Sustainability report 2022-2023
Aalborg University (AAU) was founded in 1974 in response to regional challenges and needs for education, growth, and employment. From its inception, external collaboration and problem-based learning (PBL) defined AAU, and these core elements remain to this day where AAU nationally is the preferred collaborative partner of businesses, taking into account university size, and the sustainability report presents examples of how AAU, in various ways, contributes to each of the 17 Sustainable Development Goals.

The 2026 vision for AAU is to be internationally recognized as a mission-oriented university that contributes to sustainable development. This sustainability report presents selected cases on sustainability activities at AAU; is not an exhaustive review of AAU’s sustainability-related work.

Aalborg University Sustainability Report 2022-2023 is the result of a collaborative, inclusive process across AAU. The efforts on sustainability are showcased in cases from research, teaching, engagement, and operations, and they all demonstrate broad commitment to sustainability at AAU. This report presents selected cases on sustainability activities at AAU; is not an exhaustive review of AAU’s sustainability-related work.

Acknowledgements
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Editors
Heidi Simone Kristensen
Assistant Professor, Department of Sustainability and Planning
Sofie Nygaard Rønnov Olsen
Research Assistant, Department of Sustainability and Planning

Layout
Søren Emil Søe Degn
Graphic Designer, AAU Communication and Public Affairs

Times Higher Education Impact Rank overall - Aalborg University

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560 entrants 768 entrants 1118 entrants 1466 entrants 1591 entrants

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Wicked problems are by their very nature challenging and can seem impossible to solve. At Aalborg University, we believe that we can contribute to solving wicked problems through partnerships and working across traditional boundaries. We have made this ambition clear in our strategy “Knowledge for the World 2022-2026” where we put forward our vision to be internationally recognized as a mission-oriented university that contributes to sustainable development. Following this strategy, Aalborg University adopted the first two missions in 2023: well-being of children and young people, and sustainable energy supply. These two missions are a result of our strategic ambition to create knowledge for the world and will be an important part of our contribution to sustainable development going forward.

Given our mission-oriented approach, Aalborg University is driven by a larger purpose that goes beyond the impact of our own organization and aims to contribute to local, national and global sustainable development. Aalborg University aims to contribute to the UN Sustainable Development Goals (SDGs) based on a mission-oriented and action-driven approach with a wide range of societal stakeholders, such as researchers, the business community, interest groups, international partners and public sector organizations, to find the best solutions and create knowledge for the world.

Sustainability is a core part of all our activities at Aalborg University, and the SDGs provide a comprehensive framework for our sustainability efforts. To achieve the SDGs and overcome the urgent challenges we are facing, action is required from all actors in society. Aalborg University acknowledges the vital role of universities in tackling the global challenges presented in the SDGs and is actively working to solve these in ongoing collaborations and partnerships with local, regional and global stakeholders, embedding new and reinforced solutions that support sustainable development.

In 2023, AAU ranked 9th overall in the Times Higher Education Impact Rankings and 2nd for its contributions to SDG 4 Quality education, SDG 10 Reduced inequality and SDG 17 Partnerships for the goals. We are especially proud of these acknowledgements as they are a testament to our collaborative approach to creating knowledge for the world.

The 2022-2023 Sustainability Report presents examples of the work being done by staff and students from all faculties and departments to contribute to all the SDGs. These efforts support the SDGs through research, education, knowledge collaboration and operations to create impact at the local, national and international level, and make a difference to all generations.
Sustainability at AAU at a Glance

AAU is a mission-oriented university
With two missions adopted to support SDG 3 and SDG 7

No. 2 university in the world on SDG 4 in 2023
(out of 1504 institutions)

In 2023 AAU ranked in the World Top 10 on sustainability in the THE Impact Rankings

AAU is the best engineering university in Europe

AAU developed its first Climate Plan in 2023

No. 2 university in the world on SDG 17 in 2023
(out of 7625 institutions)

8/10 leading scientists in Electronics and Electrical Engineering in Denmark came from AAU in 2023

No. 2 university in the world on SDG 10 in 2023
(out of 901 institutions)

More than 51,000 green student meals in 2022-2023 at AAU

51% reduction in water consumption per user in 2022 compared to 2006

50% of external members in AAU’s board must be female

In 2022 AAU launched 8500 m² Innovation HUB

90% of companies experience that collaboration with AAU leads to innovation

31% of AAU management must be female

98 cold water fountains across AAU

75,000 m² of wild nature at AAU

98% of AAU research staff must be female

8/10 leading scientists in Electronics and Electrical Engineering in Denmark came from AAU in 2023

2.336 research staff

1.337 administrative staff

4 faculties

AAU is the best engineering university in Europe

18.559 students (total)

2.229 international students

826 PhD students

67 Bachelor programmes

94 Master programmes

AAU is a mission-oriented university
With two missions adopted to support SDG 3 and SDG 7

Who are we?

Grants

Where?

Aalborg Campus
212,000 m²

Esbjerg Campus
13,000 m²

Copenhagen Campus
40,000 m²

Danish public
Danish private
EU
International

AAU is a mission-oriented university
With two missions adopted to support SDG 3 and SDG 7
At Aalborg University, we believe that knowledge can and must change the world. To that end, Aalborg University is a university with high ambitions. We seek knowledge through interaction with the world around us and are dedicated to solving real problems.

Aalborg University is a leading university in terms of supporting and promoting balanced and sustainable development, which according to the UN is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Aalborg University contributes to sustainable development through our core activities in research, learning and teaching, external leadership, and governance and operations.

Research
With Aalborg University’s problem-based approach, researchers are committed to solving challenges and gaining new insights across traditional disciplines with the common goal of creating a better world. At our four faculties, we address major societal challenges and aim to deliver applicable knowledge for the world through excellent research. Researchers across the university are working to help achieve sustainable development on a local, national and international level. We work to provide the necessary knowledge, technologies, innovations and pathways to enable implementation and achievement of the UN Sustainable Development Goals.

At Aalborg University, researchers work across disciplines and sectors to ensure that our research creates knowledge for the world. We engage in partnerships with businesses and public sector authorities to be able to deliver valuable knowledge as an important contribution to developing sustainable solutions to societal challenges.

Learning and teaching
The PBL-based pedagogical model of Aalborg University has become both nationally and internationally recognized by universities, researchers and students as an advanced, efficient learning model. Our goal is to drive change by educating graduates for the labour market of the future who are ready on day one to solve future challenges. We work to continuously to ensure that our programme offerings meet the needs of surrounding communities and the future labour market.

All students at Aalborg University learn to collaborate, and to apply a critical, analytical, problem-oriented, and innovative approach, which will help them make their knowledge available to society. We educate graduates in a wide range of fields, and our engineering and science programmes are internationally recognized and are commonly ranked among the very best.

External leadership and engagement
The journey towards a sustainable future necessitates a strong foundation of transformative knowledge, coupled with close partnerships with relevant stakeholders. Aalborg University’s tradition of strong collaborative relationships with businesses, universities, civil society, and public sector authorities is thus one of the cornerstones of the university’s contribution to the sustainable development of society. Collaboration with external stakeholders helps to ensure that both research and educational activities are relevant and contribute to the advancement of society.

Governance and operations
Aalborg University strives to integrate sustainability in all activities, and we work strategically to reduce our negative environmental impact and create positive impacts instead. We work on energy saving targets, waste sorting, biodiversity, responsible procurement, promoting a safe, healthy working environment and strong governance structures.

Knowledge is the alpha and omega. The world needs universities that engage critically and constructively, and take responsibility for our shared future by transforming complex challenges into sustainable change.

AAU Strategy: Knowledge for the world 2022-2026
A safe and just world

In 2022, society was shocked by geopolitical events on European soil, inflation and an energy crisis that have changed the lives of many people. The implications continued into 2023 challenging collaboration and joint efforts on climate change etc. This all underscores the need for a safe and just world.

We live in a time of change, and relationships between humans, cultures, and institutions are changing. To bring about a safe and just world, co-creation in re-conceptualizing the relationship between public authorities and citizens must be ensured.

Security and safety are essential to achieve SDG 16 and require that national security sectors are effective and operate with respect for human life. To overcome the current imbalance and obtain a just world, it is important to uphold and reinforce the rule of law principles governed by strong institutions.

Safety in times of conflict requires defence mechanisms beyond those used in political arenas and on battlefields, as digitalization and technological advancements have increased the need for cyber security and for building cyber resilient infrastructures, supporting SDG 9.

Quality of life and the safety of many lives were impacted by the European energy crisis, which underlines the need for a transition to a green, resilient and flexible energy sector, supporting SDG 7.

At AAU, we strive to contribute to a safe and just world through our activities in research, education, outreach and operations. To shed light on some of our contributions, this page presents examples of initiatives aiming to support a safe and just world.

A consistent and detailed strategy for a fully decarbonized society

In Nordic criminological and legal research literature, it is often argued that a rise of punitive populism took place in the 1990s - 'punitive turn, Nordic style'. The project examines whether and how this turn has influenced the legislative process in Danish criminal law-making and impacted substantive criminal law over the last four decades. The project aims to contribute to a knowledge-based nuanced of the criminal policy debate in Denmark and the possible consequences of the trends investigated for the quality of criminal law.

CRUCIAL addresses the challenge for utility infrastructures to assure stable operation that is resilient to malfunction, outages and cyberattacks. To this end, CRUCIAL will develop the next generation of monitoring and control software solutions. CRUCIAL’s product is secure-by-design control and optimization software for uninterrupted operation of water and electricity infrastructures providing:

- Anomaly resilience (safety), i.e., the ability to detect human errors as well as cyberattacks and respond to them
- Confidentiality of algorithms and privacy

Punitive turn, Danish Style

Danish universities and GTS institutes collaborate on defence technology development

AALBORG UNIVERSITY

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Engineering students repair hospital equipment and teaches hospital staff in Africa

The organization EWH Aalborg (Engineering World Health) supports engineering students who want to do humanitarian volunteer work by participating in one of its summer programmes.

The work mainly includes repairing hospital equipment and teaching the hospital staff to use the equipment and repair it if necessary. This greatly benefits African hospitals as a lot of their current equipment is either broken or the staff is not able to operate it.

Every year one or more students participate in this summer programme thanks to donations to EWH Aalborg.

Green must be the new black: Development of business models for green charcoal

In Uganda and in many other countries in Africa, Latin America and Asia, charcoal is to a large extent used for cooking. This in turn entails health risks, deforestation and rising temperatures. A sustainable alternative does exist: green charcoal.

Green charcoal is made from residual products from the agricultural sector. However, it is not widely used. For green charcoal to become a viable alternative, new business models are needed to make it worthwhile both to produce and to buy green charcoal.

Researchers in the Department of Communication and Psychology at AAU are helping to activate local as well as global knowledge and experience to shape useful business models for the transition from black to green charcoal. One of the methods is called ‘co-creating transition’. The project, UPCHAIN, originates in Uganda, but the potential is global. UPCHAIN is supported with 11,999,489 DKK from Danida.

Access2Innovation

(A2I) is a spinout from AAU and is the leading Danish network for innovative, sustainable, commercial solutions for African emerging markets. Since 2007, A2I has resulted in more than 80 partnerships between companies, NGOs, investors, knowledge institutions and authorities, offering financing and expertise in innovation and business development in Denmark and Africa.

With support from the European Regional Fund, A2I in recent years has supported AAU in engaging in 12 innovation partnerships along with Danish SMEs anchored in needs identified in East Africa. The partnerships range from optimization of batteries, improved planning tools for solar parks, AI solutions for tracking of wildlife to improved cock stoves.

In addition to this solution driven approach, A2I, AAU, the Danish Red Cross and WWF Denmark have addressed the underlying challenges in the financial ecosystem that now prove to be the major bottleneck in scaling solutions in African markets.

In 2023, the course is now set for a dedicated focus on developing sustainable solutions targeting food loss and increased productivity in selected food value chains in Africa. This will be done by bringing high-tech low-cost solutions to tackle needs for improved water, irrigation, access to energy for processing and production, optimized logistics etc. in partnerships between the private sector, civil society and researchers.

End poverty in all its forms everywhere
The Department of Sustainability and Planning at AAU, in conjunction with two departments at the University of Copenhagen, has analysed Danish companies in cultivation, production, sale and consumption of plant-based foods, given that increased production and consumption of plant-based food can reduce the climate impact of production and consumption of food if it reduces the production and consumption of meat and dairy products. The project analysed the companies’ product areas, employment and competences, relationships with suppliers and customers as well as their views on prerequisites for future growth. Combined with an analysis of measures on the production and consumption of plant-based foods in Germany, the Netherlands and Israel, proposals were developed for several possible Danish measures. The report served as part of the knowledge base for developing the Danish action plan for plant-based food.

Edible insects for a sustainable future
Compared to traditional protein sources, insects have several advantages and common features: They support a more sustainable production, they have more nutritional and health benefits, they pollute less and are thus more environmentally friendly, and resource utilization is higher and more efficient. AAU organized a theme day to present new research and engage in constructive dialogue on ‘Edible Insects for a Sustainable Future’. The programme included new findings and research on the use of insects for food and feed. The purpose of the day was to continue to develop this relatively new research area and industry that receives great media attention and public interest in insects as feed and food. Attendees at the theme day were stakeholders across traditional disciplines.

RN Robotics
Established in 2022, RN Robotics is a spin-out focused on developing a self-driving agricultural platform. Their aim is to reduce pesticide usage for weed control, optimize fertilizer application, and monitor plant growth.

Grass4Food
In the future, we should reduce the consumption of steaks, cheese and the like. Instead, we should learn from and eat what cattle do: grass. By doing so, we will reduce greenhouse gas emissions, with positive effects on climate.

Green student meals in AAU canteens
The canteens at AAU are operated by Jespers Torvehakken, a food service provider that is at the forefront of responsible canteen management, striving to reduce the environmental impact of the canteens. Jespers Torvehakken is in the process of becoming B-Corp certified, which means that they document how they address sustainability in all facets of the company. For example, they work intensively on limiting food waste and through collaboration and dialogue with AAU, Jespers Torvehakken is working to reduce food waste through data, meal planning, and preparation. A focal point at AAU has been the introduction of green student meals, which is an important step in making AAU canteens affordable for all – the student meals are cheap, and meat is optional. This has resulted in more than 51,000 green student meals sold in 2022-2023.
Better help-seeking for children with mental health disorders

Many children and adolescents with mental health disorders are not in contact with specialized mental health services. To close the service gap, it is important to increase knowledge on barriers to access. In a cross-sectional observational study, 244 parents of children and adolescents were interviewed regarding barriers to accessing mental health services and the research group found these results: The most reported barriers were lack of information about where to seek help (60.3%), the perception that professionals did not listen (59.8%), and professionals refusing to initiate interventions or provide referral to services (53.7%). Lack of knowledge, stigmatization and unavailability of services were common themes across barriers to help-seeking. Such knowledge is important for improving practice.

Sound feedback for rehabilitation

This research project at the Department of Architecture, Design and Media Technology, explores how sound feedback technology can make rehabilitation more effective for people with neurological issues. The aim is to develop a tool that enhances patient engagement, motivation and re-learning of movements such as walking. The hope is to improve patients’ quality of life and increase their chances of returning to a fully productive life. The tool acts as a feedback system that is based on data from motion sensors attached to the patient that generate sound cues. These feedback cues help patients gain greater awareness of their movement quality than would usually be possible, accelerating their relearning process. This technology is expected to benefit individual patients, and to positively impact the healthcare system and society at large.

Desinfection robots

A study group in Sustainable Design has conducted a project on sustainable conversion of disinfection robots used to reduce routes of infection. The robots are a useful tool against pandemics such as the coronavirus. The students researched the market, conducted a Life Cycle Assessment of the robot and developed new requirement specifications. The result of the project included a sustainability strategy for the company Sterisafe as well as a series of requirement specifications for the company’s robot with a view to potentially introducing the robot – which is already in use internationally – in Danish hospitals.

Student well-being in focus at annual Study Environment Day 2022

More than 200 students registered for the Study Environment Day on Campus Aalborg. This was a record number of participants, which highlights the importance of this year’s Study Environment Day theme Student Well-being, an issue that after two years with the coronavirus pandemic seems particularly important to the students. The day was planned by the and designed to give the students new, concrete knowledge and tools to improve their well-being at the university. In workshops, students could learn about well-being in group work, learn to become aware of their personal stress pattern and how to thrive under pressure, acquire tools to develop their mindset and motivation as well as build good study techniques. The day ended with pizza, snacks and board games where the participants highlighted the good atmosphere that energized the day.

AAU adopted two missions in 2023: one mission is focused on the

Well-being of children and young people

Ensure healthy lives and promote well-being for all at all ages
On 1 January 2022, AAU opened IAS PBL – a new inter-disciplinary problem-based learning institute for advanced study (PBL).

PBL is the core of the university’s pedagogic approach and provides the foundation for AAU to enable students to learn through addressing authentic problems. IAS PBL aims to strengthen and advance PBL in the work it is recognized for the great work that tutors do to ensure the new students a good, fun and secure start to their studies. In 2022, the tutor corps in the Communication and Digital Media programme at AAU won the prize. The new students nominated the tutors themselves, noting that their introduction period had been fun and safe environment. Moreover, the nomination stated that the tutors created a sense of community, and planned activities that embraced everyone. According to the tutor group, their main focus has been on exactly that: making as many people as possible feel comfortable during the introduction period. The prize is DKK 10,000 to be used for a social event.

In QS Reimagine Education as the most innovative educational concept in Europe.

Students working at Aalborg University City Campus (Photo: William Holler Brandstrup)
Girls’ Day in Science

For several years, AAU has hosted an annual Girls’ Day in Science with the goal of encouraging more young women to pursue a career in STEM (Science, Technology, Engineering and Mathematics). During this event, AAU invites several hundred young women from local high schools to spend a day at AAU with our female PhD students and researchers.

In 2022, about 400 young women visited all three campuses for Girls’ Day in Science. The young women spent the day getting introduced to the STEM area and experienced what the Aalborg model is like. They participated in workshops on coding, microplastic, and energy consumption in buildings, to name just a few. Hopefully, their participation in Girls’ Day in Science further inspired them to choose a STEM career.

Celebration of International Women’s Day

What is the gender equality paradox? Is there equality in the labour market? And what are women worth?

These were all questions that were debated when AAU celebrated International Women’s Day with the event ‘Is the fight a pretty sight?’ attended by HRH Crown Princess of Denmark.

For the event, AAU brought together several inspiring personalities who all had one thing in common: fighting for a more fair and equal society. Presentations and debates focused on cultural and structural barriers that create inequality between genders.

Blind recruitment: removing bias from the hiring process

There must be more focus on gender equality when hiring new staff at AAU. AAU is therefore starting a pilot project aimed at selected positions where identifying information is removed from job applications and CVs before they reach the appointment committee. The purpose is to remove information that may affect the hiring process so that the best qualified are hired. Specifically, profile pictures and other information that is irrelevant to the position – such as gender, age, ethnicity, marital status and hobbies – are removed. The appointment committee must also weigh selection criteria, create question frameworks, conduct case-based interviews and watch a video of the most frequent pitfalls when it comes to bias in the recruitment process.

New target figures to promote equality in senior management

Half of the external members of AAU’s University Board must be women. For the rest of management, the target is 31 percent. These are the university’s new targets for the underrepresented gender on the board and in other senior management that the board adopted in December 2022. Rector Per Michael Johansen believes that the new target figures can help push the university in the right direction in terms of creating more equal gender distribution in the university’s management positions by including all types of talented individuals.

To meet the new targets, the university must employ at least three additional women in senior management compared to today. This corresponds to an improvement of six percent and a relative improvement of 20 percent.

Achieve gender equality and empower all women and girls

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FIERCE: Feminist Movements Revitalizing Democracy

FIERCE aims to provide theoretical and practical knowledge and tools to revitalize alliances between the feminist movement, civil society and political decision makers in a context of growing social inequalities, political disaffection and strengthening of populists, radical right, anti-gender/anti-feminist actors and discourses. It develops understanding of feminist and anti-feminist/anti-gender movements, activities and discourses, and their impact on the institutional arena and on policy outcomes focusing on the period 2010-2021.

Building on co-creation methods and on a strong alliance with civil society organizations, FIERCE proposes pilot actions that can reinvigorate democratic practices, in line with feminist inclusive visions for the future of democracy. FIERCE thereby sets out a bottom-up, problem-driven and impact-oriented approach, bridging academic knowledge, policymaking and bottom-up democratic strategies.

Achieve gender equality and empower all women and girls

Practices and Strategies of Gender Representation in Danish Political Parties: Dilemmas of “Everyday Democracy”

In Denmark, women’s representation at the national parliamentary level has stagnated at 37-39 percent which has remained the average since 1998. At the same time, the average percentage of women candidates is lower than the percentage of women elected. AAU researchers seek to explain this gap by addressing internal differences in practices and strategies in recruitment and nomination in the parties, without formal quota systems.

The study focuses on internal, informal measures to promote gender equality in representation (or lack thereof) and asks why some parties are laggards while others have achieved high levels of women’s representation. The framing and focus of the study is on the dilemmas of ‘everyday democracy’, exploring the diversity of practices and strategies for training, visibility and empowerment of women candidates as measures of gender equality/parity.
Membrane distillation and membrane crystallization for recovery of water and minerals from waste streams

The water supply in South Africa is scarce and combined with an insufficient supply of minerals it demands research and technology development. The ambition of this project is to produce a system for simultaneous recovery of fresh water and minerals from waste streams with the long-term objective of providing an alternative solution for water and resource supply from wastewaters.

To achieve this goal, AAU, University of Witwatersrand and the companies Grundfos Holding A/S, power stations and mining companies in South Africa have joined forces to solve current and future problems of water and resource supply.

Smart Water Infrastructure (SWIft)

The research in the SWIft project is directed towards optimization and control aspects of large-scale infrastructures with a particular focus on water supply networks. Specifically, we will develop methods that solve the ambivalence between vulnerability and optimality, i.e., the more efficient the infrastructure, the less robust it is to faults. The empirical study and the verification of hypotheses will be done in the Water Lab. Nonetheless, we anticipate that our contribution will be suitable for the majority of large-scale infrastructures including electrical grids, wind farms and transportation networks. Our hypothesis is that enhancing the AI – using application-specific knowledge described in a mathematical model – will enable safe operation and faster optimization.

Nanobubbles for aeration and wastewater treatment

Nanobubbles are a new technology where air bubbles are formed from e.g. oxygen or ozone in nanometer size, i.e. very small bubbles. This technology is relevant for wastewater treatment where nanobubbles have several advantages: they provide much better utilization of the air that is supplied compared to traditional aeration; free radicals are formed when the bubbles collapse, which can break down organic molecules; and they can be transported around in a wastewater tank and guided to the place where they are to be used.

This project at AAU investigates how nanobubbles can supplement or even replace traditional bottom aeration in wastewater treatment, including to what extent nanobubbles can remove unwanted micro pollution. The project is being done in collaboration with industrial partners and states around the Baltic Sea aiming to improve the aquatic ecosystem.

The impact of wastewater on biodiversity

AAU researchers in the Department of Chemistry and Bioscience are involved in the project ‘Spildevandets påvirkning af biodiversitet’ [The Impact of Wastewater on Biodiversity] developing novel DNA analyses for surveillance and control of microbial communities in technical systems and standardized monitoring in aquatic biodiversity.

The aim is to segment microbiological composition and describe how wastewater treatment plants can be managed for resource and energy recovery and to monitor how effluent may affect biodiversity in the recipient streams.

AAU frequently collaborates with industrial partners, such as utility companies, in projects where new methods are essential for commercially viable and sustainable products in high demand among municipalities and others engaged in wastewater treatment and recovery of resources as well as those subject to water quality regulations.

Rainwater usage in gardens at the main campus

On the main campus in Aalborg East, the majority of the 200,000 square meter garden and green areas are watered using rainwater. The rainwater is collected in two places on the campus – from a 25,000-litre rainwater basin and a 15,000-litre tank buried in the ground. This method enables us to save groundwater and make use of the natural minerals in the rainwater. The outdoor area of the main campus in Aalborg East (Photo: Emilie Bach Pedersen).

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AAU research advances development and implementation of green energy systems

Ensuring access to affordable, reliable, sustainable, modern energy for all is the core of SDG 7. Research, education and innovation are paramount to further progress on the transition to green energy systems. At AAU, energy and electronic- and electrical engineering are essential focus areas, and we are proud to have some of the best researchers in these fields.

Brian Vad Mathiesen, Professor in Energy Planning in the Department of Sustainability and Planning, has been named the most excellent researcher worldwide in the field of energy systems by Research.com in 2023 based on his work on future materials for power-2-x-technology and developing energy efficiency in systems.

Smart Energy Systems - international conference

The International Conference Smart Energy Systems 2023 in Copenhagen has more than 200 speakers and is being hosted by AAU and Energy Cluster Denmark. The aim of the annual conference is to create a forum for the industry, politicians and scientists where scientific findings and industry experiences can be discussed. The focus is on enhancing the knowledge of Smart Energy Systems (SES), 4th Generation District Heating, electrification, electro fuels and energy efficiency. The concept of SES is essential for 100% renewable energy systems to harvest synergies and exploit low-value heat sources. The most effective solutions are to be found in combining the electricity sector with the heating and cooling sectors and the transport sector. The combination of electricity and gas infrastructures may play an important role in future renewable energy systems.

In 2022, AAU launched cross-disciplinary research ESUS (Energy for Sustainable Society) across three faculties (TECH, ENG and SSH). The ambition is to create human-centred sustainable energy solutions that lead Denmark to achieve net-zero emissions. The aspiration is the creation of Research & Innovation (R&I) Communities that build on the existing, rich energy research at AAU and develop this further by collaborating across sectors and disciplines.

Achieving novel carbon neutral energy communities

To accelerate the transition of electricity systems to a more decentralized structure, the SUSTENANCE project aims to demonstrate cost-effective, customer-centric solutions for effectively integrating different energy system carriers for the sustainable development of regional communities in meeting their energy needs from local sources of renewable energy. Specifically, the goal is to establish locally integrated ‘energy islands’ that will aid the decarbonization of local energy systems and increase the levels of renewable energy use, enhancing the environmental, social and economic conditions of citizens.

The project involves 21 partners from 12 countries across India and is led by AAU. The project has demonstration sites in Denmark, the Netherlands, Poland and India.

AAU adopted two missions in 2023: one mission is focused on ensuring access to affordable, reliable, sustainable and modern energy for all; the other is focused on the reduction in energy consumption per user in 2022 compared to 2006.

Positive outcome from energy optimizations

AAU is systematically working to reduce energy consumption. The reduction efforts are based on:

- Energy renovation and improved energy efficiency: AAU continuously implements energy-saving measures on technical installations, such as replacing lighting with LED, replacing ventilation units and pumps with low-energy models and establishing building management systems and automatic control of heating and ventilation. In addition, several adjustments have been made to ensure energy-efficient heating, cooling and ventilation systems.
- Phasing out of energy-inefficient buildings: AAU has in recent years removed energy-inefficient research and laboratory buildings. These buildings have replaced older, space- and energy-inefficient buildings that have been decommissioned. This way, AAU ensures a better fit to the desired activity, and the buildings, on average, are more energy efficient.
- Area optimization: AAU is focusing on densifying and sharing facilities which leads to a reduction in the building area and a reduction in energy consumption overall. The administration has introduced an activity-based working environment with shared workplaces for approximately 500 employees. Similarly, several research environments are working to share more of their buildings such that densification takes place on an ongoing basis.

AAU’s climate response 2045

It is quite possible for Denmark to meet the government’s climate objectives. Professors Henrik Lund, Brian Vad Mathiesen and colleagues, in the research group Sustainable Energy Planning in the Department of Sustainability and Planning, have collaborated with the Danish Society of Engineers, IDA, to compose IDA’s climate response 2045. The climate response is a concrete solution for how Denmark can reach its 2030 goal of 70 percent CO2 reduction and become climate neutral by 2045. The report focuses on energy efficiency improvement in industry and buildings, planning for increased electricity consumption due to the reduction of fossil fuels, the need for increased wind power, further development of biomass, and the need for electrically fuelled public transport. The IDA vision also serves as the foundation for Heat Plan Denmark 2021 which explains the vision for the future heat supply in Denmark.

Positive outcome from energy optimizations

In 2021, the Aarhus University Business School (AABS) has placed 52nd in the world and 17th in Europe in the latest QS World University Rankings by subject. The rankings are based on criteria that measure the quality of teaching and research, reputation, and international outlook of the school.

In 2021, the Aarhus University Business School (AABS) has been named the most cited expert in the global climate research community. The ranking is based on the number of citations received by articles published in peer-reviewed journals and is a measure of the impact and influence of the school's research.

Demonstration village Aardehuizen in the Netherlands with PV penetration both on the garage and in the fields around the houses (Photo: Derwin Hoogsteen, University of Twente)
A study by AAU Business School showed that the plans for CO2Vision will significantly increase the need for welders and electricians. The shortage of welders and electricians will be significant in just 5-7 years. Projections estimate the number nationwide to be 20,000 and the study estimates that the need will peak at the beginning of 2030 when most carbon capture facilities are established. Welders and electricians will be needed in a new context, so adaptability is important. However, for now, engineers are the most needed resource, according to the preliminary study results.

Inclusive employment for all

Despite praise for the Danish labour market for being very competitive, flexible, inclusive and secure, there are still groups that are left behind, for instance people with disabilities. At the Research Centre for Disability and Employment, leading Danish experts on labour market and social policies study the mechanisms underlying lower employment of people with disabilities and how to bridge the gap to persons without disabilities.

The research applies an integrated approach and studies labour supply (people with different types of disabilities), labour demand (employers) and labour matching (employment services). The researchers collaborate with the stakeholders (disability organizations, civil authorities, and labour market organizations) to achieve social impact and promote inclusive employment for all.

Data science and machine learning guide midwives and nurses to safe childbirth in global south

Researchers from AAU Business School are engaged in a developing collaboration with the Maternity Foundation, a Danish NGO that aims to ensure safe childbirth for women and newborns globally. "Data science and machine learning have the potential to transform the health sector," says social scientist Signe Pedersen, who leads the research project investigating data extracts from the foundation’s app “Safe Delivery” that is used by midwives and nurses in the global south. The app improves skills, knowledge and confidence, and can be used by professionals as pre-service education or on-the-job training and guidance. AAU has developed machine learning-based extensions for the NGO’s Safe Delivery App that aim to improve conditions for midwives and nurses, and improve maternal and neonatal health outcomes. AAU students are involved in integrating AI techniques to make the app more efficient in providing the right content to users.

Vocational schools as bridge-builders for safe work

The aim of this project is to contribute knowledge and tools that can improve the safety of pupils and apprentices. The project is led by researchers at the Centre for Youth Research at the Department of Culture and Learning, the National Research Centre for the Working Environment, Occupational Medicine at the University Clinic, Gødstrup Regional Hospital, and international researchers. They will develop and test occupational health and safety education, focusing on safety and occupational accidents, as well as strengthen pupils and apprentices’ action skills, as well as their own knowledge and confidence, and can be used by professionals as pre-service education or on-the-job training and guidance. AAU has developed machine learning-based extensions for the NGO’s Safe Delivery App that aim to improve conditions for midwives and nurses, and improve maternal and neonatal health outcomes. AAU students are involved in integrating AI techniques to make the app more efficient in providing the right content to users.

LISES (Local Innovation in Social and Employment Services) researchers and knowledge brokers bring knowledge to practice

Twice a year, LISES researchers meet with the LISES knowledge brokers—employees who are particularly committed to knowledge mobilization in practice. They are from the six municipalities that are part of the LISES collaboration. The seminars address particular themes where LISES researchers engage in dialogue with the knowledge brokers on specific topics within each theme. A knowledge mobilization format has also been developed for the seminar series: Visit the experiences. Here, selected knowledge brokers from the municipalities describe to the other participants how they specifically handle knowledge mobilization in their municipal practice.

The knowledge brokers are part of LISES’ work to create and anchor an organizational structure that supports reflexive practice and promotes citizen involvement in the municipal employment administrations.

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Photo: Emilie Bach Pedersen
SUSTAINABILITY REPORT 2022-2023

At Aalborg University, we are at the forefront of collaboration with the wider world. We embrace all disciplines and constantly challenge their boundaries within the realm of science. It is the foundation upon which this house is built, and the strong base upon which we shall continue to build.”

AAU INNOVATE is a new 8500 m² extension to AAU, providing space for cross-disciplinary research, innovation, entrepreneurship and collaboration with society at large. The hub offers a variety of facilities, including nine thematic labs and eight garages for innovation, entrepreneurship and collaboration with the Danish Nature Agency and global stakeholders.

Two startups at AAU INNOVATE exemplify our commitment to empowering students to contribute to societal challenges. Pull & Go develops wheelchair attachments that combine push and pull functions. The aim is to enhance mobility and alleviate shoulder pain for wheelchair users utilizing technology to improve accessibility and quality of life. Fireobs specializes in advanced systems for early forest fire detection, reducing economic and biodiversity costs. Collaborating with the Danish Nature Agency and global stakeholders underscores the significance of Fireobs’ proprietary technology.

"It gives us an incredible number of opportunities to be housed in AAU INNOVATE. We have access to knowledge sharing with other developers like ourselves. And we receive training and participate in workshops focusing on product development and business start-ups under the auspices of AAU Student Entrepreneurship. It has pushed us to where we are today. That is, where we now have a product that works and can solve a huge global problem.” - Jenisten Anthony, FireOBS

Let’s innovate - Grand opening of AAU INNOVATE
On October 3, 2022, AAU’s rector officially opened AAU INNOVATE - Science and Innovation Hub with these words: “At Aalborg University, we are at the forefront of collaboration with the wider world. We embrace all disciplines and constantly challenge their boundaries within the realm of science. It is the foundation upon which this house is built, and the strong base upon which we shall continue to build.”

AAU INNOVATE creating a frame for startups
AAU Student Entrepreneurship strives to make entrepreneurship accessible to all AAU students, regardless of academic background and career aspirations. We offer curricular and extracurricular entrepreneurship activities to students supporting their professional competencies and entrepreneurial mindset. Two startups at AAU INNOVATE exemplify our commitment to empowering students to contribute to societal challenges. Pull & Go develops wheelchair attachments that combine push and pull functions. The aim is to enhance mobility and alleviate shoulder pain for wheelchair users utilizing technology to improve accessibility and quality of life. Fireobs specializes in advanced systems for early forest fire detection, reducing economic and biodiversity costs. Collaborating with the Danish Nature Agency and global stakeholders underscores the significance of Fireobs’ proprietary technology.

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Drones for Windmills - Proof of concept
The project ADD2Wind investigates the use of drones to transport items atop large windmills. This can have several positive effects. Firstly, it can improve the efficiency and safety of maintenance work on the windmills, as technicians can avoid the risks associated with climbing to the top of the windmills. Secondly, it can reduce the downtime of the windmills, as parts and tools can be delivered quickly and easily, enabling maintenance work to be completed more swiftly. This can result in increased energy production and lower costs. Additionally, the use of drones can reduce the environmental impact of maintenance work, as it can eliminate the need for heavy machinery and reduce the amount of carbon emissions associated with maintenance activities. Finally, the use of drones for this purpose can also lead to cost savings for wind farm operators, as it can eliminate the need for costly crane rentals and reduce labour costs.

Societal impact through annual conference
The annual conference – Environmental Assessment Day’ – hosted by AAU since 2009 has proven to be a significant activity for researchers to impact society towards sustainability. The conference is a co-creating space and a hub for societal stakeholders to meet, exchange and contribute to collaboration across practice and research. In 2023, the conference attracted more than 300 actors representing different consultancy companies, authorities at different levels, researchers, and the ministry in charge of legislation.

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

New project will deal with rising costs of maintenance critical infrastructure
A new research project will aim to tackle the rising costs associated with maintaining and repairing critical infrastructure such as the Great Belt Bridge and the Lindfjord Tunnel. The new type of monitoring, Structural Health Monitoring (SMH) systems, increases the safety and lifespan of the structures while also reducing CO₂ emissions. With the new structural health monitoring, it is possible to continuously monitor the structures and obtain more reliable data on corrosion. In addition, the new types of sensors can be retrofitted, increasing the lifespan of the individual structures.

In 2022 AAU launched 8500 m² Innovation HUB

Student invention turns noise into music
Noise in the hospital is a growing problem for both patients and staff. Sounds from alarms, telephones or talking can lead to stress, anxiety and burnout. Two noise therapy students, Cilla Jepsen and Mindaugas Dambrauskas, have made an invention that eliminates such sounds without isolating the user in their own bubble as happens when wearing a headset. Denoiser works by adding music in sync with the noise, thus reducing the noise. The physical device has not been developed yet, but the two students have tested the idea with sounds from the hospital and found that their invention led to users becoming more relaxed, less fatigued, and less disturbed by the noise. Denoiser will also work in other environments such as offices, dental clinics or even in the home. The two students won two awards at the Health HUB Innovation Award 2022.

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Sustainable and responsible accommodation of refugees

A group of students in the Techno-Anthropology degree programme has examined what happens when refugees from minority language areas come to Denmark. Being obliged to sign a digital integration contract in a language they do not understand and have difficulty translating can create issues that Danish society needs to be aware of. In addition, communication with Danish public institutions takes place via e-Boks also in Danish. Knowledge in this area is needed in order to create sustainable and responsible accommodation of these refugees.

Health perceptions and behaviours among socially marginalized men

The effects of social marginalization and health are well-documented, revealing a complex association between health perceptions and health behaviour. This is especially evident among socially marginalized men. These men have varying health challenges and engage in risky health behaviours, such as alcohol consumption, tobacco smoking, and lack physical activity. The ethnographic study including 200 hours of participant observation and 25 interviews with socially marginalized men aged 45–65 showed that health was perceived as relating to the ability to participate in daily life activities, such as getting around effortlessly and the ability to work. Overall, the results provide important insight into how health perceptions and health behaviours are embedded in the men’s everyday lives. This knowledge may be used by health professionals in providing and developing health services.

Unwarranted variation in health care in focus

At the Danish Centre for Clinical Health Service Research (DACS) unwarranted variation in health care is one of the primary research areas. Health service research can be defined as research on the functioning of health services. Clinical health services research is focused on clinical activities and aimed at increasing our understanding of the interaction between the organization of health care systems, use of resources, quality of care and patient outcomes, including survival, functional level, and quality of life. The research is predominantly based on clinical epidemiological methods and involves observational as well as interventional studies. Data from existing data sources are often used, including nationwide clinical quality databases and national health registers.

AAU research contributes to advancing equal treatment in the health care sector (Photo: Nils Krogh)

No. 2 university in the world on SDG 10 in the THE Impact Rankings 2023 (out of 901 institutions)

AAU launches diversity and inclusion training

Most people do not deliberately exclude anyone. Even so, we sometimes end up doing and saying things that seem exclusionary. The best way to become aware of one’s own biases is to constantly be challenged and confronted with them. These were some of the messages when the first round of was launched in spring 2022. The training consists of workshops in unconscious bias as well as cultural intelligence and supports the action areas that AAU has included in the university’s strategic action plan for equality and diversity. Around 160 administrators and staff members have participated in the training and gained evidence-based knowledge about how diversity factors such as gender, age and cultural background can create value in management, forms of communication and collaboration.

AAU conducts an inclusion survey

In the autumn of 2022, a questionnaire was sent out to all permanent staff members with the headline ‘How do you experience inclusion at AAU?’ The questionnaire is part of the survey that aims to provide knowledge about how the university can become a more diverse and inclusive workplace. The survey shows that AAU is a workplace with a high degree of friendliness, respect and freedom, but where few take responsibility for including those who experience different challenges than the majority. It is especially the international, female and younger staff members who experience challenges related to inclusion, such as gaining access to informal networks, participating in decision-making processes or building a relationship with the manager. Among international staff, the language barrier is a particular challenge for inclusion.

More knowledge on bowel diseases and mental illnesses will ensure equality in treatment

Research from the PREDICT Centre of Excellence at Aalborg University in collaboration with Harvard Medical School and Mount Sinai Hospital in New York shows that up to 35 percent of the 50,000 Danes living with chronic inflammatory bowel disease, such as Crohn’s disease and ulcerative colitis, suffer from anxiety or depression. Unfortunately, many patients with chronic bowel disease do not receive optimal treatment for their mental health issues. The research from the PREDICT Centre of Excellence in this area can help ensure that cooperation between gastrointestinal departments and psychiatry receives more attention so that this patient group also receives treatment for anxiety or depression.
Sustainable screw piles will revolutionize the building industry

Foundations based on steel screws can replace traditional foundations. This will make future building construction faster, cheaper and more sustainable. Along with the companies Andreasen & Hvidbjerg and BAYO.N, Professor Lars Bo Ibsen in the Department of the Built Environment has headed a project where steel piles several meters long that are screwed into the carrying layers underground were tested. Toughest foundations made from gravel, sand and concrete require machines that emit large amounts of CO₂ to dig away the top layer of soil and dispose of it. The foundation must then be prepared with sand and gravel – resources that are rapidly becoming scarce – and a concrete footing is cast using cement that is also very heavy on CO₂ emissions. All of this can be avoided by using screw piles, and the building process can start the day after the foundation has been screwed into the ground.

Culturally Sensitive Tourism in the Arctic

The project ‘Culturally Sensitive Tourism in the Arctic’ – ARCTISEN – develops a support system for start-ups and existing small and medium-sized enterprises offering innovative tourism products and services. Expanding tourist interest in the Arctic brings unforeseen opportunities to maintain local livelihoods and lifestyles. The project partners in Finland, Sweden, Norway, Canada and Denmark/Greenland highlight the pressing demand for new tourism products and services that draw on the rich natural and cultural resources of the region. Simultaneously, limited knowledge of indigenous and other local cultures in northern communities calls for more open and sensitive dialogue among different tourism actors.

Healthy and resilient homes

There is an increasing focus on the indoor climate of buildings, and that was exactly what students in the Master of Architecture program worked on in the project ‘Living on the Edge’. They designed a healthy and resilient building complex in Rotterdam, a city that floods a few times a year. The building thus had to be both resistant to flooding and at the same time have a healthy indoor climate. They designed a ground floor that can dry in record time and return to normal after a flood. The students thought of even the smallest details that could solve the big challenges of flooding and indoor climate. They designed a ground floor that can dry in record time and return to normal after a flood. They had also thought through the entire interior in the process and designed it in resistant materials. The project won second prize in a Healthy Homes Design Competition in Rotterdam.

The future of arctic coastal ecosystems - Identifying transitions in fjord systems and adjacent coastal areas (FACE-IT)

Managing the consequences of a warmer Arctic on the cryosphere, biodiversity and societies is a major challenge, requiring knowledge about how the social-ecological system operates and how it may operate in the future. In a scenario workshop in the summer 2023, researchers in FACE-IT engaged with local stakeholders to discuss potential future developments around Nuup Kangerlua (the Nuuk Fjord). FACE-IT provides the first large-scale systematic comparison of coastal areas under variable degrees of cryosphere loss. The project’s activities include field campaigns and workshops in Porsangerfjorden (Porsáŋgguvuotna), Finnmark, Norway; and Isfjorden, Svalbard and Disko Bay, Nuup Kangerlua, Greenland. FACE-IT is anchored in the Department of Culture and Learning and has received funding from the European Union’s Horizon 2020 research and innovation programme.

Living on the edge – Risk, resources, resilience and relocations in the western Limfjord, ca. 1750-1900

The ‘Living on the Edge’ project examines how the population along Danish coasts has lived and dealt with the ravages of storm surges from approximately 1750 to 1900. Results from case studies on Agger and Harboøre facing the North Sea are typical of regions of risk. Human settlements were marked by an accommodation to nature when it comes to construction of houses, dikes and plantations. Similarly, the occupational strategy of the coastal dwellers was marked by a plurivocal combination of part-time jobs that distributed the risk of poor fishing and farming seasons, and not least the impact of sudden natural disasters such as floods and violent storms. Our results show that, paradoxically, lower loss of life and resources that draw on the rich natural and cultural resources of the region. Simultaneously, limited knowledge of indigenous and other local cultures in northern communities calls for more open and sensitive dialogue among different tourism actors.

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CircularTEX
In the textile industry, a 75 percent reduction in new products is needed to reach climate goals. The main purpose of the CircularTEX research project is to strengthen sustainability by extending the lifespan of textiles. Textile production needs to match customer needs instead of today’s over-production of poorly developed textiles, premature disposal and deadstock. A change like this will lead to significant CO₂ reduction.

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TECH Centre for Circular Economy will help achieve a sustainable future
As AAU, an interdisciplinary centre called TECH Centre for Circular Economy (TECH4CE) will strengthen the many different initiatives in sustainable and responsible consumption and production. TECH4CE will contribute to the progress already made in production businesses such as textile, plastics, electronics, and building, by analysing and developing strategies for these initiatives. Particular focus is on design of circular products and business models, logistics regarding materials and resources, traceability of products and their life cycle, standardizing and certifying recycled products and materials, and documentation of environmental effects. TECH4CE consists of representatives from all four departments under the Technical Faculty of IT and Design.

In 2023, TECH4CE hosted its first summer school in applied circular economy, relevant for both PhD students, academics and professionals within the field.

Engineering programme in Sustainable Design
The engineering programme in Sustainable Design enables students to transform products and systems in order to achieve greater sustainability. Students learn to work with the different aspects of sustainability, including sustainability in relation to climate and social issues. The programme combines sustainable product design with tools from innovation theory and user-oriented design. Visualization and experimentation are important strategies for developing new innovative solutions that can overcome system dependencies and achieve sustainable system transformation in various sectors of society. Students engage in challenging design-oriented problem solving in collaboration with NGOs, companies, public institutions and professional groups. Thus, graduates of this programme contribute to transforming the SDGs into action in society both during their studies and as professionals.

Old furniture is upcycled instead of ending up as waste
A more circular way of thinking about the materials we consume is necessary, and specific consideration is given to durability, the possibility of repair, recycling, and disposal. Every time furniture is purchased at AAU, Campus Service is increasingly trying to reuse or upgrade existing furniture rather than discarding it. The latest example of this is the project ‘Upcycling for the Built Environment’. They have been given a service overhaul and a new table top, and a new life as group tables in study areas. Another example is some of the many partitions found in open study areas at the university. Here, the frame is reused and made up-to-date boards with acoustic-regulating material and glass or whiteboard are installed. At the same time, a programme’s identity is reflected in the recycling of furniture.

Ensure sustainable consumption and production patterns
Plastic is used all over: for packaging and products, creating enormous amounts of waste with negative environmental effects. Switching from a take-make-dispose approach to plastics to a circular economy built on reusing and recycling plastic is not trivial. It requires cutting edge technology, redesign of manufacturing systems and supply chains, and consideration of the entire product lifetime. At the Faculty of Engineering and Science, we are engaged in developing technologies for mechanical recycling, methods for sourcing and handling material streams, and other solutions to these challenges in the project Circularity of Industrial Thermoplastic for High Quality Recycling. The project is based on close industrial collaboration, and the aim is to enable companies to use recycled plastics in their products to the highest possible value application preferable in their own products.
Environmental Assessment

DCEA - The Danish Centre for Environmental Assessment

DCEA is an interdisciplinary research and policy engagement centre focusing on impact assessment and decision-making practices in the sustainability domain. DCEA is involved in several projects and initiatives all working to develop climate and environmental solutions for a sustainable future. One is the upcoming AAU Climate Account and Climate Plan where DCEA has a key role. This has a wide focus on both the footprint and handprint of university activities. DCEA is also leading the International Horizon Europe project, ALIGNED, that creates a common assessment platform to support bio-based production. Further, DCEA is leading the project GETTING THE DATA RIGHT which is a large project aimed at providing data for decision support for effectively reducing greenhouse gas (GHG) emissions. This involves GHG emissions data on the production and consumption of all products in all countries.

In May 2023, 50 staff members and students met for an internal Kick Off of AAU’s Climate Plan 2030 [Photo: Lasse Møller Badstue]

Towards EU embodied carbon benchmarks

As the primary result of the project ‘Towards embodied carbon benchmarks for buildings in Europe’, researchers from AAU in collaboration with Ramboll and KU Leuven developed a framework for benchmarking and limiting the embodied carbon of new buildings. The project began with a study identifying solutions to measure embodied carbon emissions and to define carbon budgets and targets. Secondly, the project included recommendations for a baseline of current embodied carbon levels in new buildings as well as considerations of the available carbon budget for these emissions. The ambition is that the project will lead to policy development across Europe at the political level and to the implementation of a performance system in the form of benchmarks for the reduction of embodied carbon to integrate climate change measures into policy and planning.

Tool for the sustainable transformation of the Danish construction sector

The transformation of the Danish construction sector revolves around the project ‘Towards embodied carbon benchmarks for buildings in Europe’. The tool, called LCA DIALOG, produces a Life Cycle Assessment (LCA) that calculates the potential environmental impacts of buildings, including production and use of materials, energy consumption throughout the buildings’ life cycle, and disposal or recycling of the materials. The tool is interactive and allows construction companies to enter all relevant data. The first version was developed in 2013, and is to this day continuously adjusted by a team of AAU researchers in order to incorporate e.g. DGNB sustainable building certifications and new legislation.

Kick off of AAU’s Climate Plan 2030

In 2021, Aalborg University adopted three climate targets that in 2023 were complemented by the development of AUA’s first climate plan. The climate plan addresses the handprint and footprint of AUA, and consists of nine action areas (three handprints and six footprints). The nine areas cover our footprint in relation to research, education and behaviour and communication, as well as our footprint connected to buildings and energy consumption, procurement, mobility, food and beverage, waste resources, and investments.

In May 2023, 50 staff members and students met for an internal Kick Off of AAU’s Climate Plan 2030 at AAU INNOVATE with a two-part programme: first presentations and then a workshop consisting of eight groups. The presentations provided inspiration for further dialogue in the groups – analogue as well as digital – and all participants had the opportunity to provide input on the plan in relation to the nine action areas.

Following the Kick Off, several workshops have been held covering the individual action areas in the climate plan. During the fall of 2023, all staff and students were invited to provide input and ideas for the climate plan. In the spring of 2024, the climate plan will be supported through the development of specific action plans and targets.

In 2021, Aalborg University adopted three climate targets that in 2045 in the cheapest and best possible way while striving to make it technologically, organisationally, and humanely possible to further enhance the ambition of these targets.

• Aalborg University has reduced its greenhouse gas emissions by 70 percent in 2030 (1990 baseline)

• Aalborg University is climate neutral no later than 2045

• Aalborg University will contribute to national fulfillment of the 70 percent reduction in 2030 and climate neutrality in 2045 in the cheapest and best possible way while striving to make it technologically, organisationally, and humanely possible to further enhance the ambition of these targets.
The 21st Danish Marine Researcher Meeting

In August 2022, AAU hosted the 21st Danish Marine Researcher Meeting – a three-day event focusing on issues such as sustainable fishery, microplastics, and restoration and preservation of marine environments. The meeting was held with a sense of urgency: Today, the sea is under ever-greater pressure from economic growth and development, and damage to the ocean has far-reaching effects on productivity, species diversity and resilience.

The mission of the Marine Researcher Meeting, which is held every second year, is to increase awareness of the importance of marine environments, including sustainable use of marine resources. The meeting includes participants from universities, authorities, ministers, the business community, interest groups, the fishing industry, the Danish Society for Nature Conservation, members of parliament, etc.

The Fish's Footprint

The number of fish in the oceans is not infinite, and the negative climate impact from fishery should not be neglected. This is documented by an AAU research project called The Fish's Footprint. AAU researchers have examined the climate impact of the Danish fishing industry through life cycle assessments. The project applied different methodological approaches, scrutinized the importance of assumptions and data availability as well as examined the communication challenges that may arise when calculating the climate impact from fishing. The project's results mark a starting point for future endeavours to reduce Danish fishing's climate impact based on data and with a clearly defined focus. The project's insights will be relevant for the development of consumer-oriented environmental and climate labelling or campaigns.

The Centre for Blue Governance – Interaction between people and the sea

The Centre for Blue Governance (CBG) at AAU is a multidisciplinary research group focused on the interaction between people and the sea. CBG is working to empower coastal communities to transition towards sustainable, inclusive, and resilient coastal development. The Centre for Blue Governance supports the development of fisheries must respect the marine environment as well as commitments to combat climate change. The Centre for Blue Governance is funded through the EU's Horizon Europe programme and spans six living labs across six European regional seas. Healthy oceans and seas are essential to our existence, and in the Horizon 2020 research project – Ecological Tipping Cascades in the Arctic Sea, CBG is focusing on understanding and predicting changes in Arctic marine biodiversity and implications for two vitally important marine ecosystem services: fisheries production, which is the economic lifeblood of many Arctic communities, and carbon sequestration, which has important feedbacks for the global climate.
The Danish Hedgehog Project aims to document the status of species and optimize conservation strategies to protect wild hedgehogs. (Photo: Tine Reinholt Jensen)

Research-based protection of wild hedgehogs
An AAU researcher in the Department of Chemistry and Bioscience is documenting the status of species focusing on optimizing conservation strategies to protect wild hedgehogs as the European hedgehog is vulnerable to extinction. The "Danish Hedgehog Project" involves more than 400 volunteers collecting dead hedgehogs from all over Denmark. The project identifies the dead hedgehogs to describe the general health status of the Danish hedgehog population including examining parasite burdens, microbiomes, pesticides and other chemicals in the hedgehogs, and the impact of inbreeding on hedgehog life expectancy. The findings show that the Danish hedgehog population has low genetic diversity, indicating a high degree of inbreeding. The likelihood of inbreeding increases as the hedgehog's habitats become fragmented by roads, buildings, fences, and railway tracks, and as population decline restricts the pool of potential mates.

AAU represented in Denmark’s first Biodiversity Council
When Denmark’s first Biodiversity Council was established in 2021 by the Ministry of Environment, AAU professor Niels Madsen was appointed as one of the council’s nine members. Niels Madsen particularly contributes with expertise on biodiversity in the coastal zone and the sea. The council advises the Danish government and Parliament on how to improve conditions for the proliferation of wild nature in Denmark where species of different kinds can thrive. In 2022, the council published its first report with the disheartening conclusion that Denmark so far has not done nearly enough to turn the loss of biodiversity, which is already well documented, into progress. The establishment of the Biodiversity Council reflects an ambition to give a historic boost to Danish nature and is part of a broad political agreement dating back to 2020.

Biodiversity makes AAU a living lab
In 2022, walk and talk routes were established on campus where staff and students can hold meetings outside while also enjoying the benefits of daylight, fresh air, movement, and the view of the flourishing areas. The gardening team has also created a community garden where students and staff can use a raised bed to grow their own flowers and vegetables. In addition, falcon boxes have been set up on some of the tall buildings in the area. Biodiversity is increased by letting grass and herbs grow wild, and to further support this, a brush fence was erected, and insect hotels have been set up throughout Campus East. These measures also turn the campus into a place where this year several project groups are investigating biodiversity as part of their semester projects.

75,000 m²
of wild nature at AAU

BioValue
Biodiversity loss needs urgent action: turning research results on biodiversity protection into actionable measures is a priority for Europe. To this end, collaboration is essential for informing national and European policies. The project BioValue leverages transformative change in spatial policymaking, planning practices and infrastructure development to upscale opportunities for valuing biodiversity in support of EU strategic action. BioValue considers three complementary instrumental perspectives to support different sectors and actors in taking ownership of biodiversity concerns:
- Spatial planning and management instruments
- Environmental assessment instruments
- Economic and financing instruments

BIOPATH - Pathways for an efficient alignment of the Financial System with the needs of Biodiversity
The research project aims to contribute to transformative change by turning the financial system into an important driver for halting and reversing the loss of biodiversity. The vision is that the knowledge and innovations generated in the project are widely integrated into decision making in industry and the financial system. Land use is the largest driver of terrestrial biodiversity loss. Therefore, BIOPATH focuses on land use change and management intensity related to agriculture, forestry and energy.

The research project aims to map, assess, co-develop and test existing and novel approaches for the integration of biodiversity considerations into financial decision making with our financial and industrial partners, and analyse the institutional and policy implications of potential transition pathways.

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Ladybug in the rewilding area on AAU’s main campus (Photo: Morten Johansen)
**Green transitioning calls for specific skills in public employees working with administration**

Researchers in climate communication from Denmark and Sweden have developed a method that strengthens public institutions in the green transition. The method enables institutions to utilize citizen potential to create change, such as investment in green solutions. The method requires public frontline employees to meet citizens on new terms, which requires skills to listen and new ways of interacting with citizens. For example, the citizens of a municipality want an impartial, individual advice on converting from an oil-fired boiler to a heat pump – advice that would be too expensive for the municipality to provide. The municipality was open to the citizens’ request, and a solution was found in home get-togethers where the citizens invited friends over for coffee with an energy consultant sent by the municipality to give advice. The method is available at samskabende.com.

**Whistleblower policy at AAU**

In 2021, AAU introduced a new whistleblower policy creating a reporting scheme to protect whistleblowers and ensuring that serious mistakes or negligence are found and, to the greatest extent possible, prevented. The policy applies to both current and former staff members as well as external partners of the university. From December 2021 to December 2022, AAU received three reports through the whistleblower scheme. This is taken as evidence that the policy is successful, and the scheme has been evaluated as being a good supplement to day-to-day communication and management at AAU. Two of the reports are still being processed while one has been resolved.

**Algorithmic Explainability for Everyday Citizens**

Despite the ever-increasing impact of AI on our daily lives, everyday citizens are insufficiently able to understand and interact with algorithmically driven decision-making. In the Algorithmic Explainability for Everyday Citizens project, researchers in the Department of Computer Science seek to understand the needs of the public in assessing AI-driven decision-making. Based on the needs identified, the researchers will develop and evaluate interactive applications to inform the design and deployment of future AI-driven decision support systems.

**Human rights salon**

The Department of Law held an online human rights salon open to all interested parties. The featured speaker was an AAU professor from the Raoul Wallenberg Institute for Human Rights. The topic of the salon was Human Rights Cities – cities where local government, local parliament, civil society, the private sector, and other stakeholders are committed to making sure that the city applies international human rights standards. Human Rights Cities strengthen the local level in addressing issues across sustainability, accessibility, governance, public services etc. Thus, human rights cities contribute to achieving the SDGs.

**Master of Public Governance**

The continuing education Master of Public Governance is aimed at managers and leaders in the public sector to develop their personal management practice. The purpose is to qualify and develop the public manager’s ability to perform professional management and develop their own management practices. The training emphasizes the development of personal management practice and allows for flexibility for the individual participant.
Aalborg University - impact through partnerships

AAU actively engages in creating strong partnerships on a local, regional, national and international scale. AAU is involved in various partnerships to promote cross-sectoral dialogue and action for developing best practices, new innovations and technologies aimed at tackling the diverse sustainability issues. The scale of the partnerships ranges from international collaborations to collaborations between businesses of all sizes, public sector organizations and AAU researchers or students to rental of AAU research equipment and facilities.

AAU’s engagement in partnerships for the goals received a second place on SDG 17 in the Times Higher Education Impact Rankings 2023. Here we present some of the strategic partnerships at AAU:

**Energy Cluster Denmark**

AAU is heavily involved in Energy Cluster Denmark (ECD). Denmark’s cluster organization for the energy system. Strategic research partnerships with small and medium-sized companies, global companies and public organizations lead to beyond state-of-the-art energy solutions for the transition towards climate neutrality and a fossil-free society. AAU researchers work with ECD members in domains such as energy production, storage, efficiency and system integration. AAU is a board member in ECD.

**CESAER**

CESAER is a united voice of 58 science and technology universities in Europe. Participation in CESAER provides opportunities for Aalborg University to influence key bodies, participate in European funding programmes and advance understanding of science and technology in societies for a sustainable future. AAU is represented in several task forces, for example Task Force Sustainability. Its purpose is to accelerate needed change and advance contributions to knowledge societies for a sustainable future, and in doing so to externally and internally advocate, inspire and learn through best practice.

**Green Transition of Education and Educational Technology (GreenEdTech)**

Climate change mitigation is the most urgent political agenda, and education is a core instrument in addressing the challenges. GreenEdTech will develop sustainable education solutions for Danish schools that integrate digital learning to educate young people to be at the forefront of mitigating climate change and obtaining new green jobs. The consortium consists of academic environments, edtech development organizations, the Danish Agency for IT and Learning, and Danish companies delivering green solutions. AAU plays a vital role in the GreenEdTech partnership as leader of the project and is responsible for designing models for education in sustainable development.

**CO2Vision**

CO2Vision is the joint beacon of green growth in the entire region of North Denmark aiming at making the region a national and global frontrunner for carbon capture, utilization, and storage (CCUS). CO2Vision derives from a wide-ranging partnership, consisting of more than 50 private companies, organizations, educational and research institutions, and business developers.

AAU is part of the consortium behind the beacon, and we complement it specifically with mapping of energy infrastructure, construction of test facilities, real-time simulation of the integration of new technologies in the energy system, analyses of related labor market needs and design of educational programs for the future CCUS-industry in collaboration with companies and educational institutions.

**Transatlantic Telehealth Research Network**

As the prime mover in Denmark, AAU is a major presence in the Transatlantic Telehealth Research Network (TTRN) - a partnership between Denmark and the USA dedicated to developing cutting-edge research and innovation in telehealth to improve health and well-being for patients globally. The research is interdisciplinary and focuses on developing new diagnostics, preventive care and treatment technologies for patients in their own homes utilizing telehealth technologies. Problem-based, user-driven innovation is a key focus in the international and interdisciplinary TTRN.

TTRN gathers knowledge and contributes with research projects, PhD courses, white papers and position papers that have an impact globally. Currently, TTRN is concerned with how technology can help solve the major capacity problems in the healthcare system.

**Strengthens the means of implementation and revitalize the global partnership for sustainable development**

As a network university, AAU is a member of international networks and international collaborations that extend around the world. This map shows our international collaborations regarding projects and publications, 2019-2023 (Source: AAU Research Portal).
About this report

This report constitutes only a small subset of the many initiatives AAU has embarked on in our efforts to contribute to achieving the UN Sustainable Development Goals. Additional information on how Aalborg University engages with the UN Sustainable Development Goals in research, teaching, collaborations and operations can be found on the AAU website.

The activities presented in this report have been identified and selected through comprehensive consultations with key stakeholders from the Faculty of Medicine, the Technical Faculty of IT and Design, the Faculty of Engineering and Science, the Faculty of Social Science and Humanities, Campus Service, AAU Innovation, the Rector’s Office, Study Services, and AAU Communication and Public Affairs.

Publication data used in this report for the first 16 Sustainable Development Goals was extracted from ScWalc using the predefined Research Areas in ScWalc for the respective SDGs. The methodology used by ScWalc to define the SDG Research Areas is the Elsevier 2023 SDG mapping. The search was limited to publications from 2018–2023, and data was extracted on 31 October 2023.
