 ‘Industry, Innovation and Infrastructure’ to be the least important.

**8 and 9.** HVL stakeholders’ show willingness to act (table 12). Just over two-thirds of HVL stakeholders are willing to support and participate in actions to improve the sustainability of HVL as 68.4% responded ‘yes’ to the first statement. HVL stakeholders show a strong willingness to learn more about SD at HVL as 81.6% responded ‘yes’ to the second statement.

**Frequency and Percentage of HVL Stakeholders Beliefs Concerning Statements the SDGs**  
 ● All of the goals are equally important.  
 ● I don't know ● Some of the goals are more important than others.



*Figure 27. Frequency and percentage (%) of responses to the question “Select the following statements which you believe to be true concerning the SDGs”. Some goals are more important than others (light- blue); all of the goals are equally important (mid-blue), I don’t know (dark-blue), or ‘None of the goals are important’ (not shown as no respondents selected this statement.)*

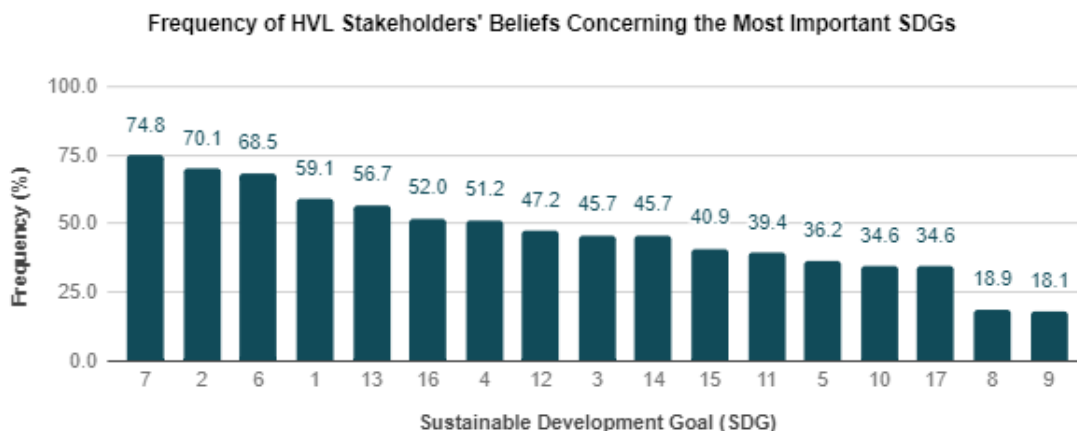


Figure 28. Frequency (%) of HVL Stakeholders' response to the question "Select the Sustainable Development Goals which you believe to be more important to focus on". See Appendix for the associated name of the SDG number. N= 127.

Table 12. Frequency of HVL stakeholders' willingness to act (WTA)

Statement (N= 266)	Frequency 'Yes' (%)	Frequency 'No' (%)
Are you willing to support and participate in actions to improve the sustainability of HVL?	182 (68.4)	84 (31.6)
Would you like the opportunity to learn more about SD at HVL?	217 (81.6)	49 (18.4)

### 3.4. The Level of Engagement and Communication of HVL Sustainable Development-Related Activities from HVL Stakeholders' Perspective (RQ4)

The following section presents HVL stakeholders' level of engagement and communication in and the potential for engagement of HVL SD-related activities captured by the questions designed for RQ4 (fig. 1 and 2).

Firstly, fig. shows that HVL stakeholders believe that communication to them about HVL activities (top-down) is average and their voice is averagely heard to influence decision-making at and the sustainability of HVL (bottom-up) (M= 2 and 2,  $\bar{X}$ = 1.9 and 2.2). The range of the ratings to the statements are the same (range= 4). However, they believe top-down communication is better than bottom-up as they rate the first statement higher (positive skew  $\bar{X} > M$  and  $\bar{X} = 2.2$ ) than the second statement (negative skew and  $\bar{X} = 1.9$ ).

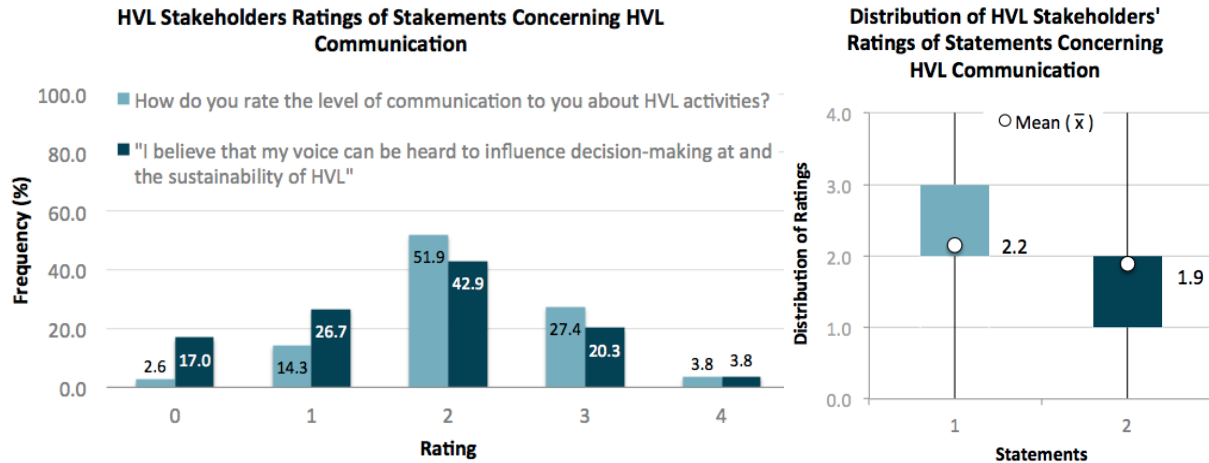


Figure 29. HVL Stakeholders' responses to the questions "How do you rate the level of communication to you about HVL activities?": five-point Likert scale: 0: 'Very poor'; 4: 'Very good' (light-blue) and "I believe that my voice can be heard to influence decision-making at and the sustainability of HVL.": five-point Likert scale: 0: 'I strongly agree'; 4: 'I strongly disagree' (dark-blue). N= 266, range= 4 and 4, M= 2 and 2,  $\bar{X}$ = 2.2 and 1.9, and Mo= 2 and 2.

[3, 4, 5, and 6](#). The overall level of engagement or communication of HVL SD-related activities with HVL stakeholders is low as most responded that they are not aware of HVL-related SD activities ('No'  $\bar{X}$  = 70.8% and 'Yes'  $\bar{X}$  = 29.2%) (table 13). Respondents are most aware of opportunities at HVL to take action towards SD at HVL or in communities outside of the institution ('Yes= 34.6% and 'No'= 65.4%), followed by something HVL is doing to become more sustainable ('Yes= 33.5% and 'No' = 66.5%), something HVL is doing to help communities outside of the institution become more sustainable ('Yes= 25.2% and 'No'= 74.8%), and respondents are least aware of opportunities at HVL to learn about SD ('Yes= 23.7% and 'No'= 76.3%).

Lastly, the overall potential for engagement in HVL SD-related activities with HVL stakeholders is high as just under two-thirds of respondents answered 'yes' to the questions concerning potential for engagement HVL ('Yes'= 60.6% and 'No'= 39.4%). Respondents are most are willing to support and participate in actions to improve the sustainability of HVL ('Yes'= 81.6% and 'No'= 18.4%) and just over two-thirds of respondents would like the opportunity at HVL to learn more about SD ('Yes'= 68.4% and 'No'= 31.6%). However, respondents are less willing to be contacted further about SD activities at HVL ('Yes'= 31.9% and 'No'= 69.1%) table 13.

32.3% of respondents provided their email at the end of the questionnaire, showing that ca. one-third of respondents wish to be contacted further about HVL SD-related activities. However, this result is not used to gauge the potential for engagement, as discussed in section E1.4.

Table 13. The level of engagement/communication of and the potential for engagement in HVL SD-related activities with HVL stakeholders

Statements Regarding the Level of Engagement/Communication of HVL SD-related Activities "Are you aware of..."	Frequency 'Yes' (%)	Frequency 'No' (%)
anything HVL is doing to become more sustainable?"	89 (33.5)	177 (66.5)
anything that HVL is doing to help communities outside of the institution become more sustainable?"	67 (25.2)	199 (74.8)
any opportunities at HVL to learn about SD?"	63 (23.7)	203 (76.3)
any opportunities at HVL to take action towards SD at HVL or in communities outside of the institution?"	92 (34.6)	174 (65.4)
	$\bar{X}$ = 29.2%	$\bar{X}$ = 70.8 %
<b>HVL Stakeholders' Potential For Engagement in HVL SD-related activities</b>		
"Would like the opportunity at HVL to learn more about SD?"	182 (68.4)	84 (31.6)
"Are you willing to support and participate in actions to improve the sustainability of HVL?"	217 (81.6)	49 (18.4)
"Would you like to be contacted about sustainable development activities at HVL?"	85 (31.9)	181 (69.1)
	$\bar{X}$ = 60.6%	$\bar{X}$ = 39.4%

Respondents that selected 'Yes' for the four questions regarding the level of engagement and communication of HVL SD-related activities in table 13. were also optionally asked to state what they are aware of. Almost all HVL stakeholders state what they are aware of.

For the first question, 96.6% state what they are aware of that HVL is doing to become more sustainable. The key words picked out from respondents' statements are represented in fig. 30 Most are aware of environmental actions, such as that HVL: has "Waste-sorting" or "recycling"; recently "replaced plastic containers" for "compostable take-away containers in the canteen" in order to "reduce use of plastic"; has the environmental certificate; "Miljøfyrtårn"; is "Power saving" through "temperature control in buildings", "In many places the lights are sensor regulated" and "swing door to keep the heat inside". A few people mention "less use of paper" and digitalising as HVL is "posting tasks on fronter instead of paper", and HVL is having "more digital communication", "skype meetings" and there has been a "Development of online education". A few respondents also mention that they are aware that HVL had a "Sustainability Conference". Relatively fewer respondents mention that "Fjord warming is used for in Høgskulebygget i Sogndal". Also less mentioned were actions regarding social sustainability a few



respondent state they are aware of a “focus on gender equality”, “cooperation and equality”, and that “Employment targets to promote equality and employees with different backgrounds.” One respondent commented that HVL has a “Principle of free school” and that there are “group room[s] with possibility of cooperation [and a] student board”. Only two respondents specifically mentions actions regarding economic sustainability; at HVL there are “reasonable prices” and a “Free-school-principal”. Lastly, a few commented on general sustainability action that HVL is taking such as they “Think about future needs and changes in society”. The remaining unmentioned are only mentioned by one respondent.



Figure 30. Word cloud for key words in the answers to the question “Are you aware of anything HVL is doing to become more sustainable?”. The size of text represents the frequency that the term was used; the larger the text, the larger the frequency. Most statements were originally in Norwegian, but translated to English using google translate, and they key words picked out.

For the second question, 86.5% state what they are aware of that HVL is doing to help communities outside of the institution become more sustainable. The key words picked out from respondents’ statements are represented in fig 31. Respondents mentioned they are aware that HVL has an “exchange scheme” the most, followed by that HVL has “collaboration with international universities” and “collaboration projects” with African universities e.g. “with Zambia”. Many respondents are aware that

HVL has: a course in “*Global Knowledge*”; “open, online lectures”; “Research in sustainability” and has “Research dissemination in different ways”; “*theme days*”, such as “*international days*”. A few people mention they are aware that HVL “*Participates in conferences*”, such as “*Climate change conference*”, “*Contributor to climate conference*”, and “*Conference in Bergen on the sustainable development of universities*”. Less state that HVL has “*Community projects*” and “*collaboration with working life, the region and with local businesses*”. One person responded “*HVL is strongly involved in and close to society in several ways: project collaboration, student involvement, knowledge dissemination ...*”. However, another respondent gives a contrasting statement, “I guess that there are some projects, but I could not really name a specific one. Certainly, there is much more potential & [a] need to get engaged.” Two respondents also mention HVLs’ collaboration with minority groups: “[*HVL has*] *employees across different groups in society. Immigrants, persons with disabilities, etc.*” and that “*Immigrants learn Norwegian at HVL*”. One person names a few international collaboration projects including “*Active Smarter Kids, Trudvang project, etc*”. The remaining unmentioned are only mentioned by one respondent.



Figure 31. Word cloud for key words in the answers to the question “*Are you aware of anything that HVL is doing to help communities outside of the institution become more sustainable?*”. The size of text represents the frequency that the term was used; the larger the text, the larger the frequency. Most statements were originally in Norwegian, but translated to English using google translate, and they key words picked out.

For the third questions, 93.7% state what opportunities at HVL they are aware of to learn about SD. The key words picked out from respondents' statements are represented in fig. 32 Respondents state the most that they are aware of the "climate change management masters", studies in "the department of environmental and natural sciences", the bachelor in "renewable energy", and "through my studies". Relatively fewer state they are aware of "the sustainability conference"; "other conferences", "open lectures", "seminars", "I had a study in sustainable development in my bachelors", and "various different studies". Only a few name certain other courses or subjects such as "outdoor life", "in Environment and Science" and "The subject Technology Management". A few also state they are aware specifically of Only one respondent named multiple courses; "many studies have this in their curriculum e.g. with Climate Change Management, Renewable Energy, Energy Technology, Electricity, Health and Social Sciences, Sports and Outdoors, Global Knowledge, and surely more that have it in the theme". One also stated a "Course on Ethics and Corporate Social Responsibility with Tom Skauge for example" and that "Technology Management has the UN's goals among other things". Another respondent stated they are aware of "internal arrangements" such as "lunch seminars" and one respondent vaguely stated "the internet". The remaining unmentioned are only mentioned by one respondent.

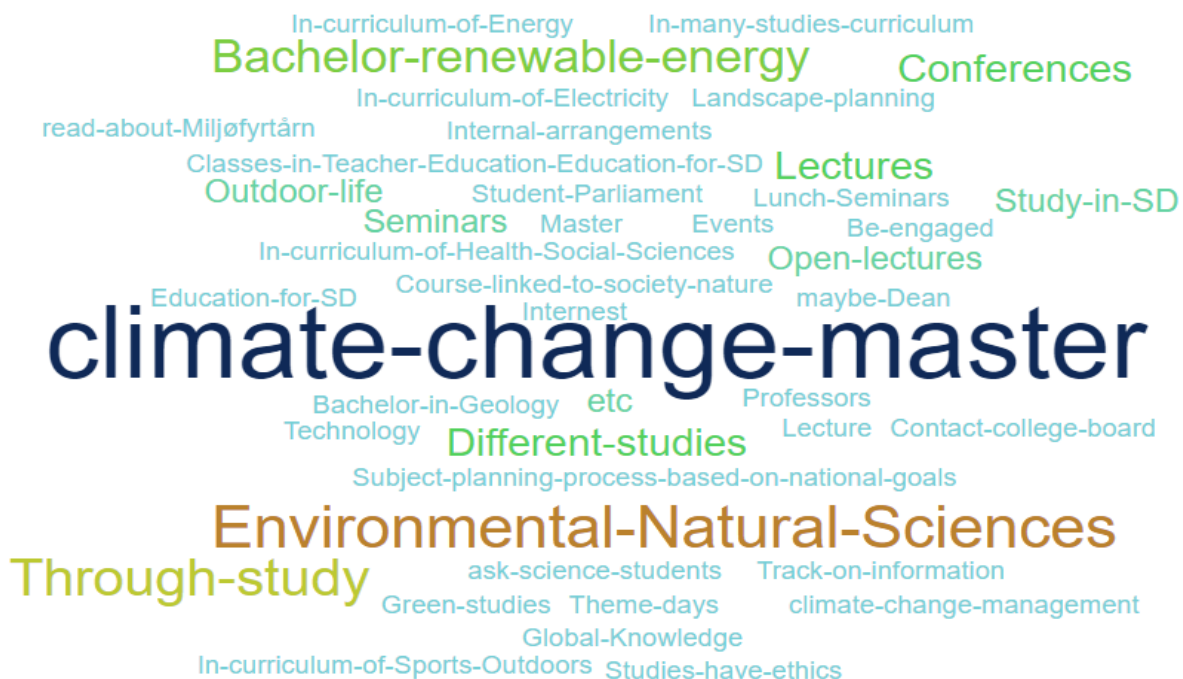


Figure 32. Word cloud for key words in the answers to the question "Are you aware of any opportunities at HVL to take action towards SD at HVL or in communities outside of the institution?". The size of text represents the frequency that the term was used; the larger the text, the larger the frequency. Most statements were originally in Norwegian, but translated to English using google translate, and they key words picked out.

Finally, for the last question, and 80.4% state opportunities at HVL they are aware of to take action towards SD at HVL or in communities outside of the institution. The key words picked out from respondents' statements are represented in fig. 33. Respondents mention they are aware of "FIVH" the most, followed by "Various voluntary organizations", "environmental organizations", or more specifically, name the organisations such as "Protect Our Winters", and "Naturvernforbundet". Relatively fewer mention "Community-garden", "Trivselsentralen", "student parliament", "Natur og ungdom", and "Greenpeace". A few respondents mention specific activities HVL students are doing, such as "Pick up trash in nature and along the beach zone", "clothes repair workshop, clothes swap ...", that it is "[ones] own initiative to do things" and "a personal duty to reflect ones own behaviour and to improve", and vaguely mentions "Local work". Only two respondents mention HVL-specific organisations vaguely such as "various student organisations" or give specific organisations such as, "Activities among students to reduce consumption of plastic bags etc". Two respondents also respondent state named initiatives: "Fairtrade" and "Bike to work". The remaining unmentioned are only mentioned by one respondent. One respondent showed their understanding of what they were aware of; "Trivselsentralen student organisation- promotes volunteer work, social sustainability + in environmental sustainability"



Figure 33. Word cloud for key words in the answers to the question "Are you aware of any opportunities at HVL to take action towards SD at HVL or in communities outside of the institution?". The size of text represents the frequency that the term was used; the larger the text, the larger the frequency. Most statements were originally in Norwegian, but translated to English using google translate, and they key words picked out.

### 3.5. HVL Stakeholders' Recommendations to Improve the Sustainability of HVL (RQ5)

The following section presents HVL stakeholders' recommendations to improve the sustainability of HVL captured by the questions designed for RQ5 (fig 11 ).

1. The aspect(s) that HVL stakeholders recommend HVL to focus on to become more sustainable is shown in fig. 26 Section E3.3. and also in the Section C3.3 text where the figure is discussed. In summary, HVL stakeholders recommend that HVL focuses most on environmental sustainability followed by social and economic sustainability. Very few recommend that HVL should focus on 'other' aspects or none of the presented aspects. Very few did not know what they recommend.

2. Similarly, whether HVL Sogndal stakeholders recommend that the SDGs can be used to guide HVL to become more sustainable is also presented in fig.25 Section C3.3. and also in the Section C3.3 text where the figure is discussed. To summarise, HVL stakeholders 'agree' that the SDGs can be used to guide HVL to become more sustainable (strong positive skew:  $\bar{X} > M$ ,  $\bar{X}= 3.1$ , and  $M=3$ )

3. 53.0% of respondents provide their personal recommendations to improve the sustainability of HVL, but 8.5% of these stated "I don't know" or "I don't know enough to answer", and two said "nothing". The key words picked out from respondents' recommendations are represented in fig. 33. Respondents recommend that HVL should have "better waste sorting" or "better recycling" the most. One respondents notices that waste-separation is only in Høgskulebygget, in the main building, "Better opportunities for waste-sorting throughout the whole school, both paper, plastic and food waste should be sorted in all school buildings, not just Høgskulebygget".

Secondly, respondents recommend that HVL should save energy. Several respondents provide specific recommendations, such as "less electricity consumption (light indoors, doors, insulation)", "more motion sensors to the lights" and "Install motion sensors in meeting rooms and classrooms to limit the use of power". One respondent infers heating use could be reduced, "thermostats for heaters in group rooms are often hotter than necessary". One respondent also provides a solution to encourage HVL stakeholders to reduce their energy use and feels very strongly towards reducing energy use: "Introduce monetary fines to departments that leave many of their lights on all night (for example the engineering and science department!!!!!!)".

Thirdly to this, several respondents said they want more information on or to be more educated in sustainability or SD. For example, two respondents stated they wanted more information specifically on the sustainability of HVL: "Information about how sustainability is done at HVL", and "Better information on HVL's facebook page". One stated they specifically wanted HVL to "Include information about

*sustainability into teaching*”, “Organize open lectures regarding sustainability” and that they want “several courses on awareness raising about energy consumption”. Similar to this but the respondent also provides their opinion on the importance of education stated they want to “Attend a seminar” and that HVL should “spread the word to provide further learning. Education and information is the key!”. One student provided an innovative idea for SD education “Put up a “fact of the week” on the screens or whatever where people can learn new stuff, such as how polluting it is to travel by plane, or how much emissions there are for buying off season fruit etc, with a long term goal of building up an understanding of co2 emissions”. Furthermore, one respondent recommends that “Key Performance Indicators should be made available”.

Many respondents mention that HVL should reduce the use of plastic and also that they want more sustainable food. Most respondents state in general HVL should “use less plastic”. Some respondents are specific where HVL should reduce plastic, such as “Use less plastic on food from the cafeteria” and “remove the small plastic bags used in the office of the Høgskulebygget in Sogndal”. A few state specifically that HVL should stop using plastic completely, such as “remove plastic cutlery completely” and “Remove single use plastic from the canteen and elsewhere”. Of those that stated they wanted more sustainable food, many respondents stated that they specifically wanted “Several vegan dishes”, “Better offers of vegan food”, “more vegetarian food”, and “better vegetarian offers” in HVL cafeteria. A few respondents stated that they wanted a “larger offer of green food”, more “short-travelled”, “organic”, and “local”.

Less recommended, but still recommended by many, state that HVL should encourage conscious attitudes amongst HVL stakeholders Respondents state that HVL should encourage a conscious attitude on actions they can take, such as “encourage them [HVL stakeholders] to use the staircase”, “Encourage students at the school to pick up trash they find”, and “encourage us to think more energy-efficient”.





Figure 33. Word cloud for key words in the answers to the question “Have you your voice heard! What would you recommend HVL do to improve the sustainable of HVL?”. The size of text represents the frequency that the term was used; the larger the text, the larger the frequency. Most statements were originally in Norwegian, but translated to English using google translate, and they key words picked out.

Less recommended, but still recommended by many, said they want HVL to reduce the amount of waste, inferring to not just recycle better, such as “Reduce trash production of students”. They recommend that HVL should reduce the travel of HVL stakeholders, such as “Radically work to reduce travel work”, and work for better inclusion, such as “Work for better inclusion in class environments”, “Improve dialogue and reflection with students” and “include all organisational levels”. Furthermore, respondents also recommend that HVL: makes a “Permaculture Garden” and the garden should be made “in the HVL Park :)”; should “Get better bike storage”, such as “Fix the bicycle pump outside campus Førde [...] Eventually, hang out tools at the bike station, so that you can fix your bike” and “bike storage under cover: avoids snow and rain”; and “reduce food waste” by “give out left over food at the end of the day”. A couple of respondents also said that they recommend that HVL has bikes that HVL stakeholders can use, such as “Have campus bikes employees and students could borrow by paying a deposit”.

A small number of respondents (less than 5) said they recommend that HVL improves their use of “Digital-aids” to help reduce paper use, to reduce travel and improve teaching, e.g. “Replace physical

*meetings that require travel with good online meeting” and “reduce travel work. This requires innovative use of digital aids”, and “All teaching [should be] posted out digitally”.*

The remainder of the recommendations were only mentioned by one or two respondents. These recommendations included recommendations regarding: social aspects, e.g. *“Work more for equal numbers of each gender in the different studies” and “more non-alcoholic events”*; HVLs’ purchasing power, e.g. *“Make sustainability a requirement for large purchases”*, more courses teaching SD-key skills, e.g. *“Greater degree of decentralized studies”*, how to source knowledge from HVL stakeholders on how to improve the sustainability of HVL, e.g. *“I would arrange an interdisciplinary workshop at HVL, invite a lot of students, so as to combine innovation techniques such as design thinking to identify problems and at the same time come up with interdisciplinary solutions to them. There are incredibly good skills in the students, which I think are not being used properly.”*; how to monitor HVL sustainability, e.g. *“Start measuring the university’s resource flows and SDG indicators.”*. Furthermore, one or two respondents mentioned they recommend carbon-taxing, that the recent merge should be suspended, that they want Norwegian language practice and job training, *“That the library has enough copies of the curriculum, so students do not have to buy”*, and amongst others, to become more sustainable.

Lastly only two respondents mentioned the SDGs and one mentions economic recommendations. They are both the most elaborative recommendations. The first is the only negative-orientated towards the SDGs as they state the SDGs are not useful for HVL:

*“It’s good HVL is thinking about sustainability. But one thing I will never accept is to change the menus in the cafeteria, because it has the highest limitation effect and the quality of life [...] Raspeballs [i.e. meatballs] on Thursday are sacred to one, and the sheep meat is produced on sustainable mountain pastures. Our lifestyle here is much more sustainable than those who live in larger cities that have no knowledge of either nature or food production. But, in the end, the United Nations goals are hard to work with. They contain a lot of good stuff but also rubbish. One goes further with common sense, skilled local professionals and the National Maritime Administration.”*

The latter respondent states:

*“Create and finance a sustainable development office with a coordinator and financial resources (e.g. able to higher students to develop tools and SD projects). Start measuring the university’s resource flows and SDG indicators. Establish a fund that allows to finance SD education (e.g. citizen science, teaching material, a lecture series on SD traveling HVL campuses), SD research (e.g. being able to*



*higher students as research assistants, inter-campus and international network building). Introduce transparent and accessible-to-all reporting on SD progress. Annual HVL-wide SD week with different events targeting HVL staff & students but also wider society (incl. SD conference).”*

## F. Discussion

### 1. Response rate

Although a response rate could not be calculated due to the nature of the recruitment process, the outreach of the questionnaire can be hypothesised. Given that the recruitment process for the questionnaire mainly targeted HVL-Sogndal and there are ca. 3600 HEI stakeholders at HVL-Sogndal and the response number from HVL-Sogndal is 202 (75.8 %), the questionnaire outreach was ca. 5.6% of HVL-Sogndal stakeholders.

### 2. HVL Stakeholders' Background Information

In table 7, the difference between the frequency of where respondents are from, namely 'Other region in Norway' (59.5%) and 'Sogn og Fjordane' (23.7%), is likely explained because 'Other region in Norway' includes all other regions other than Sogn og Fjordane. Sogn og Fjordane holds ca. 2.1% of the Norwegian population. The relatively high frequency of respondents from 'Sogn og Fjordane' on a country is assumed to be attributed to the fact that most respondents were from HVL-Sogndal campus. This assumption is made because it is likely that those living in Sogn og Fjordane would wish to study or work at their local HEI, and HVL-Sogndal is one of the two Høgskuler in the area, the other being HVL-Førde. It is assumed that there are relatively few respondents are from 'Abroad' because most courses offered at HVL are given in Norwegian, and are not classed as 'international' courses, and the working language of HVL is Norwegian. The distribution of the frequency of the age groups, with the largest frequency aged 18-25, may be explained because the greatest number of respondents are students, and most students that responded are aged 18-25 (80.4% of students), followed by aged 26-33 (16.4% of students), 34-41 (2.5% of students), 42-49 (1.0% of students) and no students are older than 50. Few staff members are aged 18-25 or 65+ (1.5% and 3.0% of staff respectively). The frequency of staff aged 26-33, 34-41, 42-49, 50-57, and 58-65 showed a similar distribution (17.4%, 22.2%, 14.2%, 23.8%, 17.4% of staff respectively), and therefore explain the distribution of the age groups other than 18-25

In table 7 and fig 12, it is likely that there is a greater frequency of respondents from HVL-Sogndal (75.8 %) because the recruitment for the questionnaire was targeted at HVL-Sogndal stakeholders and the questionnaire was not advertised to such an extent at the other HVL campuses. The only means of recruitment for the other campuses included: questionnaire promotion at the internal HVL internal conference in my talk and on the conference website (HVL, 2018b); communication with the student representatives from the other campuses; and emailing the head of all programmes, departments and faculty. The difference in frequency of respondents between the larger frequency of HVL-Bergen

respondents compared to HVL -Haugesund, -Stord, and -Førde could be because HVL-Bergen is the largest campus (ca. 10 400 stakeholders) and perhaps because there was a greater number of HVL-Bergen stakeholders present at the HVL internal conference (HVL, 2018b). It is likely that the overall greatest frequency of respondents is 'Student' because there are greater number of students than staff at HVL (88.4% of HVL stakeholders are students). At HVL-Sogndal, the frequency of the roles can likely be explained by the fact that the greatest number of stakeholder role is 'Student', followed by 'Researcher/Lecturer', 'Management/Admin/Library', and 'SAMAN'. The small number of respondents from SAMAN may also be due to the fact that SAMAN stakeholders at HVL-Sogndal were not given the opportunity to take the questionnaire during their workday, whereas the other stakeholder groups were able to. For HVL-Bergen a similar reasoning can be made. However, there are more 'Management/Admin/Library' compared to 'Researcher/Lecturer' respondents possibly because there was greater attendance of the former at the internal HVL Conference (HVL, 2018b) compared to the latter. The pattern of respondents' role from HVL-Haugesund, -Stord and -Førde may be reflected by the number of these HVL stakeholders that attended the HVL internal conference (HVL, 2018b). Overall, it is likely that there are no 'SAMAN' respondents from the campuses other than HVL-Sogndal because it is unlikely that the recruitment process reached this stakeholder group at these campuses. Another possibility is that stakeholders were more interested in the topic of improving the sustainability of HVL and therefore had more motivation to take the questionnaire compared to stakeholders at other HVL campuses. However, this is unlikely given that HVL-Sogndal was the main target group for the questionnaire,

The frequency of 'Student' to 'Researcher/Lecturer' respondents in the different departments (fig. 13) follows the same reasoning as described above, and is likely because there are more students than researchers or lectures at HVL (88.4% of HVL stakeholders are students). The frequency of the respondents from the different faculties may be explained by the fact that more stakeholders in the FLKI may have been reached by the recruitment process, followed by FIN, FØS and FHS. However, it may also be that those in the FLKI may be most interested in improving the sustainability of HVL and therefore had greater motivation to take the questionnaire, followed by FIN, FØS and FHS may have the least interest and therefore have least motivation. FIN has greatest number of environmental sustainability-related courses and Tuncer, (2008) found there was not a statistically significant difference of attitudes towards between students who enrolled were in an environmental-related course and those who did not. Therefore it assumed that the response rates between the departments was not due to lack of interest, but because of the recruitment process.

The frequency of the different position types for the stakeholders shown in table 8 may mostly be explained due to the total number of the positions in the HVL stakeholder groups. There are more 'Researcher/Lecturer' positions<sup>34</sup> at HVL compared to Head of Faculty, Department and Programme. There are greatest number of Head of Programme positions (96 positions), followed by Head of Department (ca. 18 positions) and Head of Faculty (four positions). The frequencies and the associated response rate of all but Head of Faculty and Head of Department can be explained by the relative number of positions available. Given that there are more positions for Head of Department, than Head of Faculty, the frequency and the associated response rate may be explained by the fact that those in the position of Head of Faculty were less interested in the topic of improving the sustainability of HVL than compared to those in the position of Head of Department. These conclusions can be made because all Head of Programme, Department, and Faculty staff were contacted.

The frequency pattern of the frequency of 'Student' stakeholders in each faculty (fig.14) follows the same explanation for that described for fig. 13 However, the different frequencies of the year groups is likely due to the recruitment process because there are no obvious similarities between the different faculties. Although, it cannot be ruled out that the frequency pattern of the year groups is due to the interest-level of the different year groups.

The number of students that have been a student representatives is quite high (27.7%) (table 10) given that ca. 8% of students are student representatives (two for each programme). This could infer that student representatives have a high interest in improving the sustainability of HVL. The number of students that have had previous education for HVL is also high (40.9%) (table 10). This infers a high proportion of students tend to choose HVL other HEIs to continue their education.

The number of HVL stakeholders that have received education in SD is fairly low (25.3%). The different places the different HVL stakeholders had received education in SD was not explored, but were grouped together (fig). More students have attended a course on SD compared to other stakeholders possibly because they have received education in their study programmes at HVL; 31.9% received education in their programmes at HVL (fig). It can be concluded that other HVL stakeholders (staff) did not receive education in SD through from HVL through their work because no respondents selected that they had received their education in SD from a course offered for staff (fig.), and no respondents stated this when asked what opportunities they were aware of to learn about SD at HVL (fig). Overall, these results are not

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<sup>34</sup> Unknown number of positions, but assumed to be >96 as it is assumed there is at least one staff member per study programme offered at HVL.

satisfactory as according to SDG 4, target 4.7 and indicator 4.7.1, all should receive education for sustainable development ((UN, 2015b)). Therefore, a satisfactory response would be that all respondents have received previous education in general and all would have received education specifically from HVL. Furthermore, all academic staff should be highly trained in SD, and all HEI stakeholders should have good understanding and awareness (point 1 and 3, table 2) in order for HVL to fully engage in SD.

The number of HVL stakeholders that have educated themselves on the topic of SD is considerably high (<96.6%) (table 10). This shows that HVL stakeholders have a strong interest in SD as they have taken their own initiative to educate themselves e.g. through friends, the internet, films, books, activism groups etc., but it does not reflect their knowledge of SD. However, this may be because it is inferred that those that answered the questionnaire did so at their own will, and this in itself reflects interest of the respondents in the topic of SD and the SDGs.

Respondents appear to have an understanding of the term 'interdisciplinary' as only 6.6% stated that they did not know the interdisciplinarity of their course (fig.18). The interdisciplinarity of HVL courses appears to be average as 34.6% of respondents consider their course to be average. However, respondents believe the courses to be more interdisciplinary than not as more respondents rate that their course is interdisciplinary or 'very interdisciplinary' (30.8%) compared to not very interdisciplinary to 'not interdisciplinary' (18.1%). This result is not satisfactory as all courses should be interdisciplinary in order to open up new paradigms (table 10), i.e. a satisfactory result would be that all respondents select interdisciplinary or 'very interdisciplinary' for HVL to fully engage in SD. However, it is important to point out this result does not reflect that all courses are not that most respondents are from HVL-Sogndal, this result mostly reflects HVL-Sogndal programmes. Furthermore, as the result encompasses student and academic staff views and all faculties combined, it cannot be concluded concretely that each programme offered are considered interdisciplinary by both students and staff. To give insight for this, it would be necessary to compare the ratings to the variables 'stakeholder role', i.e. student or academic staff, and faculty, i.e. FLKI, FIN, FØS, FHS.

It is also critical that all courses should also be 'transdisciplinary' for HVL to fully engage in SD (point 9, table 2). However, whether HVL courses are transdisciplinary or not was not researched as it was assumed that most respondents may not know the difference between inter- and transdisciplinary.

### 3. HVL Stakeholders' Knowledge of Sustainable Development and the Sustainable Development Goals (RQ2)

In this section, the limitations of the questionnaire design are discussed, followed by and a discussion of the results for the findings for RQ2, HVL stakeholders' knowledge of SD and the SDGs. The limitations of the questionnaire are discussed in the order they appear in fig. 10 The number given in bold and underlined is the question number presented in fig. 10 under 'RQ2: KNOWLEDGE'.

#### LIMITATIONS

1. The first question (fig 10), regarding awareness of the SDGs, was limited to determining HVL stakeholders awareness and not their understanding because the question did not allow the participant to elaborate on their understanding of the SDGs, which would give insight to their understanding. The choice of this question is considered to reflect HVL stakeholders' awareness well. However, respondents may be inclined to select 'yes' even if they have not heard or seen of the SDGs to appear as if they are aware. This limitation cannot be removed by comparing those that responded 'yes' to other question answers as respondents may have awareness of the SDGs, but may not have any level of understanding of them.

2 and 3. The second and third questions determine the self-rated level of understanding rather than understanding because the response only reflects their own reflection on their level of knowledge; their actual understanding is not being tested. For example, a participant may select that they are an expert because they wish to appear they have good understanding, but they may not be an expert. This limitation could be addressed by comparing each respondents' answers for question 2 to their answers for questions 4, 5 and 6, as these questions determine HVL stakeholders' understanding. For example, if a respondent selects 'I am an expert' for question 2, but chooses the incorrect photos in questions 4 and 5, and does not select all statements for question 6, they are not an expert. Similarly, answers for question 3 can be compared to the answers to question 7. If a respondent selects 'I am an expert' for question 3, but does not select all of the statements to question 7, the respondent is not an expert. This is true for the contrary answers to the question answers above. In this way, one can assess HVL Sogndal self-rated understanding compared to their actual understating.

4 and 5. Question four and five gauges HVL stakeholders understanding of SD because it is assumed the respondent must have good understanding to select the correct 'more' sustainable photo for the discrete choice sets that have a determined 'more' sustainable photo (appendix B.). However, there is a possibility that participants could choose the more sustainable selection by chance of random selection

(50%) if they do not know. Additionally, respondents may not select the correct photo as they may not understand the photos correctly. The choice sets are assumed to represent SD concepts clearly as they were tested in the pilot study. To improve the clarity of the representation of the SD concepts, the questionnaire could have been given to more HVL stakeholders in the pilot study. To address these limitations, respondents' answers could be compared to question 6. If respondents select the correct photos, but do not select all of the correct statements in question 6, they may not have as good understanding as represented by their answers for the choice sets. This difference could be due to respondents choosing the correct photo were by chance. However, comparing their answers between these two questions does not fully address the limitation because respondents may have an understanding of what is 'more' or 'less' sustainable through image representation, but not through written statements, as they may not know or understand the academic terms used in the statements for question 6's answer options.

The selection of the 'more' sustainable photo in the discrete choice sets that do not have a determined 'more' sustainable photo appendix B. may not reflect respondents' attitudes towards SD as they may simply have chosen a certain photo they have more SD knowledge of, or that they have no knowledge to determine how the other photo could be considered the more sustainable photo.

Furthermore, the environmental, social and economic dimensions were represented fifteen, fifteen, and seven times respectively. Ideally, the economic dimension would be represented the same number of times as the economic and social dimensions to ensure equal education in all dimensions. To improve the educational aspect of these questions, more photos representing the economic dimension should have been used. However, I found it difficult to find photographs that represented the economic dimension clearly enough for the respondents to understand. In the pilot studies, more discrete choice sets included the economic dimension, but participants reported to not understand certain economic discrete choice sets, and they were therefore excluded in the final questionnaire.

[6 and 7](#). Questions six and seven capture HVL stakeholders' understanding of SD and SDG because it is assumed respondents must have knowledge of the SD and SDGs statements to choose the correct statements. However, given that all of the multiple choice selections are true, these questions may not reflect respondents' knowledge of SD and the SDGs purely as they may be swayed to select all of the statements if they guess that they are all true. It is also possible that respondents may select a certain statement by chance if they do not know. These limitations could be addressed as described above under questions 4 and 5 by comparing each respondents' answers.

Additionally, given that only correct statements were given regarding SD and the SDGs, participants may not have been able to come up with such answers alone. Furthermore, respondents' knowledge of SD of the UN definition and concepts of SD was mainly tested. Therefore, if respondents follow a different SD definition and associated concepts, they may not select any of the statements and consequently appear not to have any understanding. However, this limitation can be addressed as if respondents do not select any of the statements and do not write in 'other' option, it is assumed they do not have assessed of SD or the SDGs. If they do provide a written answer, their understanding can be assessed.

Overall, an open-ended question could be arguably more suited to test participant's true understanding instead of the above questions. For example (Summers, M., Corney, G., Childs, 2004) Appendix, que 2 asks 'In the box below, try to explain what is meant by 'sustainable development'. This type of question does not influence or control the participants' answers as multiple choice selection questions do, i.e. they can only write down what they know instead of being presented with possible related concepts. Overall, no question was designed to test the respondents' knowledge of the interlinkages between the environmental, social and economic dimensions of SD. Originally, questions were included in the pilot study, but they were excluded after the pilot study was run to limit the length of the survey.

## RESULTS:

Overall, HVL stakeholders' knowledge of SD is fairly good, reflected by their high awareness of the SDGs (83.0%), average self-rated understanding (Likert rating  $M=2$ ,  $\bar{X}=2.2$ ,  $Mo=2$ , 59.0% selected average level of understanding and 29.7% selected good level of understand or 'I am an expert') (fig 19), high correct photo selection in the discrete choice sets that had determined 'more' sustainable photo for the general concepts of SD ( $\bar{X}=95.9\%$ ) (fig. 20) their high selection of the first two statements regarding the 'generational' concepts of SD (86.1% and 80.5%) (fig. 20), but lower selection of the three dimensions of SD (62.8%, 48.1%, and 41,4%) (fig. 21). The high selection of the correct photos that had determined 'more' sustainable photo shows that HVL stakeholders have a high understanding of the SD dimensions when presented with pictures, and therefore they have an innate understanding of what is 'more' or 'less' sustainable. No studies were found that test HEI stakeholders understanding of SD with a discrete choice experiment. Therefore, no comparison can be made to other research and the results presented here is new data for and method to test HEI stakeholders' knowledge of SD. HVL stakeholders' knowledge in regards to HVL-related concepts of SD is high, given that almost all respondents chose the correct photo in the discrete choice sets that had determined 'more' sustainable photo for HVL-related concepts of SD ( $\bar{X}=95.9\%$ ) (fig 20). However, their knowledge was not tested further with written



statements. This would give further insight of the number of respondents that had understanding that the three dimensions are weighted equally.

However, HVL stakeholders' understanding appears to be high reflected by the choice experiment, but they appear to have less understanding of the three dimensions when presented with statements. This difference could be due to the design limitations of these questions as described (question 3 and 4), or because stakeholders do not have as high a level of understanding of the academic statements of SD, compared to visual images representations SD. HVL stakeholders rated their understanding of SD low compared to their actual understanding captured in the discrete choice set questions, whereas their rating is consistent with their tested knowledge in statement selection. Interestingly, 1.9% of stakeholders rated that they have no knowledge of SD (fig 19). However, no respondents selected 'I don't know' for their answers in the multiple choice selection of true concepts of SD (fig 21). This could infer that they rated their knowledge worse than their actual understanding, or because they chose statements at random because they did not want to admit they did not know. It may also infer that the respondents had been educated through the discrete choice experiment questions, as these questions came beforehand. It was not researched how many HVL stakeholders selected all three SD aspects, just two SD aspects or just one of the SD aspects.

HVL stakeholders' understanding reflected in multiple choice selection results are similar to previous researchers. For example, Cotton et al., (2007); Kilinc & Aydin, (2013); Summers, M., Corney, G., Childs, (2004) found that stakeholders have greatest knowledge of the environmental dimension. However, their results for HEI stakeholders' understanding of economic and social concepts differ. The results of this study compare to Kilinc & Aydin (2013) as they found that stakeholders had greater knowledge of the social concepts compared to the economic concepts. Although, the difference between HVL stakeholders understanding of the economic and social concepts are very similar, (0.3% difference), it cannot be concluded that this difference is statistically significant as not statistical test was done. The result may be similar to Christie et al., (2015) as they found that the difference between the social and economic understanding of SD was not statistically significant. The differences in the HVL stakeholders' understanding of the SD concepts may be due to the variables that are known to affect HEI stakeholders' knowledge, the variables that this study believes could affect HEI stakeholders' knowledge outlined in section E3.1, or other unknown variables.

Overall, HVL stakeholders knowledge of the SDGs is low to average, given their high awareness of the SDGs (83.0%), poor to average self-rated understanding (Likert rating  $M=2$ ,  $\bar{X}=1.6$ ,  $M_o=2$ ) (fig 19),

relatively low selection that the SDGs are important at all societal levels (38.7%)(fig 22). HVL stakeholders' awareness is greater than that observed by Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye (2017, table 2), as HEI stakeholders in this study had on average 58.7% awareness. Academic staff had greater awareness compared to non-academic staff and students (87.3% compared to 61.5% and 27.2%), but the average awareness in this study is still higher than the academics. However, similar to (Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, 2017)view, this level of awareness is not sufficient given that the SDGs aim is *"to leave no one behind"* (UN, 2016, p. 2); a satisfying awareness level would be 100.0%.

HVL stakeholders self-rated understanding of the SDGs is greater compared to HEI stakeholders awareness found by Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye (2017, table 2), . In this study, only 6.1% believe they have 'good' understanding of the SDGs, whereas this study found that 12.0% of HVL stakeholders believe they have either a good or higher than good (expert) level of knowledge (fig). No studies were found that assess HEI stakeholders' level of understanding of concepts associated with the SDGs, in particular, understanding of which societal levels the SDGs are important for. Therefore, the results of HVL stakeholders' understanding cannot be compared and considered new data for the HEI stakeholders' understanding of the SDGs.

It is difficult to compare whether HVL stakeholders' self-rating of their understanding of the SDGs actually reflects their understanding as their self-rated understanding can only be compared to one other question that determined their actual understanding. Given that 12.0% self-rated their understanding to be either 'good' or 'I am an expert', (fig. 19), but more selected all of the correct statements regarding the societal level the SDGs are importance for (38.7%), HEI stakeholders' may have under-rated their understanding of the SDGs in this regard. They have at least 'good' understanding of the SDGs it is assumed if the respondents select all of the statements (fig. 22)

HVL stakeholders may have been educated in the SDGs through the questionnaire as 7.0% said they were not aware of the SDGs at the beginning of the survey, and later, no respondents selected 'I don't know' when asked to select statements regarding which societal level the SDGs are important for. If stakeholders had not learned anything, 7.0% would have selected 'I don't know' as if they had no awareness they would not have been able to answer this question. However, the fact that no respondents selected 'I don't know' due to the limitations discussed above under question 7. Respondents may not have wished to appear as if they do not know anything about the SDGs, and therefore may have selected statements by chance, or guessed that all statements were true. The result

that almost all respondents selected that they know that the SDGs apply globally may be because the term 'global' is used in the name of the goals.

The results of HVL stakeholders' knowledge is not considered satisfactory for HVL to fully engage in SD as all respondents must have good understanding and awareness of the UN SD definition, concepts of SD, and the UN SDGs. Respondents awareness of the SDGs are considered almost satisfactory as almost all of respondents were aware of the SDGs. A satisfactory response would be that all respondents are aware of the SDGs. Similarly, the results of HEIs understanding captured by the discrete choice experiment is considered almost satisfactory as almost all respondents selected the correct more sustainable photo. A satisfactory response would be that all respondents select the correct photo. Furthermore, a satisfactory level of knowledge would be that all HEI stakeholders have a 'good' to 'I am an expert' level of knowledge of the UN SD definition and the UN SDGs, and all respondents select all of the true statements regarding concept of SD and the SDGs.

#### 4. HVL Stakeholders' Attitudes Towards Sustainable Development and the Sustainable Development Goals, and Towards Application in HVL (RQ3)

In this section, the limitations of the questionnaire design are discussed, followed by and a discussion of the results for the findings for RQ3, HVL stakeholders' attitudes towards SD and the SDGs. The limitations of the questionnaire are discussed in the order they appear in fig 10. The number given in bold and underlined is the question number presented in fig. 10 under 'RQ3: ATTITUDES (values and opinions)' and 'RQ3: ATTITUDES (WTA)'.

#### LIMITATIONS

1, 2, 3, and 4. The first four questions capture HVL stakeholders' attitudes towards SD at HVL because the questions directly ask respondents to give their opinion towards the sustainability of HVL directly, and concepts directly related to the HVLs' role in SD (fig 10). As discussed in chapter, opinions are verbalizations of attitudes and values. Their values are also captured as attitudes are based on values (chapter). A five-point Likert scale was chosen because it allows respondents to have a choice to choose the 'middle ground' option, rating 2, or to choose a 'side', rating 0-1 (disagreement) or 3-4 (agreement). Furthermore, if respondents select values on one of the 'sides' when an option to take the 'middle ground' is provided, one can be more certain that the respondent does in fact agree or disagree. Although, respondents may be inclined to take the 'middle-ground' if they do not know. A greater Likert scale would provide quantitative data on the greater strengths of HVL stakeholders' attitudes. However, this data is not needed to answer the RQ3 of this study, and having such a large scale may induce

'questioning/testing fatigue' as the questionnaire is fairly long. 'Yes/No' answers were not used here as this does not provide a middle ground option. The option of 'I don't know' was added so that respondents would not be forced to give a rating if they did not know. However respondents may select a rating and not 'I don't know' because they do not want to show they do not have the knowledge. This limitation can be addressed by comparing respondents' answers to the questions that tested respondents' knowledge (E3.3). The results of these questions may be positively skewed from the respondents that are in high levels of management as they have a vested interest that the results of this study show that HVL stakeholders believe that HVL is very sustainable and does not need to become more sustainable.

However, it is important to point out that the results for the first question do not reflect the actual level of sustainability of HVL (fig 24). The results for question 2 is considered factual as the statements is a definite statement i.e. respondents agree that it is extremely important that HVL becomes more sustainable. The results for questions 3 and 4 are not considered factual due to the use of the word "can", i.e. even though respondents agree with the statement "*The SDGs can be used to guide HVL to become more sustainable*", it does not mean that in practice they will be able to guide HVL to become more sustainable. However, a comparison can be made between the answers of the respondents that have a good understanding of SD and the SDGs and the statements, because they may be able to judge the statements accurately.

5. This question captures HVL stakeholders' attitudes towards SD at HVL because the questions directly ask respondents to give their opinion towards what aspects they believe to be most important to focus on for HVL to become more sustainable (fig 26). The same reasoning as above applies for capturing their attitudes, opinions and values. 'I don't know' and 'None of the above' were give as options as well as the three dimensions because it allowed respondents not to be forced to select an answer if they did not know. It also gave the opportunity to provide their opinion if they did not agree to the statements that were provided. This could further give insight as to whether respondents agree or disagree with the three dimensional concept of the UN SD definition. However, the results of this question may not directly reflect their attitudes and may perhaps give further insight for RQ2 as respondents may only select statements they have more knowledge on. Comparing this question to RQ2, question 6, can provide insight on this. They may also select a statement by chance if they do not want to 'I don't know' for similar reasoning discussed previously.

**6 and 7.** This question captures HVL stakeholders' attitudes towards the SDGs in general and not specifically for HVL. The same reasoning as questions 1, 2, 3 and 4 applies for capturing their attitudes, opinions and values. 'I don't know' was given as an option in the first question for the same reasoning as applied above and was not given for the second because only respondents that selected 'Some of the goals are more important than the others' for the first question were, and therefore would consider one of the SDGs listed to be more important. 'None of the above' was not an option in either questions because the first two statements in the first question are contrasting. It was not an option in the second question for the same reasoning as why 'I don't know' was not given. Ideally, these question should have also been asked specifically for HVL to give insight on their attitudes towards whether they believe if all of the SDGs are important for HVL, and if not, which they believe are more important for HVL to focus on.

**8 and 9.** The two questions captures HVL stakeholders' willingness to act attitudes for SD and for SD-related activities at HVL because the questions directly asks if they are 'willing'. The first question gauges respondents they are 'willing to support or participate', whereas the second question determines whether they are 'willing to be educated in SD'. However, it is important to point out that if respondents select 'yes' to the either question, they may not actually support or participate or take part in learning more if the opportunity is provided to them. 'Yes/No' was used for these questions rather than using a Likert scale, to force respondents to choose a definite answer. A Likert scale would gauge the strength of their willingness, but as a definite response is more useful for providing recommendations (section) as one can be more certain on their willingness.

Overall, the respondents' sustainability attitudes are not only influenced by their knowledge, but also by complex personal and environmental factors (Sidiropoulos et al., 2018), so researching respondents' attitudes in comparison to their knowledge can only explain respondents attitudes to a certain extent.

## RESULTS

Despite HVL stakeholders have poor to average and average knowledge of SD and the SDGs most have a positive attitudes towards SD and the SDGs in relation to HVL as most stakeholders either agreed or strongly agreed that it is important that HVL becomes more sustainable (72.5%) (fig. 24), improving the sustainability of HVL can improve the sustainability of the external community (71.8%) (fig. 25), the SDGs can be used to guide HVL to become more sustainable (57.9%) (fig. 25), ca. two-thirds are willing to support and participate in activities to improve the sustainability of HVL (64.4%) (table 12), and almost all respondents are willing to have the opportunity at HVL to learn more about SD (81.6%) (table 12).

For the first three results, it is assumed to reflect HVL stakeholders' attitudes with more certainty as most respondents did not choose the 'middle ground' option. For the respondents who disagreed or strongly disagreed that it is important that HVL become more sustainable (6.0%) (fig. 24), the result may be explained due to a lack of knowledge as 11.3% of respondents self-rated their knowledge of SD to be 'none' or 'poor' (fig. 19). It may also be because a similar number of respondents believe that HVL is either almost completely sustainable or 'completely sustainable' (fig. 24) (9.0%). Similarly, the low ratings shown in fig. could be due to respondents' lack of knowledge. 4.9% disagreed or strongly disagreed that improving HVL-sustainability could improve external community-sustainability (fig 25) and 10.5% disagreed or strongly disagreed that the SDGs can be used to guide HVL to become more sustainable, and 31.8% of respondents believed they have no or poor knowledge of the SDGs. The frequency of agreement for the application of the SDGs may also be because explained by the number of respondents that agreed or disagreed that HVL should become more sustainable. To explore this further, statistical analysis could be used to compare respondents' attitudes with their knowledge. However, it is unlikely that the result can purely be explained by respondents' knowledge because multiple factors influence one's attitudes and factors are often complex, such as societal factors (Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, 2017).

HVL stakeholders' positive attitude towards SDGs in general is reflected by that 91.4% selected that the SDGs are in some way important (fig). However, this positive attitude is not for their application for HVL. The 8.6% of respondents that did not know if the SDGs were important could be explained by their lack of understanding (11.7% rated their knowledge to be 'none'). However, this was not explored, and may be due to other influencing factors as discussed above. Of the respondents that selected 'some of the goals are more important than others', their selections of the goals they believed to be more important does not show a clear pattern (fig. 28) when compared to their knowledge of the three SD dimensions. Given HVL stakeholders' knowledge of the three dimensions represented in (fig ), it was predicted that HVL stakeholders would have chosen the environmental-orientated SDGs the most, followed by social- and economic- orientated SDGs. This was true for the economic-orientated SDGs as they believe that the economic-orientated SDG, SDG 8, to be one of the least important SDG to focus on. However, this pattern was not observed for the environmental- and social-orientated SDGs. Many respondents believe the environmentally-orientated SDGs as the most important to focus on e.g. SDG 7, 6, and 13, but they also rated them to be less important, e.g. SDG 12, 14 and 15. Many respondents rated the social-orientated SDGs as the most important to focus on, e.g. 2, 1, 16 and 4, but they also rated them to be less important, e.g. 3, 11, 5, and 10. However, when compared to HEIs knowledge of SD captured by the

discrete choice set questions, this may reflect stakeholders true attitude as to which SDGs are the most important to focus on as they have a high level of knowledge SD when presented with images of SD concepts. However, it cannot be out-ruled that the results for this question is not due to stakeholders' knowledge of the SDGs as their knowledge of the different SDGs was not tested. The different combinations of SDGs that respondents chose was not researched. This could give further insight of HVL stakeholders' attitudes towards the different SDGs.

The attitude that HVL stakeholders believe HVL should focus most on environmental SD aspects, followed by the social and economic SD aspects (fig. 26) may be explained by respondents' knowledge (fig. 19). The ratio of selection of the environmental to the social to the economic aspects was 1.00 to 0.78 to 0.66 when selecting the true statements of the SD concepts (fig 21), whereas the ratio was 1.00 to 0.73 to 0.32 for the most important aspect for HVL to focus on. The ratio is fairly similar for the environment and the social aspects for both respondents' knowledge and attitudes, meaning that respondents may have recommended that HVL focus on these aspects as they appear to know the most about these aspect. However, the ratio of the social aspects is smaller for respondents' attitude than compared to their knowledge, meaning that respondents recommend that HVL focus least on the economic aspect. Respondents may have selected this aspect the least because they appear to know least of this aspect. It was not researched how many HVL stakeholders selected all three SD aspects, just two SD aspects or just one of the SD aspects. This would give further insight into which aspects they believe would be useful in combination for HVL to improve their sustainability.

The results of HVL stakeholders' attitude towards SD presented in this study is similar to other research. For example, Emanuel & Adams, (2011) found that students are willingness to support and participate in sustainability initiatives to improve the sustainability of their HEI. However, no similar studies were found for other HEI stakeholders attitudes in this regard. Azapagic & Perdan, (2005) found that students believed SD in general is either 'import' or 'very important', but no studies were found that directly assessed HEI stakeholders' attitude if they believed it is important that their HEI becomes more sustainable. As such, these findings provide valuable data for HEI stakeholders' attitudes.

HVL stakeholders' positive attitudes towards the SDGS were higher than HEI stakeholders in the study by Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, (2017). Overall, combining the results for HEI stakeholders' attitudes, they found that 56.3% of their respondents showed positive attitudes, and this study found 69.3% of HVL stakeholders have positive attitudes. However, the overall attitudes of HEI stakeholders at Osun State University was the average of: 84.5% wanted to learn more



about the SDGs; 60.9% were ready to invest their time and efforts in learning more about the SDGs; and 29.7% believed they had a very good grasp of the SDGs. Therefore, results cannot be directly compared for overall attitude. HVL stakeholders' attitudes towards whether they want to learn more can be compared; more HEI stakeholders at Osun State University wanted to learn more about the SDGs as this study found 81.6% of HVL stakeholders wanted the opportunity to learn more. Omisore et al., (2018) did not assess HEI stakeholders' attitudes whether they believed all goals to be important, some of the goals to be more important than not, or which SDGs stakeholders believed to be more important. He also did not research the stakeholders' attitudes whether they thought the SDGs could be applied to an HEI setting. No other previous studies were found that research HEI stakeholders' attitudes regarding these three topics. In this way, the results of this study add to HEI stakeholders attitudes of the SDGs.

The results of HVL stakeholders' attitudes towards SD and the SDGs is considered satisfactory for HVL to engage in SD as the majority of HVL stakeholders show positive attitudes towards SD and the SDGs; the majority are supportive (fig 24 and fig 25), interested (table 10), and willing (table 12). HEI stakeholder support, interest and willingness are considered key drivers for HVL engagement in SD (point 4 table). However, other key attitudes were not explored, such as: whether HVL stakeholders are open to change associated to behaviours, practices or initiatives; or whether policies and legislation are consistent and are developed and supported by proactive leadership to promote sustainability in curricula, research, campus operations where SD is given importance/priority (point 5, table). These areas should be explored to fully represent HVL stakeholders' attitudes that are important for HVL to engage fully in SD.

### 5. The Level of Engagement and Communication of HVL Sustainable Development-Related Activities from HVL Stakeholders' Perspective (RQ4)

In this section, the limitations of the questionnaire design are discussed, followed by and a discussion of the results for the findings for RQ4, the level of and the potential for engagement of HVL SD-related activities from HVL stakeholders' perspective. The limitations of the questionnaire are discussed in the order they appear in fig. 11. The number given in bold and underlined is the question number presented in fig. 11 under 'RQ4: ENGAGEMENT of HVL (a) LEVEL OF COMMUNICATION/ENGAGEMENT and (b) POTENTIAL FOR ENGAGEMENT'.

#### LIMITATIONS

1 and 2. Captures attitudes towards the level of communication and therefore the engagement of HVL activities. In the first questions, HVL stakeholders were asked about the communication of general activities and not SD-related activities as the question aimed to gauge HVLs overall level of



communication with HVL stakeholders. This question aimed to capture the level of top-down communication. In the second question, similarly, respondents were asked about general decision-making, rather than SD-related decision making because the question aimed to gauge HVLs overall level of communication with HVL stakeholders. This question aimed to capture the level of bottom-up communication. The results of these questions may likely be positively skewed as respondents in a high level of administration, such as leaders are more likely to answer 'yes' as they have a vested interest that it appears that the level of communication is very good and that HVL stakeholders' strongly agree that their voices can be heard. To address this limitation, respondents in high levels of decision-making could be looked at.

[3, 4, 5, and 6.](#) Captures the level of engagement and communication of SD-related activities at HVL as if many respondents select 'Yes', it infers that level of communication and therefore the level of engagement is good, and conversely if most select 'no' they believe it is bad. However, if participants select 'No', it may not only reflect that the level of engagement/communication is bad, but that HVL may not have many SD-related activities or they may not have adequate knowledge to judge what actions are associated to SD. The results of these questions can be compared to the above questions to address this lack of clarity. If respondents believe communication to be 'good' or 'very good', but they select 'No' for any of their answers for questions 3 to 6, then it is assumed that HVL does not have SD-related activities for the questions they select no for, or that the respondent may not have adequate knowledge to recognise certain activities as being related to SD. This limitation could be addressed by comparing those that answered 'no' to their level of knowledge of SD. Question 6 is very similar to question 3 and 4, but it is concerned with asking if respondents have knowledge of activities they can actually take part in, rather than activities done by HVL. Therefore, some participants may not observe this difference between the questions and assume them to be the same and therefore not actually provide accurate answers.

[7.](#) This question captures whether respondents who selected 'Yes' to any of the above questions do truly know of HVL SD-related activities, However, as this question is optional, it cannot be concluded that if respondents do not answer this question that they are not aware of such activities. This question was asked primarily to collect information on what respondents are aware of to map what HVL are doing. However, the responses are not considered to be a complete list of what HVL is doing as their responses may be limited by their knowledge, i.e. what actions they associate with SD. Their responses can be tested against their level of knowledge to see if this is the case. It may also further reflect the engagement level of different HVL activities as it is inferred that the engagement of the actions

respondents' state is good. The questionnaire is also quite long and these questions are asked towards the end of the questionnaire, therefore, respondents may have 'questioning/testing fatigue' and may only write a short response in order to be finished with the questionnaire.

[8, 9 and 10](#). A full discussion of these questions is provided under section E3.4, questions 8 and 9 and these questions are also related to RQ3. In relation to RQ4, these questions capture the potential for engagement in HVL SD-related activities. This is because if HVL stakeholders select 'yes' meaning they are willing to act in regards to HVL SD-related activities, these respondents are the mostly likely to become engaged if the opportunity is given to them. However, respondents answers do not necessarily represent whether they will or will not become engaged in HVL SD-related activities because respondents are only asked in regards to their 'willingness', and not if they would actually take part. The third question may represent if respondents are willing to act, although, this questions was not considered to capture respondents willingness to act. Respondents may be willing to act, but they may not willing to provide their email as they may not be willing to receive emails. They may be open to other forms of communication. They may also not wish to provide their email to remain anonymous in their responses.

## RESULTS

Overall, HVL stakeholders rate HVL communication channels to be average (47.5%) (fig. 29). However, there is contrasting opinion on HVL communication channels because 30.8% rate that communication channels are poor to 'very poor' or they disagree or 'strong disagree' that their voice can be heard to influence decision-making at and the sustainability of HVL, whereas 24.1% rate the communication channels as good to 'very good' or that they agree or 'strongly agree' that their voice can be heard to influence decision-making at and the sustainability of HVL. HVL top-down communication appears to be better than bottom up as more respondents rate the level of communication to them about HVL activities as good to 'very good' (31.2%), whereas less rate that they agree or 'strongly agree' that their voice can be heard to influence decision-making at and the sustainability of HVL (24.1%). This infers that the respondents- as change agents for SD- are not recognised or taken seriously by higher levels of management.

Overall, the level of engagement in or communication of HVL SD-related activities with HVL stakeholders is low as ca. two-thirds of respondents are unaware of SD-related actions that HVL is doing (70.8%) (table 13). Respondents' awareness of HVL activities may be due to the fact that HVL is not very good at communicating their actions, because HVL is not doing many actions, or because the respondent does

not associate action that HVL is doing to SD, as discussed above in the limitations (questions 3 to 6). Given that most respondents believe that HVL communication to them about SD-related activities is average (fig), and many respondents provided SD-related actions that HVL is doing (fig), those who are not aware may be due to poor HVL engagement and communication, or possibly because the respondents do not have the knowledge of SD to associate certain HVL actions with being SD-related actions, rather than that they are not doing any SD-related actions.

Out of all of the actions stated for the actions that respondents are aware that HVL are taking to become more sustainable, most of the actions are environmental SD actions (57.6%), followed by social SD actions (39.4%) and least actions are economic SD aspects (6.1%). As previously discussed in the limitations, these results may be explained by respondents appear to have greater understanding of the environmental dimension of SD, and less on the social and economic dimensions (fig. 21). Many respondents may have only reported on environmental actions as these respondents may have only associated environmental actions to SD. However, this may be not only due to lack of knowledge but also could further confirm that HVL engagement and communication is poor. Furthermore, given that fewer actions stated are social and economic, it is also possible that HVL is not doing as many of these actions. The actions that were stated the least or not stated at all may be linked to either poor HVL engagement, lack of SD knowledge of respondents or that HVL is not doing other actions, as explained in the limitations. To come to a conclusion, it would be necessary to map all of HVL actions, to determine the different SD-related actions. Respondents' understanding of actions that can improve sustainability is overall good as all actions stated are connect to SD. One respondent not only shared their awareness in their answer, but also provided their opinion as they stated they are aware that HVL recycles, but that it is "INADEQUATE".

For the actions that HVL are taking to help communities outside of HVL to become more sustainable, the fact that respondents state they are aware of partnerships such as exchange schemes and partnerships with international universities, it infers that respondents have an awareness of the importance of SDG 17: Partnerships for the goals. Respondents' knowledge was not tested elsewhere in this in the study. The fact that respondents also said they were aware of open lectures, dissemination of SD knowledge, open-access libraries, it infers that they are aware that it is important for HEIs to share their information to engage with SD in HEIs. Respondents also have knowledge that external leadership involves collaborating with the local community and local businesses. However, the importance of HEIs in local, regional or national policy development was not mentioned. Furthermore, the actions that were stated

the least or not stated at all may be linked to either poor HVL engagement, lack of SD knowledge of respondents or that HVL is not doing other actions, as explained in the limitations. Respondents level of knowledge of actions that can improve the sustainability of the external community is overall good as all actions stated are important actions that are reported to improve external communities' sustainability.

For the statements of the respondents' awareness for opportunities at HVL to learn about SD, respondents mostly stated environmental courses. This may be because they mostly associate environmental and not social or economic courses to education for SD, but also because they don't consider that social or economic courses includes adequate SD education. Many people stated 'through studies' but it is unclear as to whether this was through their own studies, or just a general statement. Given that one person stated "*many studies have this in their curriculum*", but respondents statements do not reflect this, it infers that HVL is not communicating this well. However, this response was from has an Administration/library/leader staff member and may be a biased response due to their vested interest that it appears that HVL has SD in multiple courses. Furthermore, the actions that were stated the least or not stated at all may be linked to either poor HVL engagement, lack of SD knowledge of respondents or that HVL is not doing other actions, as explained in the limitations. To confirm this, SD in all courses should be mapped to gauge which studies integrate SD in their curricula. There may also be more actions Respondents' level of knowledge of what opportunities can provide education in SD is good as all statements have the potential to educate one in SD.

For respondents' statements of opportunities they are aware of at HVL to take action towards SD at HVL or in communities outside of the institution, it is likely that many respondents misunderstood this question. Many respondents listed external organisations such as FIVH<sup>35</sup>, POW<sup>36</sup>, and Naturvernforbundet<sup>37</sup> (fig. 33) . The respondents that made general statements such as "*Voluntary organisations*" and "*environmental organisations*" may either be refereeing to organisations at HVL or external organisations. The organisations stated mostly focus on a variety of SD dimensions. For example, POW is mostly environmental, but FIVH works for all three dimensions of SD. This could reflect that respondents have a good awareness that the work that these organisations do, and hence the three dimensions of SD, are related to SD. However, only one person gave insight into their understanding of how the work that the organisation carries out is related to SD: "*Trivselsentralen student organisation-promotes volunteer work, social sustainability + in environmental sustainability*". The actions that were

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<sup>35</sup> Framtiden i Våre Hender: Future in Our Hands

<sup>36</sup> Protect Our Winters

<sup>37</sup> Friends of the Earth

stated the least or not stated at all may be linked to either poor HVL engagement, lack of SD knowledge of respondents or that HVL is not doing other actions, as explained in the limitations. However, for this question, it is likely that many respondents did not comment of other actions at HVL due to a misinterpretation of the question.

Overall the level of engagement and the level of communication is not satisfactory for HVL to engage with SD within their whole institution because good communication channels (bottom-up and top-down) (table 2, factor 6.), change agents for SD, i.e. HVL stakeholders, are recognised and taken seriously are critical for an HEI to engage in SD (table 2, factor 6) and the majority of HVL stakeholders must be engaged (table 2, factor 4). Therefore, for communication channels to be satisfactory and that change agents for SD are recognised and taken seriously, the majority, or all, of respondents select that the communication channels are good or very good, and they agree to strongly agree that their voices can be heard to influence decision-making at and the sustainability of HVL. A satisfactory response would be that the majority of respondents are engaged, i.e. that most respondents select yes to questions 4, 5, 6, and 7, and should be able to state a wide variety of HVL SD-related activities. Neither case was found in this study; most rated communication channels to be average and most were unaware of HVL SD-related activities.

Critically, given that most respondents have not had SD education at HVL (78.6%) (table 10 and fig. 17), and if the reason that most respondents are unaware of HVL SD-related activities to become more sustainable (30) is due to HVL not doing enough activities, it infers that HVL is not incorporating SD fully into their curricula or campus operations. Furthermore, few respondent are stated they aware of HVL leadership-related action for HVL SD, if this is because HVL leaders are not fully supporting SD, it infers that HVL is not fully engaging in SD in their governance or administration. It is not certain that whether HVL is incorporating SD fully in to research as it was not explored if those that said they have carried out research at SD, carried their research out at HVL (table 10). Additionally, it is not certain if HVL is fully engaging their external community in regards to SD because although many respondents said they are aware that HVL has several collaborations with international universities, has collaboration with the local community and businesses and has open-lectures, it is not clear if HVLs aim in their efforts is to improve the sustainability of their external community.

Other key factors that affect HVL fully engaging in SD related to engagement is that the majority of HEI stakeholders are committed, empowered and participate (table 2, point 4), and that there is open access to information regarding qualitative and quantitative performance indicators (table, 2 point 2).

Respondents' answers to question 7 may reflect 'participation', as they are asked what actions they are aware of to improve HVL sustainability of the external community. But respondents were not asked specifically if they participate in such actions. Respondents were not asked specifically about commitment, empowerment, participation or whether they are aware of if performance indicators are open for all HVL stakeholders. However, it is inferred that performance indicators are not available because one respondent stated that "*Key Performance Indicators should be made available*" for the last question in the questionnaire as discussed in the next section. These factors should be explored to further research HVL stakeholders' level of engagement in HVL SD-related activities.

Despite the low level of engagement of HVL stakeholders in SD-related activities, the overall potential for engagement is makeable high as just under two-thirds of respondents answered 'yes' to the questions concerning potential for engagement HVL ('Yes'= 60.6% and 'No'= 39.4%). Respondents willingness to act is most strongly captured in by the fact that 81.6% are willing to support and participate in actions to improve the sustainability of HVL. The willingness to act is not captured so strongly by the question asking if they want to learn more, as respondents may not want to learn more about SD as they already feel they have sufficient knowledge and they may still be willing to participate. Respondents answers to these questions should be compared to see if there is a link with those that answered 'No' and their level of knowledge. Although respondents are less willing to be contacted further about SD activities at HVL table 13., this may not reflect their willingness as discussed above in the limitations.

## 6. HVL Stakeholders' Recommendations on How to Improve the Sustainability of HVL (RQ5)

In this section, the limitations of the questionnaire design are discussed, followed by and a discussion of the results for the findings for RQ5, the HVL stakeholders' recommendations of how to improve the sustainability of HVL. The limitations of the questionnaire are discussed in the order they appear in fig 11. The number given in bold and underlined is the question number presented in fig 11. under 'RQ5: RECOMMENDATIONS'.

### LIMITATIONS

1 and 2. A full discussion of these questions is provided under section C3.4. questions 4 and 5 as these questions are also associated to RQ3 and the same discussion applies in regards to RQ5. In relation to RQ5, these questions capture HVL recommendations on how to improve the sustainability of HVL because it can be inferred that their attitudes reflect what they would recommend for HVL. Question 1 (or question 4 in RQ2) directly asks what aspect of SD they recommend that HVL should focus on.

Similarly, question 2 (or question 5 in RQ2) indirectly captures what respondents would recommend. It is inferred that if respondents believe the SDGs can be used to guide HVL to become more sustainable, that they would also recommend that the SDGs can guide HVL to become more sustainable.

3. As this question has an open-ended answer option, HVL stakeholders are free to provide any recommendations that they believe will improve the sustainability of HVL. However, respondents' answers may be limited to their knowledge of SD. If respondents do not have a good understanding of SD, their recommendations may not actually improve the sustainability of HVL, and they may not know of what actions can improve sustainability if they do not have a good understanding. These responses should only be treated as their ideas for recommendations, and they should be further scrutinised if they are related to SD or not. Furthermore, each respondents' answer could also be checked against their level of understanding of SD. The answers to this question also provides insights to HVL stakeholders attitudes of the application of SD at HVL as their answers will reflect which aspects of SD they believe to be most important for HVL to focus on. Their answers can be compared to questions 4 and 5 for RQ3 (section E3.3). As this question is optional, it may also reflect HVL stakeholders' level of interest that HVL becomes more sustainable because if respondents provide a recommendation, it infers they have an interest.

Overall, the respondents' recommendations are based on their attitudes, and previously discussed, as their attitudes are not only influenced by their knowledge, but also by complex personal and environmental factors (Sidiropoulos 2018), so researching respondents' attitudes in comparison to their knowledge can only explain respondents recommendations to a certain extent.

Questions 7 in RQ2 (section E3.2) and 6 and 7 in RQ3 (section E3.3) (fig. 10) could also give insight of HVL stakeholder's recommendations. If respondents select that the SDGs are important for their local community, it can be inferred that they are therefore important for HVL. For the latter questions, whether respondents believe all of the goals to be equally important or some goals are more important than others, or that none of the goals are important, it could be inferred that their answer could be their response applies for HVL. However, these latter questions are not considered as their recommendations may be different for HVL.

## RESULTS

The recommendations that the respondents provide give insight on the most critical barriers they believe HVL faces today to become more sustainable. In this way, this study is similar to Disterheft et al., (2015) as these factors will in turn be considered critical success factors.

The reason that respondents recommend that HVL should focus on the environmental aspects the most followed by social and economic aspects is discussed in section RQ3 under question 5. Similarly, the reason that respondents recommend that the SDGs can be used to guide HVL to become more sustainable. In summary, this result may reflect respondents' true attitude, but their recommendations may also be linked to their level of understanding of SD (fig. 19 and fig. 20) and their knowledge of the SDGs (fig. 19).

Given that ca. half of respondents provide personal recommendations to improve the sustainability, it infers that these respondents show the most interest and perhaps are more engaged in the topic. Some respondents provided brief answers, whereas some provided very long, descriptive and direct recommendations. The latter respondents can be considered more interested and engaged in the topic, however, some of the respondents that provided short responses may also be just as interested by affected by 'questioning/testing fatigue'. The respondents that answered 'I don't know' may not know due to their lack of knowledge of SD in general, or because they don't know how SD could be applied at HVL. They may also not know enough about HVL in general or HVL SD-related activities. For this latter case, it could reflect HVLs level of engagement and communication in HVL SD-related activities. However, this was not researched.

Greatest number of respondents gave environmental-related SD recommendations, e.g. *better waste sorting* or *better recycling* and *save energy* (fig. 33). Less respondents recommended social-related SD actions, such as *more non-alcoholic events*, *more job training*, and *more dialogue with students*, and only one respondent gave a recommendation that is economic-related. Disterheft et al., (2015) also found that HEI stakeholders in his study viewed that *more dialogue* was needed for the HEIs in their study to engage with SD.

The greater focus on the environmental compared to social and economic recommendations is consistent with their answers to question 1 of this section. It would be useful to compare each respondents' answers to their answer for question 1 to see if they selected the SD dimension that corresponds with their answer to provide further clarification of the respondents' attitudes towards



which aspects HVL should focus on. The reasoning why respondents recommended environmental recommendations the most may also be related to their level of knowledge of SD concepts (fig), as discussed in the limitations.

Respondents' recommendations that they want more education and information on SD is in agreement with the results for RQ2- that students self-rate their knowledge of SD to be average and of the SDGs to be poor, and with RQ4- that communication channels are average and the majority of respondents are not engaged in HVL SD-related activities. The recommendation that HVL should improve their web-based information on SD, i.e. *"Better information on HVL's facebook page"* is in line with previous studies as, Timonhy et al 2015 found that universities often miss web-based opportunities to deliver the SD-related information.

Furthermore, recommendation to work for better inclusion, such as *"Work for better inclusion in class environments"*, *"Improve dialogue and reflection with students"*, and *"include all organisational levels"* is also in agreement. This shows that respondents that gave these recommendations have a good understanding that communication is a critical success factor for HVL to engage in SD (table 2, factor 2, 4, 6, and 7). The recommendation *"include all organisational levels"*, may infer that the respondents recommend that they want to be included HVL decision-making the sustainability of HVL. Although this conclusion cannot be made without further exploration.

## 7. Summary

The results presented in this study are to give an overview of HVL stakeholders' level of knowledge of and attitudes towards SD and the SDGs. It also serves to give an overview of the level of engagement and communication of HVL SD-related activities and their recommendation on how to improve the sustainability of HVL. Therefore comparisons were not made between the following variables: where HVL Stakeholders are from; their age; which HVL campus they are from; their role or position at HVL; the faculty they are in; the year of studies they students are in; the number of years they have been employed at HVL; their the contract type; whether they have been a student representative; whether they have previous higher education qualifications or work experience; the type of previous or other work experience; whether they have attended a course on SD; and whether they have carried out research in SD. This was not done as this is the first study of its kind at HVL. The most pressing variable to further investigate would be the difference between the campuses, the different HVL stakeholders and the department they are in. More detailed scrutiny of the results was not carried out due to the time constraints of this thesis.

The results presented in this thesis most strongly reflect HVL stakeholders from the Sogndal campus because 75.9% of respondents are from Sogndal. Most results are also students as 76.7% of respondents are students. Therefore, the result presented here should not be taken to reflect other HVL campuses strongly, especially not for Førde, Haugesund, Stord campuses as fewest respondents were from these campuses. It is considered that the results reflect HVL (most specifically Sogndal) due to the high number of HVL stakeholders that took the questionnaire (N=266)

Furthermore, although this study points out that it is crucial to include all HEI stakeholders in the decision making process, HVL external stakeholders were not included in this study. This is because it was not possible within this study to map the external stakeholders during the time of the study. This should be done in a future study.

## G. Concluding Recommendations and Outlook

In this study, Jan and I explore how HVL can become more sustainable. The HVL case study is interesting to focus on as HVL does not have a holistic SD assessment methodology or report at current. The transformational power of HEI be lead society to become more sustainable it well documented (Stephens et al., 2008, p. 320). HVL, specifically HVL-Sogndal, is interesting to focus on as HVL-Sogndal has a dense environment for students and employees and almost half of Sogndals population is directly involved in HVL-Sogndal (ENITCH, 2017); HVL Sogndal therefore has great transformative power to influence the Sogndal region.

For HVL to lead by example and fulfil their transformative power they must be a 'sustainable university'. HVL must therefore adopt a sustainability framework methodology and report on their efforts. Therefore, we present the SDG-framework for HVL to follow to aid it fulfilling their role in SD. This is innovative in the field of sustainability frameworks for HEI as no previous studies have done this. In this way we also address the barrier of a "Lack of a standard definition, a non-ambiguous concept, and understanding and awareness by all stakeholders of SD in general and the role of HEIs in SD" (table factor 1) and "Lack of agreed upon and access to qualitative and quantitative performance indicators for SD in HEIs" (table 2, factor 2). We translated the SDGs targets and indicators to apply specifically for each of HEIs core functions so that HEIs can work towards sustainability in each of their core functions (fig 4). In this way HEIs can apply all of the SDGs through the whole HEI system and work towards SD. However, as this is the first full translation of the SDGs for HEIs, the translation is in its infancy. We invite scrutiny of our method and our translation. Our whole translation processes, allocation of the SDGs' targets and indicators to a core function, and the translation of the original SDGs' targets and indicators was subjective. Therefore, we invite and advise that several HEIs worldwide carry out the process we present, so that efforts can be combined to make the translation as democratic as possible, living up to the same way that the SDGs were formulated.

Further to HVL needing to adopt a sustainability framework, HVL also needed to address other barriers and drivers to HVL engaging fully in SD through the whole institution. I formulated an online questionnaire to address the barriers: HVL stakeholders' level of knowledge of SD; HVL stakeholders' attitudes towards SD; the level of communication and engagement of HVL stakeholders regarding SD-related decision-making and/or activities; and HVL stakeholders' recommendations to improve SD at the HEI (Table). It is well known that that HEIs can only achieve becoming a 'sustainable HEI' once the

perceptions of key HEI stakeholders towards SD is known (Filho, 2011) It is also necessary to gauge the level of engagement as it is crucial all HEI stakeholders are engaged in the HEIs transformational process. Crucial to engagement is also the level of communication of SD-related activities. HEI stakeholders cannot have knowledge, and therefore not have attitudes or engagement, if communication is poor. Specifically, it is vital that all HEI stakeholders believe their voice can be heard in regards to HEI SD-related-activities and decision-making. This study was innovative as it is the first study carried out of its type at HVL. Although there are many studies that research students' and academic staffs' perceptions of SD (table 3), only few were found that included non-academic staff. Only one study was found that researched HEI stakeholders' perceptions of the SDGs (Omisore, A. G., Babarinde, G. M., Bakare, D. P., Asekun-Olarinmoye, 2017). This study is also believed to be the first to research HEI stakeholder understanding of SD using a discrete choice experiments and to capture the level of engagement and communication of HVL SD-related activities, as well as providing HEI stakeholders a space for them to have their voice heard and recognised.

The level of awareness of HVL stakeholders is relative high (83.0%). The level of HVL stakeholders' self-rated level of knowledge of SD was found to be average ( $M= 2$ ,  $\bar{X}= 2.2$ ,  $Mo= 2$ ) (fig. 19) and higher than their self-rated knowledge of the SDGs ( $M= 2$ ,  $\bar{X}= 1.6$ , and  $Mo= 2$ ) (fig. 19). HVL stakeholders' have a good understanding of general SD concepts and HVL-specific SD concepts as almost all respondents selected the correct more sustainable photo ( $\bar{X}= 95.9\%$  and  $93.7\%$ ) (fig. 20). However, HVL stakeholders' understanding is less when asked to select true statements relating to SD and the SDGs as the respondents did not select all of the true statements regarding the three dimensions and the generational aspects of SD (fig. 21), or that the SDGs can be applied to all levels of society (fig. 22). Overall, it was found that the level of knowledge was inadequate as all HEI stakeholders should have good knowledge and awareness of the SDGs.

Despite HVL stakeholders poor to average level of knowledge of SD and the SDGs, respondents showed a positive attitude towards SD at HVL (fig. 24 and fig. 25). HVL stakeholders' 47.7% have the attitude that some of the SDGs are more important than others, and 43.6% believe that all of the goals are important. They also believe that SDG 7, 2 and 6 are the most important to focus on generally. This study provide valuable data for HEI stakeholders' knowledge and attitudes as no studies were found that assess HEI stakeholders' level of understanding of concepts associated with the SDGs, in particular, understanding of which societal levels the SDGs are important for. Similarly, no studies were found that directly

assessed HEI stakeholders' attitude if they believed it is important that their HEI becomes more sustainable.

The communication channels of HVL were found overall to be average (fig. 29). HVL top-down communication appears to be better than bottom up as more respondents rate the level of communication to HVL stakeholders regarding HVL SD-related activities as good to 'very good' (31.2%), 24.2% rate that they agree or 'strongly agree' that their voice can be heard to influence decision-making at and the sustainability of HVL. In this regards, HVL stakeholders- as change agents for SD- are not recognised or taken seriously by higher levels of management. The level of engagement in or communication of HVL SD-related activities with HVL stakeholders is low (table 13). Out of all of the actions stated for the actions that respondents are aware that HVL are taking to become more sustainable, most of the actions are environmental SD actions (57.6%), followed by social SD actions (39.4%), and least actions are economic SD aspects (6.1%) (fig. 26). For the actions that HVL are taking to help communities outside of HVL to become more sustainable, many are aware of partnerships such as exchange schemes and partnerships with international universities but less so on other aspects (fig 31). For the statements of the respondents' awareness for opportunities at HVL to learn about SD, respondents mostly stated environmental courses. Very few HVL stakeholders have had education in SD from HVL (table 10). For respondents' statements of opportunities they are aware of at HVL to take action towards SD at HVL or in communities outside of the institution, it is likely that many respondents misunderstood this question, but a few provided examples of correct actions (fig. 33).

Critically, it is inferred that HVL is not incorporating SD fully into their curricula or campus operations and that HVL is not fully engaging in SD in their governance or administration. It is not certain whether HVL is incorporating SD fully in to research or if HVL is fully engaging their external community in regards to SD. Overall, the level of engagement and the level of communication was found to be satisfactory for HVL to engage with SD within their whole institution because most rated communication channels to be average and most were unaware of HVL SD-related activities. All must feel like their voice can be heard, that communication is good for HVL to engage fully in SD and the SDG and be aware of HVL SD-related activities, but this was bit found. Despite this, the potential for engagement in HVL SD-related activities is striking as 81.6% want to help support. This infers that HVL stakeholders would be very accepting to new SD-related activities.

HVL stakeholders recommend that HVL should focus on the environmental aspects the most, followed by social and economic aspects (fig. 26, and fig. 33). They also recommend that the SDGs can be used to

guide HVL to become more sustainable (fig. 25). Just over half of respondents provided recommendation for HVL to improve their sustainability (fig. 33). Recommendations very varied and ranged of environmental, social and economic actions. Respondents recommended environmental actions the most, followed by social and only one on economic actions. These responses were used in combination with previous literature and the workshop held at the HVL-sustainability conference to provide concrete recommendation for HVL to take to improve their sustainability. This report recommends the following:

1. **Sustainable Development Officer:** Create and finance a sustainable development office with a coordinator and financial resources to manage all aspect of sustainable development at HVL.
2. **Framework:** HVL should adopt the translated-SDG framework to assess, monitor and report on their sustainability actions. This framework can also be used to guide the implementation SD in HVL as concrete HEI-specific targets are given along with measureable indicators.
3. **Mainstream the SDGs into all core functions:** include that HVL mainstream the SDGs into all core functions being education, research, operations and governance and community outreach:
  - 3.1. *Education:* map what each course is doing in relation to the SDGs and identify the gaps. Ensure that the SDGs are included in all courses at all levels. *Establish a fund that allows to finance SD education.*
  - 3.2. *Research:* map what each research project (by researchers and in class projects) is doing in relation to the SDGs and identify the gaps. Strengthen and foster research on SD, focusing on the transformative capacity the university holds within their regions.
  - 3.3. *Operations and governance:* Recognition and support is needed from HVL leaders as they are role models of the HEI. Map how the campus is run relation to the SDGs and identify the gaps. Start by measuring the university's resource flows and SDG indicators
  - 3.4. *Community outreach:* map what collaborative project is doing to the SDGs and identify the gaps. Commit to SD knowledge sharing and transparent and accessible reporting on SD to ALL.
4. **Educate all HVL stakeholders:** ensure that all are educated on the SDGs, not just students in their courses:
  - 4.1. Run online, interactive courses for all
5. **Communication:** The need to improve communication channels in order to enable all HVL stakeholders voice can be heard, specifically for SD-related activities and decision-making. Update HVL website with an SDG dashboard to communicate their efforts.
6. **Engagement:** Include all, specifically for SD-related activities and decision-making:

- 6.1. Strengthen and foster more SD-related activities and communicate these to all stakeholders. In particular hold more interactive workshops for to source knowledge for action to improve the sustainability of
  - 6.2. HVL annual HVL-wide SD week with different events targeting all HVL stakeholders and external community
  - 6.3. Run interdisciplinary workshops at HVL combining innovation techniques such as design thinking to identify problems and come up with interdisciplinary solutions to them, targeting all HVL stakeholders and external community
7. **Data policy:** The need to work out an overarching data policy, handling the access to data and publishing standards (e.g. open access to data and publishing).

The recommendations provided are by no means exhaustive and they are open to change as HVL transforms. It is hoped that further research is done to improve the sustainability of HVL. I wish to conclude this report that [68.4%](#) of respondents in this study said they want to help support and participate in activities to improve the sustainability of HVL and [81.6%](#) of respondents want to learn more about sustainable development. Given that this study provides accurate reflections of HVL stakeholders, specifically at the HVL Sogndal campus...

**LET'S GET GOING AND HELP HVL BECOME ENGAGED IN SUSTAINABLE DEVELOPMENT FOR ALL!**





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## Appendix

A: SDG translation attached excel file 'SDGs University'



## B: Table of Photo Pairs in Choice Set



Section 2B: Which scenario is more sustainable?						
Choice Set Number	Main Topic(s) of Choice Set	Dominant SD Dimension (s) reflected in Choice Set	Choice Set		Hypothesis of Choice set	Results of Choice Set (%)
1	Anthropogenic caused air pollution in cities and 'green spaces' in cities	Environmental	A	City settlement with clean air & 'green spaces'  Source: <a href="http://www.metropia.com/blog/clean-air-nyc-going-beyond-mass-transit">http://www.metropia.com/blog/clean-air-nyc-going-beyond-mass-transit</a>	Participants choose A over B because they may believe it shows cleaner air and more green spaces	264 (99.2)
			B	City settlement with polluted air and no 'green spaces'  Source: <a href="http://www.statisticsviews.com/details/feature/9541581/Statistics-and-Advanced-Analytics-Face-Off-the-Chinese-Air-Pollution-Problem.html">http://www.statisticsviews.com/details/feature/9541581/Statistics-and-Advanced-Analytics-Face-Off-the-Chinese-Air-Pollution-Problem.html</a>		2 (0.8)



2	Safeguarding the biosphere's integrity:	Environmental, economic	<p>A Resilient rainforest</p>  <p>Source: <a href="http://www.wakingtimes.com/2015/07/10/the-6-biggest-threats-to-the-amazon-rainforest/">http://www.wakingtimes.com/2015/07/10/the-6-biggest-threats-to-the-amazon-rainforest/</a></p>	Participants choose A over B because they may believe it shows the intact, resilient rainforest ecosystem; the ecosystem has not been cleared	245 (92.1)
			<p>B Resilience of rainforest is threatened due to clearing for development</p>  <p>Source: <a href="https://www.goldmanprize.org/blog/brazil-forest-code-reform-avoids-showdown-leading-into-rio20/">https://www.goldmanprize.org/blog/brazil-forest-code-reform-avoids-showdown-leading-into-rio20/</a></p>		21 (7.9)

3	Sustainable human settlements	Environment, social	A	<p>City human settlement with clean air &amp; green spaces but little natural environment</p>  <p>Source: <a href="http://www.metropia.com/blog/clean-air-nyc-going-beyond-mass-transit">http://www.metropia.com/blog/clean-air-nyc-going-beyond-mass-transit</a></p>	<p>Participants may choose A OR B because they may believe:</p> <p>A: rural areas to be more connected to nature &amp; resources</p> <p>B: cities have shorter travelling distances &amp; more efficient systems</p>	54 (20.3)
			B	<p>Rural human settlement surrounded by natural environment (Flåm, Norway)</p>  <p>Source: <a href="http://australiaforeveryone.com.au/trips/dest-flam.html">http://australiaforeveryone.com.au/trips/dest-flam.html</a></p>		212 (79.7)





4	Economic/ spatial inequality; eradicate poverty	Economic, social	<p>A Geographical poverty: Slums and wealthier infrastructure adjacent to each other</p>  <p>Source: <a href="https://www.quora.com/What-images-best-represent-economic-inequality">https://www.quora.com/What-images-best-represent-economic-inequality</a></p>	Participants choose B over A because they may believe it shows a society with more equal economic/spatial distribution	17 (6.4)
			<p>B Infrastructure with equal wealth distribution</p>  <p>Source: <a href="https://thenextweb.com/insider/2015/07/11/san-francisco-housing-inflated-by-tech-money-is-in-trouble/">https://thenextweb.com/insider/2015/07/11/san-francisco-housing-inflated-by-tech-money-is-in-trouble/</a></p>		
					249 (93.6)



5	Quality education, eradicate poverty, eradicate child labour	Economic and social	<p>A Child labor in a Burkina Faso gold mine</p>  <p>Source: <a href="https://pulitzercenter.org/projects/burkina-faso-gold-mines-child-labor-exploitation-poverty-migration-famine">https://pulitzercenter.org/projects/burkina-faso-gold-mines-child-labor-exploitation-poverty-migration-famine</a></p>	Participants choose B chosen over A because they may think educating children is conducive to eradicating poverty and child labour	9 (3.4)
			<p>B Children in a quality school</p>  <p>Source: <a href="https://www.quora.com/How-would-you-improve-primary-school-education-in-India">https://www.quora.com/How-would-you-improve-primary-school-education-in-India</a></p>		257 (96.6)

6	Eradicate social violence and exclusion, promoting world peace, unequal power, human rights, police violence	Social	<p>A</p> <p>Woman beaten by police in Bangladesh</p>  <p>Source: <a href="https://uscundercurrent.wordpress.com/2011/03/02/violence-and-social-change-when-does-one-hit-back-by-max/">https://uscundercurrent.wordpress.com/2011/03/02/violence-and-social-change-when-does-one-hit-back-by-max/</a></p>	Participants choose B over A because...	7 (2.6)
			<p>B</p> <p>Communal living / living together / social inclusion</p>  <p>Source: <a href="https://divinedentallv.com/dentist/dentist-in-las-vegas/">https://divinedentallv.com/dentist/dentist-in-las-vegas/</a></p>		259 (97.4)







7	Gender equality, and <u>reduced Inequality</u>	Social	<p>A Ratio of males to females in the UK House of Lords (Kvinner= Women; Menn= Men)</p>  <p>Source: <a href="https://www.parliament.uk/business/lords/work-of-the-house-of-lords/">https://www.parliament.uk/business/lords/work-of-the-house-of-lords/</a></p>	Participants choose B over A because they may believe it reflects more equality for gender and reduced inequality	9 (3.4)
			<p>B Radio of males to females in Norwegian parliament (Kvinner= Women; Menn= Men)</p>  <p>Source: <a href="https://www.tnp.no/norway/politics/3840-33-utoya-survivors-can-be-in-the-norwegian-parliament">https://www.tnp.no/norway/politics/3840-33-utoya-survivors-can-be-in-the-norwegian-parliament</a></p>		257 (96.6)

**Section 2C: Which scenario is more sustainable for HVL?**



1	Resource- saving, behavioural change		A	<p>Lights on in an empty room at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>	<p>Participants choose B over A because they believe turning off the lights saves resources (and money spent on electricity)</p>	48 (18.0)
			B	<p>Lights off with someone in the room at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>		218 (82.0)



2	Recycling, environmental pollution, good/bad design		<p>A 3 recycling options, labelled incorrectly at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>	<p>Participants choose B over A because they may believe more recycling options are better for the environment and perhaps because the instructions and labels allows for clearer sorting of waste better</p>	31 (11.7)
			<p>B 4 recycling options well-labelled at University of Edinburgh</p>  <p>Source: University of Edinburgh</p>		235 (88.3)



3	Recycling, good/bad design, behavioural change		<p>A 4 recycling options at University of Edinburgh</p>  <p>Source: University of Edinburgh</p>	Participants choose A over B because they believe separating out waste is better for the environment than not separating out waste	262 (98.5)
			<p>B Incorrect sorting of waste at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>		4 (1.5)

<p>4</p>	<p>Reduce consumption, environmental pollution, carbon footprint, behavioural change</p>		<p>A Reusable ceramic plate at HVL-Sogndal campus (Restavfall= general waste)</p>  <p>Source: HVL-Sogndal campus</p>	<p>Participants choose A over B because they may consider reusable items enables reduced consumption, environmental pollution and reduces our carbon footprint</p>	<p>255 (95.5)</p>
			<p>B Plastic lid with decompostable bottom at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>		<p>11 (4.1)</p>






5	Electricity-saving, behavioural change		<p>A Window closed with heating on at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>	Participants choose A over B because they may consider that closing the window saves heat and electricity	13 (4.9)
			<p>B Window open with heating on at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>		253 (95.1)



6	Local production and consumption, food packaging, carbon footprint, strengthening local economies		<p>A non-local brus plastic bottles sold at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>	Participants choose B over A possibly because they believe glass to produce less environmental pollution & have a lower carbon footprint, and local products have lower carbon footprint (reduced food miles) and strengthens local economies	13 (4.9)
			<p>B Glass bottles with locally produced juice sold at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>		253 (95.1)

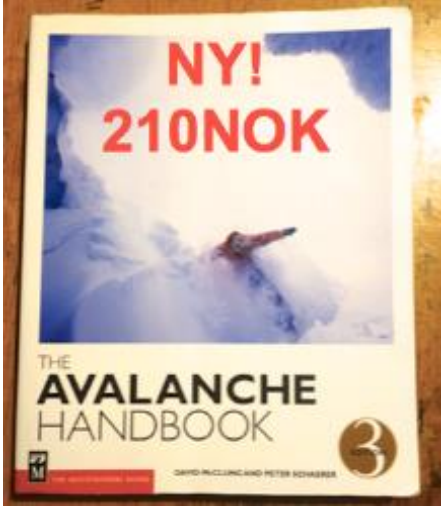

7	Behavioural change, climate change (carbon footprint), improved personal economy		<p>A Cars in open car park at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>	Participants choose B over A possibly because they believe bicycle transportation has a lower carbon footprint and are cheaper	8 (3.0)
			<p>B Covered bicycles at HVL campus</p>  <p>Source: HVL-Sogndal campus</p>		258 (97.0)





<p>8</p>	<p>Reduced consumption, improved personal economy</p>		<p>A Bicycles with no cover at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>	<p>Participants may choose A OR B possibly because they believe A: building the shelter uses more resources than those needed to replace bikes or bike parts from weathering; B: building the shelter uses less resources than the resources needed to fix bikes and bike parts from weathering without shelter</p>	<p>72 (27.1)</p>
			<p>B Covered bicycles at HVL campus</p>  <p>Source: HVL-Sogndal campus</p>		<p>194 (72.9)</p>

<p>9</p>	<p>Environmental chemical pollution</p>		<p>A Biodegradable soap</p>  <p>Source: <a href="https://www.winatural.com/CEDAR-WOOD-SOAP-DISH-p/r-99040.htm">https://www.winatural.com/CEDAR-WOOD-SOAP-DISH-p/r-99040.htm</a></p>	<p>Participants choose A over B possibly because they believe biodegradable soap does not cause chemical pollution to the environment, uses no plastic ensuring no environmental pollution and lower carbon footprint</p>	<p>247 (92.9)</p>
			<p>B Non-Biodegradable soap from plastic bag with plastic dispenser</p>  <p>Source: HVL-Sogndal campus</p>		<p>19 (7.1)</p>

<p>10</p>	<p>Health, climate change (carbon footprint), behavioural change</p>		<p>A Variety of different foods little meat and mostly healthy sold at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>	<p>Participants choose A over B possibly they believe because the food is healthier and likely has a lower carbon footprint and negative environmental impact</p>	<p>252 (94.7)</p>
			<p>B Little variety of different foods a lot of meat and mostly unhealthy sold at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>		<p>14 (5.3)</p>

<p>11</p>	<p>Reduce consumption, improving personal economics</p>		<p>A: More expensive new textbook sold at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>	<p>Participants choose A over B possibly because they believe it reduces consumption and improves personal economy</p>	<p>260 (97.7)</p>
			<p>B: Cheaper used textbook</p>  <p>Source: Victoria Slaymark</p>		<p>6 (2.3)</p>

<p>12</p>	<p>Electricity -saving, behavioural change, social, reduced inequality, social inclusion</p>		<p>A: Stairs at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>	<p>Participants choose A or B because they may believe:          A: allows equal access for disabled          B: reduces electricity consumption (and money spent on electricity)</p>	<p>250 (94.0)</p>
			<p>B: Elevator at HVL-Sogndal campus</p>  <p>Source: HVL-Sogndal campus</p>		<p>16 (6.0)</p>

