



SUSTAINABLE DEVELOPMENT GOALS

AL-KARKH UNIVERSITY OF SCIENCE



SUSTAINABLE DEVELOPMENT GOALS

Al-Karkh University of Science
2023-2024





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SUSTAINABILITY REPORT 2023
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1 NO POVERTY



NO POVERTY

The first goal of Sustainable Development is to “end poverty in all forms everywhere”. Its main objective is to reduce poverty and at the same time to maintain macroeconomic stability. There are many reasons to diminish poverty, but in short, because as human beings, our well-being is linked

to each other. Growing inequality is detrimental to economic growth and undermines social cohesion, increasing political and social tensions and, in some circumstances, driving instability.

To achieve the first goal of sustainable development, Al-Karkh University of science always seeks to eradicate poverty and achieve equality among all students, and the needed to provide university environment in which decent livelihoods and equality among all categories of students are planned to achieve.



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There are four steps of ending extreme poverty includes: meeting the people's basic needs; moving them to a decent livelihood; training them to save money and manage budget; and investing the wealth. The four elements are essential to ensure that the family is well stabilized. To enhance social solidarity, the student volunteer energy and environment tam participated in distributing Ramadan food baskets to needy families and orphans.



The Sustainable Development Goals are a global call to action to eradicate poverty, conserve land and improve lives everywhere. Among the activities of Al-Karkh University of Science is launching a campaign to collect material donations to relief those affected by earthquakes in Syria and Turkey.



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تنفيذاً لتوجيه معالي وزير التعليم العالي والبحث العلمي
الدكتور نعيم العبودي



برعاية السيد رئيس الجامعة
الاستاذ الدكتور ثامر عبد الامير حسن



إطلاق حملة لجمع التبرعات المالية
في رئاسة الجامعة وكلياتها لإغاثة
المتضررين من الزلازل في سوريا وتركيا

Conclusion

Priority actions on poverty eradication include: improving access to sustainable livelihoods; entrepreneurial opportunities; and productive resources; providing universal access to basic social services; progressively developing social protection systems to support those who cannot support themselves. Whether this is through illness, malnutrition, not having access to clean water, not having access to healthcare a lack of formal response to

natural disasters or the increased likelihood of war and conflict, there are unnecessary deaths every day due to poverty.



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ZERO HUNGER

Through the scientific observations, human has concluded that living organisms have characteristics that distinguish them from other creatures, and that the plant of these organisms is endowed with an amazing ability that made it live in different conditions of heat and cold, some of which are only suitable for hot tropical climates, and others that only live in the cold high mountain peaks. And others are not used to living except in the bosom of rivers and their banks, and through these observations, human was able to divide these plants according to their need from the environment, which made human to plant these plants at their appropriate times for production.

And the scientific progress that prompted human to recognize the needs of these plants in terms of suitable temperature and humidity, etc.

Made to provide these artificial atmospheres for the plant and thus obtain summer vegetable crops in a time other than their natural existence. Thus, man was able to establish scientific agriculture in place of traditional agriculture, which it was able to provide the human race with summer and winter vegetables at all times and seasons of the year.



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Finding and solution:

1. Covering greenhouses with green shading tulle cover to protect plants because it is inexpensive.
2. Removing waste, weeds and dead plants from inside the greenhouse or planting anvil to maintain a healthy plant means sustainable management of the land.
3. Providing water by delivering it to the greenhouse using water pumps and distributing it in the form of a drip sprinkler system for specific times according to the plant's need to provide water drainage.
4. Providing electrical energy using a timer device to regulate the turning on and off of electricity through the irrigation water pump and sprinklers.
5. Carrying out many volunteer campaigns by students of the College of Energy and Environmental Sciences to contribute to the maintenance and rehabilitation of greenhouses.

Conclusion

Glass houses protect plants from harmful weather fluctuations such as thunderbolt and wind. These houses are made of glass or plastic, but glass is preferred. These houses work to protect against heavy rains and high temperatures that reach more than half the boiling point in Iraq, where fans or cooling devices can be used inside these houses and thus increase the proportion of productive capacity of crops and thus contribute to raising the standard of living as well.



SUSTAINABLE DEVELOPMENT GOALS

AL-KARKH UNIVERSITY OF SCIENCE

GOOD HEALTH AND WELL-BEING



Smoke is more dangers for the health of human, animals and plants, where they cause different types of disease must of them are fetal which important one is cancer otherwise may be complicated to chronic disease like TB, pneumonia, meningitis or viral infection. So

must be limited the effect of these fetal materials by reduce the prevalence of used or limited the place where take it in order to achieve the most important goals of sustainable development as a good health (3) to prevent the environment pollution.

اقتل السيارة قبل أن تقتلك

السيجارة الأولى تجعل إبتصاصك مطرقة ومشوهة بأثار التدخين، فهي شبح الموت الذي يتسلب روح الإنسان ببطء، ومما يأسه اليوم التالي لمكافحة التدخين، جوار التناج، نتجبت عن أضرار التدخين وألم الإحصادات عنه.

الخطوات الرئيسية للحد من التدخين:

المراقبة الفعالة
213
إصدار القوانين لمنع التدخين في الأماكن العامة
43
إعداد الحملات الإعلامية للإقلاع عن التدخين.
رفع أسعار التبغ

للمرأة يسبب:

سرطان عنق الرحم
مشاكل الإخصاب والإجهاض
توهجات في الجنين
اضطرابات الدورة الشهرية

طرق فعالة للإقلاع عن التدخين:

اجعل صحتك هدفاً
213
أماك
المشي
وجبات خفيفة
243
وقرب الماء، الإرادة والتفكير
السليم
65
بدل كعصع العلكة
الدعم والرفقة المناسبة
67
ممارسة أي لعبة

حملة خليك واعى

أطلقت شعبية الإرشاد التربوي في جامعة الكرخ للعلوم حملة (خليك واعى) لتوعية الطلبة بأضرار التدخين





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AL-KARKH UNIVERSITY OF SCIENCE

Finding and solution:

Distribution a lots of introductory and alert panels and indicators to prevent smoking and to prevent throwing cigarette butts in the university's corridors and gardens to add the character of cleanliness and sophistication because they are an important part in polluting the environment with its harmful substances, whether with its smoke spreading in the air or when it remains on the floor of the gardens and decomposes it into its toxic base materials for plants and animals directly or indirectly.

Al-Karkh University has enacted some laws to regulate and control individuals within the university. These instructions have been implemented in the college of energy & environmental science, and Dr. Haleema Swaidan Ali, the administrative assistant of the dean's office, was one of the members of the follow-up and organization committee, whether on the students, teachers or employees alike, in applying the law and adhering to it, and holding the negligent accountable by imposing some small financial penalties to limit their use in public places and inside the university campus in particular.





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AL-KARKH UNIVERSITY OF SCIENCE



Conclusion

1. Quitting smoking reduces the risk of many diseases related to second-hand smoke in children, such as respiratory diseases, such as asthma, and ear infections.
2. Quitting smoking sets a good example for your children, friends, and loved ones.
3. Tobacco use can negatively affect social interactions and relationships.
4. Quitting tobacco means there are no restrictions on where you can go without feeling isolated or having to go out for a smoke.
5. One study showed that smokers burn an average of \$1.4 million in personal expenses, which includes spending on cigarettes, medical costs, and more.



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AL-KARKH UNIVERSITY OF SCIENCE

4 QUALITY EDUCATION



QUALITY EDUCATION

Environmental guidance and awareness

In order to reach the highest levels of environmental knowledge and culture with finding realistic solutions to many of the problems faced by environmental communities, it was decided to add an explanatory educational methodology in multiple ways that included

many seminars, workshops and scientific lectures that seek to achieve sustainable development goals by the Deanship of the College of Energy and Environmental Sciences, Department of Environmental Science & Renewable Energy Sciences. Which is considered the most important and first sections in achieving these goals, as it is closely linked to the application of sustainable development on the ground.

Therefore, summer internships can be a valuable experience that helps students develop themselves personally, academically, and professionally. Third stage students in the Department of Renewable Energy Sciences were trained in private companies and through the company the students completed real projects during their summer training by installing two advanced solar energy systems for a grain processing company in the Kadhimiya/Aden Square area and connecting solar heaters to the Ministry of Transport under the supervision of Dr. Muhammad Al-Darb, which enhanced the students' skills and provided them with valuable opportunities to acquire practical skills and interact with technology in the field of renewable energy.



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Finding and solution:

1. Providing students with the opportunity to gain practical experience and training before graduation.
2. Deepen students' understanding of the theoretical sciences they have learned in their field of specialization.
3. Developing the student's scientific skills and preparing him for field work.
4. Providing job opportunities for students of the Department of Renewable Energy Sciences.

These activities most useful to develop appropriate mechanisms to reduce or mitigate environmental and climatic impacts for Assisting researchers, students and teaching staff in various universities to understand environmental and climatic problems.



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AL-KARKH UNIVERSITY OF SCIENCE



GENDER QUALITY

Urging the empowerment of women

The phenomenon of discrimination between men and women deserves study and analysis, as it has received the attention of the whole world from organizations and governments to limit it

or try to eliminate it. This goal was achieved and women were granted equal rights with men when the General Assembly adopted the Convention granting women their rights, reducing discrimination between the sexes and placing them in a proper manner. Legal binding on the basis of internationally accept principles and measures regardless of their marital, social, cultural, religious and even political status. Other measures provide for equal rights in the political sphere and in public life, equal access to education, the same choices regarding educational.

Curricula and non-discrimination in work and wages, and guarantees of job security in cases of marriage and childbirth. The agreement affirms the equal responsibility between women and men within the framework of family life. Because the phenomenon of inequality is considered a dangerous phenomenon and its danger is embodied in all directions and levels and has negative effects on women as the second part or half of society, as inequality is considered one of the main obstacles to sustainable development.



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The women leaders at Al-Karkh University of Science





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6 CLEAN WATER AND SANITATION



CLEAN WATER AND SANITATION

Clean water and sanitation are essential for human health, well-being, and overall sustainable development. Access to clean water and proper sanitation facilities is a basic human right and is crucial for improving living conditions, reducing poverty, and preventing various water-related diseases.

Clean Water:

Clean water refers to water that is safe and free from contaminants or pollutants that can cause harm to human health. Access to clean water is essential for drinking, cooking, personal hygiene, and sanitation purposes. However, millions of people worldwide still lack access to clean water sources.

To improve access to clean water, several approaches can be taken:

1. **Water Treatment:** Implementing water treatment processes, such as filtration, disinfection, and purification, to remove impurities and harmful pathogens from water sources.
2. **Improved Water Sources:** Developing and maintaining protected water sources, such as boreholes, wells, and piped water systems, to ensure a safe and reliable water supply.
3. **Rainwater Harvesting:** Collecting and storing rainwater for domestic use, especially in areas with limited access to other water sources.
4. **Water Conservation:** Promoting water conservation practices, such as reducing water wastage, fixing leaks, and using water-efficient technologies.



SUSTAINABLE DEVELOPMENT GOALS

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Sanitation:

Sanitation refers to the adequate management of human excreta, wastewater, and solid waste. Access to proper sanitation facilities is essential for maintaining hygiene, preventing the spread of diseases, and protecting the environment.

Key aspects of improving sanitation include:

1. **Sanitation Facilities:** Providing access to improved sanitation facilities, such as toilets, latrines, and sewage systems, to ensure safe disposal of human waste.
2. **Hygiene Promotion:** Promoting good hygiene practices, including handwashing with soap, proper waste management, and safe handling of food and drinking water.
3. **Wastewater Treatment:** Implementing wastewater treatment systems to remove contaminants before releasing the water back into the environment, reducing pollution and protecting water resources.
4. **Solid Waste Management:** Establishing proper waste management systems, including waste collection, recycling, and disposal, to prevent environmental pollution and health hazards.

Problem and solutions:

1. **Lack of Access to Clean Water:** Many communities, especially in developing regions, struggle with limited access to safe and clean drinking water. This can lead to waterborne diseases and poor hygiene practices.
2. **Inadequate Sanitation Facilities:** The absence of proper sanitation facilities, such as toilets and waste management systems, can result in the contamination of water sources and the spread of diseases.



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AL-KARKH UNIVERSITY OF SCIENCE

3. Water Pollution: Industrial and agricultural activities, as well as improper waste disposal, can lead to the pollution of water bodies, making the water unsafe for consumption and harming aquatic ecosystems.
4. Water Scarcity: Some regions face water scarcity due to factors like drought, population growth, and mismanagement of water resources. This scarcity affects various aspects of life, including sanitation and agriculture.

Solutions:

1. Infrastructure Development: Building and improving water supply systems, including wells, piped water networks, and water treatment plants, can help increase access to clean water.
2. Sanitation Facilities: Promoting the construction of proper sanitation facilities, such as toilets and sewage systems, is crucial for maintaining hygiene and preventing water contamination. Encouraging the use of eco-friendly waste management techniques, like composting toilets or biogas digesters, can also be beneficial.

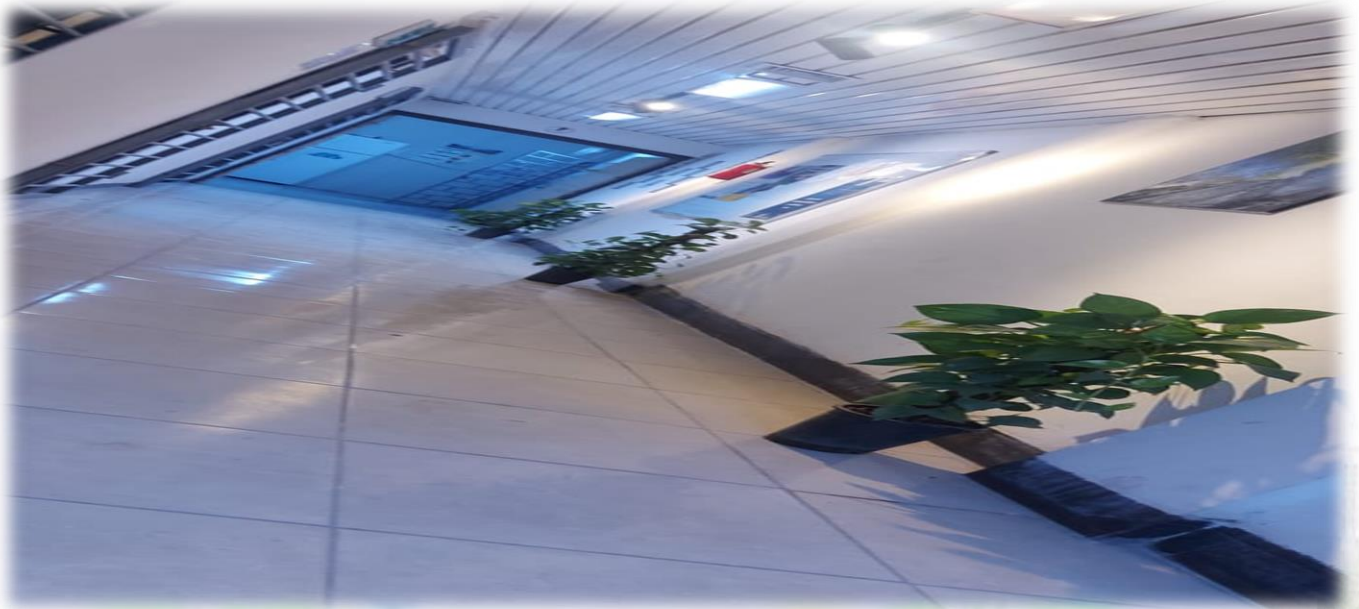
This is done in our college by maintaining the cleanliness of health facilities, laboratories, and college corridors.





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AL-KARKH UNIVERSITY OF SCIENCE





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AL-KARKH UNIVERSITY OF SCIENCE

3. Water Treatment and Purification: Implementing water treatment processes, such as filtration and disinfection, at both community and household levels can help ensure the availability of clean and safe drinking water.

4. Environmental Protection: Enforcing regulations and promoting



sustainable practices in industries and agriculture can minimize water pollution. This includes proper waste management, reducing chemical usage, and adopting eco-friendly farming techniques.

This is applied in the college through proper management and destruction of bacteria dishes in the biology laboratory

5. Water Conservation and Management: Implementing water conservation strategies, such as rainwater harvesting, efficient irrigation systems, and public awareness campaigns about responsible water usage, can help address water scarcity issues.



SUSTAINABLE DEVELOPMENT GOALS

AL-KARKH UNIVERSITY OF SCIENCE



This is done in our college through awareness workshops and lectures, including the lecture “The Importance of Protecting the Environment and Ways to Reduce Pollution” given by Dr. Ibrahim Al-Sudani.

6. Education and Awareness: Promoting education and awareness programs on hygiene practices, waterborne diseases, and the importance of clean water and sanitation can empower communities to take proactive measures for their well-being.

This was achieved in our college by using a method of isolating and sorting waste with special containers for each type of waste. And also through explanatory posters located in the college halls

7. Collaboration and Governance: Encouraging collaboration among governments, NGOs, communities, and relevant stakeholders is crucial for effective water and sanitation management. Developing and implementing comprehensive policies and regulations are essential for sustainable water resource management.



SUSTAINABLE DEVELOPMENT GOALS

AL-KARKH UNIVERSITY OF SCIENCE



Conclusion

Achieving universal access to clean water and sanitation requires a multifaceted approach involving government policies, infrastructure development, education, and community involvement. International organizations, governments, NGOs, and local communities all play vital roles in addressing the challenges and improving access to clean water and sanitation services for all.



SUSTAINABLE DEVELOPMENT GOALS

AL-KARKH UNIVERSITY OF SCIENCE

7 AFFORDABLE AND CLEAN ENERGY



AFFORDABLE AND CLEAN ENERGY

Use of Economical Lighting

The light-emitting diode (LED) lamp has entered the battlefield, and in fact, these lamps have entered the competition several years ago as they have been used on digital clock

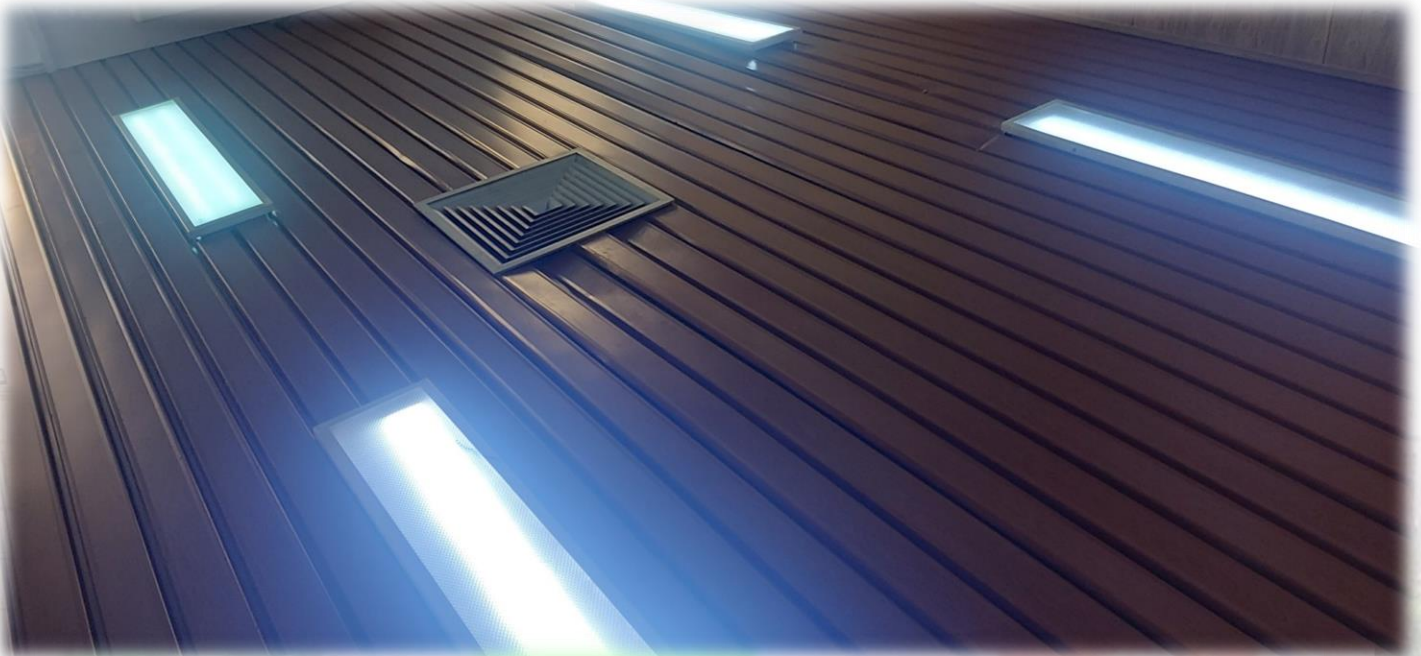
displays, lights and flashlights. In the last few years, LED lamps have become invading homes and companies alike, as a result of their design similar to tungsten lamps, making them easier to take their place. In one way or another, LED lights are a wonderful technology.

LED is an abbreviation for Light Emitting Diode, which means light-emitting diode, and it is a light source that emits light when an electric current is passed through it, as it constitutes 8.3% of the electricity consumption of an incandescent lamp, 26% of the electricity consumption of a saving lamp, and 14% of the energy consumption of an incandescent lamp, Electricity for spotlight lamp. When comparing the lighting of LED bulbs, it can consume about 8-12 watts, as we find that it is equivalent to an incandescent bulb that consumes 60 watts. Several years ago, it was only LED headlights, which radiated light in the form of points, and were designed to replace halogen bulbs, but now LED lights are available for almost all ranges of use in the home and work, including basic lighting for living areas. These lamps are used because of their high luminous efficiency in addition to their long life. As well as reducing fuel consumption, which reduces emissions that harm the climate and the environment Economy and lighting are closely related in contemporary human civilization.



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AL-KARKH UNIVERSITY OF SCIENCE





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AL-KARKH UNIVERSITY OF SCIENCE

The working principle of this lamp and its method of producing light make the amount of wasted electrical energy in the form of heat very little compared to other technologies used for lighting. Compared with tungsten lamps, it saves energy by 85%, and at the same time, it is more saving than fluorescent lamps by 5%. In parallel with rationing campaigns to reduce the consumption of electrical energy, scientists and industrialists are seeking to develop new lighting lamps that consume less energy to produce lighting, means more energy-efficient.

Downsides:

The only disadvantage of these lamps is that they do not have an excellent light distribution, as they appear less bright than other lighting technologies that have been used. The College of energy & environmental science at the Al-Karkh University of Science used an economical lighting system to illuminate the building at 70%.

The characteristics of this designed system can be summarized in the following points:

1. The designed system is a convenient and cost-effective way to light buildings.
2. It reduces the use of electric energy and the pollution resulting from it.

Conclusion

All these advantages allow using of economical lighting instead of traditionally light as small-sized energy sources based on directly emitted waves.



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Finding and solution

Some of the things that can be achieved through innovation in recycling:

1. Developing recyclable materials: Innovation can contribute to the development of new materials or the improvement of existing ones to make them more recyclable and reusable.
2. Employing clean technology: Clean technology can be used to reduce the environmental impact of recycling processes and decrease the consumption of natural resources.
3. Promoting a recycling culture: Innovation can help develop awareness campaigns and educational programs to increase people's awareness of the importance of recycling and encourage their participation.
4. Developing innovative products from recycled materials: Recycled materials can be used to produce new and innovative products, opening up new markets and increasing the value of recycled materials.

Conclusion

Innovation involves the development and implementation of new ideas and creative solutions to economic, environmental, and social challenges. This innovation can take place in the fields of technology, policies, business, education, and more. Through innovation, we can work towards achieving sustainable development goals more effectively, ensuring long-term development without a negative impact on the environment and society. Recycling is considered an essential part of efforts to mitigate the effects of climate change and to preserve natural resources for current and future generations.



SUSTAINABLE DEVELOPMENT GOALS

AL-KARKH UNIVERSITY OF SCIENCE

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



INDUSTRY, INNOVATION AND INFRASTRUCTURE

The manufacture of a specialized laboratory device for solar tracking represents an innovative solution to achieve sustainable development goals. A vertical turbine made from recycled materials was manufactured by the student Abbas Hameed, a third-year student in the Evening Renewable Energy Department, under the supervision of Dr. Firas Abdul Razzaq. The wind turbine specifications include a height of 95 cm, a rotor diameter of 84 cm, and the blades are made of lightweight PVC material that is sensitive to low wind speeds, waterproof, and resistant to external conditions. It can be used on rooftops or highways for lighting purposes.





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Finding and solution

Manufacturing a laboratory device to monitor solar radiation with the aim of enhancing the efficiency and quality of solar energy systems in order to achieve sustainable development goals, including:

1. Increasing the efficiency of solar energy utilization.
2. Reducing energy costs.
3. Improving environmental performance.
4. Encouraging research and innovation.
5. Directing investment towards renewable energy.

Conclusion

Promoting industries that adhere to environmentally friendly practices and reduce harmful impacts on the environment is essential. These industries incorporate sustainability by using renewable resources and clean technologies.



SUSTAINABLE DEVELOPMENT GOALS

AL-KARKH UNIVERSITY OF SCIENCE

11 SUSTAINABLE CITIES AND COMMUNITIES



SUSTAINABLE CITIES AND COMMUNITIES

One of the applications of sustainable cities is solar heaters, which use solar energy to heat water or air for use in heating, cooling, or other purposes. This is typically done using special solar panels that absorb solar radiation and transfer heat to the heating medium (such as water or air), with the hot water being stored in thermally insulated tanks, often made of glass or fiberglass to retain the water temperature, especially for use in heating during the night. Solar heaters are an efficient and environmentally friendly way to heat water or provide household heating, and they are widely used in sunny regions around the world to save energy and reduce harmful environmental emissions. The effectiveness of this technology depends on the climatic and geographical conditions of the area in question.





SUSTAINABLE DEVELOPMENT GOALS

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Findings and solutions

Using a solar heater can be an effective contribution to achieving sustainable development goals by reducing environmental pollution and conserving energy and natural resources. This has led us to connect the solar heater to serve as a practical example for harnessing solar thermal energy to reduce emissions, minimize air pollution, and provide a sustainable and economical option for water heating at the college. Here are some reasons that make using a solar heater beneficial in this regard:

1. **Clean Energy:** Solar heaters are considered a clean energy source as they harness solar energy to heat water instead of relying on fossil fuels such as oil or gas. This reduces greenhouse gas emissions and improves air quality.
2. **Energy Savings:** Solar heaters reduce the consumption of electricity or gas used for water heating, leading to energy and natural resource savings.
3. **Cost Savings:** Over the long term, using a solar heater can significantly reduce the cost of water heating since thermal energy from the sun is essentially free.
4. **Sustainability:** Solar heaters operate efficiently for an extended period without the need for significant ongoing maintenance, making them a sustainable investment.
5. **Environmental Awareness:** As an environmentally friendly solution, solar heaters can contribute to raising awareness about the importance of environmental conservation and the use of renewable energy sources.



SUSTAINABLE DEVELOPMENT GOALS

AL-KARKH UNIVERSITY OF SCIENCE

Conclusion

Utilizing solar energy through the use of a solar heater is an important way to contribute to achieving sustainable development goals and reducing environmental pollution.





SUSTAINABLE DEVELOPMENT GOALS

AL-KARKH UNIVERSITY OF SCIENCE

12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



RESPONSIBLE CONSUMPTION AND PRODUCTION

Paper is one of the common wastes that are recycled, and it is one of the most common wastes in which it is recycled and used in

different ways and methods, and recycling paper requires less energy, less water and carbon emissions than manufacturing new paper and at the same time reduces landfilling and the amount of waste on the surface the land, and the benefit of using and recycling paper waste is not limited to benefiting from it only once, but it is possible to use waste paper 4 to 5 times, and through modern technologies, and with good quality or reuse in other areas before it is destroyed. they are made of cellulose fibers found in the walls Various plants, including cotton, bamboo, allied grass, hemp, jute and other woods.

These scientific facts indicate the benefits of paper recycling, what will happen if it is disposed of and landfilled and the damages that will result from that. Burying paper waste releases methane, a gas 23 times more powerful and more dangerous than carbon dioxide. Paper recycling reduces carbon dioxide emissions by 20% compared to burning paper and can be reused 4 to 5 times, using 31% less energy than making new paper.



SUSTAINABLE DEVELOPMENT GOALS

AL-KARKH UNIVERSITY OF SCIENCE





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Finding and solution:

In order to achieve the goals of sustainable development and to serve the environment by reducing the Environmental pollution, that thing this made us to establish a unit for deal with paper to reuse it in different internal correspondence and save them by 50% for this academic year. Where these papers consider as an important component in paper is one of the materials that must work to reduce its use and resort to alternatives that are less harmful to the environment and are more practical or reused by

simple and practical means to exploit it as much as possible because these papers used, whether they are domestic, agricultural or industrial in the field of work.

Conclusion:

The role played by the College of energy and environmental Science is its first and primary goal of responsible consumption and production. It was found that recycling one ton of paper saves 17 trees as well as 3.3 square yards of land. As the burning of paper waste also contributes to many environmental damages, when paper decomposes in the ground, it releases migraine, which is one of the greenhouse gases that contribute to global warming, while recycling paper reduces air pollution by 74%.



SUSTAINABLE DEVELOPMENT GOALS

AL-KARKH UNIVERSITY OF SCIENCE



CLIMATE ACTION

Iraq announced last year that the government intends to join the external influences of climate change and usher in a new era by joining the Paris climate activities, and in January 2021 it agreed to the participation of the wealthy Iraq in Paris and this represents a fundamental step. Today green entrepreneurship in Iraq is a new and developing sector and generating more awareness of environmental issues will support the transition to a greener lifestyle, however challenging current societal behaviors will be the hardest thing to do. Iraq has been described as “one of the countries in the Arab region most vulnerable to climate change.

Environmental pollution from burning gas and depleted uranium is one of the many contributing factors to pollution, and the effects are widespread and affect generations through cancerous diseases or birth defects in newborns. And the official statistics issued by the Cancer Center in Iraq show an increase in the number of cancer cases in Iraq, reaching more than 67.4%, all of which is a matter of concern, and makes Iraq need innovative environmental solutions that address pollution and climate change issues.



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AL-KARKH UNIVERSITY OF SCIENCE

Finding and solutions:

1. Cultivation of empty soil spaces with evergreen plants and perennial trees.
2. Application of water conservation programs using controls and tanks.
3. Use of water sprinklers for watering.
4. Awareness lectures were done within the different courses in colleges and that fit our work.





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AL-KARKH UNIVERSITY OF SCIENCE

The issue presented in the report:

1. Campaign to plant gardens and corridors near classrooms and car parks at the university within the One Million Trees Project.
2. In cooperation with the Environmental and Agricultural Palm Organization and the Iraqi Genetic and Environmental Resources Conservation Association, the gardens and farms were monitored and maintained within the college.
3. Awareness lectures on environmental and pollution topics are constantly given through the continuing education committee.



Conclusion:

Continuity of work at the College of energy & environmental science/ University of Karkh to reduce the problems of extreme weather and try to implement the most important goals of sustainable development to maintain a healthy green environment and reduce external influences and strive to spread environmental awareness among college students through many extra-curricular and motivational activities and competitions under the supervision of specialized scientific cadres.



SUSTAINABLE DEVELOPMENT GOALS

AL-KARKH UNIVERSITY OF SCIENCE



LIFE BELOW WATER

Goal 14 of the United Nations Sustainable Development Goals (SDGs) is "Life Below Water." Life below water in Iraq is influenced by the country's unique geographical and environmental characteristics. Iraq is home to several bodies of water, including rivers, marshes, and

lakes, which play a crucial role in supporting aquatic ecosystems and providing resources for both wildlife and human populations. However, these vast aquatic ecosystems are facing unprecedented challenges due to human activities, climate change, and environmental degradation.

Here are some key aspects of life below water in Iraq:

1. **Tigris and Euphrates Rivers:** The Tigris and Euphrates rivers are the two major rivers that flow through Iraq. They are essential sources of freshwater for the country and support a wide range of aquatic life. Various fish species inhabit these rivers, including carp, catfish, and barbell.
2. **Mesopotamian Marshes:** The Mesopotamian Marshes, located in the southern part of Iraq, are one of the most significant wetland ecosystems in the Middle East. These marshes were historically home to a rich diversity of aquatic species, including fish, birds, and aquatic plants. However, they suffered extensive drainage and habitat destruction in the past due to political and environmental factors. Conservation efforts have been made to restore these marshes in recent years.



SUSTAINABLE DEVELOPMENT GOALS

AL-KARKH UNIVERSITY OF SCIENCE

3. **Fishery:** Fishing is an important economic activity in Iraq, particularly in the southern regions where the marshes and rivers are abundant. Fishermen rely on these aquatic ecosystems for their livelihoods, catching a variety of fish species for local consumption and trade.
4. **Pollution and Environmental Challenges:** Iraq's water bodies face various environmental challenges, including pollution from agricultural runoff, industrial discharge, and urban development. These pollutants can harm aquatic life and degrade water quality.
5. **Conservation Efforts:** Iraq has made efforts to protect and conserve its aquatic ecosystems. This includes initiatives to restore the Mesopotamian Marshes, manage water resources more sustainably, and regulate fishing to prevent overexploitation of fish populations.
6. **Biodiversity:** Iraq's aquatic ecosystems support a variety of aquatic species, including fish, crustaceans, mollusks, and various aquatic plants. These ecosystems also provide habitat and breeding grounds for various migratory bird species, making them important for regional biodiversity.
7. **Climate Change:** Like many other regions, Iraq's aquatic ecosystems are also vulnerable to the impacts of climate change, including altered rainfall patterns, increased temperatures, and changes in water flow. These changes can affect the distribution and abundance of aquatic species.

In order to achieve the goal of sustainable development and service to the environment, Al-Karkh University always seeks to hold seminars, scientific workshops and awareness in the field of biodiversity and environmental preservation, and also participate



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in global events to raise awareness about the reality of life below water in Iraq.

جامعة الكرخ للعلوم
كلية علم الطاقة والبيئة

برعاية السيد رئيس جامعة الكرخ للعلوم المحترم
الأستاذ الدكتور ناصر عبد الأمير حسن
وبإشراف السيدة عميد كلية علوم الطاقة والبيئة المحترمة
الدكتورة امانى التميمي

تقيم وحدة الأنشطة الطلابية وبالتعاون مع قسم علوم البيئة ورشة
بمناسبة يوم التنوع الأحيائي، يلقي فيها معاون العميد للشؤون
العلمية **الدكتور إبراهيم مهدي** محاضرة بعنوان تأثير تغيرات
المناخ على التنوع الأحيائي، فيما تقدم طالبات المستوى الثاني
(أمنه عقيل محسن، سبأ أحمد لطيف، تغريد مضر عدنان، مروة غانم
حمدي) في قسم علوم البيئة وبإشراف **الدكتور محمد عباس كاظم**
محاضرة بعنوان التلوث الضوئي بوصفه مهدد التنوع الأحيائي،
وذلك الساعة الثانية عشر من ظهر يوم الثلاثاء ٢٤/٥/٢٠٢٢ وعلى
قاعة الشهيد جمال الأبراهيمي في الكلية.
الدعوة عامة

Conclusion

Our university is constantly striving to reduce these problems, preserve the environment, protect it from pollution and deterioration, and ensure the creation of a clean, pollution-free environment to contribute to improving the quality of life for citizens, and its permanent continuation of increasing cultural awareness of the importance of these resources and preserving them to achieve sustainable development.



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LIFE ON LAND

The Dates and Sustainable Development Exhibition is an event that focuses on promoting sustainable practices and development in the date industry. This exhibition aims to showcase the importance of sustainable approaches in date farming, processing, and marketing and highlight sustainable date production's socio-economic and environmental benefits.

The exhibition typically features a range of activities and displays related to sustainable date cultivation, technology, and innovation. It may include booths or stands where farmers, producers, and organizations involved in the date industry can showcase their sustainable practices, products, and technologies. Visitors can learn about efficient irrigation methods, organic farming techniques, renewable energy applications, and other sustainable initiatives.





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In addition to showcasing products and technologies, the exhibition might also include seminars, workshops, and panel discussions on topics such as sustainable agriculture, water management, climate change resilience, and market trends. These educational sessions provide an opportunity for knowledge sharing, networking, and collaboration among industry experts, researchers, policymakers, and stakeholders.



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The Dates and Sustainable Development Exhibition serves as a platform to raise awareness about the importance of sustainable development in the date industry and encourages stakeholders to adopt environmentally friendly and socially responsible practices. It promotes dialogue, innovation, and collaboration among different actors in the industry, fostering a more sustainable and resilient date sector.



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Conclusion

Individuals and businesses can play a crucial role in promoting sustainable practices in the date industry by taking the following steps:

1. **Education and Awareness:** Stay informed about sustainable practices in the date industry through research, attending conferences, workshops, and staying up to date with industry publications. Educate yourself and others about the environmental and social impacts of date production and the benefits of sustainable practices.
2. **Adoption of Sustainable Practices:** If you are a date farmer or business owner, consider integrating sustainable practices into your operations. This may include implementing efficient irrigation systems, using organic fertilizers, adopting integrated pest management techniques, and reducing water and energy consumption. Sustainable practices can enhance productivity, improve crop quality, and reduce environmental impacts.
3. **Certifications and Standards:** Seek certifications such as organic or fair trade labels, which demonstrate compliance with specific sustainability criteria. These certifications can help differentiate products in the market and appeal to consumers who prioritize sustainable and ethically produced dates.
4. **Supply Chain Collaboration:** Engage with suppliers, processors, and distributors to foster collaboration and encourage sustainable practices throughout the supply chain. Work together to identify opportunities for improvement, promote transparency, and support initiatives that prioritize environmental and social responsibility.



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5. Consumer Education: Promote awareness among consumers about the importance of sustainable practices in the date industry. Communicate the benefits of sustainable production methods, such as reduced chemical usage, preservation of biodiversity, and positive social impacts. Encourage consumers to make informed choices and support brands that prioritize sustainability.

6. Research and Innovation: Invest in research and development to identify and implement innovative solutions that enhance sustainability in the date industry. This may involve exploring new irrigation technologies, developing efficient post-harvest processing techniques, or finding alternative energy sources for date production.

7. Collaboration and Advocacy: Join industry associations, community groups, or sustainability initiatives focused on the date industry. Collaborate with other stakeholders to advocate for sustainable policies and practices at the regional or national level. By working together, individuals and businesses can have a stronger voice and influence positive change.





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17 PARTNERSHIPS FOR THE GOALS



PARTNERSHIPS FOR THE GOALS

The impact of climate change on strategic crops is a topic of great interest in many countries around the world. This impact poses a significant challenge to the agriculture sector and to food security on both national and global levels. Dr. Saadi Star, a faculty member at the College of Energy and Environmental Sciences, Department of Environmental Sciences, conducted a study on the impact of climate change on strategic crops in collaboration with the National Center for Water Resources Management. The study spanned two years and was carried out at the research station of the center. Engineer Hatem Hameed Hussein, the Director General of the center, received the study from the research team under the supervision of Dr. Saadi Star from the College of Energy and Environmental Sciences at the University of Karkh.

It is worth mentioning that this study utilized a new model for monitoring the effects of climate change on plant characteristics, soil, and water management in the field, which was used for the first time in Iraq. The study emphasized the necessity of seeking suitable methods to adapt to climate change, including the use of modern irrigation techniques, in order to maintain high water use efficiency. This includes increasing the number of irrigation cycles and reducing the amount of water added in each irrigation.




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وزارة الموارد المائية
المركز الوطني لإدارة الموارد المائية
قسم الدراسات البيئية
محطة أبحاث الرائد / أبي غريب

Ministry of Water Resources
National Center for Water Resources Management
Environmental Studies Department
Research Station / Abi Gharib

دراسة
تكيف المحاصيل الاستراتيجية
مع التغير المناخي في العراق



أعداد
د. سهر لؤي زكي
م. علا توري ابراهيم
م. رياض مظهر صالح
م. ابراهيم عيسى داود
د. سعدي ستار شحاده
م. احمد هاتف سالم

2022
5

Finding and solution

The impact of climate change on strategic crops includes:

1. Rising temperatures and weather fluctuations can lead to reduced crop production and quality.
2. Altered rainfall patterns can result in droughts or floods, causing crop losses.
3. The spread of pests and agricultural diseases may increase due to climate change.
4. Water scarcity resulting from climate change poses challenges for irrigation and increases stress on water resources.
5. Economic and social impacts, such as rising food prices and effects on food security and the economy.
6. Adaptation and the development of sustainable agricultural strategies are necessary to address these challenges.



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Conclusion

To overcome the impacts of climate change on strategic crops, it is essential to adopt sustainable and climate-resilient agricultural strategies. Furthermore, it is crucial to enhance research and development in agriculture to develop crop varieties that are climate-resilient and resource-efficient. International cooperation is vital to share knowledge and exchange experiences in climate change adaptation, ensuring food security for everyone in the face of this global challenge.

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College of energy & environmental science