

جامعة الدوحة  
للعلوم والتكنولوجيا  
UNIVERSITY OF DOHA  
FOR SCIENCE & TECHNOLOGY



# Annual Sustainability Report

2023

Working Towards Qatar's Sustainable Society







# INDEX



President's Statement	4
Vice President of Academic's Statement	6
About the University	8
In Focus: QNV 2030 - The Third National Development Strategy	10
UDST's Sustainability Action Plans	12
<b>Action Plan 1:</b>	13
Develop Industry Related Academic Programs for the Future-Ready Workforce	
<b>Action Plan 2:</b>	22
Engage Community for Impactful Involvement	
<b>Action Plan 3:</b>	26
Promote Applied Research, Innovation, and Entrepreneurship to Achieve SDG's	
<b>Action Plan 4:</b>	37
Drive Institutional Excellence for Economic Development	
Acknowledgment	42



**Dr. Salem Al-Naemi**

President, University of Doha for Science and Technology



# President's Statement

Aligned with Qatar's National Vision, our university takes a leading role in promoting sustainability, innovation, education, and research, in harmony with our nation's ambitions. We are dedicated to playing a pivotal part in Qatar's journey toward becoming a knowledge-driven economy, propelled by sustainable methods and technological progress.

Our commitment transcends mere academic achievement; we prioritize cultivating a workforce primed for the future, equipped with the essential skills and principles vital for Qatar's advancement. Through strategic alignment with national objectives, we actively contribute to economic diversification, environmental stewardship, and social progress.

“ Together, we are paving the way for a brighter, more sustainable future for Qatar, underpinned by knowledge, innovation, and community engagement. ”





**Dr. Rachid Benlamri**  
Vice President of Academics



# Vice President of Academic's Statement

As Qatar advances its goals outlined in the Third National Development Strategy, our academic institution is deeply committed to shaping a sustainable future. Beyond traditional education, we integrate industry partnerships into our programs to provide students with a holistic learning experience.

Our mission is to instill in students a passion for sustainability, innovation, and resilience, equipping them to contribute to Qatar's future. Through excellence, collaboration, and sustainability, we nurture leaders who excel academically and embody strong ethical values, ready to contribute to Qatar's success.

“Together, let us continue to empower our students to become catalysts for change, equipping them with the knowledge, skills, and vision to navigate and shape Qatar's journey towards its grand aspirations.”



# About the University



**College of  
Engineering  
& Technology**



**College of  
Health Science**



**College of  
Business**



**College of Computing  
and Information  
Technology**



**College of  
General  
Education**

University of Doha for Science and Technology is recognized as a Center for Excellence in Technical and Vocational Education in the State of Qatar. We offer interactive academic and co-curricular programming to more than 7,400 full-time students enrolled in over 70 programs in the areas of Engineering and Technology, Health Sciences, Business, Computing and Information Technology, and Foundation Programs. In addition, hundreds of students enroll annually in a range of continuing and professional education programs.





## Our Vision

UDST shall be a leading institution that promotes excellence in applied education and research contributing to innovation and sustainable development of the State of Qatar and the global community.

## Our Mission

UDST advances quality applied science and technology through agile applied higher education and research for the socio-economic development of the State of Qatar and the world.

## Our Values

### Sustainability

At UDST, we are committed to uphold the values of higher education in our governance and to engage in sound and transparent business to fulfill the trust of the public in all matters.



### Quality

At UDST, we are committed to high standards in meeting our educational objectives and students' success, utilizing appropriate evidence to improve teaching, learning, research and overall Institutional effectiveness to fulfill both current commitments and future needs and opportunities.



### Integrity

At UDST, we are committed to environmentally sound development, creating curriculum, research and professional practices that meet the needs of the present without compromising the needs of future generations for a better quality of life.



### Innovation

At UDST, we embrace innovation in education by developing and fostering new ways to teaching, learning and applied research in line with new developments and technologies in relevant fields and providing solutions to real-world problems locally and internationally.



### Adaptability

At UDST, we anticipate and respond, in a timely manner, to changing economic, social and global changing situations by empowering our graduates through applied learning experiences and by responding to the evolving needs of students, communities and the workforce.



### Accountability

At UDST, we strive to be held responsible and answerable for the specific results and outcomes of every activity we undertake. We believe in taking ownership of our responsibilities, ensuring that our actions have a tangible impact and contribute to the success of our students and stakeholders.





In Focus:  
**QNV 2030**







## The Third National Development Strategy

The Third Qatar National Development Strategy (NDS3) for 2024–2030 is geared towards realizing the Qatar National Vision 2030. It prioritizes sustainable economic growth, fiscal stability, workforce preparedness, societal cohesion, improved quality of life, environmental preservation, and governmental excellence. The strategy aims to diversify the economy, enhance education and healthcare, bolster social development, and optimize public services, infrastructure, and environmental conservation efforts. Emphasizing collaboration among stakeholders, it capitalizes on Qatar's global energy leadership position and seeks to bolster competitiveness through innovation and private sector growth.





# UDST's Sustainability Action Plans



Develop Industry Relevant Academic Program for the Future-Ready Workforce



Engage Community for Impactful Involvement



Promote Applied Research, Innovation and Entrepreneurship to Achieve SDG's



Drive Institutional Excellence for Economic Development

The University of Doha for Science and Technology (UDST) is strategically positioned to play a pivotal role in advancing both the United Nations Sustainable Development Goals (SDGs) and Qatar's Third National Development Strategy (NDS3). By aligning its efforts with these global and national objectives, UDST aims to translate them into tangible outcomes within Qatar and beyond. Through its academic, operational, and research endeavors, UDST is committed to upholding world-class standards, thereby contributing significantly to Qatar's vision of becoming a diversified, sustainable, and forward-thinking nation.

The university's commitment to excellence is reflected in its four action plans, which outline its dedication to achieving world-class academic, operational, and research standards. By adhering to these plans, UDST aims to support Qatar's vision of becoming a diversified, sustainable, and forward-looking nation. Through its strategic alignment with the UN SDGs and Qatar's NDS3, the University is uniquely positioned to drive positive change and make meaningful contributions towards a brighter future for Qatar and beyond.





## Action Plan





## Action Plan 1

# Develop Industry Relevant Academic Program for the Future-Ready Workforce

UDST is dedicated to nurturing student success by preparing them for the future workforce. Through tailored academic programs and applied research initiatives in emerging sectors like digital technology, renewable energy, and sustainable development, the University equips students with relevant knowledge and skills. Also, it fosters strategic partnerships with industry stakeholders, providing students with practical training, internships, and real-world experiences.

Furthermore, the University focuses on enhancing educational outcomes by integrating curricula emphasizing critical thinking, digital literacy, and soft

skills. This prepares graduates for high-skilled roles in line with Qatar's economic diversification plans. Continuous professional development opportunities for faculty and staff further enhance teaching effectiveness and research impact, elevating the overall quality of education.

Looking ahead, the University aims to support lifelong learning and continuous education initiatives to upskill the national workforce, fostering a productive and skilled labor market aligned with national goals. In 2023, the University delivered outstanding results for this action plan.

### Related SDG Goals Achieved:



### Related QNV 2030 - NDS3 Outcomes Achieved:



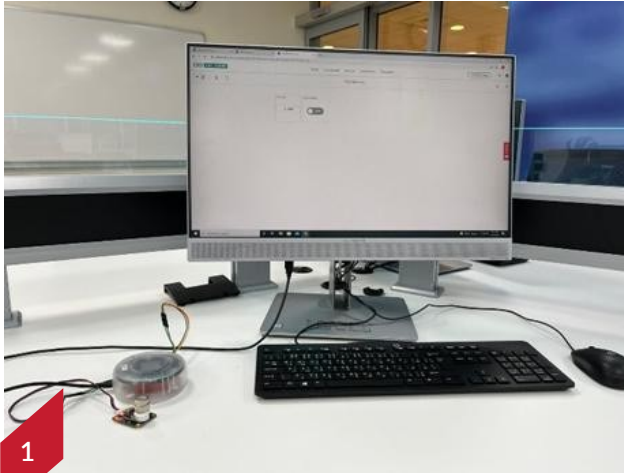
### Future - Ready Workforce



#### 4 QUALITY EDUCATION



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



#### 1 IoT App Development Lab: Advancing Sustainable Goals through Innovation.

The courseware integrated into the IoT Application Development Lab encompasses projects directly applicable to Sustainable Development Goals (SDGs). They include Air Quality Monitoring using IoT devices to assess pollution levels, CO<sub>2</sub> Monitoring and Offset Calculation to track carbon emissions and promote carbon neutrality, Water Leakage Detection systems to conserve water resources, and various other initiatives aimed at promoting sustainability and addressing global development objectives.



#### 2 UDST-NGL Learning Event: Empowering Minds for Sustainable Futures

UDST-NGL's "Empowering Minds" event on November 27, 2023, featured presentations by John Hughes, Andres Ruzo, Charlotte Ellis, and Bader Alamari, with 200 high school students attending. It included college tours, a solar car engineering workshop, and a keynote by Eng. Ahmed Mohammed Al-Sada. Organized by Krista Jack and Ahlem Souayah, with Sandee Thompson as MC, volunteers from the faculty and Health Sciences students contributed to the success of this event.

#### 3

#### Integration of AI into Teaching and Learning Events

The University of Doha for Science and Technology (UDST) hosted an insightful panel discussion on 'Integrating AI into Teaching and Learning', as part of its Foundation Program Webinar Series. The online forum, comprising of education strategists and faculty from major universities in Qatar, addressed the challenges and opportunities presented by the rapidly evolving field of artificial intelligence (AI) in education, with particular emphasis on the ground-breaking AI-powered chatbot, ChatGPT, developed by OpenAI.

4

#### UDST Science Fest

The University of Doha for Science and Technology's College of General Education organized a Fall 2023 Science Fest to educate and entertain students. The College's faculty contributed to the event's success by aligning with the vision for 2030 to promote sustainable development through education, human rights, gender equality, peace culture, non-violence, global citizenship, and cultural diversity.



5

#### Field Tour to Qatar Shell Research and Technology Center

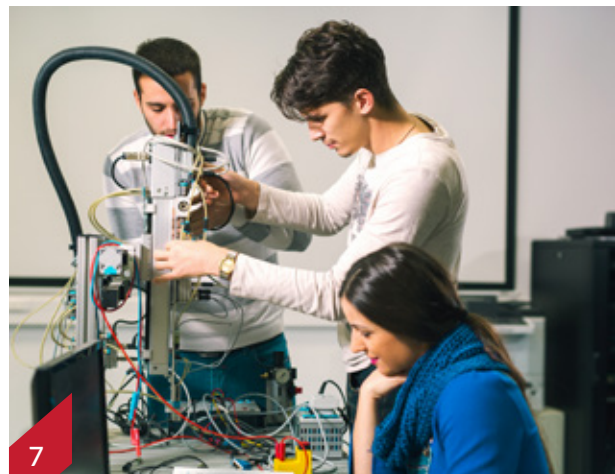
A group of students studying Petrochemistry got a chance to visit the Qatar Shell Research and Technology Center. This visit provided valuable insights into the Center's contributions to the petrochemical industry and its impact on various sectors. It was a great learning experience for the students, giving them firsthand knowledge of the Center's advancements, research projects, and technologies.

6

#### Field Trips to Local Sustainable Projects

As part of our educational initiatives, the University organizes field trips to various local sustainable projects, both governmental and non-governmental, enabling students to meet and learn from experts in the field. Some of the locations visited include the M7 museum, Mowasalat company, Heenat Salma Farm, and the beIN Sports network.

*Despite slow progress, the world is falling far behind in achieving quality education*



7

#### Postgraduate STEM/TVET Education Program

Our Postgraduate STEM/TVET Education program offers courses specifically tailored for initial teacher education. These courses integrate technology and education, emphasizing STEM concepts through computational thinking, mathematical modeling, and technology labs. Additionally, we extend invitations to in-service teachers to participate in our professional development opportunities.



### 3 GOOD HEALTH AND WELL-BEING



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



#### 1 Accreditation of Pharmacy Technology Diploma Program by CCAPP

Under the leadership of the Head of the Pharmacy Department, significant strides were made in advancing the Pharmacy Technology diploma program, culminating in its accreditation by the Canadian Council for Accreditation of Pharmacy Programs (CCAPP). Effective from July 2023, this accreditation spans a five-year period.



#### 2 Community Presentation: Breast Cancer Survivorship and Women's Health

The community presentation focused on breast cancer survivorship and women's health, providing valuable insights into the journey of breast cancer survivors, and addressing key aspects of women's health.

#### 3 Breast Cancer and Prostate Cancer Awareness Event, Collaboration with Qatar Cancer Society and Qatar Airways

UDST organized a breast cancer and prostate cancer awareness event in collaboration with the Qatar Cancer Society and Qatar Airways for their staff to promote health and wellbeing.







#### 4 Development of the Patients and Partners Program at CHS

The Patients and Partners program at CHS focuses on inclusivity by involving patients from various backgrounds to provide input and contribute to healthcare education at the undergraduate level. This initiative aligns with the shared goal of enhancing patient-centered care within the institution.

#### 5 Course Development and Teaching in Pharmacognosy

From 2022 to 2023, this initiative has aligned with the UN goal of quality education by imparting specialized knowledge and skills in the realm of natural product-based medicine. Through this educational endeavor, individuals are equipped with the expertise necessary to make meaningful contributions to healthcare and pharmaceutical research.

#### 6 Course Development: Theoretical Perspectives in Healthcare for Families

UDST curricula encompasses theoretical perspectives that focus on primary healthcare for families, as well as maternal and newborn health, and pediatric health.

#### 7 Clinical Nursing Instructor's Health Promotion Initiatives

UDST conducted sessions to educate students, faculty, and staff at the University on stress management, obesity prevention, and smoking cessation, emphasizing health promotion activities and projects aimed at enhancing client education.

#### 8 UDST Course and Workshop Development Assignments

UDST has crafted curricula for the following courses: NUPN1050 (Spring 2023), NUPN2050 (Fall 2023), Courses at the College of Health Sciences General Nursing Orientation CPD Clinical Competence Review and Assessment (Spring 2023), and Family Centered Healthcare-CPD (Fall 2023). Additionally, the University has designed Simulation Days for Person and Family-Centered Practice (Spring 2023) and Practical Nursing Practice for Families (Fall 2023) at UDST.

5 GENDER EQUALITY



Achieve **gender equality** and **empower** all women and girls

#### 1 Course Title: HRMG4084 - Managing Diversity and Inclusion

The course encompasses various aspects of diversity, including gender, race/ethnicity, disability, and age, to foster inclusive environments and effective management practices.





## 7 AFFORDABLE AND CLEAN ENERGY



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



1

### Renewable Energy Course Project

In Winter 2023, the Renewable Energy course projects at the University introduced third and fourth-year students to the Sustainable Development Goals (SDGs) as a part of the curriculum. The instructors from the College of Engineering and Technology guided the students in designing photovoltaic systems aimed at providing power to remote locations, with a focus on clean energy solutions for vulnerable communities. The projects encompassed designing PV systems for water pumping in a refugee camp and powering a school in Afghanistan.



2

### Smart Eco Hackathon

The University dedicatedly conducts workshops and skill development sessions aimed at empowering engineers to tackle projects aligned with Sustainable Development Goals (SDGs), particularly focusing on renewable energy, climate change mitigation, and zero waste management. These initiatives foster innovation and expertise crucial for addressing pressing global challenges sustainably.



# 285<sup>+</sup>

Undergraduate and graduate students under QRDI Research projects



# 43<sup>+</sup>

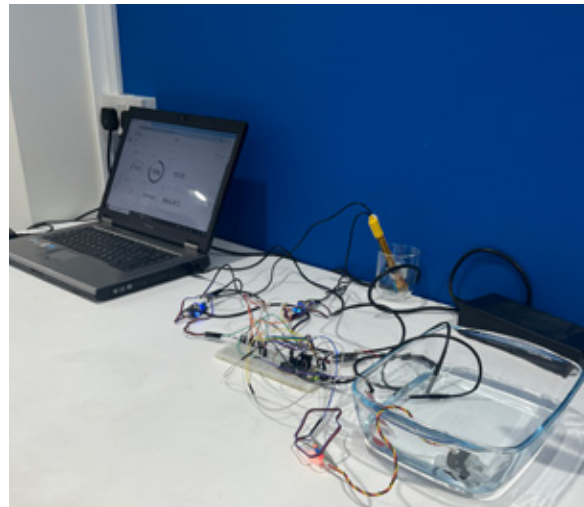
High School Research Students under QRDI-High School Research Experience Program



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

### 1 Smart Garden using IoT.

Smart Garden project tailored for Qatar EXPO 2023, embodies themes such as Modern Agriculture, Technology, Environmental Awareness, and Sustainability. It integrates technology into gardening, employing sensors to monitor environmental conditions and plant health. Automated irrigation and climate control ensure optimal conditions, accessible remotely via app or web. Energy-efficient scheduling and data visualization tools enhance eco-friendliness, fostering healthier plants and higher yields.



## Reduce **inequality** within and among countries

### 1 Integration of Economic Inequality in ECON2010 Business Economics Course

In the ECON2010 Business Economics course, for all College of Business students, significant emphasis is placed on the topic of economic inequality. This topic is covered comprehensively, including discussions on the issue itself and the measurement tools employed. Questions related to economic inequality are included in both assignments and the comprehensive final exam.







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

### 1 UDST's Hackathon competition

The University's November 2023 Hackathon crowned a team champion for their innovative project, "Application of Artificial Intelligence and Lifecycle Assessment in Converting Organic Waste to Compost." The winning project demonstrated cutting-edge integration of AI and environmental sustainability, offering promising solutions for organic waste management through composting.



### 2 Multiscale damage modeling for a sustainable future

On November 23, 2023, an instructor from the College of Computing and IT delivered an esteemed lecture at King Abdullah University of Science and Technology (KAUST) in Saudi Arabia. The seminar focused on cutting-edge advancements in artificial intelligence, exploring its applications across various domains, and fostering discussions on the future implications of AI technology on society and innovation.

### 3 Solar Car Endurance Vehicle

The project aims to build a fully solar-powered car capable of carrying a passenger and driving for several days solely on solar energy, showcasing the potential of clean transport solutions.

### 4 Advancing Sustainable Urban Development: Student-Led Research

Students explored sustainability in dense urban areas, proposing solutions like motion sensor installation on Qatari streetlights and addressing environmental concerns in urban settlements.



## Action Plan

# 2



## Action Plan 2

# Engage Community for Impactful Involvement

At the University, our core mission is to cultivate impactful community engagement aimed at generating positive outcomes. Central to our approach is the prioritization of initiatives that actively involve and uplift the local community across multiple dimensions, spanning education, health, and cultural enrichment. Through collaborative efforts with community members, stakeholders, and organizations, we strive to tackle pressing issues, foster inclusivity, and elevate the overall well-being of our community. By embracing a collaborative ethos and valuing diverse perspectives, we aim to create lasting and meaningful change that resonates throughout our community. In 2023, we achieved significant milestones in this action plan.

### Related SDG Goals Achieved:



### Related QNV 2030 - NDS3 Outcomes Achieved:



Cohesive Society



Quality of Life







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



#### Medical Camp Organized by WellCare Group

The University participated in a medical camp organized by the WellCare group on June 4, 2023, with 17 Pharmacy Technology students. This outreach initiative catered to approximately 3000 low-income individuals, predominantly laborers involved in various projects across Qatar. The event provided an invaluable opportunity for students to apply their skills in a real-life context, while simultaneously contributing to the service and assistance of those in need.



## 4 QUALITY EDUCATION



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

### 1

#### Charting the Course: Grand Challenges in Bioinformatics Education and Training

The University led the Bioinformatics Grand Challenges Consortium in defining and publishing the “Grand Challenges in Bioinformatics Education and Training.” With the increasing demand for bioinformatics expertise in the life and health sciences, a coordinated effort is required to proactively and critically reflect on the challenges of educating and training life scientists with the requisite skills and competencies.

## 12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Ensure sustainable **consumption** and **production** patterns

### 1

#### Qatar Petro Chemical Company (QAPCO)

University of Doha for Science and Technology (UDST) takes great pride in the long-term partnership that the University has built with QAPCO to support Technical and Vocational Education and Training (TVET) and Sustainability in Qatar. In an ever-evolving economy where industries continually advance and new technologies emerge, it is important that education rises to the challenges and takes advantage of the growing opportunities to equip students with the right knowledge and help them excel in their chosen fields.

With the visionary support of QAPCO, UDST was able to excel in spreading the knowledge and promising practices in TVET across Qatar. The University has made significant strides in developing not only awareness initiatives but also the culture of scholarly work and applied research.

In 2023, among several initiatives UDST participated and conducted workshops for Qatar Petrochemical company’s community outreach program on sustainable waste management.





## Action Plan

3





## Action Plan 3

# Promote Applied Research, Innovation and Entrepreneurship to Achieve SDG's

The University remains dedicated to fostering applied research, innovation, and the Sustainable Development Goals (SDGs) across its academic and operational domains. UDST actively evaluates and implements initiatives that drive innovation, address societal challenges, and contribute to sustainable development locally and globally. The University's commitment to promoting applied research and innovation is evidenced by its support for interdisciplinary collaborations, technology transfer, and entrepreneurship initiatives that aim to translate research findings into real-world solutions. In 2023, UDST achieved significant milestones in this action plan.

### Related SDG Goals Achieved:



### Related QNV 2030 - NDS3 Outcomes Achieved:



**Environmental  
Sustainability**

## 2 ZERO HUNGER

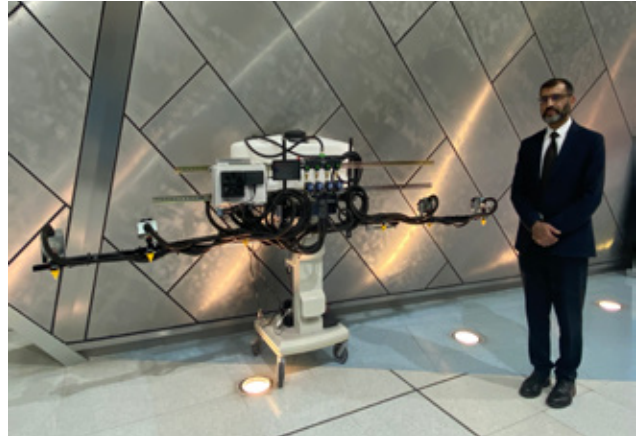


# End hunger, achieve food security and improved nutrition and promote sustainable agriculture

### 1

## AI-Driven Smart Sprayer: Revolutionizing Precision Agriculture in Qatar

As part of a QRDI-funded research project to develop smart agricultural technologies for food security AI-based disease detection models for tomato crops were developed. Integration with hardware resulted in a prototype smart variable rate sprayer, enhancing precision agriculture practices for sustainable food production in Qatar in 2023.



### 2

## Development of Smart Agricultural Technologies to Optimize Resource Allocation to Ensure Food Security – A Pathway Towards Sustainable Vegetables and Date Palm Production in Qatar

UDST was awarded a three-year research project aimed at developing climate-smart farming practices in Qatar to enhance food security and sustainability. It encompasses innovative approaches such as precision soil conservation, smart irrigation, and circular bio-economy concepts. The project seeks to optimize resources, reduce environmental risks, and train researchers for sustainable agriculture advancements.

### 3

## Food Security Workshop: Bio circular Approach for Sustainability in Food Production and Waste Valorization

The University organized a food security workshop featuring collaborative research with Dr. Bishnu Acharya, Saskatchewan Ministry of Agriculture Chair in Bioprocess Engineering & Associate Professor Chemical and Biological Engineering, who delves into bio circular approaches for sustainable food production and waste valorization to gain insights into innovative solutions for a more resilient future.

## KEYNOTE SPEAKER

Series 2024

Join us for a new round of Keynote Speaker Series  
Delivered by:

**Dr. Bishnu Acharya**  
Saskatchewan Ministry of Agriculture Chair in  
Bioprocess Engineering & Associate Professor  
Chemical and Biological Engineering

Topic:

**Biocircular Approach for Sustainability in  
Food Production and Waste Valorization**

Abstract:

Sustainable food production and waste valorization has become the necessity of today's world to meet the growing demand. In this context, Dr. Acharya's research focuses on the innovative bioprocessing and conversion technologies, particularly in the emerging area of conversion of waste biomass to bioproducts for food, chemical, material, and energy applications by adopting a circular bioeconomy approach. The presentation will highlight some of the projects carried out by Dr. Acharya and will discuss such opportunities for Qatar.

PRESENTED IN ENGLISH



### 3 GOOD HEALTH AND WELL-BEING



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

1

#### Predicting Respiratory Wellness Using IoT & AI-Based Solutions

The project aims to predict respiratory diseases in pediatric patients using AI analysis of breath recordings. The team customized an M5 AWS IoT device for real-time data processing, successfully embedding the AI model to enable on-the-fly analysis of breathing patterns for immediate respiratory health assessments.



2

#### Revolutionizing Parkinson's Diagnosis: AI-Driven SPECT DaTSCAN Image Analysis

The development of this program aims to enhance clinical practice and competency, thereby increasing patient care standards and promoting positive outcomes. This initiative focuses on educating and training the clinical workforce fostering innovation within the region.

### 4 QUALITY EDUCATION



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

1

#### UDST Project ARG01-0516-230182: Advancing Programming Education with Gamification and AI-Personalization

This project, funded by QRDI, focuses on elevating programming education in Qatar. Through gamification and AI-driven personalized learning, our aim is to enhance course outcomes and revolutionize the educational landscape.



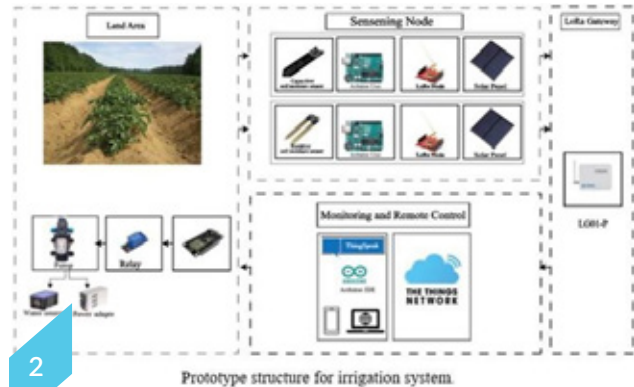


## Ensure availability and sustainable management of **water** and **sanitation** for all



### Comprehensive Water Quality Analysis and Monitoring with IoT

The students from the College of Computing and IT showcased a project titled “Comprehensive Water Quality Analysis and Monitoring with IoT” at the UDST booth of Qatar EXPO 2023. Under the supervision of the college instructor, the project focused on installing IoT sensors in campus water sources and swimming pools, alongside predictive water filtration, to ensure safe and efficient water distribution. Key outcomes included real-time monitoring of water quality, detection of contamination events, predictive water filtration, resource optimization, cost savings, and environmental sustainability. The project not only addressed health and sustainability concerns but also provided educational opportunities for students in IoT technology and data analysis.



2

### Design and Development of Soil Moisture Based Solar Powered LoRaWAN Irrigation System for UDST Campus

In this project, UDST is developing a system that utilizes soil moisture sensors and solar-powered LoRaWAN technology to regulate plant irrigation. Soil moisture readings are transmitted via LoRaWAN to a gateway, which aggregates data for display and control on the ThingSpeak cloud server. The pump motor is automated to irrigate when soil moisture levels fall below 60%, with manual control available through the MIT Inventory App.

3

### Innovative Water Management with IoT Sensors

A group of students from the College of Engineering and Technology developed a water management system using IoT sensors. This research is part of a capstone project submitted in November 2023, which has been shortlisted for the Dell Technologies Envision the Future Competition in Egypt, showcasing their innovative approach to sustainable resource management.

## 7 AFFORDABLE AND CLEAN ENERGY



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

1

### **Solar-Powered Grass Cutter: Reducing CO<sub>2</sub> Emissions and Promoting Sustainable Practice**

Under the guidance of the College of Engineering and Technology Advisor, students collaborated on an automated solar-powered grass cutter project from January to December 2023. This initiative not only aimed to showcase the efficiency of solar technology but also prioritized public education to raise awareness and advocate for cleaner energy sources.



2

### **Perceptions of Environmental sustainability in Qatar**

The University completed a QNRF-funded high school research project investigating “Perceptions of Environmental Sustainability in Qatar,” and submitted a multi-stakeholder research proposal focusing on “Food Waste Prevention in Qatar through Sustainable Supply Chain Management and Life Cycle Assessment: A Comprehensive Framework” In 2023, the University organized a Sustainability and Renewable Energy Student Project Exhibition and Hackathon.

3

### **Sustainable Campus Gardens**

The University has launched an initiative to develop sustainable campus gardens, integrating native plant species and employing eco-friendly irrigation methods. This project not only enhances the aesthetic appeal of the campus but also promotes biodiversity, reduces water consumption, and fosters environmental stewardship among students and staff.

4

### **Advancing Solar Energy Monitoring: Real-Time System Design for Residential Applications**

This Capstone Project titled “Design of Real-time Solar Power Monitoring System for Residential Applications” focused on solar photovoltaic system monitoring, aligned with Sustainable Development Goal 7: Affordable and Clean Energy in 2023. Currently, students are progressing with Capstone-II, building upon their initial design and action plan from January 2024 to April 2024.



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

### 1 International Symposium on Artificial Intelligence (ISAI'2023)

The College of Computing and Information Technology (CCIT) at UDSST hosted the International Symposium on Artificial Intelligence (ISAI'2023) on November 29-30, 2023. This pivotal event delved into AI and emergent technologies, covering technological advancements, interdisciplinary applications, and future possibilities. With international speakers, the symposium aimed to offer insights and foster collaboration for graduate students, ICT middle managers, and technology enthusiasts. Featuring presentations, panel discussions, and workshops, ISAI'2023 provided a comprehensive exploration of AI's role and impact. This symposium provided a unique opportunity envisioning the blueprint for humanity's coexistence with advanced technology.



### 2 AI-Driven Predictive Maintenance for Electric Sewage Pumps

The University proposed a new AI technique for predictive maintenance of sewage pumps. This will allow pumps to operate longer and consume less energy.



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

### 1 Exploring Qatar's Underwater Museum Potential

As part of an Undergraduate Research Experience Program (UREP) project, undergraduate students delve into sustainable tourism, investigating the feasibility of establishing an underwater museum in Qatar's coastal waters.



## 11 SUSTAINABLE CITIES AND COMMUNITIES



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

### 1 QFuel: Qatar Fuel Delivery Services

QFuel's project demonstrates a sustainable approach to home refueling. By reducing environmental impact through efficient user-client assignment, we pave the way for a greener future. Ongoing commitment to algorithmic enhancements ensures an exceptionally robust and eco-friendly home refueling experience, saving time, money, and the environment simultaneously.



### 2 AI-Driven Connected Vehicles for Enhanced Road Traffic Sustainability

The University leads a 3-year QRDI-funded ARG project focusing on improving road traffic sustainability, resilience, robustness, and safety through an innovative Joint Transportation and Communications V2X Framework leveraging artificial intelligence.

### 3 Integrating IoT in Lusail City for Smart Urban Management

This capstone project focuses on integrating Internet of Things (IoT) technology into Lusail City's infrastructure, aiming to enhance urban management and efficiency through data-driven insights and automation.



## Ensure sustainable **consumption** and **production** patterns



1

### Transforming Food Waste into Organic Compost: Empowering Doha's Outskirts

The initiative aims to convert food waste into valuable organic compost for farms surrounding Doha, promoting sustainable food waste management, and refining zero waste methodologies to benefit local communities.





13 CLIMATE ACTION



## Take urgent action to combat climate change and its impacts



1

### Enhancing Residential Energy Efficiency: Rooftop Automatic Sunshades Study

In the Fall 2023 a group of students from the College of Engineering and Technology developed a Capstone Project investigating adjustable rooftop shades' effectiveness in reducing heat transfer through low-rise horizontal roofs in Qatar. Aimed at lowering cooling load and energy consumption in typical residential buildings, contributing to energy efficiency efforts in the region.

2

### Harnessing Exhaust Heat for Sustainable Vehicle Lighting

During the Fall of 2023, a team of students from the College of Engineering and Technology embarked on a Capstone Project focused on harnessing wasted heat energy from exhaust emissions of internal combustion engines (ICEs). They delved into the efficacy of Thermoelectric Generator (TEG) devices in converting exhaust heat into electricity to illuminate vehicle lighting, thereby diminishing fossil fuel consumption and alleviating engine load.

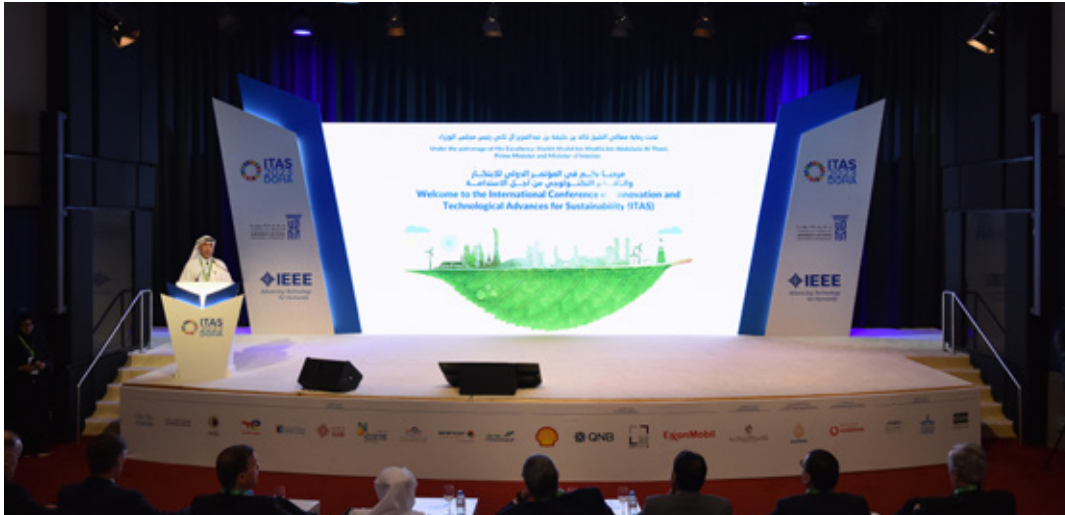
3

### Mitigating CO<sub>2</sub> Emissions: Comprehensive Solution with DAC Technology

A faculty member from the College of Engineering and Technology supervised a project focused on Direct Air Capture (DAC) technology's role in reducing CO<sub>2</sub> emissions and improving environmental conditions. Explored innovative solutions for capturing carbon dioxide from the atmosphere, addressing climate change challenges with a comprehensive approach.



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



1

### International Conference on Innovation and Technological Advances for Sustainability (ITAS 2023)

UDST organized an international conference where researchers, academia, students, policymakers, industry, and government explored new ideas, techniques, and tools to implement the United Nations Sustainable Development Goals (UN-SDGs). It encompassed a blend of local, regional, and international perspectives on transforming strategies for UN-SDGs. More specifically, participants discussed and addressed international issues related to food security, environment, energy, economy, and digital technologies for sustainable development.



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

1

### International Conference on in silico Trends and Approaches in Drug Discovery and Development

The University of Doha for Science and Technology (UDST) hosted the International Conference on In Silico Trends and Approaches in Drug Discovery and Development, sponsored by the Qatar National Research Fund, under the Qatar Research Development and Innovation Council. The three-day conference, which took place from the 22<sup>nd</sup> to the 24<sup>th</sup> of October 2023, was an important forum for knowledge exchange among researchers, academics, students, and industry professionals. The event showcased contemporary ideas and tools for in-silico drug discovery and development.





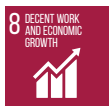


## Action Plan 4

# Driving Institutional Excellence for Economic Development

In alignment with its commitment to advancing institutional excellence for economic development, the University prioritizes initiatives aimed at fostering sustainable growth and prosperity. The University endeavors to integrate principles of economic sustainability into its core operations, research endeavors, and educational programs. This involves assessing and implementing strategies to enhance economic resilience, promote innovation and entrepreneurship, and foster partnerships with industry stakeholders. In 2023, the University achieved significant milestones in this action plan.

### Related SDG Goals Achieved:



### Related QNV 2030 - NDS3 Outcomes Achieved:



**Government  
Excellence**





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



#### UDST Student Council Officers 2023 – 2024

The University Student Council (SC) serves as the official link between the student body and university administration, faculty, and staff, providing a platform for students to express their ideas, suggestions, and needs. Consisting of an elected President, Vice-President, and Student Representatives across all colleges, these representatives are passionate about making a positive impact and serving as advocates for the entire student population.





## 17 PARTNERSHIPS FOR THE GOALS



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

1

### Partnership for Environmental Innovation: Ministry of Environment and UDSST Collaboration

The Ministry of Environment and Climate Change collaborated with the University of Doha for Science and Technology to advance environmental research, innovation, and sustainable practices, fostering a joint commitment towards addressing climate challenges and promoting environmental stewardship in August 2023.



2

### University of Doha for Science and Technology signed an MoU with Management Center Europe

Continuing and Professional Education (CPE) Directorate at the University of Doha for Science and Technology (UDST) announced its new partnership with the global leader in talent development Management Center Europe (MCE) during a virtual ceremony that was organized at the University on June 17, 2023. The agreement was signed by Dr. Salem Al-Naemi, President of UDST, and Mr. Patrick Faniel Managing Director of MCE in the presence of an official delegation from the University and representatives from MCE.



3

### University of Doha for Science and Technology and Edaa announced a landmark collaboration

University of Doha for Science and Technology (UDST) and Edaa, Qatar's Central Securities Depository, jointly developed a strategic Memorandum of Understanding (MoU) to bolster cooperation between the two institutions. The MoU was signed by Dr. Salem Al-Naemi, President of UDST, and Sheikh Saif Abdulla Al-Thani, CEO of Edaa.





4

#### University of Doha for Science and Technology signed a cooperation agreement with the Education Above All Foundation to Support Students from Gaza

University of Doha for Science and Technology (UDST) signed a partnership agreement with the Education Above All Foundation, a global education institution, in a collaborative effort to provide educational opportunities, through the Al Fakhoora Programme, for students affected by the crisis in Gaza. This initiative was made in a formal ceremony attended by Dr. Salem Al-Naemi, President of UDST, and Mr. Fahad Al-Sulaiti, CEO of Education Above All Foundation.



5

#### University of Doha for Science and Technology and Elegancia Healthcare signed a Memorandum of Understanding

University of Doha for Science and Technology (UDST) and Elegancia Healthcare (a subsidiary of Estithmar Holding) signed a memorandum of understanding (MoU), marking a significant step forward in the collaboration between healthcare and higher education sectors in Qatar. The MoU was signed by Dr. Salem Al-Naemi, President of UDST, and Mr. Joseph Hazel, Chief Executive Officer of Elegancia Healthcare during a ceremony held at UDST, in the presence of officials from both entities.



6

#### TotalEnergies Qatar and University of Doha for Science and Technology sign a cooperation agreement

University of Doha for Science and Technology (UDST) signed a three-year cooperation agreement with TotalEnergies Qatar on March 1, 2023. The agreement aims to enhance the professional development of UDST students and graduates by offering dedicated training and development programs at Total Energies and strengthening the partnership between the two institutions. Dr. Salem Al-Naemi, President of UDST, and Matthieu Bouyer, Country Chair, Total Energies Qatar, and Managing Director, Total Energies EP Qatar, signed the agreement on the University's campus in the presence of officials from both institutions.





# Acknowledgment



We sincerely thank all members of the University of Doha for Science and Technology community for their unwavering dedication and commitment towards Sustainability throughout the year 2023. Special appreciation goes to our faculty, staff, students, alumni, and partners for their collective efforts in advancing our mission of excellence in education, research, innovation, to achieve the UN SDGs. Together, we have achieved significant milestones and made impactful contributions to our university's growth and success and the sustainability initiatives within the State of Qatar and beyond. Their dedication and hard work, alongside our stakeholders' invaluable support, are truly commendable. We look forward to continued collaboration and achievements in the future as we strive towards a more sustainable and prosperous future for all.



**University of Doha for Science and Technology (UDST)**







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