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The experience ofgreen technology in the UAE and its role in promoting sustainable development

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***Abstract* :** Green technology is a modern concept that has received the attention of many countries because it has influenced people's perception of the importance of the environment and the negative impact they leave on it and the result of the irrational use of their resources, so this technology has the potential to improve environmental performance and reducing the negative effects of human activity, which will contribute to promoting sustainable development by encouraging and stimulating the production and use of clean energy, buildings, green, and transportation Green, waste recycling ... etc.

The research aims to find out the developments in green technology indicators and their most important applications in the UAE and how they contributed to promoting sustainable development, and the analytical approach has been used to achieve the research objectives One of the most important findings of the study is that the UAE has come a long way in using modern technologies in many areas such as health, education, energy and transportation, and has seen many studied indicators rise significantly.

Keywords -: Green Technology, Enhancin ,Development,International economy.

INTRODUCTION: One of the results of technological and technical development was the emergence of green technology, which led many countries of the world, including Arab countries, to pay attention to the production of such technology, which depends mainly on modern technological technologies that have entered in all fields and sectors such as industry, agriculture, educational sectors, health and energy ... In order to keep pace with this type of technology, it is necessary to develop basic education and lifelong learning through the educational system and vocational training and to strengthen the infrastructure in information related to green skills and green jobs, which contributes to the development of human resources in science and technology.

In the context of this, it is noted that the UAE has been one of the leading countries in the use of such technology, and has made great efforts to shift towards its dissemination and dissemination, by adopting policies that encourage innovation and digitization and the introductionofict in many areas such as education, health, transportation and buildings, and has sought to provide an environment conducive to technological development, In many of its projects,it isworking to develop sectors that are closely linked to thesetechnologies such as high-tech industries, inexhaustible energy, transportation and green buildings.

Research importance The experience of green technology in the UAE is a successful experiencethat has proven to existbecause of its active role in the process of sustainabledevelopment, reducing economic and social problems such as poverty, unemploymentand reducing environmental pollution.

Research goals

1- Knowing the meaning and importance of green technology

2- Follow-up developments in green technology indicators in the UAE

3- The most important applications of green technology in the UAE and its role in rationalizing the use of available resources to solve environmental problems through the use ofrenewable energy, green buildings and environmentally friendly transport as well as in the areas of health and education.

The problem of research: - The problem of research stems from the question that raised the following question ((has the use of green technologies in the UAE contributed to promoting sustainable development)?

The researchhypothesis: - The research was based on the premise that (the use of green technologies in the UAE has played a positive role in promoting sustainable development through the use of renewable energies, sustainable transport, smart cities, green education and smart health)

Research methodology: -

Thedescriptive approach was used as one of the most appropriate approaches to the subject of the study, and was used in this main and secondary sourceswith the use of reports, official periodicals, and websites.

The firsttopic: -

First: A theoretical introduction to green technology and sustainable development

1.The general concept of technology

The word technology is a word of Greek origin, consisting of two sections, the first techno)meaning craft, art or skill and the second(Logy)and means study or science,hence the word technology means the science of application or performance science, and this term appeared in the modern era after the industrialrevolution, when machines began to take Its position in industrial production, accordingly, technology has been defined as a set of processes that manufacture, modify, know and use machines, tools, technologies and systems and ways to organize them in order to solve a particular problem, improve pre-existing solutions to a particular problem,achieve a specific goal,or address a relationship (Input/output) applied or performing a particular function.(1)

It should be noted that technology has had a clear impact on society and is surrounded in many ways that have contributed to the development of its economies to become more advanced by creating new technologies, such asaircraft, automobiles ,renewableenergy such as energy (atomic, nuclear),nanotechnology, and space,so that it changed thehuman lifestyle and provided him with comfort.

There are those who believe that technology is the branch ofscientific knowledge that deals.With creativity and the use of technical means and their applications in human life, environment and society based on applied sciences, engineering, industrial arts and pure sciences.

Theword sustainability has more than one meaning in Arabic, meaning permanence, continuity or endurance. And the origin of this word belongs to the ecology where.I used. Sustainability to express the evolution and shape of dynamic systems that are vulnerable to structural changes leading to changes in their elements, characteristics and relationships with each other.

Defininggreen technology and sustainable development

Green technology is a technological pathway that includes a combination of innovations leading to improvements in productivity and environmental quality, and the identification of this concept as an application that takes care of environmental protection and the extent to which technologies contribute to reducing carbon emissions, global warming and reducing energy **consumption.** Three criteria have been set for this type of technology: less emission, less waste, and less demand for natural resources, and some have defined it as carrying out continuous development of all industrial processes and for all services and products produced in order to try to reduce the use of natural resources to preserve them from depletion for future generations, which must be taken into account, as well as to reduce pollution caused by production and consumption processes,From this definition, green technology has a preventive policy aimed at reducing or reducing waste from production and use processes, and therefore it is environmentally friendly and preserves it from pollution and depletion of its resources, and it also contributes to preventing or minimizing pollution from the source, and thus processing and eliminating waste from the production process, Or recycling them, which some have defined as climate-related technology or technologies, are also seen as mitigation and adaptation techniques, and accordingly they are used not only to encourage, sustain, and reduce greenhouse gas emissions, but also to help provide answers to climate change, and to defend the environment through sustainability in energy production processes and various technological processes.(2)

He notes that green technology has many aspects, it means any work done by man that would preserve the environment and reduce consumption to a minimum, such as good construction that does not need many adaptive and heating devices so that it is cold in summer and warm in winter, industries that use the lowest possible natural resources, waste recycling as well as transportation that does not use large quantities of fuel, Green technology is a new concept in terms of the environmental protection timetable, through followers of the best ways and methods that contribute to the conservation and sustainabilityof natural resources. Life on a planet.Earth, and if it changes, it's going to change.Technology is to promote growth.Green at low cost,and there are those who know. Green technology as.Term.Comprehensive indicates .To how to harness. And the use of technology and science.To protect the environment and preserve.on it and its sustainability where it is multiplied. The tools integrated under .That's like environmental monitoring and a lot more.

Technology is Green is a modern area of luck By evolving And grow very quickly in different All over the world ,technology is notgoing towork Green stimulates and encourages To generate and produce Clean energy, and it'sbeen The technology has been described In green, given the fact that i'm not going to be in the country. The green color that. He alwaysrepresents nature. (3)

Asfor sustainable development, it is a modern concept that has been used in contemporary development literature a lot, so that sustainability has become a globalschool of thought that is spreading in most developing and developed countries alike, adopted by official and popular bodies and demanded its application, a development pattern that is rational and rational, dealing with economic activities aimed at achieving an economic growth rate on the one hand and preserving natural and environmental resources from On the otherhand, it represents the only way to achieve a good quality of life for the population at the moment and for future generations and several definitions have been received about this concept,including thePortland definition issued by the International Commission for Development and environment in 1987 entitled "OurCommonFuture" ,sustainable development, which is seen as development

"The third item adopted at the United Nations Environment and Development Conference in Roedi Janeiro in 1992 defined the need to realize the right to development so that the development needs ofpresent and future generationsmust be realized equally." In an effort to link economic development with the environment, sustainable development has been defined as "anattempt to reduce the conflict that leads to environmental degradation by finding a means of integratingthe environment with economicdevelopment,"while the Foodand Agriculture Organization (FAO) defines sustainable developmentin 1989 as "the "1989" Managing and protecting the natural resource base and guiding technical and institutional change in a way that ensuresthat the human needs of current and future generations are fulfilled and continue to be satisfied,"and therefore seek to sustain natural resources and fisheries, not to overuse them such as agricultural and animal products and not to harm the environment and wealth and are technically appropriate, economically appropriate and socially acceptable."

Greentechnology objectives and importance

Green technology seeks to achieve a range of goals which is as it comes [(4)]

A- Developing and developing the skillsof employees, managers and investors of technology.

B- Reducing costs, reducing the size of the productivesystem, developing productivity and making appropriate adjustments to it.

Activating and expanding the communications network and inventing new ways.

Follow-up of successive technology variables and their impact on society and how to deal with technological devices and equipment, to regulate their performance, maintenance and development.

C- Creating new goods and developing marketingmethods andmethods, andsorting new styles of management.

Rationalizing the use of available resources to solve environmental problems.

Treatment of water and wastewater and environmentally safe treatment and management of waste.

Providing renewable energy, greenbuildings and environmentally friendly transportation.

Y- Preservingmaterials Raw and energy.

For institutions to achieve all previous goals.It must integrate the environmental dimension.In all the activities and processes that have beencarriedoutby the You're doing it, starting with an adjustment.Inputs to become cleaner than.Previous through the production processes that.You have to be efficient.Energy and waste reduction, down to outputs, which must be environmentally friendly and achieve.Consumer desire and safety.

4- The contribution of green technology to sustainable development:- technology is preparing.An effective and essential tool to address development challenges And achieve the development goals sustainable ,such as protecting the planet, eradicating poverty and managing Natural and climatic risks and realization Foodsecurity, it's proven Studies that before and after Formulating the sustainabledevelopmentplan Forthe year2030, it is also a catalyst for accelerating the completion of the three pillars of sustainable development (economic growth, social integration and environmental sustainability), and highlights the role of green technology through goal 9 Of the Sustainable DevelopmentGoals which calls for encouraging innovation and stimulating industrialization Comprehensive and infrastructure resilient, add to being an essential element in A lot of education goals Health, well-being, equality between Gender, economic growth, decent work, and sustainable city and communitygrowth And the climate, the institutions.Strong and corporate contract, justice and equality.[(5)]

L Technology hasproven its usefulness in manyleadingdevelopment projects Sustainable, like technology Artificial intelligence, 3D printing andothers In many countries, they also use big data to treat electronic waste and reducepollution And ease trafficcongestion And in mobilizing newsources.of financing like capital The first to generate solar energy.[(6)]

The secondtopic: studying the reality of green technology in the UAE

1- A glimpse of the UAE economy:

The year (1971) is the year in which the UAE was declared as an independent and sovereign state formed fromthe Union of Six Emirates(Abu Dhabi, Dubai, Sharjah, Ajman, Um al-Qayoun and Fujairah),andin 1972 the Emirate of Ras Al Khaimah joinedtheUnion, located in the south-eastern part of the Arabian Peninsula and the southwestern part of Asia, the area of the state is about (83,600) km2, Most of them are deserts with oases, with a total population of about 9,770,526 million estimated in 2019, and gdp amounted to about $421.14 billion, according to World Bank statistics for 2019.

Since the founding of the UAE, oil has accounted for the largest proportion of its domestic production, with a contribution of about 90%,and over time this percentage hasdecreased to about 32% of domestic production, while the contribution of industry (46.16%) according to 2019data has increased, due to the state'stendency to diversify its economic resources by allowing the private sector to enter into industrial investment, implement privatization and financial liberalization programs and reduce government intervention. In addition to adopting economic strategies that stimulate economic diversification, it has increased the contribution of other sectors such as manufacturing, tourism,

trade, services, alternative energy and banks, andseeks to raise this contribution in 2021 to 80% by directing investments towards those sectors[7].

The UAE economy initially relied heavily on oases agriculture, fishing and pearltrade,but after the discovery of oil in the1950s there was a change inthe structure of the economic life of thecountry, as since 1971 it has sought to keep pace with developments in the world by investing in new sectors where the knowledge component such as aircraft component industry, nuclear and renewable energy, communications technology and information is increasing in order to move to the age of knowledge and development from During smart technologies and digital economy to becomethe regional center of technological services for communications andinformation, several initiatives have been taken to achievethis, including the adoption of a financing policy in the field of technological science and innovation, consisting of continuous government spending on infrastructure projects such as transport network projects and smart building projects,the federal train project, and the launch (100) A local initiative in its plan includes important sectors including(energy, health, water,educationandtransportation)and estimated thevolume of investments in these sectors at about (300) billion dirhams,and is also a model for smart investment through its financing of smart projectsthat included (500) advanced services, Such as the smart palm project established in 2016, which is based on solarenergy, and the Silicon Park project, which cost (300) billion dollars, and as a result the UAE has won the first place in the Arab world in terms of the number of smart cities and an estimated (20.8%), of the total smart citiesin the Arab world and constitute(50%) of the total cities in the country, It also ranked third in the quality of infrastructure in air transport and airports, first in the world in the road quality index and fourth in the marine port infrastructure quality index and the quality of public infrastructure[8]

2- Analysis of the development in green technology indicators in the UAE

Research and development indicators in the UAE

- Indicators of spending on research and development: - The viability and excellence in today's world is not limited to the possession of wealth or the powerofarms, but is determined by the possession of the keys of knowledge and the ability to produce it and create wealth,and therefore has become one of theimportant criteria to measure progress,is progress in the field ofscientific research, and providing the necessary funding to create a competitive scientific environment is the first condition to reach the level of global measurement in scientific productivity.

As part of its vision to become one of the most productive countries for science and knowledge, the UAE has implemented many initiatives and investments,including the establishment of theMinistry of Artificial Intelligenceand the ArtificialIntelligence Program, through which many experts presented ideas that contribute to the UAE's competition for the first positions in scientific research and knowledge production worldwide. In 2018,it launched theEmirates Scientific Laboratories Platform, which connects (6) laboratories in the UAE with scientists with the aim of strengthening scientific effort and supporting researchers and academics, and developing scientific and technological capabilities, while the Department of Education and Knowledge in the UAE launched a competitive program to fund research under the name (AbuDhabi Grant for Research Excellence) in 2015, and the Visiting Professor Program More than 150 research projects have been funded from the start of the project to 2019, including life sciences(health, food and agriculture), ICT,aviation and space, materials science and manufacturing, as well as energy[9]

Based It And as a result For that. programs And initiatives. comb If Ratio Spending on Search And development as a percentage from output Local Total cod Seen Rise during yrs Study And as he clear On the table. (1) because Rose these Ratio from (0.49%) year (2011) To reach into (%1.3) in year(2019)

Table(1)The proportion of research and development spending on GDP in the UAE for selected years

The year	Percentage	The year	Percentage
2011	0.49	2017	1.13
2014	0.69	2018	1.30
2015	0,90	2019	1.3
2016	0.96		

Source: Researcher D onWorld Bank Open Data, available on the website, https://databank.albankaldawli.

This has resulted from the uae's high interest in the Research andDevelopment Index by increasing government investmentin this field, in addition to support from the private sector by sponsoring creative talent and providing more funding for basic research. Invite prominent foreign scientists to visit laboratories and laboratories and work with them

Numbers of research and development researchers

The UAE supports national cadres and motivates them to scientific research, development and creativity by employing the potential of human capital and attracting competencies and enabling scientists and researchers to access the latest devices,so for the purpose ofencouraging researchers and increasing their numbers launched the program (HomeFund) which works to finance scientific research, This program seeks to support students and inventors from university students in primary and higher studies as well as members of the community interested in scientific research and technology, and build a cadre of young researchers and promote a culture of research and innovation through three programs (UAEResearcher Program,Applied Research and Development Program, and GrantProgram).[10]From a follow-up to schedule(2)it can be noted that the numbers of researchers in the UAE have increased during the years of study as the number of researchers increased from (1980.48)in 2015 to (2378.89) in 2018, and this increase is the result of the great interest of the UAE government in the index of researchers in the field of research and development through increased domestic spending of the state on research and development and launching Grants and initiatives that contribute to motivating researchers and encouraging them to research scientifically.

Table(2)Research and Development Researchers per million people in the UAE for selected years

The year	Number	The year	Number
2015	1980.48	2017	2380.985
2016	2383.08	2018	2378.89

Source: World Bank Open Data Researcher, available on the website, https://databank.albankaldawli.

2- Scientificpublications: - Scientific publishing is the most important measures used in estimating the level of scientific production, as there is no value for science unless it is published and made available to serve humanity on the basis that science is global trend,and knowledge has no homeland, and by extrapolatingthe reality of scientific research in the UAE we find that it came in sixth place in the Arabworld, and the second gulf during the period (2008-2018) in research and scientific papers published, The field of electrical and electronic engineering ranked first and actually (5003), followed by energy and fuel research,while thelargest producing institutions were Khalifa University for Scientific Research and reality(7083) research[11]

Table(3)Numbers of scientific publications in the UAE during the period (2018-2000)

The year	Number	growth rate	The year	Number	growth rate	The year	Number	growth rate
2000	330.44	---	2007	757.57	8.1-	2014	2343	9.4
2001	380.58	15.1	2008	983	29.7	2015	3151	34.4
2002	399.54	4.9	2009	1219	24.0	2016	3469	10.0
2003	539.87	35.1	2010	1200	1.5-	2017	3848	10.9
2004	555.02	2.8	2011	1321	10.0	2018	3974	3.2
2005	704.31	26.8	2012	1685	27.5			
2006	824.69	17.0	2013	2140	27.0			

Source: Researcher based on

(1) World Bank open data, available on the website, https://databank.albankaldawli.

(2) Arab Scientific Society Organization, Study and Research Unit, Profiles of Scientific Research in Arab Countries (2008-2018), available on the website,https://arsco.org/article-detail-1641-8-0

To see the development of this indicator during the duration of the study, table3can be followed, which shows that the number of scientific publications in the UAE increased during the period (2000-2018),while growth rates ranged from high to low as shown in the table, where the number of publications increased from (330.44) in 2000to (3974) in 2018, This increase in the number of scientific publications in the UAE is the result of increased spending on research and development, increased support and grants to researchers and enabling them to access scientific laboratory devices.

High-tech international trade

Since its inception, the UAE has adopted a free economy system based on the marketsystem, where the forces of supply and demand determine the basic economic data, which are prices and investment in the productive economic sectors, service and internal and foreign trade without any significant intervention bythegovernment, where an open economic policy based on freedom of investment and trade in various fields has been adopted,The private sector has a leading role in the national economy,where the role of the government was limited to the development ofmacroeconomic policies,and in line with technological developments in the world, investment policy in the UAE focuses on the development of information technology in various economic activities,where thenet flows of the computer and telecommunications sectors within the UAE (13.1) billion dirhams, and a growth of (2.5%) during the year(2016) according to statistics issued by the Central Bank of the Emirates.

It should be noted that the proportionof manufactured exports of medium and high technology such as chemical products, machinery, transport equipment and telecommunications equipment, reached (11.3%) of Dubai's manufactured exports in 2018, while in 2010 it was about4% and this increase in the share of exports from high-tech industries indicates the relative success of Dubai in achieving industrial diversification It has been seeking to accelerate manufacturing of high-tech products since the announcement of the Dubai Industrial Strategy (2030), which came into force in 2017[(12)]

The development in the proportion of exports of high-tech goods from total manufactured exports in the UAE can be observed table 4,which shows the proportion of these exports for several years, as it is clear that this percentage has ranged from high to low and was the highest in2014 (10.36%), while the lowest in 2016 was (.2,62%).

Table(4)Percentage of high-tech exports of total manufactured exports in the UAE for selected years

The year	Percentage of exports	The year	Percentage Exports
2008	3.36	2016	2.62
2012	3.77	2017	2.72
2013	3.61	2018	3.05
2014	10.36	2019	2.16
2015	3.31		

Source: World Bank Open Data Researcher, available on the website, https://databank.albankaldawli.

Table(5)Percentage of ict exports and imports of total exports and imports of manufactured goods in the UAE for selected years

The year	Percentage of exports	Percentage of imports	The year	Percentage Exports	Percentage of imports
2007	2.72	4.96	2015	2.51	4.90
2008	1.95	4.50	2016	2.09	5.54
2012	7.49	10.99	2017	7.46	17.19
2013	1.78	3.30	2018	7.06	13.30
2014	2.25	4.38	2019	7.79	11.99

Source: World Bank Open Data Researcher, available on the website, https://databank.albankaldawli.

As for the development in the proportion of exports and imports of ICT goods from total UAE exports and imports, table5can be observed, as it is clear that the proportion of exports and imports of these goods ranged from high to low during the study period and reached its highest rate in 2019 at (7.79%), while the highest rate of imports in 2017 was about (17.19%) This indicates the UAE's interest in increasing the proportion of exports of these goods and working to reduce the proportion of imports from these goods.

Patents

The UAE seeks to create a stimulating environment for innovation, invention, ip applications, research and development and establish them as engines for building the futureeconomy, so it has developed legislative, legal and environmental frameworks supporting innovation, including Federal Law No. 31 of 2016 amended federal law No. 17 for the year (2002). Which stipulates that the patent is granted for each new invention resulting from an innovative idea or innovative improvement in all areas of technology, each of which is based on scientific foundations and is subject to industrial exploitation, whether related to new industrial products or new industrial methods or means developed or by the application of new methods or known industrial means, and does not grant the patent for

inventions arising from its publication or exploitation in violation of public order or morals, research and plant or animal species. Or biological methods of plant or animal production, except for microbiology methods, andthe patent is registered through the International Patent Center, which is affiliated with the Ministry of Economy within theUAE. In this regard, the UAE has established the Program (Integration)of the Abu Dhabi Technology Development Committee and this program provides material and legal support toinventors and enables them to patent internationally,which contributes to encouraging researchersand inventors, in addition to the role played by UAE universities in providing inventions that lead to building a knowledge economy and providing solutions to challenges and contributing to the achievement of sustainable development goals and quality of life and supporting the uae's position in the field of Inventions,forexample,wefind that emirates university contributed to the increase in the percentage of patents granted until 2019, where the number of inventions at the university reached (128) of them (39) in 2019,the share of theFaculty of Engineering (18) patents and(6) for the Faculty of Science and(6) for the Faculty of Medicine and Health Sciences and(7) for the Faculty of Food and Agriculture and(7) for the Faculty of Food and Agriculture and(2) Technical College of Information (2).[(13)]

The development of patents in the UAE during the study period can be known by noting table6,which shows that the total patent applications of residents and non-residentsof the UAE during the years of study haveincreased, as the number of patents increased from(26) patents in2011 to (58) patents in2019. The invention for residents within the UAE, as for patents for non-residents within the UAE, increased from (1325) patentsin 2011 to (1846) a general patent(2019),resulting from the support provided by the UAE to inventors, innovators and technology pioneers in patenting and working to provide the necessary requirements to apply them to the ground and marketedit.

Table(6)Total patent applications for residents and non-residents of the UAE during the period (2019-2011)

The year	Total patent applications for residents	growth rate	Total patent applications for non-residents	growth rate	The year	Total patent applications for residents	growth rate	Total patent applications for non-residents	growth rate
2011	26	---	1325	---	2016	33.5	123.3	1743	0.2
2012	20	23.0-	1331	0.4	2017	52	55.2	1748	0.2
2013	18	10-	1408	5.7	2018	56	7.6	1727	1.2-
2014	29	61.1	1443	2.4	2019	58	3.5	1846	6.8
2015	15	48.2-	1738	20.4					

Source: World Bank Open Data Researcher, available on the website, https://databank.albankaldawli.

2- The most important applications of green technology promoting sustainable development in the UAE

We will review a number ofapplications that contribute to the promotionof sustainabledevelopment in the UAE, which relies on the use of technologies etc.in the completionof its tasks,including:

1. Smart City Project (Model Source)

One of the most important initiatives launched by the UAE is to establish smart cities, which is one of these smart cities where it was established in 2006 in Abu Dhabi as a sustainable residential community, to be or to a city free of pollution all over the world, especially harmful gases, and contribute to the production of electricity from natural sources through solar energy, It provides (70,000) jobs, masdar city also contains green spaces, and environmentally friendly transportation such as self-driving electric cars that do not emit polluting materials to the environment and depend on intelligent urban design that deals with population density efficiently as its buildings are designed to suit the volume of water and energy consumption and be less than (40%) Compared to normal construction, this city has combined traditional Arab architecture with modern construction technology based on innovative solutions in the field of sustainability and energy and is one ofthe key elements of the comprehensive development plan launched in Abu Dhabi in2009 and has many investment models for the development of renewable energy sources, including the establishment of a special fund comprising (250) million dollars spent on investment in modern technology such as panels used on solar farms, It is attracting technology companies to cleanenergy.[(14)]

One of the most importantprojects That's It was accomplished in acity.Source: -[(15)]

1- Converting gas in landfills into energy: This project was established in2011 and one of its objectives is to reduce emissions Harmful gases such as carbon dioxide by converting it into energy.

2- Wastewater treatment and gas conversion to energy:The capacity of this project (4-6) MW,aims to exploit biogas to provide (35,000) (M3) of gas on a daily basis at two sites within Abu Dhabi with various specialties for work and providing clean energy technologies.

3- Production of solar energy and sewage treatment plant: the goal of these facilities is to produce renewable energy.Which is environmentally friendly in various sectors such as transport, operation, construction and other sectors,and the energy produced works to treat sewage.
4- The system for energy management in smart homes.
5- Diagnosis of geothermal energy to be a source of cooling of theEarth.

Models for environmentally friendly buildings

Renewableenergy

The UAE has come a long way in investing in the renewable energy sector, especially solar energy, and there are several forms of investment in the energy sector, including investment in environmentally friendly technologies and modern technology,investment according to the type of energy source and investmentby region, so the UAE ranked third in the Arab field in the field of solar energy production in 2013,and in 2014 produced about(140) Megawat solar energy, the second source of electricity generation in the UAE, is also guiding and encouraging innovation in the renewable energy sector with the aim of raising the quality of networks and efficiency in storage methods according to energysources,in addition to increasing the percentage used in cleanenergy to (30%) by 2030, and working on production (25-30%) In its electricity needs of nuclear and solar energy while Abu Dhabi is working on the goal of covering (7%) of their energy needs in its quest to invest and implement renewable energyprojects, therefore established the Supreme Energy Council in 2009, whose tasks focused on the following:

Effective planning of the energy sector and reducing CO2 emissions.

Creating sustainable energy sources capable of meeting the needs of the present and the future

Raising quality standards and diversifying energy sources, among the most important energy projects implemented bytheUAE:

A- The establishment of Masdar City: Masdar company specializes in developing and deploying clean technologies for renewable energies to build Masdar City, the first carbon-free city in theworld,becausethiscity contains clean energy projects and research centers such as wind farm, Shams1 hydroelectric plant in Abu Dhabi, um al-Nar station,and Noorsolar project

. B- Mohammed bin Rashid Al Maktoum Energy Complex:

This complex was built in Dubai by the Water and Electricity Authority because this complex depends onenergy.Pv and solar energy the goal of this project is to provide clean energy to citizens and reduce greenhouse gas emissions and carbon emissions, as well as achieve energy security, is the largest solar complex in the world and is expected to reach a production capacity of (5000) MW by the year (2030),and the projects ofthis complex since its inception receive a great attention from global developers, which contributed to raising the capacity of solar projects in the complex to (1013) Megawat with PV and concentrated solar panel technology,while the capacity of projects underimplementation is (1850) MW in preparation for reaching (5000) MW by 2030[(16)]and includes research and innovation centers and was initially operated in2013 through the adoption of solar energy, and the implementation stages of this complex can be followed up through table(7)Whichshows that the purchase price ofelectric power between the second and third phase has decreased and that the price obtained by the Electricity Authority to buy the energy produced in the third phase is much cheaper than the second and fourth phase, especiallythe percentage of energy generated from solarenergy.

Table(7)Steps for the Implementation of Mohammed Al Maktoum Solar Complex (2013-2030)

Stage	Part	Al-Qdara (M.W.)	Year of entry into service	Technology used	Price of electricity (S.T.C.O.S.)
The first		13	2013	**Foto Voltia**	**Unknown**
2nd		200	2017	**Foto Voltia**	5.84
Third	**The first** **Second** **Third**	200 300 300	2018 2019 2020	**Foto Voltia** **Foto Voltia** **Foto Voltia**	2.99
Fourth		700	2020	**Concentrated solar energy**	7.3
Future stages		3287	2010- 2030	**Unknown**	
Total		5000			

Source: Renewable Energy in theArabCountries, Chapter 10,Prospects for Electricity Generation.Using energy sources.Renewed in the Arab countries. P. 209, available on the website. https://www.amf.org-ae

C- Concentrated SolarProject: One of the largest concentrated solar projects in the world where it was announced under the Dubai Clean Energy Strategy and operates with a capacity (1000) MW untilthe year(2030),and this project will contribute toreducing one million tons of carbon emission per year, and will use thermal storage technology for(8-

12) Hour by hour per day taking into account economic and technical factors, which helps to increase the efficiency and efficiency of production and provide sustainable energy supplies, while Dubai Clean Energy Strategy (2050) aims to make Dubai the lowest carbon footprint city by 2050 and provide (75%) energy production capacity from clean energy sources[17]

Sustainabletransport

There are several factors driving innovation in the transport sector,including changing production and consumptionpatterns ,andlimitednatural resources,and calls for the development of transport services that keep pace with economic, social and environmental trends and contribute toimproving energy efficiency in this sector, and the transition to clean fuel use and the transition from private transport to public transport that is not dependent on engines and achieve significant health and economic gains,Sustainable transport also refers to mobility within low-impact patterns and mechanisms on the environment such as non-mechanical transport such as bicycle rides and environmentally friendly mass mechanical transport.

As far as the UAE is concerned, it has come a long way in the use of transportation that achieves sustainable growth. In 2018, a new generation of electric buses designed based on the latest technologies in bus design and suitable for high-temperature and humid environments (3) were usedin 2018. It is a car for four people and works with renewable energy and can travel a distance (150) km without the need to recharge, and is the first car to be produced and adopts its full capacity of electric power through a battery with a capacity (16) kW, and can be charged quickly to reach (80%) of its capacity within (30) minutes,in addition to its use of aself-driving electric vehicle that accommodates (12) Passengers equipped with the latest technologies that enable them to move effectively and accurately, with the ability to identify the obstacles they face and these technologies[18]

- Antenna to use satellite-related navigation system to determine the exact location of the vehicle at any moment
- A distance measure measures the range of milan and the speed of each wheel to estimate the speed of the car and change its location.
- Cameras identify obstacles that can hinder vehicle movement

Sensors: Provides exceptional 3D maps to locate the vehicle and obstacles.

The driverless personal transport system(PRT) has also been used in Abu Dhabi, where the city operates (9) cars on the personal transport system and is characterized by low cost and energysaving, and it is an environmentally friendly means because its use does not have a carbon effect and contributed to thetransportation of more than two million passengers in Masdar City,starting in 2010 and until (2018)

Launched in2014, the Dubai Tram project is one of the environmentally friendly public transport vehicles operating using ground-based electrical feeding, and the world's first system to use automated gate technology forthe passenger terminal platform compatible with the train's opening and closingsystem.

The UAE's tram network includes about 17 passenger tram stations and a fleet of 25 trams, and there is a plan to launch environmentally friendly hydrogen taxis in 2050 and increase its fleet of these vehicles by 22%, which contributes to reducing carbon emissions by nearly 40% compared to regular taxis.

There are many applications used by the UAE aimed at achieving sustainable transport and reducing congestion and noise, thereby reducing carbon emissions,reducing transport difficulties andpreserving the environment from pollution[19]

In summary, it can be said that the use of these techniques has contributed to reducing carbon emissions, reducing waste of materials and through the use of renewable energy sources and reducing the use of depletedmaterials.

4- Green Education

Education is an essential means of investing in human capital, and is a goal of the Sustainable Development Goals and a necessary condition to ensure its security, and with rapid technological progress education has become like other sectors that are trying to keep pace with development, so it has been of great importance by many countries around the world including the UAE through its orientation towards adopting education that seeks to achieve sustainable development and keep pace with technological development and benefit from it in other elements of the educational process with high efficiency and outputs Distinguished according to environmentally friendly standards through attention to two basic parts,the first relates to environmental programs of buildings, energy, afforestation and services, and the second focuses on the educational process with technologies, applications, strategies and practices related to the concept of green education and the benefits of this system adopt techniques that contribute to the rationalization of energy consumption resulting from the use of computers, lighting and adaptation,as well as theuse of educational techniques in an environmentally sound way, It is economical in effort and time and works to dispense with the use of books and paper references by relying onthe smart programming system to design programs and applications that can be used in the educational process through the use of tablet computers and the latest software and modern technologies in the field of communication and informationtechnology.

In this regard, the UAE has been moving towards adopting e-learning since 1989, when the Department of Education and Youth adopted the development of programs used to teach computer science in the UAE from high school, and this experience covered every region of the UAE with two schools, one for boys and one for girls, and in 2018 the UAE launched a school initiative, an electronic platform in Arabic.Provides (5000) fidowi educational lessons in mathematics, physics, chemistry, biology and other materials for all classrooms and is available to more than (500) million Arab students as the Mohammed Bin Rashid Al Maktoum Global Initiatives Foundation (MBRGI) launchedthe digital school initiative to provide certified digital education to students from various social, economic and educational backgrounds, Targeting the most vulnerable and less privileged community groups and refugees in Arab societies and the world

Atthe level of university education, it is noted that many UAE universities have adopted e-education in teaching as shown intable8,which shows universities that have adopted many smart applications in education,and has established manyeducational platforms for this purpose,and education is important in theUAE Vision for 2021, which aims to draw attention through innovation in all sectors, including the education sector. To direct attention and attention to technological education and to generalize the application of curricula based on artificial intelligence and robotics andthe requirements of the fourth industrialrevolution, and promote innovation in teaching methods and methods such as intelligenteducation, and develop the infrastructure of education through the establishment of laboratories and research centers in schools and universities to encourage students to innovate and invent[(20)] This contributes to the availability of high quality educational services and accessibility by all members of society, in addition to reducing the consumption of materials and energy.

Table(8)UAE universities using e-learning

University	Content
Hamad Bin Mohammed University	Founded in 2008 and in 2016, this university introduced the concept of e-learning to motivate students to compete with and encourage their peers by providing awards and gifts, as a result of which it has won numerous international awards in the use of ICT And contributed to the promotion of e-learning initiatives by offering accredited courses for all bachelor's and master's degrees
Alk Tronian College of Overall Quality	Headquartered in Dubai, the collegespecializes in providing quality management education services and has been interested in addressing issues related to the concept of educationat the Arab level in particular and at the global level ingeneral.
University Al Lotta	This wasfounded University in 2001- 2002from By Al LottaPresident Council of the Islamic Foundation For education and education in Abu Dhabi offers The education program on The internet's way to All over the world The main goal of the university Is to invest in The idea that connects the Education by means of modern ism that has contributed by making e-learning more democratic and vital And accessible to all those whowish In education.

Source: Prepared by the researcher Depending onme

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5- Smart Health (Electronic):

Technology has played an important role in the development of medical innovations and the creation of treatment for a number of diseases,and recent developments in digital technology have contributed tothe development of more innovations in this field that can address shortcomings in the healthcare sector and provide more reliable and transparent medical care services.

In this regard, the UAE has paid great attention to the health services provided to citizens and residents, and the UAE has sought to encourage innovation and creativity in the health sector through the use of modern technological technologies in addition to encouraging and developing the pharmaceutical technical industries and developing medical research to treat alldiseases. It has also adopted a strategy of leading artificial intelligence to help and serve medical personnel in the diagnosis of diseases, prescribing treatment and providing health services based on advanced technology such as robotic surgery and telemedicine, continuing to develop the pharmaceutical and biotechnology

industries, and inventing advanced technological systems to manage the health system,and promote healthy lifestyles through the use of smart technology for preventive purposes, In addition, the use of many applications adopted by the UAE in the field of smart health[21] and this interest in the health sector by the UAE is manifested as part of its efforts to achieve the Sustainable Development Goals by focusing on promoting the use of advanced technologies in the provision of health care services and working to support growth in biotechnology and pharmaceutical industries and working with companies to support medical research in the UAE with the aim of preventing diseases and promoting healthy lifestyles.

In summary, we note that these applications have contributed to promoting sustainable development in the UAE by contributing to reducing waste in resource use, reducing pollution rates, producing and improving the quality and accessibility of educational and health services by all.

Conclusions

1 - Green technology is a term that expresses how technology and science can be harnessed and used to protect and preserve the environment.
2 - Greentechnology contributes to promoting sustainable development by improving environmental performance, reducing the negative effects of human activity andencouraging clean energy production anduse, buildings, green and green transport,andwaste recycling.
3 - Themost important conclusion of the study is that the UAE has come a long way in using modern technologies in many areas such as health, education, energy and transportation,and many of the indicators studied have seen a markedrise.
4 - The trend towards renewableenergy use is one of the uae's most prominentgreen technologytrends

Recommendations

1- The needtoadoptstrategies that adopt green technologyin allaspects of economic, social and environmental.
2- Increasing investments directed towards the development of human capital and scientific research.
3- The needto work on the establishmentof research centers concerned with the production of green technology
Encouraginginnovation and providing material and moral incentives to innovators

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