

**Transitioning towards a green economy as a strategic option to achieve the goals of sustainable development -A reference to some successful experiences -**

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**Abstract:**

This study aims to highlight the importance of the transition towards the green economy as one of the most important stratégiques options that the state can adopt in order to achieve the goals of sustainable development, by reducing the environmental and social risks resulting from the brown economy, which has become a trend for many countries of the world, whether developed among them or even developing ones, where many successful international experiences have emerged in the transition towards a green economy through the development of a strategy that works to green some economic sectors such as energy, agriculture, waste and other sectors.

**Keywords:** Environment; Green economy; Sustainable development.

**JEL Classification:** O13; Q56.

## **Introduction**

As a result of the significant increase in the severity of environmental issues and problems, human began to worry about his future, so the global interest in environmental issues increased, as the environment became a basic pillar within the development processes, and man continued to think about finding solutions to environmental issues and economic crises, so the so-called green economy emerged as a new concept based on efficient use of resources, improving human well-being, achieving social equality, preserving the environment, and the rights of future generations. The green economy has witnessed great development in recent years because of its great importance in achieving the goals of sustainable development. Both developed and developing countries are working to promote this trend. Which is no longer limited to investing in clean energies, but rather to investing in various fields, allowing for the achievement of sustainable development in its various dimensions?

## **Study problematic:**

The problem of the study can be formulated in the following question:

- **How does the transition from a brown economy to a green economy contribute to achieving the goals of sustainable development?**

## **Objectives of the study:**

This study seeks to achieve a set of objectives, the most important of which are:

- Determining the most important goals of the transition towards a green economy and the most important sectors concerned with it
- Highlighting the most important mechanisms of transition towards a green economy
- Clarifying the relationship between the green economy and sustainable development
- Presentation of some successful international experiences in adopting the green economy

## **Study division:**

In an attempt to answer the problem of the study, this research was divided into three main axes:

- The first axis: the theoretical framework for sustainable development and the green economy

- The second axis: the green economy as a tool for achieving sustainable development
- The third axis: some successful experiences in the transition to a green economy.

### **1- The theoretical framework for sustainable development and the green economy**

After humanity reached great degrees of progress in all fields, especially those related to both sides the industrial and technological aspects to affect the components of the environment, and that is evident through the emergence of many problems that have become a major threat to the environment on the one hand and the future of human life on the other, and in an effort to overcome these problems, sustainable development emerged, which culminated in the emersion of what is known as the green economy.

#### **1-1- The concept and principles of sustainable development**

Sustainable development has emerged as a natural result of the incorrect detachments of traditional development, after a series of reports presented by specialists in the economy and the environment within many international meetings and conferences.

##### **1-1-1- The concept and characteristics of sustainable development**

The term sustainable development has received great attention from researchers, writers, and international organizations alike, which opened the way for the multiplicity and abundance of its definitions, and perhaps the most important of these definitions are as follows:

- The concept of sustainable development was launched for the first time in the report of the World Commission for Environment and Development issued in 1987 and entitled “**Our Common Future**”, where he defined it as “a process of change in which the exploitation of resources, the direction of investments, the direction of technological development, and institutional change are in harmony and consonance, working on enhancing the capabilities of the present and the future to meet the needs of the present and the future” (Our Common Futur, 1987) .
- Sustainable development in its comprehensive concept is defined as a comprehensive activity for all sectors, whether in the state, organizations, public or private sector institutions, or even individuals, through the formation of a process of developing and improving the conditions of

reality, by means of optimal exploitation of human and material resources and energies in order to meet the needs of the present and raising the standard of living of individuals, without compromising the ability of future generations to meet their own needs (Sustainable Development, 2022).

- While the Food and Agriculture Organization of the United Nations defined it as “the process of managing and protecting the bases of natural resources, and working to direct them towards technical and institutional change in a way that ensures the achievement and continued satisfaction of human needs for current and future generations”(دوناتو، 2003، صفحة 56).

Sustainable development has several characteristics, perhaps the most important of which are (EDWIN, 1999, pp. 73-80):

- **Environmental problems are the main reason behind the current development crisis:** Where the essence of sustainable development lies in the interaction between development and the environment by preserving the environment to ensure a healthy normal life, as well as the production of renewable wealth while not depleting the non-renewable one.
- **Sustainable development requires a multispectral approach (environmental, economic, social):** In addition to the economic dimension of sustainable development, the social dimension emerges by focusing on increasing the amount of production by ensuring an increase in energies from one generation to the next, and most importantly the fulfilment of basic human needs. As for the environmental dimension, which focuses on the fact that the continuation of human behaviour will lead to changes that will affect the human race and threaten its continuity?
- **The importance of technology in achieving sustainable development:** Where technological innovation works as a strategy aimed at achieving the objectives of environmental management and alleviating the overall pressure of human development on the environment by relying on innovation and modern technological techniques.
- **Sustainable development requires the participation of all sectors:** Achieving sustainable development includes the participation of all sectors at all levels, not just governments, as the best way to deal with environmental issues is to ensure the participation of all citizens at all levels in policy-making and achieving goals.

- **Sustainable development requires a degree of awareness:** Among the characteristics of sustainable development is that it requires changes in awareness and ethics, especially with regard to dealing with nature.
- **Sustainable development is a non-generational phenomenon:** Where justice must be achieved in development in a manner that fairly takes into account the needs of development on the one hand and the future of generations on the other hand.

### **1-1-2- Sustainable Development Goals**

On January 1, 2016, the world officially started implementing the 2030 Agenda for Sustainable Development, which is a transformative action plan based on the Sustainable Development Goals, represented in the following (تقرير أهداف التنمية المستدامة ، 2017):

**-Poverty eradication:** by eliminating poverty in all its forms, including poverty, within the next 15 years, so that all people enjoy a basic standard of living and social protection benefits, and the percentage of the world's population living below the poverty line has decreased by half between the years 2000 and 2016 from 26% to 13%.

**-Complete eradication of hunger:** This goal seeks to eliminate hunger, provide food security and improved nutrition, promote sustainable agriculture on a large scale, double agricultural productivity and increase investment.

**-Ensuring healthy lifestyles and well-being for all ages:** by improving reproductive, maternal and child health, achieving health coverage for all and ensuring access to medicines.

**-Ensuring fair and inclusive quality education for all and promoting lifelong education opportunities for everyone:** by working to acquire basic and higher-level skills and achieving more access to technical and vocational education and training, and the number of out-of-school students reached 59 million in 2013.

**-Achieving gender equality:** by striving to ensure the provision of all opportunities for women, eliminating all forms of discrimination and violence against them, and giving them the opportunity to participate on equal terms with men in political, economic and social life.

**-Ensuring the provision of clean water and sanitation services for all:**

Providing clean water and facilitating access to it for everyone is an essential part of the world in which we want to live, because millions of people die every year as a result of inadequate supplies of safe drinking water and lack of sanitation and general hygiene.

**-Ensuring affordable, reliable and sustainable access for all to modern, reliable and sustainable energy services:** by seeking to promote broad access to energy and improved use of renewable energy, including by strengthening international cooperation and expanding clean energy infrastructure and technology.

**-Providing decent work and promoting economic growth:** which requires promoting steady, inclusive and sustainable economic growth by creating conditions that allow people to obtain good job opportunities that stimulate the economy without harming the environment?

**-Establishing a resilient infrastructure, stimulating inclusive industrialization, and encouraging innovation:** This goal focuses on promoting infrastructure development, industrialization, innovation, and increasing access to information and communication technology.

**-Reducing inequality within and between countries:** This goal calls for reducing inequality based on gender, age, race and religion. It also aims to ensure that migration is safe and orderly. It also addresses issues related to the representation of developing countries in decision-making on global level.

**-Making cities inclusive and sustainable:** This goal aims to renew cities and human settlements and plan them in a way that takes into account social cohesion and security, while working at the same time to stimulate innovation and employment.

**-Ensuring the existence of sustainable production and consumption patterns:** through the development of local policies and international agreements concerned with the management of resources and energy and the sustainability of infrastructure, which contributes to reducing economic, environmental and social costs in the future.

**-Addressing climate change and its effects:** which represents the greatest threat to development, which calls for urgent action to address climate

change and its effects, in addition to building resilience in dealing with climate-related natural risks and disasters?

**-Conservation of the oceans, seas and marine resources:** by managing these resources and using them in a sustainable manner to achieve sustainable development.

**-Protecting wild ecosystems:** by working to combat desertification and stop land degradation and loss of biodiversity.

**-Peace, justice and strong institutions:** by encouraging the establishment of peaceful societies in which no one is marginalized in order to achieve sustainable development, providing access to justice for all, and building effective, accountable and inclusive institutions at all levels.

**-Contracting partnerships to achieve the goals:** by strengthening the means of implementing and activating the global partnership for sustainable development.

### **1-1-3- Basic dimensions of sustainable development**

It was stated in a book on indicators of sustainable development, which was issued by the Committee on Sustainable Development emanating from the Earth Summit that the basic dimensions of sustainable development are represented in (أبعاد التنمية المستدامة، 2022):

- **Economic dimension:** Sustainability here, through the economic dimension, means achieving economic well-being through equality in the distribution of resources and reducing inequality in incomes. Thus, the effective means of alleviating the burden of poverty and improving living standards has become the responsibility of both rich and poor countries. This mean is considered a purpose in itself, represented in making the opportunities for access to resources, products and services among all individuals within society closer to equality. Unequal access to education, social services, and over land and other natural resources constitute an important barrier to development. This equality helps stimulate the development and economic growth necessary to improve living standards.
- **The social dimension:** Sustainable development in the social dimension means working to achieve great progress in order to stabilize the final size of the Earth's population because the limits of

the earth's ability to support human life are not known precisely, and the distribution of population is important, as the current trends towards expanding urban areas, especially the development of large cities has huge environmental consequences, and sustainable development involves the full use of human resources by improving education, health and education services, and fighting hunger. The role of women is of particular importance, as caring for women's health and education would lead to their susceptibility to sustainability with multiple advantages. The democratic socialist method of governance constitutes the main basis for sustainable human development in the future.

- **Environmental dimension:** Sustainable development in its environmental dimension needs to protect the natural resources necessary for the production of foodstuffs, starting from protecting the soil to protecting the lands allocated for trees and protecting fisheries with the expansion of production to meet the needs of the growing population, and sustainable development here also means the use of land arable and more efficient use of water supplies, as well as the development and adoption of improved agricultural practices and technologies that increase yields, and this needs to avoid excessive use of chemical fertilizers and pesticides so as not to lead to the deterioration of rivers and lakes, and threaten wildlife, and pollute human food and water supplies.
- **The technological dimension:** It is the dimension associated with the modern trends of sustainable development through interest in the use of cleaner technologies in industrial facilities that often lead to pollution of the surrounding air, water and land. Because of this, it is a major source of air pollution in urban areas, and sustainable development in this field aims to reduce the global rate of increase in greenhouse gas emissions, by significantly reducing the use of fuel and finding other sources of energy to supply industrial societies.

## **1-2- Basic concepts about the green economy**

### **1-2-1- The concept of green economy**

The term green economy appeared for the first time in the economic literature in 1989, when it appeared through the title of a report prepared by a group of environmental experts for the United Kingdom government, and despite the re-use of the same term by the same group in 1991, they did not provide it with a clear definition. In the framework of preparing a general policy in order to get out of the global financial crisis that the world witnessed in 2008, the term was used again, as the United Nations



Environment Program launched the Green Economy Initiative with the aim of providing analysis and political support for investment in green sectors and in greening non-environmentally friendly sectors. The United Nations issued a report entitled "Towards a Green Economy" within the framework of the same initiative in 2011, and many definitions of the green economy have emerged among them.

- **Definition of the United Nations Environment Program:** which was defined in 2010 as that economy that results in an improvement in human well-being and social equality while significantly reducing environmental risks and ecological scarcity of resources so that growth in income and employment is achieved through investment in a few sectors pollution and enhance the efficiency of energy and resource use, and preserve biodiversity and serve the ecosystem (UNPE, 2010, p. 5).

- **Definition of the United Nations Conference on Trade and Development:** which was defined in 2011 as that economy that works to improve the well-being of members of society and reduce inequality while not exposing future generations to the risks of scarcity of resources and environmental problems and thus achieve sustainable development (Undesa, 2011, p. 11).

- **The definition of the Organization for Economic Cooperation and Development:** which defined it as ensuring the pertinacity and continuity of natural resources and the provision of environmental resources and services on which the well-being of societies depends, and to achieve this, investment and innovation must be stimulated, which supports steady growth and provides new economic opportunities (OCDE, 2011, p. 9).

Although there is no single agreed definition of the concept of green economy, it is agreed that its ultimate goal is to achieve sustainable development by adopting a comprehensive development model that takes into account the social and environmental dimensions as well as the economic dimension and creating a balance between them, present and future.

### **1-2-2- The most important sectors concerned with the green economy:**

With regard to the sectors that would help in the transition to the green economy, they are as follows (UNEP, 2021):

- **Green buildings:** by focusing on the use of environmentally friendly building materials while working to reduce the impacts of buildings on health and the environment.
- **Preserving fisheries:** by working to reduce the phenomenon of indiscriminate fishing and the depletion of fisheries.
- **Preserving forest wealth:** as forests work to support the ecosystem by contributing to the ecological balance.
- **Green transport and communications:** which guarantees the provision of a safe transportation system for individuals and countries without harming health, the ecosystem, and the interests of future generations?
- **Water management:** through the rational use of water, maximizing the use of rain and torrential waters, and treating and reusing sewage water.
- **Land management:** through sustainable agriculture and support for organic farming through the use of naturally produced food inputs.
- **Green Renewable Energy:** By working on the development of environmentally friendly and renewable energy sources such as solar energy and wind energy.
- **Green Tourism:** It is tourism that takes into account the needs of the environment and ways to preserve it from pollution by adopting programs in which fun is integrated with the protection of the environment.
- **Waste management and recycling:** by converting waste into organic fertilizers, animal feed, or clean energy, or manufacturing it in a manner that guarantees public health and takes into account environmental concerns.
- **Green industry:** The transition to green industry is considered an essential element in satisfying human needs, achieving social development, and addressing everything that threatens natural resources and the environment.

## **2- The green economy is a tool for achieving sustainable development**

The green economy works to enhance the interdependence between the economy, the environment and sustainable development by adopting effective economic policies to preserve the environment, reduce its degradation and reduce poverty.

**2-1- The difference between the traditional economy and the green economy:**

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As a result of environmental degradation and the exacerbation of the climate phenomenon, the green economy has become a basic and inevitable trend for most countries in the world. And the natural ecosystem, which contradicts the model of what is known as the traditional economy or as it is sometimes called the brown or black economy because of the levels of pollution resulting from it, which is evident in Table No 01.

**Table number (01): A comparison between the traditional economy and the green economy**

<b>Elements</b>	<b>Traditional economy</b>	<b>Green economy</b>
<b>Energy resources</b>	Depends on fossil fuels (coal, oil, gas)	Depends on renewable energy of all kinds (solar, wind, etc.)
<b>Exploitation of natural resources</b>	It does not care about natural capital and its natural resources are exposed to abuse	It came to make the best use of natural resources without exceeding their ability to renew
<b>Environmental dimension</b>	It does not care about the environmental dimension and works to achieve the economic goal, regardless of other considerations	It balances the economic, social and environmental dimensions
<b>Economic growth</b>	It works to achieve high growth rates that are not distributed fairly, in addition to being at the expense of the environment	Works to achieve sustainable growth, keen on using natural resources and reducing pollution
<b>Technology use</b>	It relies on production-intensive technology that achieves high economic returns and does not take into account natural resources and pollution levels	It uses clean, environmentally friendly technology and recycles what is used
<b>Social Justice</b>	Inequality in distribution despite the high growth rates, which is confirmed by the high rates of unemployment and poverty	It mainly aims to address the problem of poverty by creating green job opportunities

**Source:**(حسام محمد، 2017، صفحة 56)

**2-2- Transition paths to the green economy:**

Countries and institutions can transition to the green economy through two important paths namely (see table 02).

**The first track:** from launching green projects through launching new projects for social and economic development so that environmental considerations are taken into account in the first stage of project design and then in all stages of its implementation and monitoring.

**The second track:** by reorienting the current patterns of production and consumption and/or correcting them by improving their environmental performance.

For greater efficiency, both tracks must be worked together because they are complementary and interrelated, and they must be supported by a set of government programs and policies that encourage the private sector and civil society to participate in the transition to a green economy in the context of sustainable development.

**Table number (02): Transition pathways to a green economy in the context of sustainable development**

<b>Launching new green projects</b>	<b>Converting current projects into green projects</b>
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<p><b><u>Creating new social and economic opportunities based on new green activities</u></b></p> <ul style="list-style-type: none"> <li>• Improving trade flows with a focus on environmental goods and services</li> <li>• Developing regional green curricula, innovation, R&amp;D activities and technology transfer</li> <li>• Encouraging entrepreneurship, education and retraining</li> </ul> <p><b><u>Expected benefits</u></b></p> <ul style="list-style-type: none"> <li>• Creating carbon-free activities</li> <li>• Providing new areas for economic growth</li> <li>• Creating new sources of income</li> <li>• Creating new job positions</li> <li>• Employment of young people in new sectors</li> </ul>	<p><b><u>Creating new social and economic opportunities by transforming current economic activities into green ones</u></b></p> <ul style="list-style-type: none"> <li>• Promote sustainable transport</li> <li>• Transforming buildings and designs projects into green projects</li> <li>• Transforming electric energy production projects into green ones</li> <li>• Improving the efficiency of water management systems and water desalination and distribution processes</li> <li>• Encouraging sustainable livelihoods and sustainable agriculture</li> </ul> <p><b><u>Expected benefits</u></b></p> <ul style="list-style-type: none"> <li>• Low carbon emission</li> <li>• Improving transportation</li> <li>• Reducing water scarcity</li> <li>• Improving food security</li> <li>• Developing rural areas and increasing income</li> <li>• Reducing land degradation and desertification</li> </ul>
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**Source:**(الإسكوا، 2011، صفحة 20)

**2-3-The most important concerns about the transition to a green economy:**

Despite the increasing opportunities offered by the green economy, many countries, especially the developing ones, still fear that the complete transition to the green economy will become a tool that may be used to impose restrictions on their development and the possibility of improving the well-being of their people. The following are the most important concerns about the transition to the green economy (الإسكوا، 2011، الصفحات 67-64).

**2-3-1 The use of environmental standards as non-tariff barriers:**

developing countries fear that the transition to a green economy will lead to the imposition of non-tariff barriers to trade and competitiveness, by practicing a kind of ban on products and production processes that do not follow environmental performance standards that developed countries can. With the increase in countries seeking to adopt basic concepts and methods related to the green economy, it is expected that the volume of international

trade exchanges will be affected by the new green mechanisms that regulate the global market, as products that are subject to environmental standards will have better marketing opportunities in global markets.

**2-3-2- The cost of green subsidies:** The issue of green subsidies can be seen either as an opportunity or as a challenge, depending on the strategy adopted to implement it. While the goal of improving the environmental performance of products and production processes is a goal that should be sought, developing countries should realize that industrialized countries impose achievable environmental standards in their countries given the volume of industrial support and subsidies to them, which is difficult for developing countries because of the lack of financial, technical and human resources aimed at supporting the environment and green investment or innovation.

**2-3-3- Retraining and building competencies:** When talking about the orientation of national economies towards green production sectors and investment in creating green jobs, the issue of training and skills development is raised. The lack of skilled manpower specialized in advanced technology requires the formation of a new manpower in these sectors, which needs a lot of time and investment, and may constitute a major obstacle to the expansion of the green economy. The International Labour Organization has classified a new category of workers known as "green workers", and this category of workers will gain special importance in the future economy.

**2-3-4- The difficulty of measuring progress towards a green economy:** When developing a strategy to achieve a green economy, common methodologies and measurement tools must be identified in order to evaluate progress and options taken, given the contradiction in goals between the various sectors concerned. An approach based on distinguishing between green measures and non-green measures should be adopted.

### **3- Some successful experiences in transitioning towards a green economy**

Some countries, whether developed or developing, have succeeded in turning towards a green economy by developing a strategy that greens some economic sectors such as energy, agriculture and waste.

#### **3-1- Some experiences of developed countries**

##### **3-1-1- Germany's experience in renewable energy (solar energy)**

Similar to the major industrial countries, Germany is considered one of the largest energy consuming countries in the world. Considering that it is the

largest European economy, the rate of carbon emissions per German citizen is among the highest in Europe, energy to about 50% by the year 2030, and Germany ranked first in the world in terms of installing photovoltaic panels for several consecutive years, which amounted to a total number of 43 gig watts until the end of 2017 distributed to about 1.64 million photovoltaic systems throughout German soil, including solar panels on roofs and large solar power stations, which represents 10% of the installed capacity in the world.

In contrast to a system that relies on large, centralised production of energy, thousands of solar panel operators have become an increasingly important part of the German energy system. Renewable energy, estimated at 39% according to the German Association for Energy and Water (BDEW), while the contribution of solar energy worldwide to cover electricity consumption was about 2% (BENJAMIN, 2018).

Within the framework of the transition to a green economy, Germany is developing a long-term strategy through which it aims to raise the share of renewable energy to 80% of the total electricity production by the year 2050, while reducing carbon emissions by between 80% and 85%, which is considered a major challenge that Germany seeks through. To be a global leader in this field, and this strategy includes three main axes (STEPHANIE, 2018).

- Optimal utilisation of available renewable energy resources by all regions of the country.
- Reliance on the method of covering the deficit between the different regions of the country
- The process of importing energy from other neighbouring countries is minimal.

### **3-1-2- The Swedish experience in recycling:**

Sweden recycles more than 99% of all household waste in various ways, and it has reached this huge number after passing through several stages, as this percentage had reached only 38% in 1975, and in 2016, approximately 2.3 million tons of household waste were converted into energy through combustion, i.e. about half of the total household waste. Sweden resorted to importing household waste in 2015, as it imported 2.3 million tons of waste from many countries, including Norway, the United Kingdom and Ireland, and heavy metal emissions decreased by 99% since 1985. Although Sweden burns three times more waste today, Wayne

Vakieff, CEO of the Swedish Association for Waste Management and Recycling, still believes that the Swedes can do more in this field, given that half of the household waste is recycled, i.e. turned into energy, and explains that recycling used materials or products means using less energy to produce a new product. Swedish families play a very important role in this process by doing the primary sorting of their household waste so that they separate the waste into several types, including paper waste, plastic, metal, glass, electrical appliances, electrical lamps and batteries. Many municipalities also encourage consumers to separate food waste, and all of this is reused, recycled or composted, as newspapers are turned into paper mass, bottles are reused or melted into new items, and plastic waste becomes plastic raw material. Food is composted and becomes soil or biogas through a complex chemical process, garbage trucks are often run on recycled electricity or biogas, and waste water is purified to the point where it is safe to drink. In this way, Swedes are now recycling almost 100% of their household waste, which can be called a real recycling revolution (JONAS, 2018).

### **3-2- Some experiences of developing countries**

#### **3-2-1- UAE Experience (UAE Green Development Strategy):**

In 2012, the United Arab Emirates launched a national initiative under the name "Emirates Green Development Strategy" under the slogan of a green economy for sustainable development. It is a long-term national initiative to build a green economy in the country, which aims to make the UAE a world leader in this field and an export centre and re-exporting green products and technologies, in addition to preserving a sustainable environment that supports long-term economic growth, as the UAE announced its intention to enhance the competitiveness and sustainable capacity of national development efforts and preserve its environment for future generations (UAE, 2017, pp. 6-7).

This initiative includes many programs and policies in the fields of energy, agriculture, investment and sustainable transportation, in addition to new environmental and urban policies aimed at raising the quality of life in the country. Six strategic paths have been identified covering a wide range of major policies and projects as follows (UAE, Green Economy for Sustainable Development, 2023):

- **The first track / green energy:** It includes a set of programs and policies aimed at promoting the production and use of renewable



energy and related technologies, in addition to encouraging the use of clean fuels for energy production and working on developing standards and enhancing energy efficiency in the public and private sectors.

- **The second track / green investment:** It includes government policies aimed at encouraging investments in the green economy, facilitating production, import, export and re-export of green products and technologies, in addition to creating job opportunities for citizens in these areas and equipping national cadres in this field.
- **The third track / green cities:** It includes a set of urban planning policies aimed at preserving the environment, raising the environmental efficiency of housing and buildings, encouraging environmentally friendly means of transportation or what are called sustainable transportation, in addition to programs aimed at purifying the indoor air of cities in the UAE to provide a healthy environment for all.
- **The fourth track / dealing with the effects of climate change:** through policies and programs aimed at reducing carbon emissions from industrial and commercial establishments, in addition to encouraging organic farming through a set of incentives at the federal and local levels.
- **Fifth Track / Green Life:** It includes a set of policies and programs aimed at rationalising the use of water, electricity and natural resources, in addition to projects for recycling waste resulting from commercial or individual uses. This track also contains awareness and environmental education initiatives for the public.
- **Sixth Track / Green Technology:** This track focuses in its first phase on carbon capture and storage technologies, in addition to waste-to-energy conversion technologies.

### **3-2-2- China's experience in solar energy:**

China relies to a large extent on fossil resources such as coal and oil, which makes it face the problem of pollution on a large scale, which prompted it to diversify sources of energy supplies and switch to cleaner energies, which was embodied through support policies beginning in 2008, and in this endeavour it topped China in 2017, a group of countries investing in renewable energies with a total investment volume of more than \$165 billion. As for the solar energy sector, in which it occupies the first place in the world, China seeks to rapidly increase solar energy generation to 10% of the country's electricity needs by 2030, according to the National

Energy Agency of China (NEA), China wants to increase its solar energy production capacity to 110 GW by 2020, which was 53 GW in 2017 (TIM & SIMON, 2017).

And in order to achieve its national goals in the field of solar energy, China has adopted a set of stimulating policies in this field since 2013, the most important of which is support for photovoltaic solar systems. In addition to the national support for solar energy, which amounts to \$0.049 per kilowatt hour, there is support at the local level so each province in China has its own support policy for solar energy projects. Many provinces produce local solar panels and have their own goals in expanding towards the use of renewable energies, as support rates differ from one region to another. China has been able to conduct the first historical experiment in terms of operating a city, complete through its renewable energy sources away from coal and other fossil resources, and tax incentives provided for solar power plants also encourage the expansion of this type of projects (MIN, MIAO, MOFAN(2018).

China has become a world leader in the manufacture of solar photovoltaic technology, as it owns the nine largest companies among the ten largest in the world, and China intends to invest \$ 360 billion in renewable energy in the coming years, which means providing more than 13 million jobs.

## **Conclusion**

The orientation towards the green economy has become one of the most important tools available for achieving the goals of sustainable development, a global endeavour for various countries of different degrees of economic progress, due to the importance of the environmental dimension in addition to the economic and social dimension, and a balance between them in order to achieve sustainable growth and reduce poverty and it achieves well-being, and the transition to a green economy requires reliance on both human and natural capital, in addition to financial and legal support. It must also be emphasized that the green economy does not replace sustainable development, but rather is one of its most important tools.

## **Recommendations:**

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- Defining a comprehensive strategy for the transition to a green economy, whether at the national or regional level.
- Setting incentives and policies that encourage the adoption of greener and more sustainable patterns of consumption, production and investment.
- Giving priority to national programs for the development of renewable energies and waste recycling.
- Involvement of civil society and the private sector in transition programs towards a green economy.
- Encouraging international cooperation, especially with regard to the transfer of green technology to developing countries, and benefiting from their experiences in the transition towards a green economy.
- The need to activate legislation and laws that include preserving the environment and encouraging green consumer behaviour.
- Paying attention to the fields of scientific research in the clean energy and environment sectors.

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