

CLIMATE FRAMEWORK FOR HIGHER EDUCATION INSTITUTIONS-GUIDELINES



A Climate framework for higher education institutions, with the aim of engaging universities and university colleges in Sweden to contribute to both national and international commitments to reach the so-called 1.5°C target.

Higher education institutions (HEIs) have a central role in efforts to combat climate change. We have an important task to contribute through our teaching and research, but we also need to contribute by reducing the impact of our own operations.

The HEIs that have signed this framework consider the climate to be a crucial and prioritised issue. We undertake to do the following:

- We will through education, research and external engagement help society as a whole to achieve set targets.

- We will work to reduce our own climate impact in line with society's commitment as expressed in national and international agreements.
- We will, based on our HEI-specific conditions, set up far-reaching targets for climate-related work and also allocate resources so that we can achieve these targets and conduct follow ups.
- We will clearly communicate our climate-related work in order to inspire and spread knowledge to other organisations and members of society.

Signatures of the vice-chancellors of HEIs affiliated to the Climate Framework

Contents

Introduction	4	7. Purchasing and procurement of	
Contents	4	goods and services	8
Key areas for HEI-specific measures		8. Investments.....	8
and external engagement.....	5	9. Carbon sinks	8
1. Business trips.....	5	10. Education	9
2. Commuting, trips to and from work	6	11. Research	9
3. Food and food services.....	6	12. External engagement and societal impacts ...	9
4. Energy consumption	6	13. Students	10
a) Operation of the property portfolio	6	Follow up and results.....	11
b) Research and education activities.....	7	HEI-specific organisation and follow up	11
5. Property portfolio, new construction and		Analysis of emissions	11
rebuilding.....	7	Commitment to and follow up of	11
6. Waste management.....	7	Climate Framework.....	11

INTRODUCTION

Introduction

This Climate Framework has been produced on the initiative of Higher Education Institutions (HEIs) with the ambition of clearly contributing to climate change adaptation in line with society's national and international commitments. By 2030, all the HEI signatories of this Climate Framework will have implemented measures in order to be in line with the 1.5°C target. This document includes guidelines for the Climate Framework.

Higher education institutions have a central role in efforts to combat climate change. We have an important task to contribute through our teaching and research, but we also need to reduce the impact of our own operations.

The HEIs that have signed this framework consider the climate to be a crucial and prioritised future issue. This guidelines identifies a number of key areas for climate impact from HEIs. It includes examples of measures that HEIs can take. Depending on local circumstances, different HEIs can choose to focus on different key areas. The guidelines include the key areas education, research and collaboration, but also areas related to campus activities, travelling, procurement etc.

BACKGROUND TO THE CLIMATE FRAMEWORK

The latest report from the international climate panel IPCC¹ underlines the seriousness of climate change and that it is now a matter of urgency to address this. The report shows that warming of 1.5°C will have serious consequences and that these increase considerably at warming of 2°C. At the same time, the commitments that different countries have made so far leads to a warming of at least 3°C during this century and then continued warming². In order for warming to be kept under 2°C and with a striving for 1.5°C in line with the commitments in the Paris Agreement, global emissions need to be reduced by approximately 50 per cent per decade³ so that

we can achieve climate neutrality around the middle of this century and thereafter achieve negative CO₂ emissions⁴.

Sweden's national target in its Climate Policy Framework is not to have any net emissions of greenhouse gases to the atmosphere by 2045, and thereafter achieve negative emissions⁵. Sweden's Climate Policy Framework also involves sub-targets on the way to the long-term target. If the emission reductions are not achieved with sufficient speed, there is a risk that the climate system passes a threshold value and the temperature increases become self-reinforcing⁶.

Enabling the achievement of national and global climate commitments requires changes in the entire economy of society⁷. All sectors of society are affected. HEIs have several roles in this process. Naturally, we will continue to research on climate change; about how it can be mitigated and how we can adapt to it. We will also educate and communicate with citizens and leaders who can implement the transformations. Furthermore, HEIs will develop solutions that can reduce the emission of greenhouse gases and participate in the implementation of these solutions. We also have a responsibility to spread the knowledge that is generated. Finally, we have our own activities that lead to greenhouse gas emissions and these also need to be reduced in line with society in general. The latter is important, among other things to show that HEIs take their own research seriously. There are also growing expectations among students, employees⁸ and the world in

¹ IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp. ² UNEP (2018). The Emissions Gap Report 2018. United Nations Environment Programme, Nairobi. ³ Rockström, J., Gaffney, O., Rogelj, J., Meinshausen, M., Nakicenovic, N., Schellnhuber, H.J. (2017): A roadmap for rapid decarbonization, Science, 355, 1269-1271. ⁴ IPCC, 2018. ⁵ Swedish Climate Policy Council (2018): Swedish Climate Policy Framework. Report no 1. (In Swedish). ⁶ Steffen, W., Rockström, J., Richardson, K. et al (2018): Trajectories of the Earth System in the Anthropocene, PNAS, 115, 8252-8259. ⁷ European Commission (2018): A Clean Planet for all – A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy, COM (2018), 773 final. ⁸ Backgård, F. et al.: We demand our future employers take responsibility for the climate. DN Debatt, 2 December 2018. Alvesson et al.: Universities must initiate climate change adaptation. DN Debatt, 28 October 2018.

general that HEIs are to take responsibility for their own emissions.

This Climate Framework describes how HEIs should address climate change. It indicates important areas in which HEIs affect the climate and also suggest several suitable areas for measures to reduce climate impact. Using this framework, individual HEIs can, according to their conditions, select areas in which to set targets and implement measures. The Climate Framework focuses on emissions from the HEI's own operations, but also covers to a certain degree the core activities of education, research and collaboration.

By joining the Climate Framework, each HEI shows that it takes climate change seriously by allocating resources, implementing measures in order to follow up and report results of climate-related work. Collective knowledge about climate change and its effect is developing fast and continuously. We have a responsibility to follow developments and continuously review the targets and measures in our climate-related work.

An important starting point for the Climate Framework is that it should also contribute to achieving the 17 global sustainable development goals of Agenda 2030. Several of the 17 global goals and the 169 sub-goals concern climate issues. When the UN's member states adopted the global goals, they also adopted a system for how the goals were to be followed up on a national and global level, and indicators have been drawn up to enable developments to be measured.

Involvement, application and follow up of the Climate Framework for HEIs.

The Climate Framework was initiated in the autumn of 2018. The aim is to involve as many HEIs as possible as a way for academia to achieve a concrete and evident effect for climate change mitigation. Participating in the Climate Framework requires a higher education institution to:

- demonstrate a clear strategic goal for reducing its climate impact
- demonstrate systematic goal-oriented work
- report measurable effects and achieved results
- allocate resources, implement measures and report results of climate-related work.

Climate-related work is often long term and quality assured measurability can be difficult to achieve for certain measures. Therefore, if there are good grounds for presuming that implemented activities lead to an emission reduction, these can also be counted as achieved results, even if it has not been possible to measure the effects in terms of reduced CO₂ emissions. The Key Areas chapter provides examples of potentially suitable areas on which to focus. There are also proposals on how measures within each area can be reported.

The HEIs affiliated with the Climate Framework will meet annually to discuss their efforts and the results of the work on climate change adaptation, and to inspire each other to continued action.

A list of participating HEIs are available at <https://www.kth.se/om/miljo-hallbar-utveckling/klimatramverket-1.903489>.

KEY AREAS FOR HEI-SPECIFIC MEASURES AND EXTERNAL ENGAGEMENT

Every higher education institution is unique and therefore has its own challenges in the climate field. Some have already implemented or are in the process of implementing measures to reduce and manage their climate impact. The key areas described below can be regarded as a starting point and inspiration for HEI-specific climate-related work and can act as a tool and driving force for achieving the aims of the Climate Framework.

In addition to their own specific challenges, the higher education institutions have common challenges that should be solved in collaborations with other HEIs. Working groups can be formed for these key areas and they can draw up common proposals for measures and indicators.

The key areas below are categorised in two groups; areas relating to the HEI's core activities (education, research and external engagement), which below are referred to as indirect climate impact, and areas relating to the HEIs' operational activities, which below are referred to as direct climate impact. It should be noted that this terminology does not fully agree with, for example, the Ordinance on Environmental Management in Public Authorities⁹, see also the section below on analysis of emissions. Both direct and indirect climate impact can be both positive and negative. The key areas that are underlined below constitute the areas on which the affiliated HEIs are expected to work with. These areas have been selected as they are the ones judged to have the greatest effect on climate change. As the aim of the Climate Framework is to contribute to reduced climate impact, the indicators that are used for measuring the effects should to the greatest extent possible be connected to emissions measured in carbon dioxide equivalents.

Direct climate impact:

- Business trips
- Commuting, trips to and from work
- Food and food services
- Energy consumption
 - Operation of property portfolio
 - Research and education activities
- Property portfolio, new construction and rebuilds
- Waste management
- Purchasing of goods and services
- Investments
- Carbon sinks

Indirect contribution to climate change adaptation:

- Education
- Research
- External engagement and societal impacts
- Students

1. BUSINESS TRIPS

Why: For many HEIs, air travel is the single largest source of greenhouse gas emissions. In addition to carbon dioxide emissions, aircrafts' high-altitude emissions of water, nitrogen oxides and particles also contribute to climate change. The largest environmental impact of several HEIs stems from their international air travel. Working to optimise travel is important and a challenge, as reduced travel may be in conflict with international career development for researchers, and as the sector works actively to increase internationalisation and external engagement. Avoiding air travel for relatively short trips (domestic) is a common measure, but it is important to be aware that emissions from long haul flights (over 500km) are considerably greater than from short trips¹⁰. There are also no indications that emissions from air travel are decreasing¹¹. Due to technological development, emissions can be expected to fall by 1–2 per cent per person kilometre and year. A study by EPFL in Switzerland shows that measures such as choosing economy class tickets (which means that more seats are filled on each aircraft), taking the train instead of flying for some or all of the journey, and avoiding transfers can reduce emissions by 36 per cent¹².

However, the best course of action can in some cases be to avoid business trips. Travel-free meetings (digital meetings) instead of physical meetings can make an additional contribution to reducing emissions. Furthermore, trips with a high climate impact can be levied with extra charges in line with Fossil Free Sweden's Internal Travel Tax Challenge¹³.

In certain cases, emissions from business trips by car can also be significant. For HEIs with multi-site campuses, the trips between the various sites can also be considerable.

⁹ Ordinance (2009:907) on Environmental Management in Public Authorities. ¹⁰ Environmental Protection Agency (2019): Environmental management by the State 2018. Report 6877. ¹¹ Larsson, J., Kamb, A., Nässén, J. and Åkerman, J. (2018): Measuring greenhouse gas emissions for international air travel of a country's residents' methodological development and application for Sweden. Environmental Impact Assessment Review, 72, 137-144. ¹² Ciers, J., Mandic, A., Toth, L.D., Veld, G.O. (2018): Carbon footprint of academic air travel: A case study in Switzerland. Sustainability, 11, 80. ¹³ <http://fossilfritt-sverige.se/utmaningar/>

Action examples: Initiatives for travel-free (digital) meetings, including internationally, and to facilitate and promote such types of meeting through digitalisation (acquisition of professional equipment in the form of hardware and software). Dialogues about why trips are needed and how more sustainable internationalisation work can be developed. A clear travel and meetings policy, clear aims and guidelines concerning air travel (avoid intermediate landings, only book economy class flight tickets, introduce restrictions on air travel), active participation in Virtual Meetings in Public Agencies (REMM), introduce financial/policy instruments, support travel by rail, adopt Fossil Free Sweden's Company Car Challenge, adopt Fossil Free Sweden's Internal Travel Tax Challenge, cooperate with local organisations (e.g. the Climate Protocol in Uppsala Municipality¹⁴).

Measurement examples: Report emissions in CO₂ equivalents (calculation, measurement or template-based estimates). In addition to the CO₂ emissions that air travel causes, the emissions of particles etc. at high altitude contribute to climate change. In addition to CO₂ emissions, it is therefore appropriate to report the emissions of CO₂ equivalents which are calculated by multiplying the CO₂ emission by a high-altitude factor. The latter can be set at 2.0¹⁵ and should be reported.

2. COMMUTING, TRIPS TO AND FROM WORK

Why: For some HEIs, the trips that the staff and students take to and from campus can be significant. Here, each HEI has unique conditions depending on access to public transport, cycle paths etc.

Action examples: Subsidised purchase of bicycles, facilitate/subsidise public transport, nudging through various competitions, make life simpler for cyclists through easily accessible covered bicycle racks and providing changing room facilities and showers, cooperate with HEIs' property owners and the municipalities' transport office/urban planning office and public transport companies in order to improve traffic flows, ensure that there are charging stations for electric bikes and cars, cooperate with local organisations (e.g. the Climate Protocol in Uppsala Municipality).

Measurement examples: Report emissions in CO₂ equivalents (calculation, measurement or template-based estimates), conduct travel surveys for employees and students.

3. FOOD AND FOOD SERVICES

Why: Food production accounts for a significant part of the global emissions of greenhouse gases. Choosing a climate-smart diet can significantly reduce emissions¹⁶. For Swedish HEIs, opportunities to affect emissions relating to food and food services depends among other things on who rents and operates restaurants, cafés and catering connected with the HEI. In many cases, the HEIs have no direct influence over the food that is served, however, new routines can be established through procurement processes for catering and restaurant services, and through dialogue with the organisations involved. There may therefore be a need for new forms of cooperation between HEIs and restaurant operators and catering companies. Food is also an area that is an important priority for many students.

Action examples: Develop new, climate-smart procedures and policies for the purchase of food and catering in conjunction with conferences and internal meeting (this could include among other things menus with a low CO₂ impact, e.g. vegan diet, climate measurements linked to the menus, restrictions for single-use articles and the phasing out of fossil fuel-based plastic articles, deposit system for takeaway food boxes).

Measurement examples: Emissions measured in CO₂ equivalents (calculation, measurement or template-based estimates).

4. ENERGY CONSUMPTION

a) Operation of the property portfolio

Why: Heating and operation of buildings accounts for a large part of HEIs' energy use. A major part of this is the heating and operation of offices, but there are also special activities, such as laboratories and server halls, that consume a lot of energy. As both heating and electricity in Sweden is produced using CO₂-efficient methods, the emission of greenhouse

¹⁴ <https://klimatprotokollet.uppsala.se/klimatutmaningar/resor/>. ¹⁵ Jungbluth, N. and Meili, C. (2019): Recommendations for calculations of the global warming potential of aviation including the radiative forcing index. *International Journal of Life Cycle Assessment*, 24, 404-411. ¹⁶ Bryngelsson, D., Wirsenius, S., Hedenus, F. and Sonesson, U. (2016): How can the EU climate target be met? A combined analysis of technological and demand-side changes in food and agriculture. *Food Policy*, 59, 152-164.

gases from energy use in buildings can be relatively low. However, improving energy efficiency plays an important role in a climate strategy as access to renewable energy is limited and increased energy efficiency is thus necessary for achieving the phase-out of fossil fuels¹⁷.

Action examples: Insulation, charting of energy flows and activities based on results with very precise measurement data, requirements for electrical, cooling and heating suppliers, optimisation of heating, investigation of opportunities to adapt cooling and ventilation based on usage pattern of premises, optimisation of lighting, optimisation of ventilation, procedures to save electricity, activities/competition/benchmarking /campaigns for the organisation (employees and students), 50/50 cooperation between property owners and the organisation so that 50 per cent of the proceeds from the savings stay with the property owner and 50 per cent goes to those who have made the savings, cooperate with local organisations, as in the Climate Protocol in Uppsala Municipality.

Measurement examples: Emissions measured in CO₂ equivalents (calculation, measurement or template-based estimates), energy use/employee and student, energy use /m², emissions/m², emissions/employee, energy from renewable sources and from fossil fuels.

b) Research and education activities

Why: Energy-efficiency improvements in combination with research and education activities can not only provide positive savings, but also act as a clear and tangible area for climate-related work for employees and students.

Action examples: Optimisation of labs, optimisation of heating, lighting, cooling and ventilation in education premises, optimisation of energy consumption from equipment and media usage.

Measurement examples: Emissions measured in CO₂ equivalents (calculation, measurement or template-based estimates according to the GHG Protocol scope 2, see below in section on analysis of emissions), energy consumption/publication, energy consumption/scope of teaching.

5. PROPERTY PORTFOLIO, NEW CONSTRUCTION AND REBUILDING

Why: Production of building materials and construction processes cause significant greenhouse gas emissions^{18,19}. Over the entire life cycle, these emissions can be greater than those stemming from operation of the buildings. Using state-of-the-art building techniques, there are possibilities to reduce these emissions by almost half²⁰. This may involve the choice of building material, the choice of fuel for vehicles and more efficient processes. HEIs who are constructing new buildings or renovating and rebuilding old ones have great potential to reduce emissions²¹. The choice of building material has a considerable impact on the climate – wood, for example, can act as an indirect carbon sink²².

Action examples: Introduce procedures and climate measures prior to new construction and in the building process, always consider solar cells in conjunction with work on roofs, install solar cells on roofs and facades, climate-smart houses, wooden houses, climate-smart building material, requirements for contractors, requirements for transport in connection with construction, plan for long life-cycle housing with flexible fixtures/application areas, environmental certification for buildings with a system that takes into account climate aspects from a life-cycle perspective, take on Fossil Free Sweden's Solar Challenge²³, cooperate with local organisations (e.g. the Climate Protocol in Uppsala Municipality²⁴).

Measurement examples: Emissions measured in CO₂ equivalents (calculation, measurement or template-based estimates). Number of environmental and/or energy-classified buildings. Number of m² of roof with/without solar cells, CO₂ from transport, CO₂ from A1-A5 according to SS-EN 15804.

¹⁷ IPCC (2018). ¹⁸ Malmqvist, T., Nehasilova, M., Moncaster, A., Birgisdottir, H., Nygaard Rasmussen, F., Houlihan Wiberg, A. and Potting, J. (2018): Design and construction strategies for reducing embodied impacts from buildings – Case study analysis. *Energy and Buildings*, 166, 35-47. ¹⁹ Heeren, N., Mutel, C. L., Steubing, B., Ostermeyer, Y., Wallbaum, H. and Hellweg, S. (2015) Environmental Impact of Buildings – What Matters? *Environmental Science & Technology*, 49 (16), 9832-9841. ²⁰ Malmqvist, T., Erlandsson, M., Francart, N. and Kellner, J. (2018); Reduced climate impact from newly-built housing blocks. The Swedish Construction Federation. ²¹ Farahani, A., Wallbaum, H., Dalenbäck, J.-O. (2019) The Importance of Life-Cycle Based Planning in Maintenance and Energy Renovation of Multifamily Buildings. *Sustainable Cities and Society* 44 (January): 715–725. ²² Ostermeyer, Y., C. Nägeli, N. Heeren, and H. Wallbaum (2018) Building Inventory and Refurbishment Scenario Database Development for Switzerland. *Journal of Industrial Ecology*, Vol. 22 (4): 629-642. ²³ <http://fossilfritt-sverige.se/utmaningar/>. ²⁴ Challenge: Construction and installation <https://klimatprotokollet.uppsala.se/klimatutmaningar/byggnation-och-anlaggning/>; requires an LC analysis in accordance with SS-EN 15804.

6. WASTE MANAGEMENT

Why: The burning of waste consisting of plastic from fossil fuels causes emissions of carbon dioxide. Effective sorting and recycling of waste can therefore be a part of a climate strategy. Circular waste management can also reduce emissions of greenhouse gases from other materials by generating recycled materials and products that can replace materials and products that are produced by more emission-intensive activities²⁵. This applies to both everyday waste from offices and restaurants, and waste of a single-use nature such as construction and demolition waste and discarded office furniture. In most cases, the greenhouse gas emissions related to waste management should be limited in relation to other emission sources.

Action examples: Reduce the total amount of waste, reduce the amount of burnable waste /unsorted waste/fossil fuel-based plastic waste, increase the amount of sorted waste, ensure correct handling of waste, increased reuse of furniture etc., set requirements for suppliers regarding transport /management of waste.

Actions may also include reducing the purchasing of items that will soon become waste and to reuse furniture and computers, for example, repair instead of buying new, buy second hand etc.

Measurement examples: Emissions measured in CO₂ equivalents (calculation, measurement or template-based estimates), number of kg burnable waste /employee, number of kg burnable waste / publication.

7. PURCHASING AND PROCUREMENT OF GOODS AND SERVICES

Why: HEIs purchase and procure a large number of different products and services. Some are specific to the sector, such as laboratory equipment and chemicals, others are more general such as furniture and computers. The manufacturing, transport and use of the products cause emissions of greenhouse gases. Requirements set for mode of transport, packing density and route optimisation are important parameters for setting requirements in the procurement of goods, in addition to the environmental requirements that may be set for specific

goods and their uses. NTNU in Trondheim²⁶ has analysed the climate impact of all purchases, including common product groups of HEIs such as laboratory equipment, chemicals and computer equipment. The purchase of consulting services may also result in significant emissions. Environmental requirements can be set for procurements in all these product groups.

Action examples: Set clear requirements for suppliers, set environmental and sustainability requirements linked to climate impact in public procurements, such as packing density and fuel requirements for transport, demand renewable material, waste prevention measures. (For guidance, see "Sustainability criteria" on the National Agency for Public Procurement website.²⁷)

Measurement examples: Emissions measured in CO₂ equivalents (calculation, measurement or template-based estimates), number of procurements that include requirements relating to climate impact.

8. INVESTMENTS

Why: Private HEIs may have financial assets that need to be invested and managed. Public HEIs do not have these assets but may manage different types of donation and scholarships funds. The international movement to divest (transfer investments) from companies that extract fossil fuels has had an impact at many HEIs. A higher level of ambition may be to invest in companies that are contributing to a climate-neutral society.

Action examples: Ensure sustainable and climate-smart investments, take inspiration from the Climate Protocol in Uppsala Municipality²⁸.

Measurement examples: Percentage of investments in companies that extract fossil fuels.

9. CARBON SINKS

Why: Technological developments are required in order to achieve climate goals. As mentioned above, in addition to reducing emissions there will also be a requirement for negative emissions – investments in activities that remove greenhouse gases from the atmosphere, so-called carbon sinks. This can be achieved by measures such as planting trees, pro-

²⁵ Ekvall, T. and Malmheden, S. (ed.) (2012): Sustainable waste management. Report 6523, Swedish Environmental Protection Agency. ²⁶ Larsen, H.N., Pettersen, J., Solli, C., Hertwich, E.G. (2013): Investigating the Carbon Footprint of a University – The case of NTNU. *Journal of Cleaner Production*, 48, 39-47.–NTNU (2018): Klimaregnskap for NTNU. Metode och resultat for 2016 og 2017. ²⁷ <https://www.upphandlingsmyndigheten.se/hallbarhet/stall-hallbarhetskrav/>. ²⁸ The challenge of other indirect impacts on the climate <https://klimatprotokollet.uppsala.se/klimatutmaningar/ovrigt-indirekt-klimatpaverkan/>.

duction of biochar and carbon sequestration from the burning of biofuels. HEIs have differing possibilities for creating carbon sinks. In certain cases, there may be options to manage land so that carbon sinks are created, in other cases there may be options to use district heating with negative emissions. In addition to the amount of carbon dioxide that is stored, the time perspective of carbon sinks is also significant.

Action examples: Wooden houses/buildings, district heating with negative emissions, CO₂ capture and storage, use of biochar, green spaces, investments in qualitative projects (“climate compensation”).

Measurement examples: Negative emissions measured in CO₂ equivalents (calculation, measurement or template-based estimates)

10. EDUCATION

Why: HEIs can play a considerable role by giving students relevant knowledge and skills in order to contribute to climate change mitigation and adaptation. In this context, HEIs have different conditions and have progressed at different rates. The Swedish Higher Education Authority’s thematic evaluation of integration of sustainable development in education showed a mixed picture²⁹. Among the results was the conclusion that many HEIs need to develop their processes in order to integrate sustainable development in education. For other HEIs it is a question of using the processes that exist to ensure that sustainability issues are integrated in study programmes. There are also many good examples and lessons from different types of study programme. HEIs can provide conditions for the generation that in the future will be making decisions and participating in solving the climate crisis and sustainability challenges. Using this approach, HEIs can also be a part of the solution rather than part of the problem.

Action examples: Systematic work on integrating climate and sustainability issues in study programmes, training of education leaders and management, recruitment of teaching staff, charting of possibilities to integrate climate issues in courses and study programmes, encourage interdisciplinary collaboration on climate and sustainable development.

Measurement examples: Number of courses related to climate/sustainable development, number of staff teaching on climate/sustainable development, course evaluations or course analyses to show the lecturer’s analysis of the course and the outcomes of integration of sustainable development, alumni surveys, the scope of teaching related to climate change adaptation, sustainability labelling of courses, there are also sector-specific guidelines for certain areas. There may be a need here for joint work to develop criteria and indicators.

11. RESEARCH

Why: Transformations to achieve a climate-neutral society requires new research, not only to develop innovations, but also to implement them. In this area also, HEIs have different conditions and possibilities. One factor is whether there are researchers and teaching staff with the knowledge and resources to work on these issues. Recruitment and the use of grants therefore plays a role.

Action examples: Recruit researchers with expertise in sustainable development and climate issues, and support climate-relevant research. Encourage interdisciplinary collaboration concerning climate challenges.

Measurement examples: Collaborative work is needed in this area to develop bibliometric indicators etc.

12. EXTERNAL ENGAGEMENT AND SOCIETAL IMPACTS

Why: HEIs can often play an important role as a meeting place and collaborative partner for various organisations and thereby facilitate new activities and mutual learning. HEIs can also highlight climate issues in different types of collaborative projects with the business sector, public authorities, NGOs and other stakeholders.

Higher education institutions can disseminate information on climate research and work to ensure that climate-related knowledge and expertise generated by the HEI is utilised by society. This can be done in many different ways, such as the HEI’s research and external engagement contributing to influence individuals’ attitudes and behaviour linked to climate impact, to actively take part in public debate, to provide advice to decision-makers, to license

²⁹ The Swedish Higher Education Authority (UKÄ) (2017): Universities’ and university colleges’ work to promote sustainable development. A thematic evaluation, part 1. Report 2017:12.

rights to knowledge assets to collaborative partners and third party organisations, to develop demonstrators for new technical solutions with research institutes or collaborative partners, and to start research-based companies.

A concrete example of how research can be communicated through active measures is to demonstrate various climate-smart solutions on campus. Campus areas are in many cases our external face. Both the property portfolio's outward appearance and the area as a whole, provide a picture of the HEI's vision and ambition. Climate measures can be implemented in a visible way, or the measures within the HEI can be "advertised" in the campus area, for example by signs, video screens or mobile apps, which provide information on climate-related work taking place at the HEI. Another idea is to show building material, media, ventilation, waste water systems etc. in order to spread knowledge and awareness to students and visitors. The campus area can also provide an opportunity to show the possible consequences for biodiversity.

Action examples: Joint projects with different organisations in society, active participation in Fossil Free Sweden (e.g. roadmaps, collaborative groups, challenges), outreach activities prior to law bills, collaboration with organisations working to achieve climate change adaptation can be encouraged, seminars and lectures for the public, demonstration projects on campus and so on.

The number of collaborative projects with external organisations relating to the climate challenge. Collaborative work is needed in this area to develop indicators.

13. STUDENTS

Why: Our study programmes are to provide the students with insights, commitment and tools so that they can be a part of the transformation process and work to establish a sustainable and ethical approach throughout their professional life. Clear external engagement, and the forms this takes, are of the utmost importance for creating credibility and responsiveness among the students.

The students can show a strong commitment, not least in the climate field. Global initiatives and calls to action have been created such as the Student Ecological Manifesto³⁰, which should be taken seriously and supported by HEIs. In the call to action in the Student Ecological Manifesto, which was published prior to the COP24 meeting in Katowice, the students call for their future employers to go from words to action concerning climate and environment-related work. It is our obligation as HEIs to give these students the knowledge they need to be able to push for sustainable development. In their message, they make it clear that it is they who will inherit today's emissions and the consequences they entail.

Proposed action: External engagement, support the students' commitment, initiatives and organisations in the area of climate.

Proposed measurements: Collaborative work is needed in this area to develop indicators.

³⁰ Student Ecological Manifesto (<https://studentmanifestet.se>). Climate Students <https://klimatstudenterna.se/>.

FOLLOW UP AND RESULTS

The main aim of the Climate Framework is for HEIs to implement systematic, clear and effective climate change adaptation. For this to be achieved, every participating HEI is required to have a clear working method established in their operations to reduce their climate impact. Every higher education institution has its own HEI-wide goal-oriented control. The requirement for HEIs wanting to join the Climate Framework is that there are established processes for internal climate-related work. The Climate Framework is based on each HEI having the capacity to implement, assess and guarantee to themselves the effect of their strategic climate-related work.

Achieved results are reported to the Climate Framework in the form of how much the operation's CO₂ emissions have decreased in percentage terms. A process for this will be developed, as well as a joint agreed way to calculate/estimate CO₂ emissions in each key area.

HEI SPECIFIC ORGANISATION AND FOLLOW UP

To achieve set goals, each HEI must have an organisation and follow ups. The HEI decides how this is to be structured depending on existing procedures. However, it is important that decisions are made on allocating resources to the processes and tasks required to be able to fulfil the framework, that responsible persons are appointed and that there is a follow up process.

The Climate Framework sets requirements for each HEI to define a unique budget item for climate measures and define responsibilities and resources that are available for internal climate-related work. As a suggestion, the budget item can be financed by internal costs for business trips by air travel. It is of the utmost importance that resources are defined and responsibilities are clarified in climate-related work to secure the long-term work that is needed to achieve results.

ANALYSIS OF EMISSIONS

In order to prioritise, make commitments and follow up, it is essential to carry out an analysis of emissions. There are various methods and protocols for doing this. One common reference is the Greenhouse Gas Protocol³¹ and ISO 14064 for organisations' greenhouse gas emissions. In these, the amount of indirect emissions included is voluntary, which is important as most of what is described above is defined in these documents as indirect

emissions, using a different definition compared to the one that is used above. Another common concept is the carbon footprint, which often refers to products' climate impact from a lifecycle perspective (i.e. ISO 14067), but it is also possible to talk about the footprint of organisations.

Calculating emissions requires many different data sources and calculation methods. There is often a reliance on information from suppliers, emissions from energy consumption and travel for example. Life cycle assessments can be used to calculate the environmental impact of products and services from "cradle to grave". Environmental-expanded input-output-analysis has been used to chart emissions from all purchases at a university³².

The areas described above have different system boundaries and the degree of difficulty may vary in calculating climate impact as well as effects of measures, making comparisons between them difficult. For example, emissions associated with financial investments, like the effects of education and research, are more difficult to calculate than emissions from the generation of heating.

When calculating emissions relating to the climate it is important to state which areas are included in the calculations and which are not. When choosing the areas for calculations, there are several factors that may be important. One is the HEI's ability to have an effect. A possible general rule is that those areas that the HEI can affect should be included in the analysis in one way or another. Another aspect that may be important is the purpose of the analysis. If the aim is to prioritise, it is sometimes possible to refer to other analyses conducted by other HEIs with similar conditions, and in this case the need to conduct an analysis of your own is not so great.

COMMITMENT TO AND FOLLOW UP OF CLIMATE FRAMEWORK

HEIs can, commit to measures in all the areas described above or just some of the. The commitment can relate to quantitative emission reductions. In such cases, it is important to report what the commitment covers, as well as the period involved and the baseline. The commitment can apply to the entire HEI's operations or specific areas according to above.

There are relevant examples among the climate challenges formulated by Fossil Free Sweden (fossilfritt-sverige.se/utmaningar) and Uppsala Municipality (klimatprotokollet.uppsala.se/klimatutmaningar).

³¹ <https://ghgprotocol.org/>. ³² Larsen et al (2013)

