



جامعة الإمام عبد الرحمن بن فيصل
IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY



SDG 7.4.4

Policy Development
for Clean Energy
Technology
2022-2023

Table of Contents

1. Clean Energy Patent registered by United States Patent Office...	3
2. IAU Active Participation in Global Event to the rationalization of Energy Consumption.....	4
3. IAU Strategic Plan 2018-2025 in Alignment with KSA Vision 2030..	5
4. Integrated Environmental Solutions and Consultancy Office at IAU (GAMEP authorized).....	6
5. IAU Consulting Center for Buildings Energy.....	10
6. Mechanical and Energy Engineering Laboratories at IAU.....	11
7. Research Groups at IAU for Renewable Energy.....	12
8. IAU Initiatives to achieve higher Energy Efficiency.....	13
9. Energy Efficient Building Practice at IAU.....	14
10. Renewable Energy Sources in IAU Campus.....	17
11. Workshop on “The Sustainable Kingdom” through National Collaboration.....	23
12. Workshop on “Energy Efficiency” through National Collaboration.	24

1. Clean Energy Patent registered by United States Patent Office

The given webpage link (refer to 1st and 2nd paragraph) shows that the United States Patent Office registered a patent to an IAU faculty member (Organic Chemistry), in field of Clean Energy for her innovative method of producing nano-sorbent material consisting of carbon nanotubes grafted with acrylic acid and an acrylamide polymer. The idea of this invention acts as nano filters remove and absorb toxic phenolic materials from industrial wastewater which pose a threat to living organisms.



<https://www.iau.edu.sa/en/news/clean-energy-patent-registered-by-unitedstates-patent-office-for-an-inventor-from-iau>

2. IAU Active Participation in Global Event to the rationalization of Energy Consumption

The given IAU Webpage link (refer to 1st paragraph) shows the participation of IAU in Earth Hour, a global event by turning off external and unnecessary lights of the university campuses buildings for one hour. This attempt contributes to the rationalization of energy consumption to confront global warming.



<https://www.iau.edu.sa/en/news/iau-participates-in-earth-hour-by-turning-off-buildings-lights>

3. IAU Strategic Plan 2018-2025 in Alignment with KSA Vision 2030

The given webpage link shows the **Strategic plan of IAU 2018-2025**. This plan explained its alignment between **KSA Vision 2030 and IAU strategic goal V-Sustain IAU campus environment**.

Under IAU Strategic Goal V, refer page no. 100, 101, 144, and 147, which describes about the **Renewable Energy and Energy Efficiency**:

- Initiative 5.1.1.5,
- KPI 5.1.1.5,
- Initiative 2.4.1,
- Initiative 3.2.1,
- Initiative 3.2.4,
- Initiative 3.2.5



https://www.iau.edu.sa/sites/default/files/iau_straplan_en_20jun2019.pdf

4. Integrated Environmental Solutions and Consultancy Office at IAU (GAMEP authorized)



INTEGRATED ENVIRONMENTAL SOLUTIONS AND CONSULTANCY OFFICE (GAMEP Authorized)



The department of environmental engineering is considered as a pioneer since it is the first department to offer the bachelor's degree environmental engineering in the kingdom of Saudi Arabia.



The Integrated Environmental Solutions and Consultancy Center established by Imam Abdulrahman Bin Faisal University in 2020 and Authorized by the Presidency of General Authority of Meteorology and Environment Protection (GAMEP).



The distinguished experience, expertise, and capabilities are utilized to develop engineering solutions that meet the customers' needs and local standards. The services include providing optimum air quality management and solutions on the indoor/outdoor air pollution and industrial emissions from oil and gas, energy, mining, and minerals sectors.



The Consulting and Engineering Office is dedicated to working with clients to implement compliance solutions using innovative approaches and advanced technologies. The measurement and analysis are conducted following stringent environmental laboratory protocol and best quality practice.



The multi-disciplinary consultants engineering office includes:

01 Environment services including environmental studies, design, and supervision	05 Physical, chemical, and biological procedures and mechanisms accountable for the proclamation, conveyance, alteration and preservation of pollutants.
02 Professional training for environmental specialists and technicians	06 Pollutant control procedures (predominantly the exclusion of trace & toxins or pollutants).
03 Short and long Certificate programs in environmental specialists and engineering field	07 Basic ideologies of physical, chemical, and biological conduct know how for water, wastewater and solid wastes scums or residues from different sources.
04 Third-party inspection and opinion work to ensure compliance with the project specifications, codes, and standards.	08 Pollutant control measures for Air, other contaminants removal from air & its monitoring (gases, Particulate matters & Meteorological parameters etc.).

1. Division of Solid and Hazardous Waste Management



This consultation office offers consultation services, conducting studies, third-party testing, inspection, and training in the field of environmental engineering and waste management, including industrial, medical among all other types of solid waste. In Addition, we offer short courses related to the area of solid waste management. The office is part of the Integrated Environmental Solutions and Consultancy Center established in 2020 by Imam Abdulrahman Bin Faisal University. All laboratory analysis are conducted following an approved environmental laboratory protocol.



Our services include:

- Inspecting, analysis, and assessment of all types of hazardous waste.
- Landfill and incineration design
- Best applicable technology
- Oil waste management and reuse
- Industrial waste collection and disposal
- Medical waste management, disposal, and incineration
- Radioactive waste management
- Contaminated solid purification



2. Division of Wastewater Treatment and Reuse:

water/wastewater team in IAU consultation office specializes in providing solutions for the industry's water/wastewater treatment challenges. We can guide you for the operations of wastewater system, provide troubleshooting, and can help or manage your analytical testing. We offer consulting services for both water and wastewater treatment plants. We offer consultation services, conducting studies, measurements, and training in the field of wastewater engineering, treatment, optimization, reuse, and design.



Our consultation services and laboratory analysis are authorized by the Presidency of Meteorology and Environment (GAMEP).

- Conducting analysis and modelling on the existing design of wastewater engineering systems and finding cost-saving opportunities that provide a return on investment.
- Designing, implementing, and upgrading wastewater treatment systems
- Advice on best practicable and cost-effective solutions for wastewater treatment.
- Wastewater analysis and characterization
- Marine pollution and deep discharge design
- Blue flag services and consultation
- Water footprint calculations and simulations
- Wastewater plant modelling and simulation studies



3. Division of Air Quality and Emission Control

Offering consultation services, conducting studies, third-party testing, inspection, and training in the field of environmental engineering, indoor and outdoor air quality assessment, emission inventory calculation, dispersion modeling, health risk assessment, dose calculation.

- Mobile station air quality monitoring for EIA studies
- Stack Gas Monitoring
- Designing Innovative Air Pollution Control Technologies
- Optimizing Current Air Pollution Control Technologies
- Short courses and training
- Calibration and maintenance
- Bioaerosol Sampling and Analysis
- Noise Pollution Monitoring, Mapping, Modelling, and Control
- Monitoring of Meteorological Parameters
- Air Toxics Health Risk Assessments
- Dispersion Modelling
- Source Apportionment Modelling
- Air Quality Program Management
- Air Pollution and Air Quality Mapping
- GIS maps for measured pollutants
- Source and stack emission monitoring
- Ambient air quality studies
- Mobile lab services
- Environmental management plan (EMP)
- Environmental impact assessment studies (EIA)
- Life cycle assessment studies (LCA)
- Pollutants dispersion modelling (AREMOD)
- Risk assessment and dose calculation
- Auditing and inspection
- Energy efficiency
- Carbon footprint
- Global warming and greenhouse gases
- Ambient/Indoor Sampling, Monitoring, Analysis of Air Pollutants



Mobile Air Quality Monitoring Station



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Integrated Environmental Solutions and Consultancy office

One-Stop-Shop.
Backed up with our well-equipped laboratories enables us to test and diagnose prior to consultation

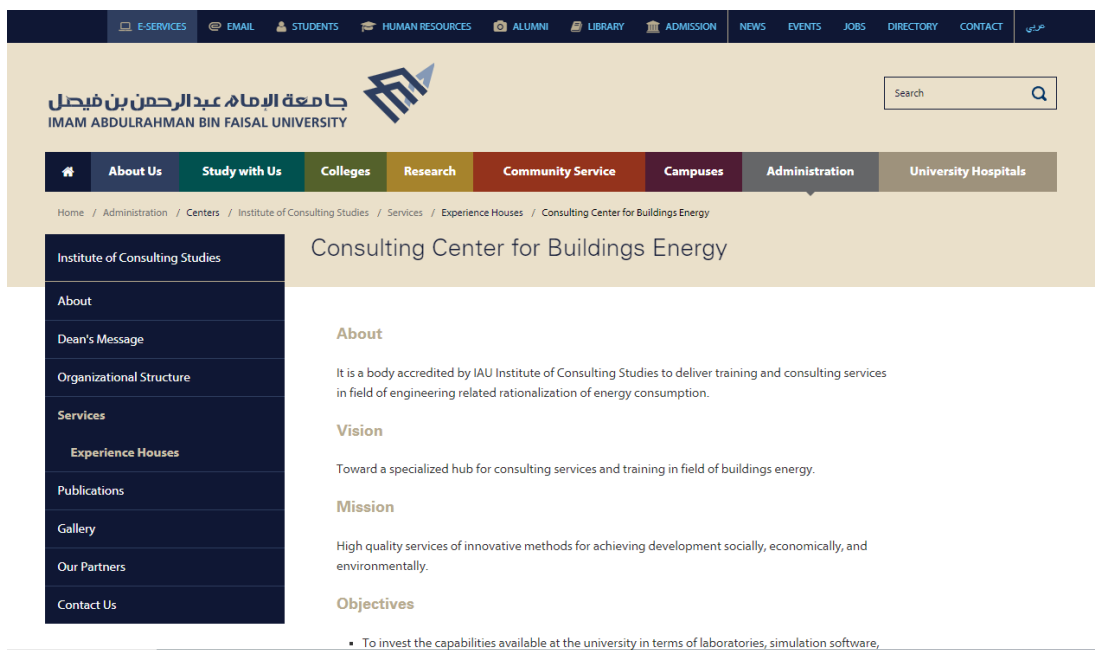
 **FLIP LINK**
<https://simplebooklet.com/Y3PjySVJ0PTkaCE6vOKo5y>

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https://www.iau.edu.sa/sites/default/files/resources/general_introduction-compressed.pdf

5. IAU Consulting Center for Buildings Energy

The given webpage link (refer to About section and Scope of work section) describes about the “consulting center for buildings energy”, a body accredited by IAU Institute of Consulting Studies to deliver training and consulting services in field of engineering related rationalization of energy consumption. Its scope of work includes training, education and workshops in the areas of sustainability, green buildings and energy conservation. It also includes energy efficiency studies and audits of existing buildings; consultations about the efficiency of air conditioning systems; and consultations about the solar energy.



The screenshot shows the website for the Consulting Center for Buildings Energy at Imam Abdulrahman Bin Faisal University. The page features a dark blue navigation bar with links for E-SERVICES, EMAIL, STUDENTS, HUMAN RESOURCES, ALUMNI, LIBRARY, ADMISSION, NEWS, EVENTS, JOBS, DIRECTORY, CONTACT, and عربي. Below the navigation bar is the university's logo and name in Arabic and English, along with a search bar. A secondary navigation bar includes links for About Us, Study with Us, Colleges, Research, Community Service, Campuses, Administration, and University Hospitals. The main content area is titled "Consulting Center for Buildings Energy" and includes a sidebar menu with links for About, Dean's Message, Organizational Structure, Services, Experience Houses, Publications, Gallery, Our Partners, and Contact Us. The main text area contains sections for About, Vision, Mission, and Objectives. The About section states: "It is a body accredited by IAU Institute of Consulting Studies to deliver training and consulting services in field of engineering related rationalization of energy consumption." The Vision section states: "Toward a specialized hub for consulting services and training in field of buildings energy." The Mission section states: "High quality services of innovative methods for achieving development socially, economically, and environmentally." The Objectives section includes a bullet point: "To invest the capabilities available at the university in terms of laboratories, simulation software,"

<https://www.iau.edu.sa/en/administration/centers/institute-of-consulting-studies/services/experience-houses/consulting-center-for-buildings-energy>



6. Mechanical and Energy Engineering Laboratories at IAU

The given webpage link (refer to Mechanical and Energy Engineering Laboratories) shows the presence of the **Mechanical and Energy Engineering Laboratories** in the College of Engineering of IAU. Among various labs, **the renewable energy lab** is the one that has essential equipment with full instrumentation to allow students to investigate the effective use of **solar energy** as a renewable, environmentally friendly energy source.

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Search

Home / Colleges / College of Engineering / Labs and Equipment / Mechanical and Energy Engineering Laboratories

College of Engineering

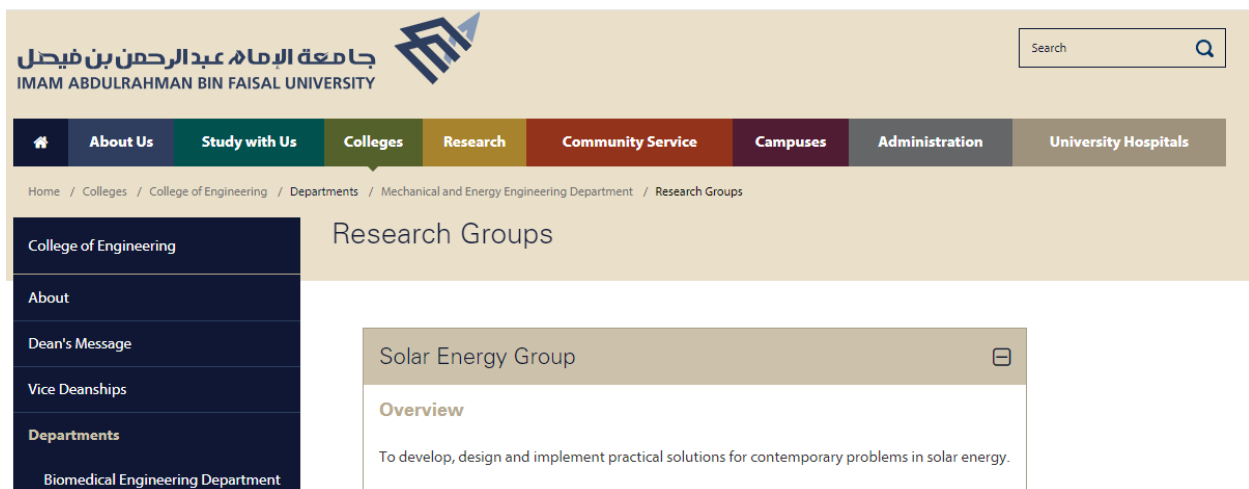
Mechanical and Energy Engineering Laboratories

- Thermodynamics Lab
- Fluid Mechanics Lab
- Refrigeration and Air Conditioning Lab
- Heat and Mass Transfer Lab
- Renewable Energy Lab
 - overview
 - The Renewable Energy lab houses some essential equipment with full instrumentation to allow

<https://www.iau.edu.sa/en/colleges/college-of-engineering/labs-and-equipment/mechanical-and-energy-engineering-laboratories>

7. Research Groups at IAU for Renewable Energy

The given webpage link (refers to research groups section) shows the presence of the **research groups** in the College of Engineering of IAU. The research groups include **solar energy group, wind energy group, and air conditioning and energy storage group**. These research groups aim to develop, design, and implement **practical solutions for contemporary problems** in solar energy, wind energy, and air conditioning and energy storage. The objectives of these groups encompass conducting **market-relevant commercial research**, supervising students, cooperating with research, and publishing high-quality papers.



The screenshot shows the website interface for Imam Abdulrahman Bin Faisal University. At the top, there is a search bar and a navigation menu with options: Home, About Us, Study with Us, Colleges, Research, Community Service, Campuses, Administration, and University Hospitals. The breadcrumb trail indicates the path: Home / Colleges / College of Engineering / Departments / Mechanical and Energy Engineering Department / Research Groups. On the left, a sidebar menu lists: College of Engineering, About, Dean's Message, Vice Deanships, Departments, and Biomedical Engineering Department. The main content area is titled "Research Groups" and features a card for the "Solar Energy Group". The card includes a title, a close button, and an "Overview" section with the text: "To develop, design and implement practical solutions for contemporary problems in solar energy."

<https://www.iau.edu.sa/en/colleges/college-of-engineering/departments/mechanical-and-energy-engineering-department/research-groups>

8. IAU Initiatives to achieve higher Energy Efficiency

The given PDF link explains the initiatives taken by IAU to achieve higher energy efficiency.



Photo solar systems installation initiative to reduce monthly electricity bill payments:

SHUTTLE OPTION 1

Shoud V Electric
Transit Buddy 18
Passenger LE Hand
Door Shuttle



SHUTTLE OPTION 2

Marsheil
DN-34C Series
18-Seater Enclosed
Electric Resort Car



Electric and affordable shuttle buses for the student and faculty

https://www.iau.edu.sa/sites/default/files/resources/reduce_overall_energy_consumption_2022.pdf

9. Energy Efficient Building Practice at IAU

The given PDF link describes energy efficient usage in IAU in the following Parts:

- PART A: Sustainable system for Outdoor Signage
- PART B: Optimized Eco-friendly Buildings

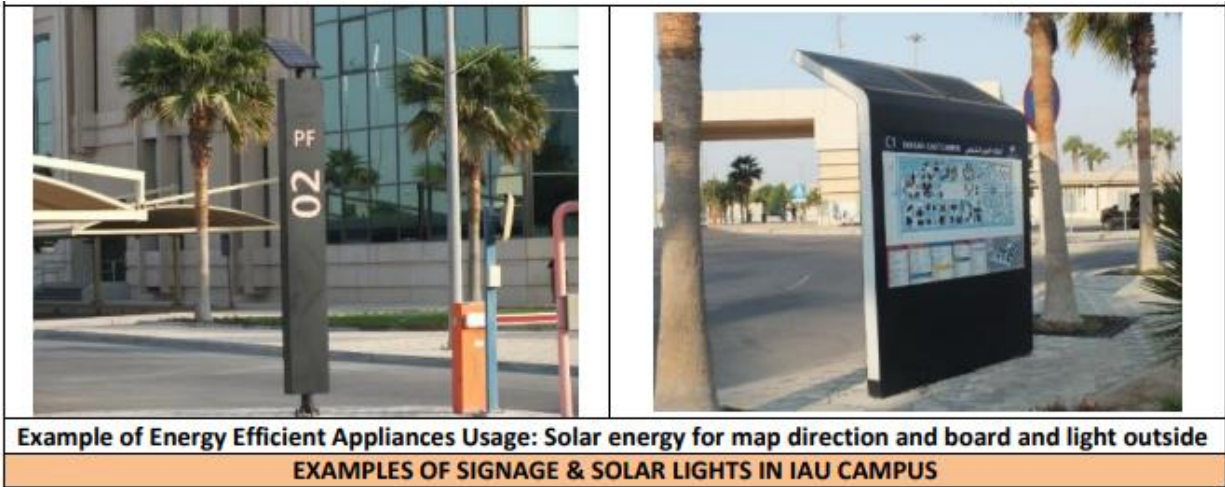
Part A



<p>(Precast Concrete insulated panels and Curtain wall) Administration Building- IAU</p>	<p>IAU implement and abide by Saudi Building Code in its all Construction and Electricity plan</p>

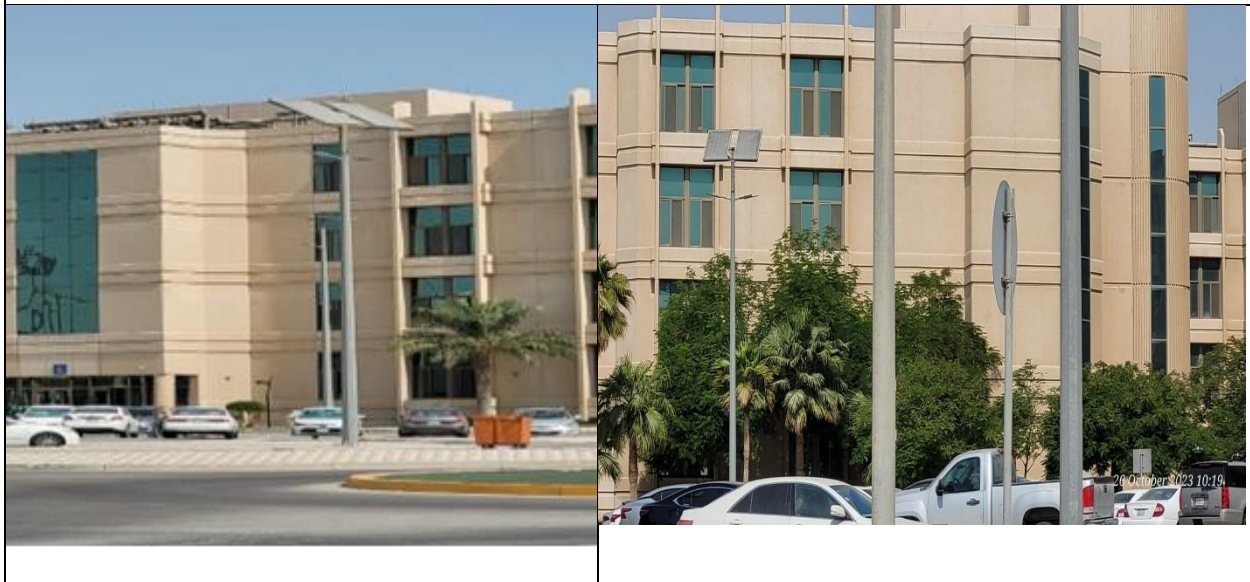
PART B

<p>GATEWAY SIGNS</p> <p>DIRECTIONAL SIGNS</p> <p>CAMPUS MAPS</p> <p>BUILDING IDENTIFIERS</p> <p>ADMINISTRATION BUILDING 1 مبنى الإدارة A13 D1</p>	
<p>OUTDOOR SIGNAGE IN C1-EAST CAMPUS</p>	



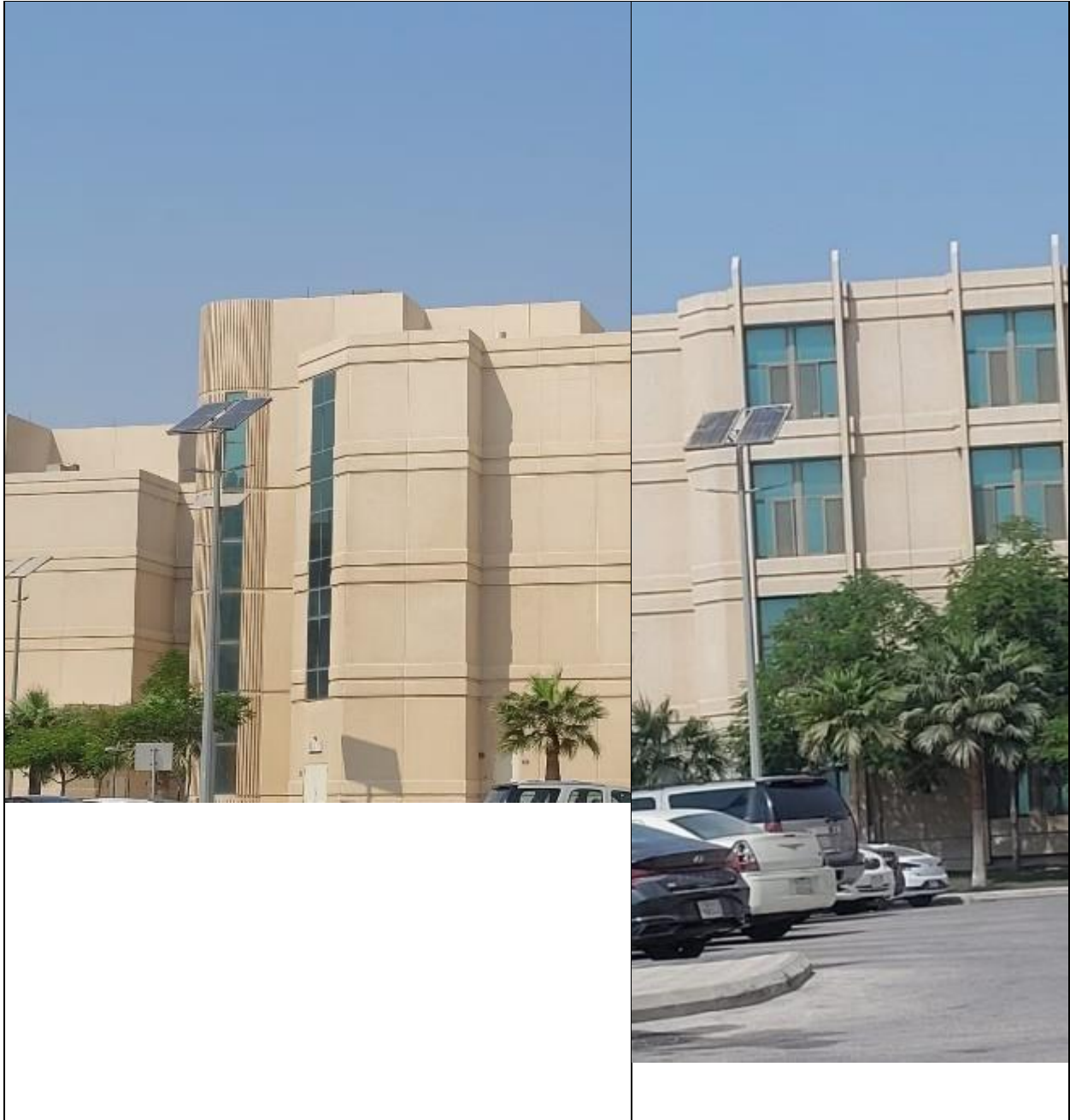
https://www.iau.edu.sa/sites/default/files/resources/energy_efficient_building.pdf

10. Renewable Energy Sources in IAU Campus





Solar Panels spread at IAU Campuses





Solar Panels installed all over the campus to provide energy for the purposes of lighting, heating, cooling, running university laboratories, etc.





Description:

Currently, **solar energy** is used only for campus lights and signage in main campus.

The mega project is in pipeline to install solar panels in the university to have an alternate source of energy, which will help to be less dependent on electricity and reduced the electricity consumption.

Wind power plants are installed in IAU Campus as part of alternate sources of energy. Based on the initial observations and usage relevance to IAU campus many Wind power plants are going to be installed on the open spaces of IAU.

11. Workshop on “The Sustainable Kingdom” through National Collaboration

Under the patronage of His Excellency the President of IAU and in the presence of the Vice President of the University for Development and Community Partnership, Dr. Nihad Al-Omair and the College of Engineering organized a workshop entitled: **“The Sustainable Kingdom”** in cooperation with **Saudi Aramco**, at the headquarters of the College of Architecture and Planning.



https://twitter.com/IAU_KSA/status/1605518297738248192

https://twitter.com/IAU_KSA/status/1604409270782640129

12. Workshop on "Energy Efficiency" through National Collaboration

The Engineering Club, in cooperation with the Saudi Center for Energy Efficiency, invites you to attend the "Energy Efficiency" workshop in Al-Khwarizmi Hall in the College of Engineering.



https://twitter.com/EC_club_iau/status/1588485055260811266