SDG HIGHLIGHT REPORT 2021 & 2022

جامعة الملك عبدالله للعلوم والتقنية
King Abdullah University of Science and Technology

KAUST Sustainability

CONTENT

FOREWORD FROM THE PRESIDENT

KAUST has been a beacon of social change and environmental stewardship since its genesis. As a leading academic institution in the Kingdom of Saudi Arabia, the Middle East, and the World, we recognize the pivotal importance of achieving the United Nations Sustainable Development Goals (SDG) and the pressing need to accelerate innovation on sustainable technologies and solutions that address humanity's current challenges.

Sustainability has always been embedded in KAUST's academic curricula, fundamental and applied research, operations and infrastructure, backed innovative technologies, and in the engagement we create with all our stakeholders. We pride ourselves on educating thought leaders that are able to understand and share the importance of technoscientific knowledge to the sustainable evolution of humankind.

This report captures some of the extraordinary work our faculty, students, staff and collaborators develop every day for the betterment of our world, and the world of those yet to come. I hope that the projects, initiatives and activities presented will inspire us to continue our sustainability journey, and also inspire local, national and international audiences across all sectors of society to engage with us in the search for the solutions we need to collectively thrive.

Let us nurture today to sustain tomorrow.

Dr. Tony F. Chan
KAUST President

INTRODUCTION

KAUST is highly committed to working towards the UN 2030 Agenda for Sustainable Development. Over the past two years, the university has made significant advances in its sustainability agenda at a local, national and international level.

In a global cooperative effort, KAUST joined 57 other universities in signing an international joint statement of support for the UN 2030 Agenda and the achievement of the SDGs, and enrolled in multiple international sustainability networks. Additionally, the university has showcased sustainability leadership in global fora, including COP 26 and 27, the UN Ocean Conference, G20, Future Investment Initiative, World Sustainability Forum, and UNESCO-TWAS General Conference.

Nationwide, KAUST has partnered with several pivotal giga projects for the sustainable development of Saudi Arabia, and been a key partner for the Saudi Green Initiative, in line with the Kingdom's Vision 2030.

At the university, a Sustainability Working Group (SWG) was created with the purpose of bringing together all relevant teams and departments of KAUST to a common platform aimed at facilitating discussion and promoting cross-cutting collaboration on KAUST's sustainability objectives.

Consolidating all these efforts, KAUST has released a Sustainability Vision Statement, launched a Sustainability website - which showcases our leadership in sustainability-driven education, research, innovation, operations, and outreach - and has accelerated the development of a sustainability roadmap and climate action plan, aimed at informing the institution's sustainability commitments.

This report aims to celebrate some of the several contributions KAUST has made towards the achievement of the Sustainable Development Goals over the years of 2021 and 2022. While not being an extensive showcase of all our contributions, we have highlighted projects, programs and initiatives that have been set-up or continuously ran during the reported period, and are related to each specific SDG across three broad categories: Education & Research, Operations, and Engagement & Outreach.

With this first SDG Highlight Report, we aim to openly share meaningful achievements, evaluate our impact within and beyond our borders, and foster joint growth with other academic institutions and organizations who share our values and goals.

Education & Research

Funding research initiatives and **investigating solutions** for pressing sustainability challenges, which enable development for the region and the world

Developing meaningful **academic curricula, educational programs** and **lifelong learning opportunities,** that guarantee **quality education** and **inclusiveness**

Operations

Tackling operational excellence through **efficient management of people, resources** and **infrastructure**

Developing and piloting resource circularity programs towards **zero waste** and **net zero carbon operations**

Creating inclusive and empowering opportunities for **human development** and **capacity building**

Enhancing the services provided to the KAUST community

Engagement & Outreach

Engaging with like-minded stakeholders who commit to a shared sense of purpose in the pursuit of sustainability

Reaching to local, national and international communities and disseminating information and awareness about sustainable development

KAUST Sustainability Vision

The Earth is being damaged by climate change and other human impacts at a rate unprecedented in history, threatening the well-being of present and future societies. At KAUST, sustainability is at the core of our education, research, innovation and operation, helping us to catalyze and realize the urgent solutions and actions needed to reverse these changes, contributing to human prosperity and development in the Kingdom and the world.

We aim to be a global model for resource circularity and a technoscientific leader in the protection and restoration of the land and coastal environment on which KAUST is established.

We exist to nurture the people and the solutions that will help sustain our planet.

1 NO POVERTY

End poverty in all its forms everywhere

1.1 EDUCATION & RESEARCH

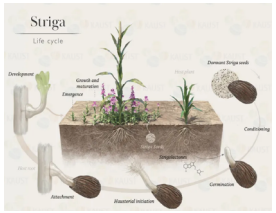
Helping low-income countries assess their energy resources

KAUST researchers from the Ali I. Al-Naimi Petroleum Engineering Research Center have conducted important research to support the sustainable development of the energy supply sources of Rwanda. During 2021 and 2022, the team first conducted an analysis to determine the energy efficiency and sustainability assessment for methane harvesting from Lake Kivu, and later published a comprehensive evaluation of the country's energy resources.

Currently classified as a low-income country, Rwanda's goal is to be a high-income country by 2050. However, developing a country with limited access to energy and critical levels of environmental depletion is a big challenge. Studies such as these are valuable tools to ensure a full understanding and minimization of mismatches between available resources and the developmental goals of a country.

Fighting poverty through the eradication of Striga

The Striga Solutions project, led by researchers from KAUST's Center for Desert Agriculture, aims to eradicate witchweed (Striga hermonthica), a parasitic plant that attacks cereal crops, including pearl millet, a staple food for African smallholder farmers. It is estimated that Striga infestations cause annual losses of more than $7 billion, impacting the livelihoods and food security of approximately 300 million people.



The multidisciplinary project has a global collaborative network of experts from Saudi Arabia, Japan, The Netherlands, Burkina Faso, and Kenya, and is supported by a $5 million grant from the Bill and Melinda Gates Foundation since 2019. Over 2021 and 2022 the team has been developing efficient hormone-based methods, is working on the identification of genetic targets for breeding and generating Striga-resistant pearl millet varieties. So far, some of these methods have shown promising results, with a field trial in Burkina Faso resulting in a 60% reduction in Striga emergence.

Prof. Salim Al Babili's Group

1.2 OPERATIONS

Fully sponsored education

Through its fully-funded graduate programs, KAUST enables students from any socio-economic background to access its wide range of renowned academic programs, live on the shores of the Red Sea, and conduct groundbreaking research in its state-of-the-art facilities. The fellowship - attributed to all admitted KAUST students - includes campus housing, a monthly living allowance (from $20,000 to $30,000 annually, depending on qualifications), relocation support, and free tuition fees. Students are also entitled to free medical and dental care as part of their insurance scheme. Support for processing and paying for legal bureaucracy to live and study in Saudi Arabia for the student and its dependents is also covered.

Providing tools of growth for small businesses

Since 2020, KAUST supports Small and Medium Enterprises (SME) through its SME Innovation Services in areas related to research and development, innovation, economic development, and continuous professional development. As more than one million small businesses currently contribute to Saudi Arabia's economic growth, SMEs are granted access to KAUST's capabilities and services, including its state-of-the-art facilities, talent pool, research and scientific expertise, specialized training courses, intellectual property research & funding opportunities.

Currently, KAUST runs two main programs: the SME Knowledge Partnership Program, which supports SMEs by providing solutions to problems and challenges they face, especially focusing on innovation and R&D; and the SME Maharat Program, which focuses on providing diverse professional development workshops provided by KAUST scholars and researchers.

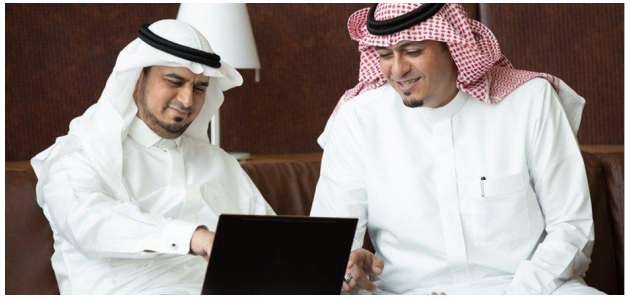
Maharat Program

6760 Applications

1933 SMEs staff participated in those workshops

55 workshops distributed on the above series

1455 (SME's) Small and Medium Enterprises



1.3 ENGAGEMENT & OUTREACH

Sharing is caring

Organized annually by KAUST's Social Responsibility team, the Sharing is Caring Campaigns represent one of the many ways in which KAUST gives back to neighboring communities, and at the same time, brings together the KAUST community to share the joys of Ramadan and Eids. The campaigns collect funding contributions and provide food hampers, educational gifts, and messages of celebration during these culturally significant times of the year, in partnership with charitable associations in the Jeddah region. During the 6th edition of the campaign in 2021, a record of 2000 gift boxes were distributed, 312 volunteers got involved and 130 greeting cards were collected from the KAUST community specifically for the people of KAUST's neighboring village, Thuwal.

Volunteers at the Sharing is Caring campaign

Sharing is Caring campaign team

Volunteering for what matters

KAUST provides volunteering opportunities for all through Campus events and initiatives organized by various departments as well as activities that support the neighboring communities of Thuwal and Qadimah. Starting in 2021, KAUST has been developing the KAUST Volunteer Program, a centralized database for volunteers, with the aim of having all volunteering opportunities accessible and organized for the community.

One successful example of a volunteer-led social initiative was KAUST's Thrift Shop - Second Chance. Operating since 2021, the shop is entirely run by a group of volunteers, providing a meaningful way for people to contribute to the community and those in need. The shop re-sells donated items from community members (having discounted prices for low-wage workers) and channels the profits to support local volunteer community programs and charities.

Second Chance thrift shop at KAUST

2 ZERO HUNGER

End hunger, achieve food security and improved nutrition and promote sustainable agriculture

2.1 EDUCATION & RESEARCH

Mapping inequalities in breastfeeding nutrition in low-income countries

KAUST faculty contributed to a global study on exclusive breastfeeding (EBF) prevalence in Low and Middle-Income Countries (LMIC). The study, published in 2021 in the high-impact journal Nature Human Behavior, resulted from a global collaboration of more than 450 researchers, and was part of the Global Burden of Disease study. The team analyzed data from 2000 to 2018, examined the trends and prevalence of exclusive breastfeeding of 94 LMIC, and projected the performance of countries in relation to World Health Organization (WHO) targets.

> **The study's results show that, amongst analyzed countries, only 6 are projected to meet WHO's ≥70 percent exclusive breastfeeding prevalence target. The long-term benefits of exclusive breastfeeding for the first six months of an infant's life have been extensively documented in scientific literature and breastmilk is considered the most nutritionally adequate food for that life stage. The study's conclusions may help countries formulate the necessary policies and interventions to promote breastfeeding.**

Saving and enhancing a local staple food

The Fit Date Palm project, led by faculty from the Center for Desert Agriculture (CDA) was launched in 2021 and aims to generate a molecular and biotechnological toolbox that can help existing crops to fight disease and adapt to climate change, and breed new varieties that have superior quality and yield while using fewer resources such as water or land. The final goal is to protect one of the most culturally and economically significant Saudi commodities. Dates are incredibly nutritious foods, being rich in slow digesting carbs, minerals and vitamins, and having the potential to be a staple crop in arid regions.

The Fit Date Palm Project principal investigator Prof. Ikram Blilou

Increasing nutrition and stress tolerance of crops

What if we could increase a food's nutrition, while simultaneously increasing its yield and stress tolerance? That was the result of the research carried out by KAUST researchers from the Center for Desert Agriculture (CDA). By manipulating the carotenoid biosynthetic pathway in tomato plants, the team achieved a significant change in metabolic pathways, which influenced hormone content and consequent plant development and physiology. As a result, the tomato plants increased their fruit yield and pro-vitamin A content, with an added bonus of increased shelf life post-harvest when compared to control tomatoes. The findings of the study highlight the importance of developing new generations of crops with high productivity and nutritional value, in a time when hunger is exacerbated by climate change and the need to feed 10 billion people by 2050 remains.

2.2 OPERATIONS

Increasing affordable plant-based options at the campus diner

From 2021 to 2022, the Students for Sustainability (S2), in collaboration with the Office of Sustainability and the campus diner food provider, led an on-campus project to make the campus diner more sustainable, as part of a Global University Climate Forum project.

> **As a result of their concerted efforts, the students were able to introduce new plant-based foods and meals at several campus diner counters, including the Budget Meal couter. The budget meal is a subsidized full meal that includes soup, main course, salad, desert and drink at an affordable price.**

Of note, the collaborative project was responsible for the implementation of a vegetarian option as part of the Budget Meal; a more nutritionally balanced salad bar with new plant-based proteins such as legumes and quinoa, and healthy fats such as avocado and nuts; and other newly introduced dishes including vegetable and falabel burgers at the gill, and fully plant-based pizzas and sandwiches.

New plant-based options at the campus diner

Tackling the campus diner food waste

Also as part of the Global University Climate Forum project from S2, the students ran a Diner Survey, in collaboration with operational teams, where consumer behavior and awareness on food waste were assessed. From the data collected from 246 participants, 42% of customers did not finish their meal, with 69% pointing big portions as the major reason, and over 50% suggesting the introduction of reusable takeway containers. As a result of that feedback, half portions were introduced at several diner counters, and paper containers were offered as alternatives to plastic. The students also introduced an eco-label system to inform diner users of the water and carbon footprint of their food choices, in order to nudge consumers to more sustainable alternatives and raise awareness of the environmental cost of food production and wastage.

The Diner Survey

2.3 ENGAGEMENT & OUTREACH

Contributing to national food security goals

In early 2022, KAUST hosted the Sustainable Food Security Workshop, in partnership with the Makkah Region Development Authority. Organized by the CDA with the support of the Office of Research Administration, the workshop gathered local, regional, and international leaders to discuss some of Saudi Arabia's most prominent food related challenges: food supply, water use, food use, environmental change and the Saudi Green Initiative. Participants collaborated to define concerns, develop solutions, and present them during the three-day program. The main goal was to learn from international leaders pushing forward high-impact scientific, technological, and policy solutions for food security, and then adapt these lessons for the Kingdom in roundtable discussions with key food system stakeholders.

Sustainable Food Security Workshop

718	60	18
Attendees	Speakers from Government, Industry and Academia	Sessions

The Edible School Garden project

In order to integrate sustainable agricultural practices, healthy food habits, and plant science into the school curricula, the KAUST School (TKS) has partnered with CDA to launch the Edible School Garden Project (ESGP). The project has consolidated over 2021 and 2022 through a design competition for the edible gardens of all KAUST School campi, and the building of all necessary garden beds. The goal of the project is to integrate the principles of sustainable agriculture in school educational programs, and encourage the school community to grow their own food, allowing for a locally grown, free-of-charge, nutritious lunch to all KAUST School students.

TKS director Dr. Michele Remington and CDA director Prof. Rod Wing with childreem participating at the design competition for the school garden

> **KAUST also aims to share the project framework, so it is implemented in other schools across Saudi Arabia. The two pilot gardens, located on the TKS kindergarten campus and grade 1-12 campus, are now embedded in the curriculum for the 2022-2023 school year. Supported by KAUST researchers, the students will also undertake hands-on plant science experiments in the TKS laboratories, using the garden's crops.**

2	85
Large Gardens	Total Garden Beds
141 m2	**1885**
Total Cultivable Area	School Students To Be Impacted

3 GOOD HEALTH AND WELL-BEING

Ensure healthy lives and promote well-being for all at all ages

3.1 EDUCATION & RESEARCH

Bringing smart technologies to healthcare

The KAUST Smart-Health Initiative (SHI) was launched in 2021 as a multidisciplinary scientific and clinical research and innovation health initiative. The mission of SHI is to develop and use smart health technologies and methods to support and promote translational health research programs that transform fundamental scientific discoveries into practical clinical tools and solutions for prevalent diseases.

> **Partnering with top hospitals and medical schools in the Kingdom, the initiative counts with a MD–Ph.D. program in collaboration with Al-Faisal University.**

The MD–Ph.D. program provides a diversified curricula of clinical sciences/experiences while exposing students to emerging knowledge from basic and translational research, targeted to their fields of specialization. Students are challenged to contribute with innovative and effective health services, as well as investigating diagnostic and treatment tools to tackle diseases with local and global impact.

KAUST Smart-Health Initiative meeting

Using organic transistor sensors to detect pathogens

Organic transistor sensors provide a new route to highly accurate and rapid testing for COVID-19 and other diseases. Several researchers at KAUST have combined their expertise in electronics and biology to produce an organic electrochemical transistor (OECT) capable of detecting single-molecules of COVID-19 and MERS viral antigens in body fluids, in just 15 minutes. The study, published in Nature Biomedical Engineering in 2021, proved the use of the technology and the team aims to collaborate with industry partners to produce prototype devices on a large scale. The final goal is to equip medical practitioners with a rapid, accurate testing tool that can detect not just COVID antigens, but other pathogens.

3.2 OPERATIONS

KAUST-developed COVID-19 test kit is used for community testing

Since the onset of the pandemic, the number of daily COVID 19 PCR tests in the Kingdom rose from a few thousand to between 75,000 and 110,000 a day. In 2021, KAUST startup Noor DX developed an SFDA-approved, economical, single-step, multi-use RT-PCR test that was used for KAUST community testing. Priced at 140 SAR for university community members and guests, the test presented a significant reduction from previous tests priced at 200 SAR. In addition to being the first Saudi test kit provider, Noor DX is the first genomics entity in the Kingdom with fully localized capability, offering a portfolio of genomic services. Localized production is strategic to building genomics expertise within the Kingdom.

Noor DX

Offering excellent health services to the community

To ensure that the KAUST community and visitors benefit from quality healthcare services, KAUST runs its own health clinic. With clinical provision from Dr. Soliman Fakeeh Hospital (DSFH) since 2013, the KAUST Health clinic has been keeping its accreditation from the Joint Commission International since 2016. This accreditation is an endorsement of the services provided and demonstrates that KAUST Health meets leading international standards of quality for patient care on routine services: Family Medicine, General Dentistry, Obstetrics & Gynecology, Pediatrics & Physical Therapy as well as specialty services such as Audiology, Dermatology or Ophthalmology.

Supporting the mental health of students

Through confidential personal counseling, educational workshops, and community outreach, the team at KAUST Student Counselling Services (SCS) seeks to ensure the holistic health of graduate students. Operating since 2011 SCS offers free prevention, intervention, information, and referral services to all students and their dependents. The most common service provided by SCS is individual private counseling. SCS also routinely provides educational workshops, psychological assessments, crisis support, referral services and consultation & education to faculty and staff to assist them in addressing the psychological needs of the graduate student community.

Student Counselling Services

1133
Students engaged

95%
Student Satisfaction Rate

3.3 ENGAGEMENT & OUTREACH

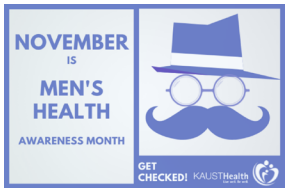
A community challenge with health as the goal

The KAUST Triathlon event is organized annually by Community Life, highlighting the community's passion for sports and friendly competition. In the 2021 competition, a total of 125 participants, aged 14 and up, participated in two modalities: Olympic Distance: 1500-meter swim, 40 km cycling and 10 km running & Sprint Distance: 400-meter swim, 20 km cycling and 5 km running. The event has become a celebration of the best KAUST athletes, both from the academic and resident community, and promotes healthy living through sports.

Kaust Triathlon 2021

Health screenings through the year

KAUST Health offers several health screening events to relevant contemporary non-communicable diseases throughout the year. Of note for 2021 and 2022 were the Breast Cancer Awareness Month, which happens every October, and the Men's Health Screening Clinic during the month of November. Both awareness campaigns encourage early detection and treatment of cancer and include full body check-up, physical exam and discussion on relevant health-related topics with the physician, clinically indicated tests and screening for various health indicators to assist in early detection, and health education on additional age-specific screenings as per international guidelines.



Hosting national events to promote health and well-being

In October 2022, KAUST hosted one of three Night Walks, a series of national events organized by the Sports For All (SFA) federation. The event started in Abha, moved to Al-Khobar and finally concluded in Jeddah, at KAUST. Counting with more than 5000 participants, the Night Walk aimed to bring together people of all ages and physical activity levels to walk over a course of 2 to 4 km under fun music and colorful light elements. Supported by the Ministry of Sport, the SFA is mandated by Vision 2030's Quality of Life Program to increase the ratio of people in the Kingdom exercising at least once a week to 40 percent by 2030.

Night Walk

4 QUALITY EDUCATION

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

4.1 EDUCATION & RESEARCH

Exposing young researchers to world-class mentorship

KAUST Visiting Student Research Program (VSRP) is a unique program that offers highly qualified and motivated students the chance to conduct innovative research at KAUST, and have access to the cutting-edge research facilities, world-class faculty and talented researchers hosted by KAUST. Students or recent undergraduates are invited to apply to research projects across several scientific and engineering fields, with a duration of 3 to 6 months.

The program allows students with an insatiable curiosity and strong academic performance to pursue their research questions under the guidance and support of KAUST faculty mentors. The program is fully sponsored by KAUST and students are entitled to free healthcare, housing and a living allowance during the time of the internship.

Visiting Student Research Program

130	130+	200+
VSRP Interns Accepted Each Year	Number of Countries Interns Join Us From	Research Projects

An opportunity for gifted students to grow

Established in 2008, even before the campus being officially inaugurated, the KAUST Gifted Student Program (KGSP) aims to create a pool of highly-qualified Saudi students within the fields of science, technology, engineering, and math (STEM). As a fully-funded scholarship, the KGSP supports the Kingdom's most talented youth to earn their STEM bachelor's degrees at premier U.S. universities, in preparation for their future graduate studies at KAUST. Throughout their undergraduate programs, recipients receive unmatched academic, developmental, and pre-professional support. Arriving in the U.S over 2021, Cohort 13 counted with 103 students, having 62 freshmen started their foundation year and 41 following the direct-to-undergraduate path. During 2022, Cohort 14 counted with 104 students, from which 44 have started their foundation year and 60 moved directly to their undergraduate.

Christina Williams, KGSP Placement Manager (far right) with UIUC Foundation Year Counselor and KGSP students

Bringing lifelong opportunities to professionals

The KAUST Academy launched in 2022 and works on creating micro-credential courses and accredited learning programs that are adapted to the busy schedule of professionals. As the Kingdom, and other economies, start prioritizing human capacity development centered on dynamic learning experiences, The KAUST Academy provides customized training solutions in the fields of advanced technology, business transformation, and specialized research techniques in physical science. Expanding and building on its quick success, the Academy is growing its portfolio of STEM-based course offerings and training, and establishing new partnerships designed to boost the labor market in both the public and private sectors. One example is the current tailored trainings in artificial intelligence - Artificial Intelligence Certificate and the AI Enrichment Program - which are aimed for public and private sector organizations such as the Education and Training Evaluation Commission (ETEC), Tahakom, Tadawul, Ministry of Interior, and Aramco.

KAUST Academy

400	8	10
Participants	High Quality Trainings Conducted	Catalogued Courses

4.2 OPERATIONS

A house of knowledge accessible to everyone

The KAUST Library is one of the crown jewels of the academic campus. With an award-winning architecture, the library building constitutes a 24/7 academic home to thousands of physical and digital educational resources, accessible to everyone. The library staff provides various services and resources, and everyone can browse through research, data, dissertations, and reports within the Research Repository collection. The Library includes several science and technology journal subscriptions, targeting both academics and community members, giving an opportunity to everyone to learn something new everyday.

A school within a university

The KAUST School (TKS) provides world-class education for the children of KAUST, showcasing KAUST's commitment not only to students, faculty and staff but also to their families. TKS uses the inquiry-based coeducational International Baccalaureate (IB) curriculum and is authorized to deliver three programs: Pre K-12; Primary Years (PYP), Middle Years (MYP) and Diploma (DP) which are fully accredited by the Middle States Association of Colleges and Schools (MSA) and the Council of International Schools (CIS).

The School comprises three divisions: Kindergarten (K1-K3), Elementary (Grades 1-5) and Secondary (Grades 6-12). Since 2021, TKS has been moved under the Office of the Provost, placing school students in the same Academic Division as university students. To further strengthen the relationship between the university and the school, the new KAUST-TKS Engagement Office was established to create programs that allow TKS students to take unprecedented advantage from the research and technology on KAUST campus. This sinergy also allows school students to be tutored, mentored, perform research projects and get engaged with world-class scientists and graduate students in a variety of STEM topics, making KAUST a unique educational environment for young learners.

4.3 ENGAGEMENT & OUTREACH

Creating transdisciplinary educational opportunities for everyone

Winter Enrichment Program (WEP) is an annual, two-week mandatory program specially designed to inspire students and attendees to unleash their creativity. In place since 2011, and open to community and external attendees, the themes differ from year to year and include both technical and artistic components. WEP allows everyone to experience science in a fun and engaging way, and for students to experience science fields and topics far from their own.

Even though WEP 2021 had its theme of "Connectivity" chosen before the pandemic, the topic couldn't have been more pertinent. As the first virtual WEP, the program counted with a diverse program, from smart grids and wireless technologies, to sensory perception and epidemiology. WEP 2022 theme was "Resilience" and explored tipping points such as climate change, pandemics, resource shortages, and rapid population growth, and how humanity can adapt in the face of challenges. All WEP programs provide unique learning opportunities delivered by experts from all over the world.

Formula E and Extreme E founder Alejandro Agag at WEP 2022

A commitment to preserve and teach cultural heritage

The Museum of Science and Technology of Islam (MOSTI) at KAUST is a celebration of all scientific contributions from Islam that laid the foundation for modern civilization. Inaugurated with the university in 2009, the museum is intended to expose visitors such as the general public, school students, and KAUST's modern-day researchers to the contributions Muslim scholars made to science and technology during the first Golden Age of Islam from the 650 to 1650. The exhibits cover the three main academic departments at the University: Chemical Life Sciences and Engineering, Material Sciences and Engineering & Applied Mathematics and Computational Sciences. The museum was renovated in 2022 to create an updated immersive and interactive experience inclusive of touch screens, moving plasma screens, multi-touch tables, flipbooks, automated scale models and interactive videos, in order to tell the story of ancient science.

Exhibition at the KAUST Museum of Science and Technology of Islam

Raising champions in STEM

KAUST launched during 2022 an intensive training forum for gifted students together with The King Abdulaziz and His Companions Foundation for Giftedness and Creativity (Mawhiba). The forum aims to nurture gifted male and female students, and provide training programs that develop their skills, while also qualifying them to participate in international competitions. With a participation of 185 students, it is considered the largest training forum for international Olympiad students, including both theoretical and practical training.

> **Before this forum, KAUST had already contributed to the participation of 16 students — and eight prize winners - at the 2022 edition of the International Science and Engineering Fair (ISEF), considered the largest scientific fair for competition in the field of scientific research for the pre-college level.**

5 GENDER EQUALITY

Achieve gender equality and empower all women and girls

5.1 EDUCATION & RESEARCH

The first Arab woman to command a deep-sea submarine

In 2022, a KAUST Ph.D. Student was proclaimed the first Arab female to lead an unmanned submarine in deep water, Afrah Alothmam, currently part of the Marine Science program at the Red Sea Research Center, was the only Arab woman working on phase 1 of the OceanX mission, an initiative that aims to explore the ocean and bring it to the public. Alothmam had the opportunity to board OceanXplorer, the most advanced science and media vessel ever built, with a crew of media professionals and researchers tasked to explore unseen parts of the ocean, observe rare deep-sea creatures, and perform scientific work. The student was recognized by The National Center for Wildlife (NCW) as an inspiration to other Arab women during the International Day for Women and Girls in Science, a UN-designated day that aims to accelerate and improve access of women and girls to science.

Giving women in STEM an edge on their scientific careers

KAUST has organized a workshop for Women in Science and Engineering in 2021, which included talks by renowned scientists and engineers on their personal journey, struggles and life-changing approaches throughout their scientific careers. The event, supported by KAUST's platform Women to Impact (WTI), also included informative sessions on preparing CVs, guidelines for successful interviews, and leadership and time management techniques.

Entrepreneurial opportunities to empower Saudi women

With the aim of teaching entrepreneurial thinking and problem solving skills to young Saudi women, KAUST has organized Saudi's first women targetted entrepreneurial program, which ran over 2021 and 2022. The "Empowering Saudi Women Through Entrepreneurship" program, developed in partnership with the University of Texas at Austin's Global Innovation Lab (GIL) and the U.S. Consulate General Jeddah, hosted 45 Saudi-based females developing innovative technologies and products with global export and growth potential to help tackle pressing global issues.

> **Entrepreneurial women will be critical in developing advanced industries to support the creation and growth of new ventures in Saudi Arabia. By supporting this important demographic, KAUST is supporting two vital pillars of Vision 2030 – to spur growth and diversification in the economy, and encourage young women's ambitions.**

Entrepreneurial Bootcamp Empowers Saudi Women

5.2 OPERATIONS

Did you know...

KAUST is a pioneering institution for gender equality since its inception by becoming the first mixed-gender higher education institution in Saudi Arabia at the time of its inauguration

Staff

Over the last 5 years

87%
increase in women participation in our Early Career Programs for nationals

29%
increase of women in leadership positions

Student ratio

2020/2021

35%

Divisions:

BESE	PSE	CEMSE
58%	29%	27%

2021/2022

38%

Divisions:

BESE	PSE	CEMSE
62%	29%	27%

Fostering women's talent

The Women to Impact (WTI) is a women-targeted platform launched at KAUST in 2019. The platform provides a suite of tools such as webinars, workshops, courses, professional development activities, mentorship and several other educational resources to women who want to succeed in science and technology careers, particularly in fields related to technological transformation.

The Early Career Accelerator Program (ECAP) launched in 2022 is an example of the programs hosted by the platform. ECAP aims to engage more women in IT and in Saudi Arabia's digital transformation. Through world-class training and career development experiences, participants become prepared to assess advanced job opportunities in several high-tech industry fields such as cybersecurity, network security, GIS, robotics or design thinking.

Family support as a means to professional equality

In order to provide its employees and students with the necessary family support for them to achieve their best, the KAUST Daycare offers opportunities, facilities and resources for children from the age of 2 months to 3½ years to grow, develop, learn and play. There are currently three daycare sites: Islands Daycare, Harbor Early Childhood Center and Gardens Early Childhood Center. The purpose-built centers provide early childhood care, as well as after school and school holiday cover for children who attend Kindergarten. The after-school programs support children to achieve a smooth transition to the IB accredited school at KAUST. Such service allows working parents to achieve a healthy work-family life balance, making them better professionals and care givers.

The team at the KAUST Daycare is continuously looking for ways to further develop links with parents, the community, KAUST Health and The KAUST School. Satisfaction surveys are also rolled out to the community to ensure parents are heard and their necessities are met.

Daycare Satisfaction Survey

June 2021

53.8%
Completion rate

97.6%
Overall Satisfaction Rate

June 2022

54.1%
Completion rate

96.5%
Overall Satisfaction Rate

5.3 ENGAGEMENT & OUTREACH

Student action for women in STEM

Launched in 2022 the goal of Woman in Science & Engineering Research (WiSER) is to empower all women on campus by creating a community that provides encouragement and support. The academic group is led by students and strives to help members maximize their potential and advance in both their professional and personal lives. So far there are a total of 91 members, 5 officers and several events planned.

WISER members

Celebrating KAUST- grown women leaders

KAUST's Strategic National Advancement has launched the #HereToLead campaign celebrating future female leaders in Saudi Arabia, and highlighting women in positions of leadership that the university has shaped. The national campaign, initiated in 2022, features the journeys of several KAUST-grown students, scholars, and staff, from STEM researchers and professors to business and management professionals, in their path to leadership roles.

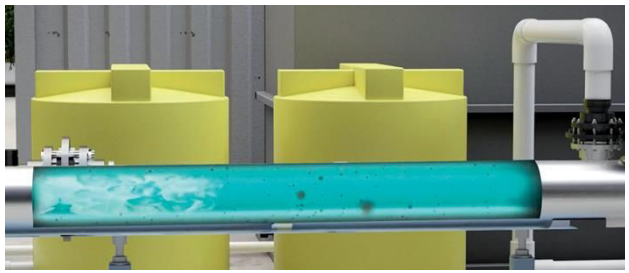
6 CLEAN WATER AND SANITATION

Ensure availability and sustainable management of water and sanitation for all

6.1 EDUCATION & RESEARCH

Innovative wastewater treatment technologies

Saudi Arabia's climate is extreme, and requires it to maximize and reuse its most precious resource – water (including wastewater). Increasing the use of treated wastewater reduces the need for desalinated water, which is costly to produce and very energy intensive, leading to higher CO2 emissions. KAUST researchers from the Water Desalination and Reuse Center (WDRC) have developed an innovative wastewater treatment method that uses less energy and renders water safe to use for agriculture. The technology was piloted in early 2022 with KAUST's industry partner MODON (Saudi Authority for Industrial Cities and Technology Zones) in Jeddah.



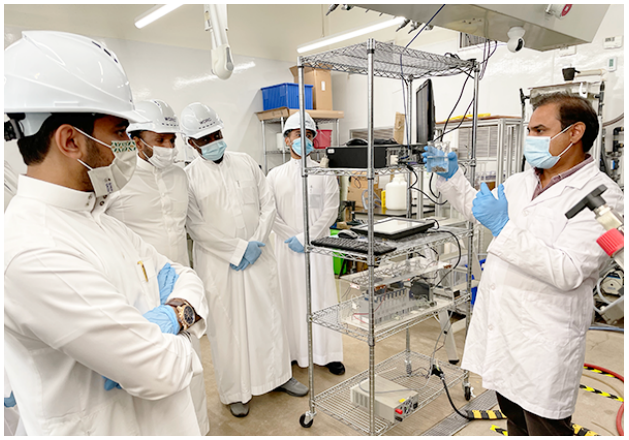
KAUST-developed anaerobic membrane bioreactor (AnMBR) technology

Off-grid desalination made smarter

Back in 2019, KAUST researchers from the WDRC realized that waste solar-cell heat could be used for water purification. They developed a device that can be coupled to photovoltaic panels and draws seawater into a series of layered channels, resulting in the production of freshwater at 1.6 L/h. Following up on that study over 2021, the team developed a theoretical model that ended up boosting the efficiency of a device, resulting in an electricity generation increase of 8% while also doubling the previous rate of freshwater generation.

Partnering with the government to advance water security efforts

On October 2021, KAUST hosted a workshop on campus for the Ministry of Environment, Water and Agriculture (MEWA), with the main goal to undertake a strategic partnership focusing on water research. The two day workshop covered topics on reservoir operations, water challenges faced in the Kingdom, water use estimation methodology, and discussions on future technology transfer and training opportunities. KAUST faculty and students from the WDRC presented topics on groundwater abstraction, object-based image analysis (OBIA), crop classification mapping, and introduction to a new cloud-based project. The workshop solidified KAUST's role as a scientific partner to the Saudi government's ambition to reach water security, in line with Vision 2030.



MEWA – KAUST Workshop

6.2 OPERATIONS

On campus efforts to save water

KAUST produces all of its potable water from desalination, and ensures all wastewater is collected for treatment and reuse, completing a full water cycle in an effort towards resource circularity. Starting from 2015, the Facilities Management (FM) teams have been implementing several actions every year to reduce the campus water consumption such as replacing fixtures with water-saving devices, equipping all faucets with touchless automatic motion sensors, and installing displacement tanks on toilets.

> **One of the biggest water-saving efforts is related to landscaping optimization. As irrigation is one of the biggest consumers of water at KAUST, the FM teams revised the landscape of KAUST in terms of functionality and visibility and converted more than 100 sites to xeriscaping themes. The ongoing project, implemented**

in selected houses everytime a resident leaves KAUST, has already resulted in a water reduction of almost 40%. This coupled with the reuse of 100% of the treated sewage effluent (TSE) resultant from wastewater treatment, has reduced significantly KAUST's water use.

Water conservation in numbers

100%
Reused TSE

100+
landscaping optimizations

~40%
water use reduction since 2015

Piloting new desalination technologies and improvements

A new pilot desalination facility was inaugurated in 2021 at the Desalination and Reuse Center (WDRC). As subsidiary Dupont transferred its Center of Excellence for Desalination to KAUST, the newly renamed Tahlia Almiah pilot has its new home on the ground floor of Building 23 (at KAUST's Innovation Cluster).

The pilot is operated and monitored through a SCADA system, very similar to that of full- scale desalination plants.Inside and outside the building, there is room to temporarily install additional pilot skids and monitoring equipment. It also has a facility to perform membrane autopsies, dye and bubble testing to determine the causes for performance decline and assess whether membrane damage has occurred. The aim is to use the plant primarily for research translation projects.

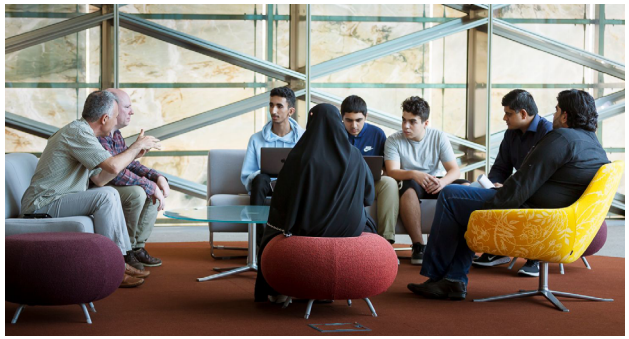
Tahliah Almiah Pilot Plant

6.3 ENGAGEMENT & OUTREACH

Sharing knowledge on water management

As part of KAUST's strategy to ensure The KAUST School (TKS) students can connect and learn from the university's scholars, TKS's grade 9 reached out to various subject matter experts to work on a project focusing on the UN Sustainable Development Goals (SDGs) during 2022. Several faculty and researchers from the WDRC gave an interview to three student groups on the topics of water management, sanitation, and sustainable desalination.

By using the KAUST community and the local desalination and wastewater treatment plants as close examples, the researchers discussed their work and its potential impact out of KAUST's walls. It was the first time WDRC researchers were requested to discuss their work in a student-led interview, and the outcomes were enormously positive both for the researchers and the students.



KAUST faculty from WDRC discussing water management with TKS students

Celebrating and raising awareness for the world's most precious element

Every year KAUST celebrates the World Water day with its community. Being located in Saudi Arabia, where water security is a pivotal challenge, the university also has water research as one of its core pillars. The days are usually a collaboration between KAUST departments, who organized several activities to raise awareness about the importance of managing and consuming water responsibly.

World Water Day celebration announcement 2021

During the year of 2021 several events were held over one week, from visits to the local desalination plant, to sports events to raise awareness on water challenges, and screening of documentaries on the topic. The 2022 edition counted with a similar program over the celebration day and, in line with the theme of "Groundwater: Making the Invisible Visible", community members learned about groundwater monitoring systems used on campus, visited the Water Desalination and Reuse Center, and were challenged with a groundwater quiz.

World Water Day celebration announcement 2022

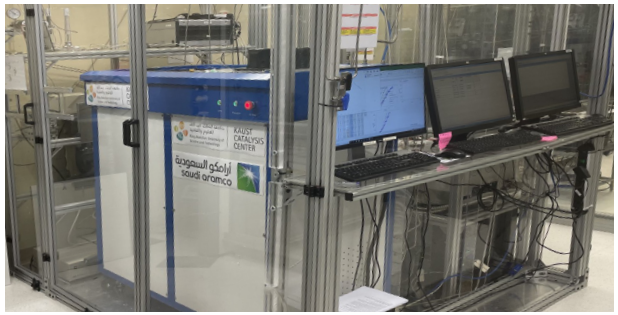
7 AFFORDABLE AND CLEAN ENERGY

Ensure access to affordable, reliable, sustainable and modern energy for all

7.1 EDUCATION & RESEARCH

Using ammonia to enable a hydrogen economy

Hydrogen is considered a key player for the decarbonization of our current energy system. However, issues related to distribution, storage and utilization need to be addressed. KAUST researchers from the Catalysis Center are developing technologies and roadmaps to provide solutions to the transportation of hydrogen and its utilization in the form of ammonia. In 2021, the team has published a comprehensive assessment on the use of ammonia has an efficient hydrogen carrier focusing on available technologies for ammonia synthesis, decomposition into COx-free hydrogen, and direct use of ammonia for power generation and transportation.



Ammonia-to-hydrogen pilot plant

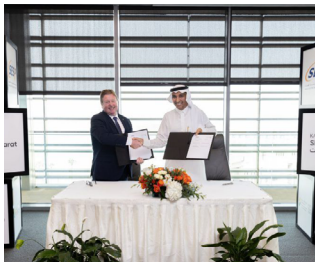
Equipping engineers with PV knowledge

Since 2021, the KAUST Solar Center (KSC) has partnered with Saudi Electric Services Polytechnic (SESP) to train in-Kingdom engineers. The KSC-SESP PV Design Schools aim to train highly qualified personnel for the growing renewable energy sector. The course creates a fundamental understanding of the core concepts necessary to work with all photovoltaic (PV) systems, including: system components, site analysis, PV module criteria, mounting solutions, safety, and commissioning according to Saudi Arabia's regulations.

In August 2022, the collaboration was solidified by the signing of a KAUST-SESP MoU, which ensures KSC will run continuous Photovoltaic Design and Installation Schools, in close collaboration with SESP and with support from KAUST Innovation. Being the first accredited solar vocational training program in Saudi Arabia, the format will enable KSC to share its advanced research expertise on renewable energy and atomic technologies with the wider regional community. The School is expected to provide more than 100 upskilled workers for jobs in the next year, in line with the Kingdom's pursuit to transition to clean and renewable energy sources.

KSC-SESP PV Design Schools

6	116	15+
Schools ran to date	Participants	Fully Certified PV Designers



Students of the KSC-SESP PV Design School at the KAUST NEO outdoor testing site, and the signing ceremony of the KAUST-SESP MoU

7.2 OPERATIONS

A pledge to reduce campus energy consumption

During 2021 the Facilities Management Operations and Maintenance (FM O&M) team at KAUST signed a pledge to reduce the energy consumption of the KAUST campus. The pledge aims at reducing the campus energy consumption and promoting the long-term sustainability of KAUST's energy-intensive operations. Through the implementation of an Energy Management System, the team commits to a 10% reduction of energy consumption as from baseline year 2015 benchmark, by 2025 or earlier.

Energy performance improvements in the design, operation, maintenance and modification of facilities and equipment will be continuously evaluated, as well as investing in energy efficiency for procurement processes. Moreover, all staff, members, customers and end users are encouraged to participate in innovative awareness campaigns and activities to encourage changes in behaviour and ideas for improvements.

Saving energy through efficient systems integration

Taking advantage of the Integrated KAUST Automation system (IKAS), the FM O&M team has successfully implemented an innovative scheduling of heating, ventilation and air conditioning (HVAC) in all mosques at KAUST in 2022. The Integrated KAUST Automation System (IKAS) is a powerful platform that mitigates energy inefficiency by monitoring and controlling all systems, including the building automation (HVAC), lighting and power monitoring and fire alarm from all KAUST buildings, and toxic gas monitoring systems from the KAUST labs

> **By linking IKAS to a prayer time open API, the HVAC system is able to run autonomously and turn ON a few minutes before and during prayer times, and adjust to a higher temperature once prayers are finished. The measure optimized HVAC running times by 38%, which translates into significant energy savings.**

IKAS

Fiscal year 2021/2022 vs previous year

- 2.3%
energy consumption in all KAUST

-1%
energy consumption on KAUST campus

-3%
energy consumption on KAUST community

-4%
energy consumption in Plant operations

Award-winning teams in energy management

In October 2022, KAUST received the Product or Service Development Award at the Institute of Workplace and Facilities Management (IWFM) Impact Awards. The team was distinguished thanks to the KAUST Facilities Management Business Intelligence Dashboards (KFM-BI), an integrative tool that includes dedicated dashboards to facility's performance, including energy monitoring and consumption.

> **According to the organizer, it was the first time a Saudi institution won a facilities management award in the UK, showcasing KAUST's commitment to be a leader in efficient energy management in its operations.**

7.3 ENGAGEMENT & OUTREACH

Advocating for a Green Hydrogen Economy

KAUST has participated in the 2022 edition of the Future Investment Initiative (FII) conference with the theme Investing in Humanity: Enabling a New Global Order. The university was featured in panel discussions and organized a pavilion at the premises to showcase its research and innovation, including in clean energy and new fuels. Of note, KAUST faculty from the Clean Combustion Center have moderated a KAUST-organized panel discussion entitled "The Hydrogen Economy: solution or illusion" that counted with the participation of an industry leader, a youth activist, a government representative and green energy policy expert. The discussion revolved around the challenges and opportunities for green hydrogen to lead the path of global decarbonization.

KAUST panel Hydrogen Economy: Solution or Illusion at FII 2022

Hydrogen-based Mobility and Power

Delegates from academia, government laboratories, and industry were invited to attend KAUST's Research Conference on 'Hydrogen-Based Mobility and Power' hosted and organized by the Clean Combustion Research Center (CCRC) in October 2022.

The conference focused on main topics related to hydrogen power and infrastructure, namely the use of hydrogen and ammonia for mobility and power generation, production and availability of hydrogen and ammonia with zero carbon impact, and infrastructure and distribution of hydrogen and ammonia. Running over three full days, the event fomented discussion around the challenges of realizing an infrastructure for carbon-free fuels, including containing, transporting, and transferring them from infrastructure to vehicles, ways of production with little to no climate impact, and the best way to ensure that there is a coupling of demand and supply such that one does not outstrip the other.

Hydrogen Based Mobility and Power conference

8 DECENT WORK AND ECONOMIC GROWTH

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

8.1 EDUCATION & RESEARCH

Professional development tools for everyone

The KAUST Digital Learning platform offers yearly high quality online learning opportunities from digital platforms covering a broad variety of topics and resources. The Human Resources (HR) offered service includes multiple renowned online learning platforms such as: Harvard Manage Mentor and the Harvard Manage Mentor Spark, directed to people managers and people leads; Coursera, a digital learning repository offered to employees and students which provides high quality online courses from over 200 universities and companies; Linkedin Learning, which is offered to all employees and contractor workforce and includes courses and video tutorials on numerous business related topics.

41
Topics mapped by The Harvard Manager Mentor for KAUST

+6000
Coursera online courses offered

16,000
LinkedIn Learning courses and video tutorials

Nurturing talent within the organization

The KAUST HR Talent Programs are key professional development tools for the university's staff to expand their knowledge and competencies. In addition to facilitating initiatives that promote and encourage leadership, the programs allow for targeted professional development of KAUST's most promising individuals and top talent. Participation happens through a nomination and selection process, and qualifying individuals can access major talent programs offered by HR.

> **One example running since 2019 is the Management Development Program (MDP), a leadership development program targeted at high performing senior managers, to support them in either broadening or deepening their impact or to take on greater responsibility.**

8.2 OPERATIONS

Services certified in efficient management

During 2021 the Government Affairs (GA) department at KAUST achieved ISO 9001:2015 certification. The international standard specifies requirements for a quality management system that accounts for customer satisfaction and effective processes of improvement. The GA office is a dedicated KAUST department that supports the multicultural KAUST community in all services related to governmental Saudi entities. The team provides support through liasoning, translations, data and document retrieval's, among others. The service ensures all KAUST employees are supported in their official matters, from onboarding to departure.

> **By achieving the ISO 9001 certification, GA contributes to Saudi Arabia's National Transformation Program, which aims to achieve governmental operational excellence, as well as to KAUST's aim to provide a productive working environment.**

Government Affairs (GA) department at KAUST celebrates the achiement of ISO 9001:2015 certification

Adopting new working models that benefit employees

Recognizing the importance of providing productive and contemporary working models, and in order to keep KAUST's community safe, engaged and active during the pandemic, KAUST implemented a flexible and hybrid working model. Piloting remote working in 2021, KAUST allowed its employees to work from anywhere in the world for up to 40 days. After the pilot program, a survey was conducted to gather the staff's insight on such measures.

The positive impact of the pilot was such in KAUST employees, that the program was extended for 2022 with a 30 days remote working quota and the introduction of flexible hours. KAUST's HR will continue to assess employee's satisfaction to ensure KAUST keeps offering working patterns aligned with the needs of its staff.

In 2022

30 days
Remote Working

160
Flexible hours

6400+
Remote working requests

5400+
Flexible working requests

Wellness as part of employee's benefits

The KAUST's Employee Well-Being Program, provides access to professional psychologists, dieticians, financial, legal, and career advisors since 2012. The program is free and confidential and is available throughout the year for employees, university students, and their families (including live-in domestic helpers). Telephone counseling is available in six languages and offers life management services, managerial coaching, and wellness coaching. The program is run by ICAS International, an independent organization that guarantees data privacy and confidentiality. Through the ICAS Lifestyle website everyone can access information on a wide range of life issues in different formats from tips on getting fit and eating healthily, to guidance on family relationships or dealing with conflict.

Did you know...

The KAUST Employee Well-being Program ranked as finalist and was Highly Commended at the CIPD Middle East People Awards 2021 in the category of Best Health & Wellbeing Initiative

8.3 ENGAGEMENT & OUTREACH

Helping students entering the job market

KAUST Career Fairs are organized twice every year for KAUST students to explore career opportunities with leading employers, both across the Kingdom and internationally. By partnering with Saudi's largest and most impactful institutions across the private, government and academic sectors, the career fair aims to maximize the potential of KAUST talent pool to create meaningful contributions to the Kingdom's development. The event is routinely hosted by the Student Career Development team, which is dedicated to offering KAUST students an array of professional development opportunities such as career counseling, skills development, mentoring and peer coaching.

Career Fair

Elevating young professionals

The Elevate Program is a yearly opportunity for recent Saudi graduates to perform internships across KAUST. The 9 month program selects potential talent from a pool of national applicants, which upon successful selection, have the chance to have a new job experience, cultivate and sharpen their technical skills, and elevate their careers through professional development opportunities. In 2022, applicants were able to apply to multiple job streams spanning communications, finance, sustainability, and engineering, hosted by different KAUST departments and teams. Talented professionals might gain opportunities to integrate the universities workforce.

Supporting Saudi Arabia to retain talent

In 2022, KAUST organized the Future Talent Conference in partnership with leading industry, consulting and government organizations, to start a dialogue and provide valuable insights on how to best attract, develop and retain talent in the Kingdom. The aim was to provide a platform for the exchange of knowledge and ideas to advance the Kingdom's vision of developing a highly qualified and skilled workforce.

> **The conference attracted hundreds of participants from across the country, including talent acquisition and human resources executives, as well as university researchers, faculty, staff and students. The two conference panels centered around two key challenges: upskilling talent for the future, and building a solid foundation for talent to succeed.**

500
Participants

800
Job opportunities presented

1000
Job interviews

Future Talent Conference

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

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

9.1 EDUCATION & RESEARCH

A massive open online entrepreneurship course in Arabic

KAUTS's Entrepreneurship Center has launched an entrepreneurship massive open online course (MOOC) in Arabic language, on the international educational platform edX.org during 2021. The course, open for all, supports KAUST's goal of providing knowledge and resources to boost entrepreneurial initiatives and innovative ideas within Saudi Arabia. Being the first Arabic course on the topic in the edX platform, the masterclass showcases KAUST's efforts in advancing entrepreneurship not only in KSA, but also in the region.

The Entrepreneurship Adventures MOOC

The eight-week course includes the basics of entrepreneurship and the startup lifecycle, and features a lineup of high-profile entrepreneurs, investors, and venture capitalists who bring first-hand knowledge and expertise to the learning experience of people taking the course. Upon completion, learners receive a certificate of completion emitted by KAUST.

105,000
Signed up

47,000
Enrolled

1,440
Certified initial registrations

93
Countries reached

Using AI for industry innovation and SDG advancement

Hosted in Riyadh and organized by the Saudi Data and Artificial Intelligence Authority (SDAIA), the Global AI Summit 2022 counted with the participation of KAUST faculty and leadership in several keynote lectures. In a talk exploring the concept of "AI+X", KAUST President Tony Chan discussed the potential synergies and power of combining AI technologies with several other science and technology fields, with the aim of tackling humanity's most pressing challenges.

KAUST participation at the Global AI Summit 2022

Across the technologies discussed, Prof. Chan enforced how such innovations could be translated into tools that can help the world meet the current SDG agenda, giving examples of the obvious impact of AI in SDG 9 through automation and innovation in industry and infrastructure. KAUST currently hosts an AI Initiative which aims to translate and apply AI technology into innovative applications, including industrial infrastructure and manufacturing.

9.2 OPERATIONS

KAUST launches Innovation Fund

To develop Saudi Arabia's innovation economy and focus on the development of the technology sector in Saudi Arabia, KAUST Innovation launched the VC Innovation Fund. Released in 2022, the fund plans to invest in seed level, deeptech startups with ticket sizes ranging from $200,000 to $2 million. The priority of investment for the fund are startups with large market potential, a superior product/technology, their alignment with KAUST's main research areas, and their potential impact on the region in terms of job creation and solutions to specific local problems.

Accelerating innovation

Founded in 2016 as a partnership between KAUST and the Saudi British Bank (SAAB), TAQADAM is a Saudi-based startup accelerator to empower big ideas, bold thinking and creativity. Through mentorship and targeted learning in ideation, product design, marketing and fundraising, founders gain the necessary skills to accelerate their startup's growth, engage and activate new customers, and gather investors. Every year, a new TAQADAM cohort receives pre-seed funding to support their time in the accelerator, as well as access to a co-working space. At the completion of the program, selected graduates are eligible for non-dilutive, follow-on funding.

300+
startups funded

$60M
job opportunities presented

11k +
innovators reached in the last decade

KAUST students shine at Falling Walls

The Falling Walls Lab is an international event that provides students with the opportunity to participate in a world-class pitch competition and networking forum where innovation is the center of every project. The competition, which aims to bring to discussion what walls in science and society should fall next, also acts as a bridge, bringing together a diverse and interdisciplinary pool of students, researchers, and early-career professionals. Over the years KAUST students have benefited from invaluable experiences, including exposure to industry leaders and cutting-edge discussions.

During 2021, 2 of the 75 students shortlisted and invited to pitch their ideas for the competition were proudly from KAUST, one "Breaking the Wall of Unaffordable Wastewater Treatment" and another "Breaking the Wall of Sustainable Hydrogen from Waste".

Falling Walls Science Summit was a hybrid event in 2021 and took place from November 7-9.

Did you know...

KAUST researchers have launched multiple award-winning start up companies?

RED SEA FARMS · POLYMERON · Wayakit · NOMADD · FALCONVIZ

9.3 ENGAGEMENT & OUTREACH

Celebrating the importance of creativity and innovation

On April 2022, KAUST celebrated the World Creativity and Innovation Day by engaging with The KAUST School (TKS) students in a challenge focused on innovation and creativity to achieve the UN Sustainable Development Goals. The two-week challenge ran in partnership between TKS, the Office of Sustainability and KAUST Smart fostered students' design thinking skills to materialize creative and innovative solutions to current sustainability challenges.

With guidance from KAUST staff, researchers and school teachers, students learned about the SDGs and the role that innovation and SDG 9 play in tackling all other SDGs. The students then selected a challenge associated with one of the presented SDGs and created prototypes and engagement/ awareness materials around their proposed solutions. The challenge culminated in a big showcase at TKS, open to all KAUST community.

KAUST signs MoU to foster innovation translation

After signing a first Memorandum of Understanding (MoU) with KAUST in March 2022, King Abdullah Economic City (KAEC) extended its engagement with KAUST by signing another MoU between the university Research & Technology Park (KRTP) and KAEC's Industrial Valley (IV). The agreement aims to enhance the collaborative framework that has allowed both parties to work towards the advancement of science and industry through the utilization of world-class core facilities and personnel at both KAUST and KAEC's Industrial Valley (IV). The goal of the agreement is to allow Industrial Valley tenants working in various research and development fields to access KAUST's KRTP. KAEC will also help identify eligible SMEs and corporations and facilitate the set-up of R&D facilities at KRTP, effectively bolstering the park's innovation ecosystem.

Memorandum of Understanding (MoU) between the Research & Technology Park (KRTP) of KAUST and KAEC

Cooperating to support impact-driven startups

KAUST has partnered with VentureSouq, Wa'ed Venture, the US Mission in the UAE and startAD to launch the second edition of the Conscious Investor Fellowship (CIF) in 2022. startAD, an Abu Dhabi-based startup accelerator powered by Tamkeen and anchored at NYU Abu Dhabi (NYUAD), launched the first edition of the fellowship in 2020, also with the support of KAUST, to enable regional investors in the GCC to create sustainable change through high-impact investments. The fellowship was considered the region's first conscious investor fellowship, ensuring innovation rooted in sustainable practices is supported and accelerated.

10 REDUCED INEQUALITIES

Reduce inequality within and among countries

10.1 EDUCATION & RESEARCH

Taking on social responsibility

The KAUST Social Responsibility (SR) team was created in 2012 to utilize the unique range of talent and skills available at KAUST, in service of local communities. Its short, medium and long-term projects aim to promote the socio-economic development of neighboring communities through strong educational programs and learning opportunities. Yearly programs, projects and initiatives are closely tied to the needs and context of the neighboring town of Thuwal, with community integration as a major goal. The projects and initiatives created by the SR team aim to improve lives for individuals and groups from neighboring communities, as well as promote environmental awareness through education and action programs, both via schools and community associations.

Ongoing educational programs such as the Young Learners Development Program and the Thuwal Teachers Development Program are tailored to empower and support local youth and teachers.

Prosperity programs provide women and men with skills to enhance their value in the workplace, and create opportunities for personal and professional development, financial stability, and lifelong well-being. Causing such impacts helps KAUST to reduce local inequalities and to place education as a key to social development.

Science Summer camp

Giving exciting educational opportunities to small communities

Developed during 2021 and 2022, the Science Summer camp is a recurrent initiative organized by the KAUST SR team. The 2021 edition was a hybrid event that offered school students both online and face-to-face classes. Students from nearby local communities from intermediate (G8-9) and high school (G10-12) level were split into two mixed gender groups and had the chance to improve their English, and gain knowledge and skills on Python programming, data analytics and bioinformatics, including applied hands-on activities in real science laboratories.

The 5th KAUST Young Learner Summer Camp was held in 2022 where more than 50 girls and boys, from G10-12, had the opportunity to connect and learn from KAUST scientists and graduate students while advancing their knowledge, communication abilities, and interpersonal skills. Young learners were offered two projects to choose from: "Design Thinking", and "The Future Of Food". The experience was further enhanced by enriching excursions to NEOM's The Line exhibition at Jeddah's Superdome and to the KAUST Museum.

All the activities aim to promote equal opportunities for young learners to be inspired by science and technology regardless of their socio-economic background.

Young Learner's Summer Camp 2022

10.2 OPERATIONS

Supporting the needs of our community

The KAUST Family and Child Support Center (FCSC) was inaugurated in October 2022 to support KAUST community parents, children and young people aged 18 months to 18 years with additional needs. The center features an activity room, a therapeutic service area, a parent and family room, and a sensory experience room, and was created to foster neurodiverse children who need further support to develop their language, academic, social, emotional or behavioral skills.

The center was created to answer parental requests within the KAUST community. During 2021 the Community Life department released the Inclusive Community Survey, aimed at community members with a disability, those who care for someone with a disability, and those who wanted to share their thoughts and expressed an interest in volunteering on the topic. From all respondents, the main disability themes encountered within the KAUST Community were Autism/Aspergers, ADD/ADHD, Behavioral, Emotional & Speech difficulties.

Inclusive educational platforms and resources

The KAUST AccessAbility Services (AAS) was launched in the Fall of 2022 to provide access for all KAUST students with disabilities or temporary debilitating injuries to activities, programs, and facilities across campus. Through partnerships with students, faculty, and staff, the AAS facilitates students' self-determination and self-advocacy, to encourage independence and enhance opportunities for student success. AAS supports students with different types of disabilities including sensory, motor, cognitive, and psychological impairments.

Including accessibility in smart design

The KAUST Smart Home is a collaborative project that merges smart technologies with humancentric design. Finished in 2021, the house was built to trial technological and design living concepts centered around human experience while addressing urban sustainability challenges. On top of the implemented technologies for water and energy saving, which granted the house LEED Platinum certification, the house's design was influenced by community discussions around accessibility.

For this reason, the house features an entrance ramp and lowered access to mail and drone delivery box, has its entire ground floor leveled, and includes modular room dividers that allow rooms to be repurposed based on the resident's needs. The lighting, AC and other technologies installed in the house can also be controlled by a touchscreen remote, making the living experience of people with physical disabilities fully accounted for.

KAUST Smart Home

10.3 ENGAGEMENT & OUTREACH

Supporting scientific excellence in developing regions

In November 2021, KAUST co-organized and hosted the 15th General Conference of The World Academy of Sciences (UNESCO-TWAS). The online event, run in partnership with the Islamic Development Bank (IsDB), and the TWAS team in Italy aimed to support TWAS's goal of promoting scientific capacity and excellence for the sustainable development of developing countries. The event featured several distinguished figures in science policy, ministers and international policymakers, which discussed topics such as digital inclusion, and financing frontier science and innovation in the global south.

Left to right: TWAS Council members Moctar Tour, and Sabah AlMomin, TWAS President Mohamed H.A. Hassan, KAUST President Tony Chan, KAUST Distinguished Professor Takashi Gojobori and TWAS Council member Manuel Limonta at the 15th General Conference

Inclusive engagement opportunities around science

KAUST's researchers and community members came together in 2022 with the Thuwal and Jeddah communities to celebrate science in a Science Festival that was the first of its kind, counting with 7000+ visitors. People of all ages experienced three days of vibrant and diverse activities including various science exhibits, daily evening science shows, eight inspiring talks from KAUST faculty, STEAM challenges, and science projects that were displayed by The KAUST School's students. The event united entire communities around science celebration.

Science Festival at Thuwal

Raising awareness and understanding

KAUST organizes several awareness campaigns all year round, some of them addressing mental and physical disabilities. The Dyslexia Awareness Week counted with several activities such as movie screenings, community discussion session, and games covering dyslexia education and awareness. The World Autism Awareness Day was celebrated at The KAUST School and wider community with similar activities, celebrating and raising awareness of the gift that neurodiversity brings to a community.

11 SUSTAINABLE CITIES AND COMMUNITIES

Make cities and human settlements inclusive, safe, resilient and sustainable

11.1 EDUCATION & RESEARCH

Planning and adapting the resilient cities of the future

Ensuring the sustainability of current and future human settlements is pivotal to securing the livability of the human population in a time of climate crisis. Launched in 2021, the Climate and Livability Initiative (CLI) aims to play a central role in identifying, guiding, and delivering strategies and solutions that address the multi-faceted climate challenge, including its cascading impacts and the needed mitigation and adaptation measures for urban cities.

> **Research projects are categorized into four main pillars: Bridging Regional to Local Scale; Climat Impact, Adaptation and Mitigation; Ecosystem Restoration, Enhancement and Resilience; and Urban Systems and Livability.**

Under the scope of the last pillar, KAUST researchers aim to guide the development of resilient and sustainable cities in Saudi Arabia and the Middle East in a time where increasing temperatures and climate change have disruptive potential in terms of the livability, functionality and basic operation of the region's cities.

CLI Projects 2021

7
Funded research Projects

25
Involved scholars

Digital twins as a way to research sustainable urbanism

KAUST researchers started a project in 2022 to build connected digital twins of KAUST, considering interactions between KAUST and its community through a real-time population model. Digital twins, which consist of digital representations of physical systems, are being increasingly regarded as valuable tools to improve urban planning, optimize asset management and create secure, sustainable cities. As part of the project, simulations, calculations and gathered data will be connected at city scale through a 'twin-of-twins' approach, which eventually empower true virtual testing at city scale. The final models will allow KAUST not only to optimize its operations, but also be a pilot to test different urban development parameters, serving as a model for other national urban development projects such as NEOM or The Red Sea Project.

Studying Saudi air quality

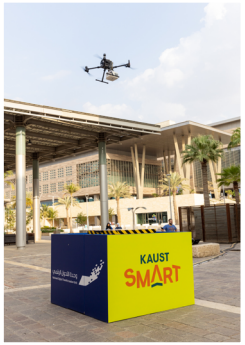
Assessing the impact of air pollution on the population's health is highly relevant to the KAUST Smart-Health Initiative, shedding light on the way air pollution impacts the health of the Saudi population. In 2022, KAUST researchers initiated a study to characterize indoor air quality in Saudi Arabia. As the first research project on indoor air quality conducted in the Kingdom, the team expects to generate important data to be used in the investigation of links between specific health outcomes, such as respiratory problems, and air quality and pollution. It is known that air quality is highly affected by desert dust, anthropogenic air pollution, intensive sunlight and high outdoor temperature, a combination of factors highly prevalent in Saudi Arabia. By filling this knowledge gap, the team takes a fundamental step towards designing effective and personalized treatment strategies to combat respiratory illnesses in KSA and the region.

Dust and air pollution are factors that affect respiratory health in Saudi Arabia; shown here above Riyadh, Saudi Arabia.

11.2 OPERATIONS

Piloting autonomous land and air deliveries at KAUST

During 2021, KAUST Smart, NDU, Community Life, and various industry and technology partners have launched and tested autonomous delivery on the KAUST community by running two distinct pilots: a self-driving vehicle for package delivery, and food delivery using drones. KAUST is the perfect place to test smart city concepts with speed and in a real-life yet controlled environment, before they are launched to the world.



KAUST tests Saudi's first self-driving vehicles

KAUST piloted the introduction of self-driving shuttles onto the university campus, becoming a pioneer in adopting autonomous vehicles in the Kingdom of Saudi Arabia. The pilot incorporated vehicles from two global leaders in autonomous mobility and advanced manufacturing, Local Motors by LM Industries and EasyMile, and was aimed at testing the feasibility of the technologies in a real-world scenario.

KAUST Autonomous Shuttle

In 2021, KAUST community members and visitors were finally able to use both shuttles, Olli and EZ10, as an integrated sustainable form of transportation to travel in the campus Horseshoe Loop, with stops outside Building 16, Building 14 and Building 18/Discovery Square. By successfully implementing the shuttles in its daily city operations, KAUST affirmed itself as a smart city leader in eco-friendly transportation and mobility research.

Making electric micro-mobility available on campus

During 2022, KAUST partnered with WAYZ to soft launch personal electric mobility options within KAUST. Community members can now enjoy WAYZ's eco-friendly, e-ride solutions to commute both on campus and across the residential and recreation areas scattered across KAUST. With multiple pick-up and drop-off spots, e-bikes and e-scooters can be used 24/7. Electric micro-mobility options can help reduce local pollution levels from transportation and also reduce direct carbon emissions, contributing to more sustainable urban environments.

WAYZ pilot at KAUST

25 E-bikes	**35** E-scooters
12 Pick-up/Drop-off locations	**342** Community users

WAYZ rental e-scooters and e-bikes

11.3 ENGAGEMENT & OUTREACH

Partnering with industry to challenge the future of mobility

KAUST and McLaren Racing launched in 2021 a STEM challenge to identify innovative solutions for the future of mobility. The goal of the challenge was to identify out-of-the-box solutions across all areas of mobility, including, but not limited to, sustainable mobility, low carbon and environmentally friendly technologies, interplanetary mobility, human-machine interactions, and digital and AI enhanced solutions.

Submissions were evaluated by a panel of KAUST faculty and McLaren Engineers and were judged based on innovation, roadmap to implementation, pitch quality, and diversity. The winning projects proposed mobility solutions that explored human-machine interaction using EEG signals, and clean solutions for transoceanic travel.

Partnering with the government to decarbonize building materials

In collaboration with the Ministry of Industry and Mineral Resources, KAUST hosted a workshop on "Cement Decarbonization in Saudi Arabia – Pathways to 2060". The event, which ran in October 2022, covered current and future technologies to decarbonize the cement industry and provided an opportunity for delegates from government, industry, and academia to share their plans and views on three main topics: fuel substitution, clinker blending, and carbon capture. With Saudi Arabia being the largest producer of cement in the Middle East, and the 8th worldwide, innovative solutions to ensure increased production does not result in increased emissions must be achieved.

KAUST workshop discusses cement decarbonization in Saudi Arabia

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Ensure sustainable consumption and production patterns

12.1 EDUCATION & RESEARCH

Extraction of valuable materials from seawater

KAUST researchers from the Center for Research in Advanced Membranes & Porous Materials (AMPM) have developed a technology that can extract lithium from seawater, using a sustainable and economically viable system. The process drives seawater through a special exclusion membrane, which allows lithium ions to pass, separating them from other elements. The process is able to extract one kilogram of lithium using only $5 of electricity. If powered with renewable energy, the process is highly sustainable compared to traditional lithium mining. It also can be coupled with desalination processes to further reduce the mining cost. The research, published in 2021, was optimized over 2022 resulting in the creation of the start-up Li Hy tech, which aims to turn the technology into a commercial product.

Creating bioplastics out of date and poultry waste

> **KAUST start-up Polymeron, founded by a team of three KAUST alumni, won in 2022 the grand prize of 1 Million USD at the Omnipreneurship Sustainability Challenge, an event organized by Tanmiah Food Co. The sustainability-driven start-up initially established itself by creating a proprietary biopolymer made out of date pits in KAUST labs.**

Polymeron team at the Tanmiah Food Co. Omnipreneurship Award "Sustainability Challenge"

This time, the team developed a method to produce environmentally friendly and 100% biodegradable composite materials through the conversion of organic waste into biochar. The biochar can then be converted into soil degrading bioplastics, which also act as soil enrichers, addressing challenges related to industrial poultry waste, plastic pollution, and soil regeneration.

Upcycling used and wasted face mask

> **A team from KAUST's AMPM has developed a method where hazardous biomedical materials such as used face masks can be upcycled to produce nanofiltration membranes using green solvents.**

Published in 2022, the study aimed to find a new use for the more than 350 billion face masks used yearly by European and Asian countries, which are commonly end up in incinerators. The team screened green solvents for the reczcling of face masks by taking advantage of their antipathogenic nature for sterilization purposes. The recovered polypropylene from the masks was then transformed into nanofiltration membranes with long-term stability. The scalability of the process allows for once discarded waste to be transformed into high-value products.

12.2 OPERATIONS

Tackling the single-use plastic problem

As of July 2022, KAUST Tamimi Markets and Oasis Minimarket no longer have plastic checkout bags. The measure comes as part of a campaign started in 2019 to make retail services more sustainable through the elimination of plastic water bottles and unnecessary single-use plastics. Due to the pandemic, the plan was postponed for health and safety reasons, but has been resumed in 2021, with most food retailers at KAUST eliminating single use plastic water bottles and with the local supermarket eliminating its check-out plastic bags. To help community members transition to reusable options, Community Life, in partnership with the Office of Sustainability, has distributed reusable bags in the community and introduced them in the welcome pack given to new residents.

> **The Tamimi supermarket at KAUST was the first store of Tamimi supermarket's chain in the Kingdom to effectively ban checkout plastic bags.**

Managing waste sustainably

KAUST startup Edama, which transforms organic waste into compost for desert agriculture needs, inaugurated a new industrial composting facility at KAUST in 2022. Located in the KAUST Research and Technology Park, the facility is the first of its kind in the Kingdom and aims to recycle 100% of the university's food and green waste, producing about 4,500 m3 of high-quality soil improver with great benefits for local sandy soils. The composting plant will allow KAUST to divert close to 60% of its total waste from the landfill, while creating a valuable product for KAUST landscaping needs.

> **KAUST has also advanced its waste management agenda towards zero waste to landfill operations by renewing its contract with waste management contractor Averda, which includes the construction of a full Materials Recovery Facility (MRF), aimed at recycling most of KAUST's recyclable waste.**

Inauguration ceremony of the new KAUST industrial composting facility

Averda's recycling trucks at KAUST

12.3 ENGAGEMENT & OUTREACH

Waste to Art

In celebration of the 2022 Earth Day at KAUST, the Facilities Management-Central Services team partnered with Jeddah-based artist Meedo Creisat to showcase some of his waste-based artwork. The "Waste to Art" Exhibition demonstrates that some of the daily throw-away materials can be transformed into playful, meaningful, and thought-provoking objects. The community had the opportunity to admire several pieces, made through creative techniques where textures and patterns are built up by layering plastic strips, smashed cans and patches on top of each other. School students from TKS also visited the exhibition and had the chance to interact with the pieces, inspiring them to look at waste as just another material to create what comes to their imagination. The exhibition was part of several awareness activities from Earth Day aimed to call for responsible consumption.

Supporting the Kingdom's waste management agenda

KAUST announced in 2022 the signing of an MoU with the Saudi Investment Recycling Company (SIRC), a wholly-owned subsidiary of the Public Investment Fund (PIF). The collaboration solidifies SIRC's commitment towards supporting KAUST startups, technology development projects, and other ongoing R&D to accelerate the transformation of the Kingdom's waste recycling sector towards Vision 2030 goals. As the country rapidly shifts towards a greener economy, Saudi Arabia aims to divert 100% of municipal solid waste and 85% of industrial waste from landfills. As a national leader in sustainable technologies, KAUST aims to support SIRC with cutting edge solutions that promote resource circularity and waste valorization.

KAUST and SIRC sign MoU to develop Saudi Arabia's infrastructure and advance the Kingdom's national waste management agenda

Giving a new life to plastics

The Precious Plastic universe aims to become a global alternative recycling system through community engagement and sharing of knowledge on the reuse of plastic. As part of a continuous effort on raising awareness for responsible consumption and production, the KAUST Students for Sustainability saw an opportunity to bring the platform to the KAUST community. In 2022, the group created the KAUST Precious Plastic Project (P3) and secured the necessary funding to purchase the required materials to give a new life to part of the plastic waste produced at KAUST. The project, which was endorsed and sponsored by faculty, waste management teams, and the Office of Sustainability, is currently in the final stages of procurement and space building and will be accessible to anyone with creative ideas and a drive to transform waste into valuable products.

Recycling at KAUST from Jan 2021 to Oct 2022

421 Metric Tonnes of Cardboard	**107** Metric Tonne of Paper	**115** Metric Tonnes of Plastics
264 Metric Tonnes of Metals	**48,060** Litres of Oils	

13 CLIMATE ACTION

Take urgent action to combat climate change and its impacts

13.1 EDUCATION & RESEARCH

Thinking circular for carbon management

In order to contribute towards the G20-endorsed Circular Carbon Economy (CCE) Platform as a tool to manage carbon emissions and foster access to cleaner energy, KAUST launched the KAUST Circular Carbon Initiative (CCI) in 2020. The aim of CCI is to connect KAUST's research to support the creation of a National Platform for the promotion, adoption, and rapid deployment of CCE technological solutions. Over 2021 and 2022, KAUST CCI's developed several research projects to address sustainable carbon management, based on its five key thrusts.

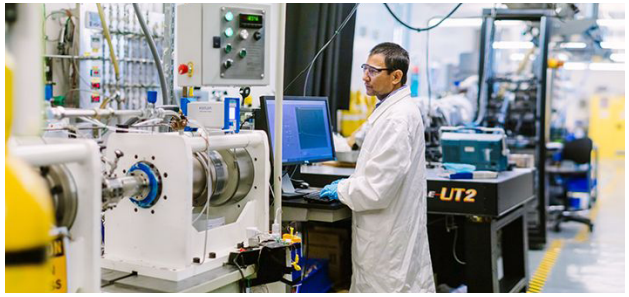
14 Projects spanning 5 thrusts:

CO2 Capture	Nature-Based Solutions	Geo-Solutions	E-Fuels	Cross-Cutting*

(*integration with renewable energy sources)

Researching new low-carbon fuels

Researchers from the Clean Combustion Research Center at KAUST are actively exploring new low-carbon fuels. In a study published in 2022, one of the teams generated a fuel derived primarily from renewably generated ammonia, that can power next-generation internal combustion engines (ICEs). By blending ammonia with a small amount of dimethyl ether (DME), the team produced a liquid fuel with low-temperature combustion properties very similar to gasoline.



Searching for alternative ammonia-based fuels with the potential to replace nonrenewable fossil fuels in the transport sector.

Capturing carbon at source

As a carbon capture strategy, KAUST researchers have developed a Cryogenic Carbon Capture technology in collaboration with Sustainable Energy Solutions LLC (USA). The technology can capture (remove) CO^2 from the exhaust gasses of fossil power plants, industrial plants (e.g., cement) or any process that releases CO^2 in the exhaust. In June 2021, the team completed a Pre-FEED (Pre-Front End Engineering Design) study of a 30 tonne/day CO^2 capture commercial-scale system for deployment at the Integrated Solar Combined Cycle plant at Duba in Saudi Arabia.

Cryogenic Carbon Capture Technology

99.99%	50%	30-50%
purity of captured CO^2	more energy efficient*	Lower Capex and Opex*

*Compared to Amine capture technology

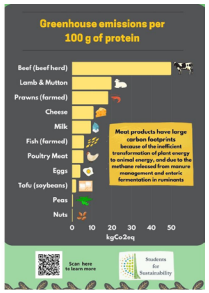
Cryogenic Carbon Capture pilot at KAUST

13.2 OPERATIONS

Informing the community on the climate footprint of food

The Students for Sustainability developed an eco-label system for the campus diner, as part of their Global University Climate Forum project started in 2021 and concluded in 2022. The students made an assessment of the ingredients used in the main dishes offered at the campus diner and calculated the water use and generated carbon emissions for each food item. The resulting eco-

labels are now displayed on all main food counters. The project aimed to raise awareness and nudge consumers into making more informed and environmentally conscious food choices.



Supporting the creation of national centers to study climate change

In 2021, KAUST signed an agreement with the National Center for Meteorology (NCM) to host a National Center for Climate Change, and support the creation of a Regional Sand and Dust Storms Early Warning and Advisory (SDS-WAS) Center.

Inaugurated at KAUST in September 2022, the center will be the central coordinating authority for climate change science in the Kingdom and MENA region by developing and conducting research on operational subseasonal-to-seasonal forecasting, and climate modeling and projection capabilities. The center will evaluate the state of the regional climate and its teleconnections with the global climate phenomenon, build an operational drought system, support the Saudi Green Initiative, investigate the impact of climate change on the dynamics of the Red Sea and Arabian Gulf, and study regional trends in the mean and extreme environmental conditions.

The Regional Sand and Dust Storms Early Warning and Advisory Center aims to be an international entity among GCC countries hosting a state-of-the-art dust storm predicting system for early warning of dust storms over the Arabian Peninsula. As a research partner, KAUST will conduct dust research, such as observation and modeling, to understand dust generation, transport, and composition in support of NCM activities.

13.3 ENGAGEMENT & OUTREACH

Advocating for climate solutions at COP

In 2021, KAUST participated in the COP26 UN Climate Change Conference in Glasgow. Across two weeks, KAUST representatives joined scientists, policymakers, activists and leaders from around the world in a series of panel events, informal discussions and presentations. KAUST faculty participated in events run by the Saudi Ministry of Energy, the International Coral Reef Society, and Aeon Collective, a leading Saudi-based Waqf working on sustainable development. The events focused on a range of themes, including climate adaptation, protecting and restoring coral, mangrove and seagrass restoration transitioning to net-zero emissions, hydrogen energy, solar technology, the circular carbon economy (CCE) and clean combustion.

In 2022, KAUST became an Education partner for Climate Action's Sustainable Innovation Forum at COP27. At the Innovation Zone, KAUST presented a booth showcasing its research solutions for climate action, and KAUST's President Tony Chan participated in a panel discussion on the role of universities in accelerating climate action. Additionally, several faculty participated in events in the Green and Blue Zone, reaching governmental stakeholders and advocating for marine ecosystem restoration and enhancement, food security, and climate change adaptation and mitigation.

KAUST representatives participating at COP 26 (first photo) and COP 27 (remaining photos)

Pushing for sustainability and climate-focused investments

KAUST has echoed its sustainability agenda at the Future Investment Initiative (FII) Summit, an event informally known as the "Davos of the Desert". The yearly event brings together global investors, innovators, entrepreneurs, and heads of state into roundtables and panel discussions on the future of global investment to advance human prosperity. In the 2021 event, KAUST organized an impact session on "Preparing Cities for a Warmer Climate". KAUST faculty also participated in discussions on the impacts of climate change on our oceans, and the importance of investing in preparedness and conservation. In the 2022 edition, KAUST continued to advocate for investment in climate action, with a KAUST faculty leading a discussion panel on the Hydrogen Economy, and with the showcase of a KAUST pavilion featuring some of the university's sustainability-driven projects such as carbon capture and storage, clean fuels and renewable energy.

Connecting stakeholders for better combustion technologies

Delegates from academia, government laboratories and industry were invited to attend the 2021 hybrid conference on 'Near Zero-Carbon Combustion Technology', hosted and organized by the Clean Combustion Research Center (CCRC) at KAUST. Participants presented their work and discussed three main topics: efficient power generation with integrated carbon capture; combustion of carbon-free fuels for power generation and transportation; and low-carbon thermal energy for industrial applications. As the world races towards decarbonization, KAUST is building bridges between researchers, industry and governments to accelerate the deployment of innovative technologies.

Supporting the oil industry in green transitioning

Saudi Arabian Oil Company ("Aramco") inaugurated the Aramco Research Center at KAUST (ARC KAUST) in 2022, aiming to accelerate the development of low-carbon solutions for the energy industry. Researchers, engineers and scientists intend to develop new technologies in carbon capture, low-carbon hydrogen/ammonia, non-metallics, e-fuels, and advanced transport technologies. The opening of the center represents an important step in Aramco's strategy of contributing to a clean energy future. The center offers unique collaboration opportunities to leverage KAUST's research capabilities and talent in the fields of clean combustion, data analytics and super computing.

14 LIFE BELOW WATER

Conserve and sustainably use the oceans, seas and marine resources for sustainable development

14.1 EDUCATION & RESEARCH

Inaugurating the world's first Coral Probiotic Village

In 2021, KAUST inaugurated the world's first coral probiotics village in the Red Sea. The "Red Sea Research Center Coral Probiotics Village" (CPV), located around 20 km off the campus shores, was initially projected to test coral probiotics, a pioneering technology developed by KAUST faculty. However, over 2022, the village evolved into a permanent natural laboratory through collaborative research projects, allowing KAUST researchers to design experiments and share data on the same reef system, unlocking unprecedented characterization of an open ocean ecosystem. The village is part of KAUSTs efforts and approach to coral preservation, restoration and enhancement.

Coral Probiotics Village

12+	7	15+
Collaborating KAUST Faculty	Atributed Grants	Student Thesis Projects

Coral Probiotics Village

Equipping in-Kingdom specialists with tools to preserve reefs

A KAUST faculty from the Red Sea Research Center hosted a coral training workshop in October 2021 targeted at marine science students and external professionals. In an effort to make coral pattern recognition engaging and instructive, the KAUST researchers organized diving activities around two themes: "Hunt your nightmares", photographing corals hard to identify; and "Hunt your endemics," photographing all endemic species one could find. The activity provided a learning opportunity for professionals working at several coastal development projects to better identify coral species of the Red Sea for biodiversity management and protection purposes.

KAUST Coral Training Workshop

Supporting responsible coastal development through research

KAUST signed a Master Research Agreement (MRA) with Red Sea Global (RSG) (former The Red Sea Development Company) in 2021. The agreement follows extensive collaboration between the two organizations and cemented the legal framework for mutually beneficial research projects on topics including, sustainability of marine environments, waste management systems, sustainable food production, energy conservation, and carbon sequestration.

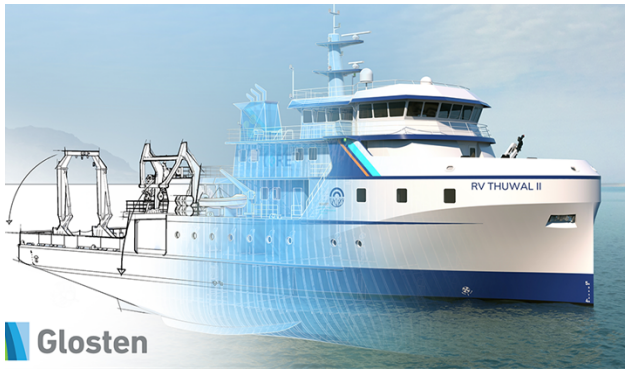
> **Establishing scientific monitoring to track environmental changes over time was one of the first assignments from the new research agreement, something vital in helping Red Sea Global achieve its commitment to deliver a 30 percent net conservation benefit by 2040. RSG's The Red Sea project is considered the most ambitious regenerative tourism project in the world.**

Red Sea Global CEO John Pagano and KAUST President Dr. Tony Chan signing the joint MRA

14.2 OPERATIONS

Investing in marine research operations

KAUST announced the investment in a state-of-the-art oceanographic research vessel (RV) in 2022, which is expected to be fully operational by 2026. The new vessel will replace KAUST's 22-year old RV Thuwal, which has become limited in capacity as KAUST expands its research ambitions for studying the Red Sea. The vessel has served KAUST scientists for as many as 220 days at sea per year since 2013. Designed by naval architecture company Glosten, the new RV will bring advanced research capabilities for work in both shallow reef and deep-water environments, including a reconfigurable deck for multipurpose jobs and equipment, and weather-hardy traits for managing the unique conditions of the Red Sea.



Sketch of the RV Thuwal II, a world-class, Glosten-designed vessel for KAUST

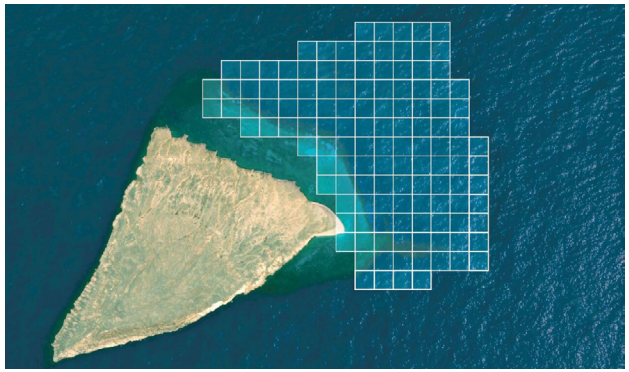
Bringing to life the world's largest coral garden

The KAUST Reefscape Restoration Initiative is a large-scale coral reef restoration program funded by KAUST and initiated in 2021. The project will be developed in partnership with NEOM at Shushah Island in the Red Sea. The initiative aims to achieve unprecedented coral restoration by integrating innovative, in-Kingdom and internationally developed technologies, pioneering propagation, planting and monitoring approaches, and by bringing on board international expertise to accelerate solutions for reef ecosystems.

Aiming to develop the biggest coral garden in the world, the program will start with a pilot nursery, which will then give rise to a coral garden the size of four football fields. The program will also count with a full digital twin encompassing advanced monitoring systems at the KAUST Shushah Island Research Center which will deliver superlative, non-invasive educational experiences to engage tourists, scientists and students from across the world.

KAUST Reefscape Restoration Initiative

1000 m2	100	400k
Pilot nursery	Hectares of restored, conserved and enhanced reefscape	Out-planted corals per year



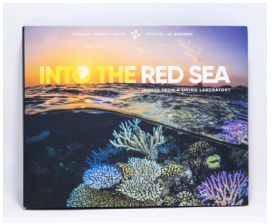
Shushah Island at NEOM

Hosting a global coral R&D accelerator platform

In 2020, the G20 launched the Coral Research and Development Accelerator Platform (CORDAP), an initiative aiming to protect and restore corals around the globe. Acting as the platform central node, KAUST has been providing administrative and scientific support to this initiative, which is financed by the government of Saudi Arabia and other G20 partners. Over 2021 the platform consolidated its structure and secured initial funding, releasing its 3-year strategic plan in 2022. KAUST faculty from the Red Sea Research Center are deeply involved in the platform, currently being part of the Scientific and Advisory Committee.

14.3 ENGAGEMENT & OUTREACH

Documenting and sharing the wonders of the Red Sea



A KAUST alumnus and a faculty from the Red Sea Research Center (RSRC) have authored the book Into the Red Sea featuring stunning images taken on the western coast of Saudi Arabia. The book, released in 2021, covers the work of scientists, engineers, and students concerned with coral reefs in the region and provides an up-to-date review of the geology, ecology, and physiology of coral reef ecosystems in the Red Sea. Hardcover copies in English and Arabic are available for purchase, giving the general public a chance to learn more about the Red Sea's rich biodiversity and the importance of preserving it.

Using algal biotechnology to sustainably explore marine resources

In 2022, KAUST announced a collaboration with The Ministry of Environment, Water, and Agriculture (MEWA) to deliver the "Development of Algal Biotechnology in the Kingdom of Saudi Arabia" (DABKSA) project. The aim of the collaborative project is to develop technologies that produce animal feed for agriculture in Saudi Arabia. Overseen by MEWA's National Fisheries Development Program (NFDP), and located at the KAUST campus, the project is set to establish a sustainable and local fish feed industry, opening new economic ventures for the aquaculture sector, and contributing to the food security agenda of Saudi Arabia's Vision 2030.

Participating in global ocean forums

KAUST was represented at the 2022 UN Ocean's Conference by integrating the Blue Saudi Pavillion. Representing the only academic partner of the pavilion, KAUST's President Tony Chan cemented the university's ambition to contribute to the Kingdom's blue strategy. The Pavilion hosted an event to facilitate the conversation around the role of science and innovation in enabling the regenerative development of the Red Sea. It counted with the participation of KAUST faculty, which discussed how meaningful partnerships and collaboration, coupled with good governance, can drive positive action in the marine environment.

15 LIFE ON LAND

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

15.1 EDUCATION & RESEARCH

Using remote sensing to monitor mangroves

KAUST researchers are developing methods to monitor mangroves and land-based ecosystems using remote sensing. Over 2021 and 2022, the team has been working on a project aiming to determine how much carbon from the air do mangroves actually capture, and how much they might store. Previous studies have shown that mangroves absorb more carbon than any other terrestrial ecosystem, including rainforests. Offsetting carbon in the atmosphere to mitigate the impact of carbon-producing activities is a global priority, and healthy mangrove systems may be one way to contribute to carbon neutrality targets. The project, which is part of the KAUST Circular Carbon Initiative, explores the concept of Nature-Based Solutions, being part of a broader effort to support the Kingdom's conservation and afforestation goals, which include mangroves along the Red Sea and east coast of the country.

Unmanned aerial vehicle (UAV) piloting and field work on the mangrove sites at KAUST.

Using deep learning to detect land desertification

Researchers from the Computer, Electrical and Mathematical Sciences and Engineering (CEMSE) Division, have published a study on land desertification detection through Generative Adversarial Networks (GAN) to address desertification detection challenges. Published in 2021, the team developed a GAN-based method to analyze and detect desertification changes in multi-temporal Landsat optical images. The developed method outperformed state-of-the-art methods and was able to separate desertification events from other land cover changes like deforestation or areas undergoing seasonal phenomena of wild grasses' dryness.

Improving wildfire detection

As a result of the changing climate, wildfires have increased both in intensity and severity worldwide. To tackle this problem, a team of KAUST researchers from CEMSE has collaborated with the University of British Columbia, Canada, to propose a novel wildfire detection solution based on unmanned aerial vehicles assisted Internet of Things (UAV-IoT). Published in 2021, the study suggested that deployment of a massive number of low-cost IoT sensors through forests would allow for early wildfire detection at the sensor level. Since inexpensive sensors do not have the necessary battery or computational power to communicate a fire detection event across a massive IoT network to the fire control center, UAVs can be utilized. The combination of IoT sensors and UAVs are able to detect wildfires faster than satellite imaging and are best suited to high-risk regions such as human settlements and national parks.

15.2 OPERATIONS

Securing KAUST's natural resources

The KAUST's Nature Conservation Area (NCA) was established in 2017, spanning a wide coastal area encompassing 152 hectares from the beginning of the Safaa Gardens neighborhood's coastline mangroves, all the way up to King Abdullah's Monument. The area hosts the Ibn Sina Field Research Station, used by KAUST researchers to perform long-term experiments and monitoring programs to gather important information about the local biodiversity of species and their global contribution. Over 2021, the Health, Safety and Environment (HSE) department released the "Mangroves at KAUST" website, a compendium of all historical and current information on KAUST Mangroves and the NCA.

KAUST's Natural Environment

45% increase of mangrove coverage from **2005-2020**

110 **hectares** of mangrove forest

15+ distinct shoreline and shallow-water habitats

Protecting KAUST's blooming biodiversity

KAUST's land and marine habitats provide a safe haven to hundreds of species who call KAUST home. Inside and outside of the NCA, a rich biodiversity thrives from the manmade parks and green areas, to the shorelines and canals. KAUST sets several operational policies, guidelines, and monitoring systems—all aimed at managing local biodiversity. These include environmental permitting and monitoring processes, biodiversity protection and conservation, and nature appreciation and engagement programs. In 2019, HSE released the book "Biodiversity: Flora and Fauna of KAUST", a celebration of all recorded flora and fauna on KAUST lands. In 2022, KAUST has been working on a new Biodiversity Strategy and Action Plan to further our commitment to biodiversity protection.

KAUST's Biodiversity

181 Coral species

176 Fish species

250 Bird species

26 Native plant species

Restoring mangrove coverage while offsetting emissions

KAUST's mangrove forest conservation and enhancement has been a key part of the operations of the university since its early days. Mangrove forests rank among the most intense carbon sinks in the biosphere, locking much more carbon into their soils than tropical forests. As part of an activity from the Winter Enrichment Program (WEP) 2022, several participants were part of a mangrove planting campaign at KAUST's Nature Conservation Area. The event aimed to promote awareness on the importance of reforestation and offset five times the carbon emissions of WEP business travelling, by planting more than 200 mangroves.

15.3 ENGAGEMENT & OUTREACH

Joining policy makers at the inaugural Saudi Green Initiative Forum

In October 2021, KAUST participated in the inaugural Saudi Green Initiative (SGI) Forum and the adjoining Youth Green Summit. Inaugurated in 2021, the SGI lays a pioneering strategy for Saudi Arabia to unite environmental protection, energy transition and sustainability programs within the Kingdom. With over 75 speakers including government representatives, CEOs, investors and influential institutions, KAUST faculty, students and leadership have participated in multiple sessions during the event, demonstrating the university's commitment to supporting the Kingdom on its ambitious sustainable development agenda, which includes a massive afforestation goal.

Supporting the Greening Saudi Project

In 2022 KAUST signed an agreement with Imar Engineering Consulting, lead of the consortium mandated to deliver the implementation plan for the Greening Saudi Project, part of the Saudi Green Initiative.

> **As part of the ambitious targets of the project, the Kingdom aims to transform its desert landscape into green rehabilitated lands by planting 10 billion trees across 40 million hectares of land over the coming decades.**

Such afforestation efforts come with challenges, particularly for the survival and ecological sustainability of the planted trees. Given KAUST's expertise in desert agriculture, water security and environmental restoration, the university will provide the necessary scientific support to ensure the project's targets are met with evidence-based plans. In addition to carbon sequestration, the massive tree planting project is expected to improve air quality, reduce sandstorms, combat desertification, and lower temperatures in adjacent areas across the Kingdom.

KAUST and Imar Engineering Consulting sign agreement to support the Greening Saudi Project

Celebrating our Planet

The KAUST community gathers every year to celebrate Earth Day, a global event celebrated in over 192 countries worldwide in support of environmental protection. Over the 2021 and 2022 celebrations, several departments at KAUST offered engagement and awareness activities such as movie screenings, quizzes, challenges, clean-ups, facility open houses and lab tours.

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

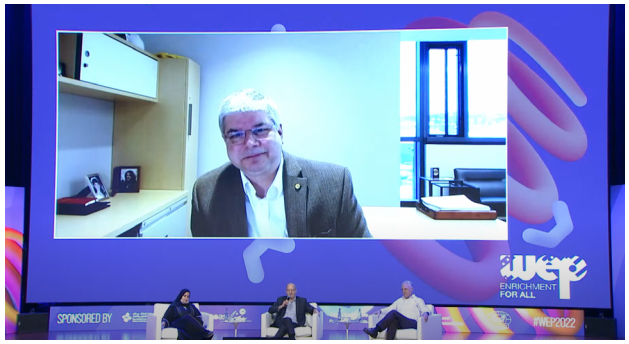
Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

16.1 EDUCATION & RESEARCH

Investigating resilient computing and cybersecurity

The Resilient Computing and Cybersecurity Center (RC3), was inaugurated in December 2020 to deliver an ambitious strategic research program in Resilient Computing, and to create critical mass and expertise in Cybersecurity in Saudi Arabia. As societies evolve and migrate to the digital domain, institutions need to ensure online systems are safe and protected against threats such as cyber attacks or personal data leaks, and that digital crimes are prevented and identified swiftly.

To research solutions that support and ensure the security and resilience of critical information infrastructure, the center established several projects over 2021 and 2022 over different research frameworks such as robust and adaptive fault and intrusion tolerance; ultra-reliable micro trusted execution environments, privacy and integrity-preserving data processing, next-generation threat and intrusion detection/prevention systems, and high-confidence vertical software verification.



Panel Discussion | The intertwining of Resilience, Cybersecurity and AI

Protecting energy grids from cyberattacks

Power grids are growing more complex everyday. As energy demand rises at a fast pace, attacks to energy infrastructures may have a catastrophic impact in terms of peace and safety. Microgrids try to minimize this threat, as they can operate independently of the main grid when required, by supporting hospitals during natural disasters, or maintaining biobanks. However, microgrids can still be prone to malicious behaviour.

KAUST researchers from the Resilient Computing and Cybersecurity Center published a study in 2022 where an assessment of how cyberattacks on energy microgrids could impact their functioning. The team simulated different cyberattack strategies to test the resilience of those systems. The results showed that all tested scenarios could have damaging effects that cascade through the power system, inducing large costs, power losses and damage to equipment. To help with solutions, the team suggested effective methods to quickly and accurately detect the anomalous conditions associated with an incoming attack.

16.2 OPERATIONS

KAUST wins security team of the year award

> **KAUST won the Best Security Team award at the Fire and Security Excellence Awards Ceremony held in London in 2021.**

After the Covid-19 outbreak, and the ensuing lockdowns, KAUST implemented a strategic approach focused on its operations, ensuring sufficient number of leaders and security personnel to manage security operations. The Security team also deployed an approved entry list of vendors and suppliers, which were regularly monitored for COVID-19 infection, and reduced community exposure to any contractors coming in and out of KAUST on a regular basis. KAUST's success in dealing with the pandemic also relied on the digitalization of 80% of provided services to the more than 7000 residents, maximizing the safety of the community.

Committing to high ethics and compliance standards

As part of its commitment to ethics and compliance, KAUST has an ongoing anonymous reporting hotline for whistleblowers or other complaints about wrongdoing that cannot be reported through normal channels. The reporting system is hosted and maintained by a third-party vendor called EthicsPoint. EthicsPoint is an independent company that provides a similar service for hundreds of companies and universities. The line is available for anyone within KAUST to use, however, any KAUST member with concerns about violations or allegations of wrongdoing is advised to first contact their immediate line management or the responsible department, which are expected to deal confidentially with any complaint.

Sharing KAUST's research outputs with everyone

Thanks to KAUST's Open Access Policy, in place since 2014, all faculty members, research scientists, post-doctoral fellows, students and employees grant KAUST non-exclusive permission to make available their scholarly research publications and to exercise the copyright in those publications for the purpose of open dissemination. Open access allows researchers to more easily find and read the research they are interested in and for authors to be more read and cited. It also discourages scientific misconduct by making all work published by the university open to public and peer scrutiny.

16.3 ENGAGEMENT & OUTREACH

Cooperating with knowledge sharing partners

KAUST and the Future Investment Initiative Institute signed a memorandum of understanding (MoU) on January 2021 to cooperate on research projects as well as events aiming at facilitating access to scientific knowledge to Humankind. The agreement reflects both parties' eagerness to advance scientific research and make knowledge accessible to the ones that need it most. The partnership emphasizes KAUST's commitment to actionable technological progress that contributes to international development and welfare.

KAUST President Dr. Tony Chan at 5th FII Summit

Celebrating an Open Access culture

The KAUST Library celebrated the International Open Access week in 2022, showcasing the importance of scholarly information and research output in promoting global sharing of information and knowledge free of any social, financial, legal or technical constraints. As part of the celebration program, a KAUST faculty presented her experience on promoting and sustaining knowledge transfer to local communities and stakeholders, as a results of her work on translating marine science research in the Indo-Pacific to institutional and governmental organizations.

The open discussion addressed the role scientists play in informing local institutions, and the general public on the data they collect in expeditions, to ensure local populations and governments are informed about their resources and how to better protect them. The session aimed at providing the audience with tools and resources towards leading local capacity building and evidence-based policy making.

"Promoting and Sustaining knowledge Transfer to Local Communities and Stakeholders" discussion carried during the International Open Access Week 2022

Raising awareness on cybersecurity

In line with worldwide cybersecurity awareness activities during the month of October, the Information Security Office at KAUST lauched the Human Firewall Awareness Month in 2020. Over 2021 and 2022 KAUST members were able to access a full month of awareness activities including e-courses, quizzes, games, seminars, among other activities. The Information Security office also runs the continuous Human Firewall Program, a risk-based approach to cybersecurity training where the team conducts educational exercises along with quizzes and an integrated points-based system that calculates the risk associated with a lack of cybersecurity awareness among users.

Engagement activities during the Human Firewall Awareness Month 2021

17 PARTNERSHIPS FOR THE GOALS

Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

17.1 EDUCATION & RESEARCH

Making sustainability the connector of our research

> **In 2021, KAUST researchers had the opportunity to showcase their work at the Research Open Week. With the theme "Sustainability: Science of the Future", the event aimed to provide a positive outlook for the future by presenting the most promising and innovative technologies arising from KAUST's research pillars: Energy, Environment, Water, Food & Health, and the Digital domain.**

The event held several education opportunities around the SDGs, such as the giant SDG cube featuring facts and figures about the challenges of each SDG, among other branding materials. This engagement allowed participants to learn and understand the deep connection between KAUST's research and the global sustainability challenges.

The Sustainable Development Goals featured throughout KAUST Research Open Week 2021

A series to discuss sustainability

As part of their yearly activities, the Students for Sustainability (S2), with the support of the Office of Sustainability, periodically organize the Sustainability Seminar Series. The lectures aim to engage and educate KAUST's academic community around relevant sustainability topics related to all 17 sustainable Development Goals. Over 2021 and 2022, local and international guests have presented work around sustainable food systems, low carbon technologies, life cycle assessment, waste management, psychology of climate change, among several others. All seminars are recorded and can be accessed by the public online.

The Sustainability Seminar Series

The KAUST Sustainability website

The KAUST Sustainability website was launched in 2022 to serve as a window to showcase KAUST's collective effort in contributing to the national and global sustainability agenda through Saudi Arabia's Vision 2030 and the United Nations Sustainable Development Goals. The website features the sustainability actions, projects and initiatives spearheaded by the university across research, education, innovation, operations and engagement. All website pages are tagged to the SDGs, in an effort to communicate and educate on KAUST's contributions to the SDGs.

17.2 OPERATIONS

KAUST solidifies its presence in sustainability networks

Over the last few years, KAUST has integrated several international networks aimed at advancing sustainability and the Sustainable Development Goals. In 2021, the university joined the UN Sustainable Development Solutions Network (SDSN), an organization working closely with United Nations agencies, multilateral financing institutions, the private sector, and civil society to mobilize global scientific expertise and promote practical solutions for sustainable development.

In 2022, KAUST was accepted as a member of the International Sustainable Campus Network (ISCN), an international forum for higher education institutions to exchange information, ideas, and best practices in implementing sustainable campus operations and integrating sustainability in research and education. KAUST has also integrated the United Nations Global Compact Network, the largest corporate sustainability initiative worldwide.

Bringing people together to advance sustainability

To advance the sustainability agenda of the institution, KAUST's President Tony Chan established a Sustainability Working Group (SWG) in March 2021. The SWG is composed of representatives of over 20 departments, teams, academic divisions, and student groups and was tasked on the identification of synergies and collaboration opportunities, outline priority actions to advance the University's sustainability agenda, and propose recommendations to assist Senior Leadership in formulating an overarching sustainability vision and action plan.

Brainstorming activity at the Sustainability Working Group Workshop

As a result of the SWG's critical endeavors, the KAUST Sustainability Vision statement was formally announced in March 2022. The group reconvened again in June 2022 to define the goals, strategies, and the necessary actions for KAUST to realize the released Sustainability Vision. A Sustainability Plan and roadmap for the university are currently being developed.

KAUST enters the THE Impact Rankings

> **KAUST has officially entered in the overall THE Impact Rankings in 2021, reporting for four global goals: SDG 6 - Clean Water and Sanitation, SDG 7 - Affordable and Clean Energy, SDG 14 - Life Below Water and SDG 17 - Partnerships for the Goals.**

The rankings aim to be a global performance analysis to assess higher education institutions against the UN SDGs. With a comprehensive methodology encompassing four broad areas - research, stewardship, outreach and teaching - universities can report their contributions by answering specific indicators. As a strong research university, KAUST has set itself apart globally in the research indicators.

Highlights of KAUST THE Impact Rankings 2022 Results

Aligning academic curriculum with the SDGs

On a continuous effort to solidify literacy around the SDGs in its academic curriculum, KAUST's Office of the Registrar has embedded dedicated fields for SDG alignment on the university course proposal forms. Since August 2022, KAUST faculty can now specifically tag what SDGs their courses will address and how, being the information shared with students as part of the course syllabus.

17.3 ENGAGEMENT & OUTREACH

KAUST co-signs global statement on UN 2030 Agenda

KAUST joined with 57 universities from 30 countries and regions to release a joint statement calling for accelerated action for a more sustainable world in 2021. This marked the first time that leading universities across six continents have made a joint statement on the 2030 Agenda for Sustainable Development, adopted by United Nations Member States in 2015 as a shared blueprint for global peace and prosperity. In the statement, university leaders, including KAUST's President Tony Chan, have reaffirmed their institution's commitment to solidarity, resilience and prosperity, and pleaded to work towards a shared vision through education, research, innovation and partnership.

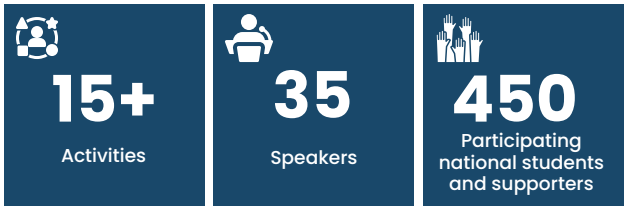
Collaborations for sustainable development dissemination

As part of its strategy to engage with key stakeholders to advance sustainable development, KAUST has signed an MoU with Saudi-based wakf AEON Collective in 2022. The partnership aims to solidify the ties between both institutions by ensuring the joint delivery of strategic projects to advance sustainability education and outreach, research communication and translation in emerging sustainability topics, capacity building, and youth engagement on sustainable development.

Hosting youth-led national events for sustainability

KAUST hosted the Saudi Youth for Sustainability Inaugural Conference (SYS2022) in 2022. With the theme "Thriving Together", the two-day event aimed to explore how Saudi youth can be active contributors to sustainable development and Vision 2030 through advocacy, education, and technology. With youth representing approximately 70 percent of Saudi Arabia's population, their role in advancing the SDGs becomes instrumental. The conference had the participation of national university students and guests from government, academia and industry. The Saudi Youth for Sustainability has established itself by gathering members from several Saudi universities with the shared goal of promoting youth empowerment through sustainability.

SYS Confernce - Thriving Together In Numbers



Participating in global sustainability fora

The 9th edition of the World Sustainability Forum (WSF) in 2021 featured a KAUST-organized satellite session entitled "Circular Carbon Economy: Paving The Way for a Sustainable Future". In support of the SDGs, the WSF is an international forum contributing to the global debate on establishing platforms and networks among stakeholders including lawmakers, industry, the general public and academic disciplines, with the aim of bringing structure to the vision of a sustainable world. The KAUST session explored realistic technology options, from the required R&D innovations to industry and government deployments, and commensurate carbon management policies for sustainable development.


17 PARTNERSHIPS FOR THE GOALS
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
15 LIFE ON LAND
14 LIFE BELOW WATER
13 CLIMATE ACTION
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
11 SUSTAINABLE CITIES AND COMMUNITIES
10 REDUCED INEQUALITIES
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
8 DECENT WORK AND ECONOMIC GROWTH
7 AFFORDABLE AND CLEAN ENERGY
6 CLEAN WATER AND SANITATION
5 GENDER EQUALITY
4 QUALITY EDUCATION
3 GOOD HEALTH AND WELL-BEING
2 ZERO HUNGER
1 NO POVERTY

ABOUT THE KAUST SDG HIGHLIGHT REPORT

This report was elaborated by the Office of Sustainability, overseen by the Office of the President. The Office of Sustainability is the connecting hub responsible for the coordination and guidance of the University's sustainability roadmap, in line with KAUST's Sustainability Vision.

Office of the President

Building 16, 4th Floor

King Abdullah University of Science and Technology

Thuwal, 23955-6900

Kingdom of Saudi Arabia

Lead Contributors

Dr. Rúben Martins da Costa, Sandra Fischer, Lavannya George, Mozon Aldosary, Lorna James, Dr. Ana Margarida Costa and Dr. Teofilo Abrajano.

Acknowledgements

The Office of Sustainability would like to thank all KAUST departments and teams who shared data or contributed to the work highlighted in this report, including, but not limited to, Community Life, Health, Safety and Environment, Facilities Management, Human Resources, Government Affairs, Global Branding and Communications, Strategic National Advancement, Graduate Affairs, IT, Innovation, Finance, Academic Divisions, Research Centers, Office of the VP for Research, Office of the Provost, Student Groups, and all external contractors, partners and collaborators.