

Promoting Renewable Energies as an Endeavor to Achieve Sustainable Development

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Abstract:

Increased interest in the study of renewable energies in the search for alternatives to compensate traditional sources known as fossil fuels, which are non-renewable and prone to depletion. Renewable energy sources are also characterized as clean and non-polluting, giving them significant importance in achieving sustainable development.

This study aims to highlight the role of promoting renewable energy in achieving sustainable development by presenting various concepts related to promotion, renewable energy and sustainable development. It also examines the role of promoting renewable energy in achieving sustainable development from economic, social, and environmental perspectives, as well as the indicators for measuring sustainable development.

Key Words : Promotion, Renewable energy, sustainable development, indicators for measuring sustainable development.

JEL Classification: Q01; Q20

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1. Introduction

The possibility of realising sustainable development depends on the existence of sufficient sources of -energy due to its importance in the development operation and its close connection to various areas and dimensions of sustainable development.

Recent studies indicate that the problems of depletion of traditional energy sources and environmental pollution would disrupt the environmental and economic system, which has prompted the need to search for environmentally friendly renewable energy resources to reduce environmental pollution and to lower pressure on the use of traditional -energy, as well; thus, renewable -energy has become one of the major important sources of global -energy outside traditional -energy, as it is clean and non-polluting. This has necessitated relying on it as an alternative to traditional energy and an urgent necessity in order to achieve the principles of sustainable development. Promotion is considered among the most effective ways to achieve this.

In this article, we attempt to answer the following problem:

- How does promoting Renewable -Energy participate to realise sustainable development ?

2. Rationale and Objectives

The importance of the study lies in highlighting the important role that the promotion of renewable energies plays in activating sustainable development, as the study aims to:

- develop one of the important elements of the mix-marketing politics.
- Explain the term of renewable -energy, recognizing its importance, characteristics, and various sources.
- Showing the importance of promoting renewable energies in achieving sustainable development.

3. Study Plan

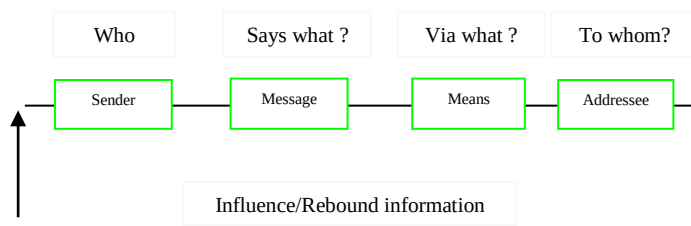
To answer this problem, this study was divided into four main parts, which are as follows; 1/ basic concepts about promotion; 2/ the conceptual gateway for renewable -energy; 3/ the theoretical foundation of sustainable -development; 4/ the role of promoting renewable -energy in achieving sustainable -development; 5/ obstacles and challenges of switching to renewable -energy.

4. Part ONE: Key Concepts on Promotion

First, according to Kotler, an organization's communication includes a set of signals sent by the organization to its surroundings "customers, distributors, the state, etc." That is, communication is the mean of dialogue with customers. Considering that all of these signals are not of the same nature and do not have the same goals, according to the same author, promotion is the activity that takes place within the framework of any marketing effort and involves a persuasive communication process, as Kincaid defines. It is an integrated communication system based on conveying information about a good or service, and a persuasive method to a target audience of consumers, to persuade its members to accept promoted goods or services, and that there must be an active and participating role in promotion within any organization's strategy, whatever it may be" (Djamel Eddine Dahia , 2019, p. 52.).

Second, the communications process in the field of marketing can be expressed in the form of a general model. For communications, as shown below: (Thamer Al-Bakri, 2009, pp. 70-71).

Figure No. (1): Marketing communication model



Source: Thamer Al-Bakri, Marketing Communications and Promotion, Dar Al-Hamid for Publishing and Distribution, Amman, Jordan, second edition, 2009, 70 p.

It goes as follows:

- Sender: the source of the message. it may be an institution or a merchant, wholesaler, retailer, etc.;
- The message: It is a set of meanings required to be sent to the addressee, the content of which is determined after studying the motivations and trends of the addressee.
- The means: These are the means of mix-promotional.
- Addressee: the one who receives the message.

Third, promotion gains great importance in many areas, including but not limited to:

Social importance of promotion:

- Raising the level of awareness among individuals;
- Rationalizing the consumption of scarce materials;
- Encouraging the elimination of many bad phenomena in societies.

The economic importance of promotion:

- It is considered an important field of work;
- Promotion leads to increasing sales of goods and thus reducing the costs of producing them and thus providing them to a large number of consumers;
- It is considered as an educational aspect for consumers (Ahmed Sharif Al-Asi, 2006, p. 32).

5. Part TWO: Conceptual Framework for Renewable Energies

Renewable -Energy represent the best choisse instead of fossil –energy, and the environmental motive represents the main reason for interest in them to reduce the gases emitted, especially carbon dioxide. We shall try below to address the concept of renewable energies and their most important sources and characteristics.

5.1 The Concept of Renewable Energy

Renewable energy is derived from inexhaustible natural resources, distinguishing it from fossil fuels like oil, coal, and natural gas. According to International Energy Agency (IEA): Renewable -energ is energy sourced from natural processes like sunlight and wind, replenished faster than consumed. Common sources include solar, wind, geothermal, hydropower, and certain bio-energy type (the Agency International Energy Agency, www.iea.org, 2019). According to Intergovernmental Panel on Climate Change (IPCC): Renewable energy is energy from solar, geophysical, or biological sources, renewed at a rate equal to or greater than its consumption. This includes biomass, solar, geothermal, tidal, and wind energy. Various technologies convert these sources into primary energy forms like heat and electricity, facilitating energy services (Farida Kafi, 2015, p. 3).

It is defined as “those energies whose presence in nature is repeated automatically and periodically”, meaning that it is the energy derived from natural resources that are renewable

or that are inexhaustible. It is also known as the energy that is available everywhere on Earth and can be easily converted into energy (Kalthum Wakli and Monia Khalfawi, 2018, p. 3).

Renewable -energ are also defined as follows: Energy generated from natural sources that automatically and periodically recur. This includes electricity produced from solar, wind, water, biomass, and geothermal heat. Additionally, renewable -energ encompass biofuels and hydrogen derived from renewable sources, highlighting their sustainable nature and capacity to provide clean energy solutions (Sufyan Bouzid and Muhammad Issa, 2017, p. 116).

5.2 Importance

Renewable energy is emerging as the primary alternative to fossil fuels and is garnering global interest as a future energy source. This interest is largely driven by environmental concerns, particularly the need to combat global warming and reduce greenhouse gas emissions .

Key types of renewable energy include solar, wind, biomass, hydropower, and geothermal energy. Additionally, there are experimental sources like ocean thermal energy and tidal energy that are still in research phases.

Renewable energy is characterized as clean, abundant, and sustainable, offering a permanent solution that does not contribute to environmental pollution. Its development is motivated by the negative impacts of traditional energy sources, positioning renewable energy as a critical component of future energy strategies.. (Rashid Zarqat, 2018, pp. 3-4).

5.3. Characteristics

Alternative energy sources are anticipated to play a significant role in meeting future energy needs, offering sustainable and long-term solutions. However, there are several characteristics:

- **Availability:** While alternative energy sources are durable, they are not consistently available 24/7, meaning they cannot be relied upon at all times.
- **Energy Density:** These sources often have lower energy intensity, requiring larger installations and multiple devices to harness significant amounts of energy.
- **Diverse Forms:** Different types of alternative energy necessitate specific technologies. For example, solar energy is harnessed from sunlight in various forms, such as light and heat, while wind energy is derived from air movement, which is converted into mechanical energy.
- **Energy Consumption:** The lower energy concentration of sources like solar energy aligns with consumption needs, particularly when energy efficiency measures are implemented to reduce overall consumption.

Overall, while alternative energy sources present challenges, their potential to contribute to sustainable energy solutions is significant. (Mohamed Ratul and Mohamed Madahi, 2012, p. 141).

5.4. Renewable Energy Sources

They are permanent and inexhaustible natural resources available in nature, whether limited or unlimited, but they are constantly renewed and are clean and do not result in any environmental pollution. The most important of these sources are:

- **Solar Energy:** This is the most widespread form of energy, emitted by the sun and accessible in all areas, including remote locations. Its use began in the late 1950s for powering satellites. Solar energy plays a significant role in environmental preservation.
- **Wind Energy:** Wind energy is derived from the kinetic energy of moving air, which is ultimately powered by the sun. The sun heats the air, causing warm air to rise and creating wind as cold air moves in to fill the void. Scientists estimate that about 2% of solar energy is converted into wind energy.
- **Water Energy:** Historically, water energy was utilized through water wheels for irrigation and milling. Its importance waned with the advent of steam engines and coal but has seen a resurgence with advancements in technology and the discovery of electric generators.
- **Geothermal Energy:** This energy comes from the Earth's internal heat. It can be harnessed by tapping into hot groundwater in areas with geological faults and fissures, converting this heat into usable energy forms.
- **Biomass Energy:** Biomass includes organic materials, such as plant and animal waste, which can be converted into heat and light. While it was historically significant (e.g., wood stoves), its importance diminished with the rise of coal and oil. However, the energy crisis in 1973 prompted a renewed interest in biomass, though its sustainability is challenged by production-consumption imbalances and high costs.

These alternative energy sources each have unique characteristics and historical contexts, contributing to the broader landscape of renewable energy solutions. (Mohamed Salmi and Al-Daraji Madraq, 2018, pp. 4-5).

6. Part THREE: The Theoretical Foundation of Sustainable Development

The concept of sustainable development emerged in the late 1980s in response to serious environmental issues affecting life on Earth. This development aimed to address the balance between economic growth, environmental protection, and social equity. However, scholars have varied in their definitions of sustainable development due to differing perspectives and priorities, leading to a lack of a singular, unified definition. This diversity reflects the complex nature of sustainability and the various contexts in which it is applied.

6.1. Sustainable Development: Concept

Many attempts have emerged to define sustainable development since the beginning of that concept in 1987. Below are some of these definitions:

The World Bank has defined sustainable development in the twenty-first century as a multidimensional process consisting of five components: sound financial management and inherent economic planning, physical capital, represented by infrastructure and fixed assets such as roads, ports, and power plants. Human capital includes good health and acceptable

levels of education and training for individuals. Social capital encompasses the skills, capabilities, and relationships among individuals, as well as the institutions that shape these interactions. It reflects the social networks and trust that facilitate cooperation and collective action.

Natural capital, on the other hand, refers to the stock of natural resources and ecosystem services that provide benefits to humanity. This includes elements like air quality, biodiversity, water resources, and the aesthetic value of landscapes. Both types of capital are crucial for sustainable development, as they contribute to the well-being of communities and the health of the environment. (Al-Khawaja Muhammad Alaa, 2006, p. 454).

The concept of sustainable development was defined by the United Nations in the 1987 Brundtland Report as the use of resources in a way that meets present needs without compromising the ability of future generations to meet their own needs. This definition emphasizes the importance of prioritizing environmental and social considerations before pursuing development. Sustainable development involves integrating economic, social, and environmental goals to create outcomes that are socially beneficial, economically viable, and environmentally sustainable. This holistic approach ensures a balanced relationship between human development and the health of the planet. (Samir Boukhatalla, 2017, p. 326).

It is defined, according to the Algerian law, as “sustainable social and economic development and environmental protection, that is, including the environmental dimension within a development framework that ensures meeting the needs of present and future generations (Article 03 of Law 30/01, 2003).

6.2. Sustainable Development Objectives

The main objectives are as follows: Reducing the poverty rate, by providing all resources to all the world's population; quality education and lifelong learning; providing health centers, which helps reduce diseases and support the health of the world's population; Food security and healthy nutrition, by supporting natural resources; creating jobs, livelihoods and equitable growth; sustainable management of natural resources; a good global environment, and long-term financing, through the effective management of environmentally friendly renewable energies (Boubaida Sharifa and Mazouz Nachida, 2018, p. 9).

6.3. Characteristics

Some of which are as follows:

- Longterm Perspective: It prioritizes longterm development, considering the temporal dimension as essential for planning and resource use.
- Rights of Future Generations: It fosters the rights of future generations to access the planet's natural resources, ensuring they can meet their own needs.
- Basic Human Needs: Meeting the fundamental needs of all individuals is a primary focus, ensuring that essential requirements are addressed first.
- Biosphere Preservation: It emphasizes the importance of preserving the biosphere and its essential elements, including air, water, soil, and natural resources.
- Human-Centered Development: Sustainable development considers human development as its primary goal, valuing social cohesion, psychological well-being, and cultural stability.
- Ecosystem Integrity: It recognizes the importance of maintaining ecosystem integrity, avoiding simplification that could harm genetic diversity.

- Integrated Development: It advocates for coordinated and integrated approaches that harmonize resource use policies, investment strategies, technological choices, and institutional frameworks, ensuring they work together effectively (Omar Sharif, 2006, pp. 148-149).

6.4. Indicators

As a result of the great interest in sustainable development studies and research, the need has emerged to develop comprehensive indicators for sustainable development that diagnose the interaction between economic, social, environmental and institutional variables. These indicators are represented in:

A- Economic indicators: The economic indicator includes several indicators, the most important of which are:

- Per capita GDP: This indicator is calculated by dividing the gross domestic product at current prices in a given year by the population in that year. The economic importance of this indicator is shown through reflecting economic growth rates and measuring the level and volume of total production.
- Ratio of gross fixed investment to gross domestic product: Gross fixed capital formation is defined as that portion of immediate productive capacity directed to the production of capital goods such as buildings, construction, machines, machinery, and means of transportation. Fixed capital formation is divided into two parts: net capital formation, which is used to increase production capacity, and compensatory capital formation, which is used to maintain existing productive capacity or compensate for the disappearance of existing fixed capital.
- The ratio of exports to imports indicates a country's ability to sustain its import activities based on its export performance. This metric reflects the balance between the value of goods and services exported and those imported, highlighting the nation's economic openness to the global market. A higher ratio suggests a stronger capacity to finance imports through exports, which is vital for maintaining economic stability and growth. This indicator is essential for understanding how well a country integrates into the global economy and its reliance on international trade.
- Official Development Assistance Group: It includes official development assistance, such as grants and loans provided by the official sector to some countries with the aim of promoting development and social services on favorable financial terms. This indicator measures the various levels of aid, and is calculated as a percentage of the gross national product. The sustainable development strategy does not require heavy reliance on foreign aid and assistance.
- External debt/GDP: This indicator is calculated as a percentage of GDP and represents countries' indebtedness and helps assess their ability to sustain debt.

B- Social indicators: The social indicator includes several indicators, the most important of which are:

- Unemployment rate: This indicator reflects the number of individuals of working age who are able to do so and have not obtained a job opportunity, as a percentage of the total labour force in a country.
- Population growth rate: The average annual rate of change in population size is a crucial indicator for sustainable development. Its importance lies in ensuring that the growth rate of per capita income keeps pace with population growth. If population growth outstrips income growth, it can lead to increased poverty, resource depletion, and social strain. Sustainable development requires a balance where economic growth supports an expanding population, enabling improved living standards and equitable access to resources. Monitoring this rate helps policymakers address potential challenges and implement strategies that promote sustainable economic and social development.
- Illiteracy rate among adults: It is calculated by the percentage of individuals over the age of 15 who are illiterate to the total number of adults.
- Enrolment rate in primary, secondary and higher schools: This is the number of people enrolled in these primary and higher schools compared to the total population. This indicator reflects the extent of dissemination of education and knowledge in a country.
- Percentage of population in urban areas: The ratio of the population residing in urban areas compared to the total population.
- Protecting and promoting human health: The most important requirements for sustainable development related to humans are the availability of healthy drinking water and health services. This indicator is calculated by dividing the number of people who do not have these services by the total population.

C- Environmental Indicators

This includes several indicators:

- Per capita share of agricultural land: This indicator includes a measurement.
- The per capita share of arable agricultural land, as well as the per capita share of land available for agricultural production. Agriculture plays a major role in achieving sustainable development because of the food it provides to the population in addition to job opportunities. Thus, it is the engine of economic growth, especially since it can contribute to alleviating poverty and unemployment.
- Change in areas of forests and forested lands: This indicator shows the percentage of change in the area of green lands to the total area of the country. If the percentage of this indicator is high, it indicates the possibility of increasing agricultural production, whereas the opposite indicates the expansion of desertification and its creep into green lands.
- Desertification: Measuring the lands affected by desertification and their percentage to the total area of the country. Reducing desert land areas is one of the conditions for achieving sustainable development.

D- Institutional indicators

The institutional indicator includes several indicators, the most important of which are:

- Obtaining information: This indicator measures the extent of individuals' ability to obtain information, which is represented by the number of students in primary, secondary and higher schools (i.e. the total number of those enrolled in the primary, secondary and higher levels of education), in addition to the number of fixed-line and mobile phone users.
 - Number of scientists and engineers in the field of scientific research: Monitoring this number helps policymakers understand and enhance their nation's capacity for scientific advancement and innovation.
 - Spending on research and development: The volume of financial spending on research and development is represented as a percentage of gross domestic product (Mahdi Sahar Ghailan, 2013, p. 33).
1. Dimensions of sustainable development: It includes three dimensions characterized by interconnection and integration within a framework characterized by organization and rational exploitation of resources:
- The economic dimension: A sustainable economic system produces goods and services continuously, and that maintains a certain manageable level of economic balance between GDP and debt, and that prevents the occurrence of social imbalances, as income must be redistributed in favor of the poor class.
 - The social dimension: It characterizes sustainable development, as it represents the human dimension, which makes growth a means of social cohesion and the process of development in political choice, delivering social services such as health and education to those in need.
 - The environmental dimension: The principles of sustainable development call for attention to issuing legislation to protect the environment and energy sources, avoiding excessive depletion of non-renewable resources, and not exceeding the ability of renewable resources to renew themselves.

Thus, sociologists focus on the basic effective factors in sustainable development, that is, individuals, the extent of their needs and desires and the use of sometimes intangible units such as well-being and social empowerment, while economists seek to increase human well-being to the maximum degree in light of current capitalist and technological assets and use economic units such as money or realized value. Being a standard of measurement, environmental experts focus on maintaining the integrity of ecosystems necessary for the overall stability of our global system and prioritize measuring units of natural, chemical and biological entities (Ramzi Boudraja, 2017, pp. 606-607).

7. Part FOUR: The Role of Promoting Renewable Energy in Achieving Sustainable Development

It is known that renewable energy exists in almost all parts of the world and can provide many times the current rate of energy consumption in the world if it is exploited correctly.

7.1. The Role of Promoting Renewable Energies in Achieving Sustainable Development from the Economic Aspect

The rising demand for energy driven by industrialization, urbanization, and societal affluence has resulted in a highly uneven global distribution of primary energy consumption. In industrial market economies, per capita energy consumption accounts for about three-quarters of total primary energy use worldwide.

Economic development is closely linked to the availability of energy services, which are essential for enhancing productivity, supporting agricultural advancements, and creating job opportunities beyond the rentier sector. Access to reliable and sufficient energy is crucial for fostering economic growth, improving living standards, and addressing disparities in energy consumption across different regions. This underscores the importance of developing sustainable energy solutions that can meet the needs of all communities while promoting equitable economic development.

It is known that without access to energy services and modern fuel sources, the availability of job opportunities and increased productivity, thus, the available economic opportunities, become limited. That being said, renewable energies help providing jobs via:

- Quantitative economic policies, as well as sectoral development policies, can encourage the emergence of new economic initiatives consistent with sustainable development through incentives that promote more sustainable patterns of consumption and production at the national level. Encouraging new non-polluting sectors, especially services and production of appropriate products, can also contribute to the environment and the search for non-traditional energy alternatives in shifting the direction of economic activities towards creating jobs in environmentally sustainable sectors.
- For developing countries, new profitable ventures in environmentally sustainable economic sectors may be less common, however, research and development in eco-technologies, eco-tourism, natural resource management, organic agriculture and infrastructure creation and maintenance, offer real opportunities for permanent and sustainable employment, preventing ocean degradation and incurring additional environmental costs.
- Industrial sectors in the field of biofuel production based mainly on agricultural production, such as labor-intensive ethanol fuel, and projects for constructing renewable energy plants in their various forms would contribute to creating added value and lead to diversifying sources of income for the national economy.

- Providing rural residents with a source or sources of renewable energy contributes to stimulating economic activity that results in improving living conditions in parallel with respect for the environment and settling these residents on their lands. This is considered an important bet for decision makers in developing countries (Ali Falak and Rashid Salmi, 2016, pp. 98-99).

7.2. The Role of Promoting Renewable Energies in Achieving Sustainable Development from the Social Aspect:

Renewable energy contributes to the social aspect through the following:

- Relying on new and renewable energy sources, such as solar heaters and photovoltaic cells, along with recycling agricultural waste into organic fertilizer, offers several significant benefits:
 - ✓ Job Creation: The adoption of renewable energy technologies can create new employment opportunities in installation, maintenance, and manufacturing sectors, helping to reduce unemployment.
 - ✓ Poverty Alleviation: By providing affordable and sustainable energy solutions, these applications can help lower energy costs for households and businesses, contributing to poverty reduction.
 - ✓ Resource Conservation: Recycling agricultural waste into organic fertilizers promotes the efficient use of resources, reducing waste and minimizing the environmental impact of disposal.
 - ✓ Sustainable Practices: These methods encourage sustainable agricultural practices, enhancing soil health and productivity while reducing reliance on chemical fertilizers.
- The use of solar energy in remote areas for thermal heating, generating electricity with steam, or drying crops contributes to breaking the isolation of remote areas and gaining many experiences and skills, contributing to achieving local development.
- Infrastructure projects, such as health facilities, hospitals, and schools, especially in remote and isolated desert areas, require huge funding sources, but if they are designed using green building techniques, costs will be reduced. Connecting to energy and the costs of maintaining wires and constructing traditional stations would also work to stimulate investment in this field and contribute to the distribution of fair opportunities among all regions of one country.
- These systems are located in close proximity to the communities that use them, providing a sense of value and shared collective ownership and promoting sustainable development.

Renewable energy systems provide new, clean and technologically advanced job opportunities. The sector is a rapidly growing provider of high-quality jobs, and in this context, it far outperforms the traditional energy sector, which requires the availability of large capital (Zawyat Ahlam, 2013, pp. 143-144).

7.3. The Role of Promoting Renewable Energies in Achieving Sustainable Development from the Environmental Aspect

The Twenty-First Century Agenda, particularly Agenda 21, emphasizes the interconnections between energy use and environmental sustainability. It outlines goals aimed at:

- **Atmospheric Protection:** Promoting initiatives to safeguard the atmosphere and mitigate the negative impacts of the energy sector.
- **Equitable Energy Distribution:** Ensuring justice in the distribution of energy resources, particularly for countries reliant on primary energy sources and those facing challenges in transitioning their energy systems.
- **Sustainable Energy Policies:** Developing sustainable energy policies that prioritize a mix of less polluting energy sources to minimize environmental harm.
- **Greenhouse Gas Reduction:** Addressing issues such as greenhouse gas emissions to reduce the adverse environmental impacts associated with energy production and consumption.
- **Research and Efficiency:** Supporting research programs aimed at enhancing the efficiency of energy systems and methods.
- **Policy Integration:** Achieving integration between energy sector policies and other economic sectors to promote holistic and sustainable development.

These initiatives are designed to foster a more sustainable energy future while balancing economic and environmental considerations (Frouhat Haddah. 2012, p. 151).

8. Part FIVE: Obstacles and Challenges of Switching to Renewable Energies

There are many obstacles and challenges because of this switching. They are as follows:

8.1. Obstacles Facing the Adoption of Renewable Energies

Countries and major companies are striving to adopt renewable energies, but this does not negate the existence of obstacles in the way:

- The economies of oil-producing countries rely heavily on traditional energy sources (oil and gas), which in some cases leads to a reduction in the rush towards renewable energy for fear of unbalancing production.
- The high capital required for renewable energy projects makes many countries need to rely on the participation of foreign investment.
- The large areas that must be allocated to wind and solar energy projects require clear policies and programs for land use and ownership by the state, to reduce the costs of renting or purchasing them.
- Many countries lack advanced technologies to continue storing energy, especially solar energy.

- Renewable energy industries, and the accompanying shift to an economy based on green electricity, require rare elements such as gallium, titanium, cadmium, among others, as exploration for them in many parts of the world is still limited, and the extraction of these elements from the ground, and methods of purifying them from impurities include environmental hazards that require precise and environmentally friendly technological means.

8.2. Challenges and Stakes of Renewable Energies

While the shift from traditional energy to renewable sources is gaining global traction due to its potential for sustainable energy supply and minimal environmental impact, several challenges remain:

- A. On the financial level: Renewable energy production efforts face a problem related to the lack of competitiveness in their prices compared to traditional energy prices. This has been confirmed by some of those interested in the energy field, including the head of the alternative energy sector, Manfred Engelhard, an expert in the Austrian M+W group, who stated that the problem is the basic principle of alternative energy in general is its inability to compete with other means of energy production in terms of prices. For example, the price of producing a kilowatt-hour of electricity through solar energy is estimated at about 19 to 20 cents/euro, while the price of a kilowatt-hour through nuclear energy is estimated at only 10 to 12 cents.

There is also a challenge related to the risks of exchange rate fluctuations because energy in general is one of the products that is quickly affected by fluctuations in the foreign exchange rate, and as for investments in the field of renewable energy, they are usually linked either to energy producing companies or to country projects, and although consensus has now been achieved regarding the climate changes caused by thermal and gas emissions, it has also been verified that clean renewable energy research is the way to solve this problem. However, only a few reports have talked about the way projects for applying these technological solutions will be financed, which further reduces the feasibility of such projects. The International Energy Agency estimates that the world needs to invest more than \$17 trillion to finance the global expansion of energy over a period of 25 years.

- B. On the political level: There are risks facing renewable energy projects, represented by the possibility that countries will back away from power purchase agreements that secure long term returns for energy projects and in exchange for which loans are provided. There is also a lack of maturity in the legal environment for renewable energy production, which increases the risks. Contractual, and the energy field may be subject to a change in political positions, which will have a negative impact on this type of project.
- C. On the technical level: Renewable energy projects face various technical challenges, including:

- Scarcity of Skilled Operators: A shortage of trained energy operators can hinder the effective management and operation of renewable energy systems.
- Limited Specialized Engineering Services: The lack of access to specialized engineering expertise can impede the design, installation, and maintenance of renewable technologies.
- Uncertainty in Resource Availability: Variability in resources, such as inconsistent wind performance or solar radiation, complicates planning and reliability.
- Maintenance Equipment Availability: Limited access to appropriate maintenance tools and equipment can lead to increased downtime and reduced efficiency of renewable energy systems.
- Intellectual Property Theft: Emerging markets often face risks related to the theft of intellectual property, which can stifle innovation and discourage investment in renewable energy technologies.

Addressing these challenges requires investment in training, development of local expertise, and protective measures for intellectual property to foster a more robust renewable energy sector (Abdul Razzaq Fawzi and Hasnawi Belbal, 2015, pp. 5-6).

9. Conclusion

The process of transforming the global economy from an oil economy to a more open economy has become an urgent need. Regardless of the negative effects of fossil energy on the environment and its contribution to global warming, most Western countries are currently moving towards using clean energy.

Following the observations, we have a set of proposals, summarized as follows:

- Paying attention to the promotional process, which is mainly based on improving the communication process.
- Working to exploit all available promotional means to raise awareness and encourage the need to transition to clean renewable energies.
- Establishing well-studied and sound legal frameworks and strict procedures by the state to complete various projects related to the field of renewable energies on time.
- Providing incentives and encouragement to all actors by strengthening the promotional process at all levels.
- It is necessary to encourage research and development into the possibilities of using renewable energies, support scientific research centers for the development of energy fields, encourage the use of means of transportation that are highly energy efficient and less polluting to the environment, conduct technical examinations of automobile exhaust and polluting means of transportation. In addition, the privatization of the energy sector and the diversification of its institutions must be undertaken.
- Involving the private sector in promoting regional industrial development of renewable energy.

- Preparing and disseminating policies supporting renewable energy, and providing a basis for exchanging views at the regional level on political and technological issues.

10. Referrals and references:

10.1.Books:

1. Thamer Al-Bakri, (2009), *Marketing communications and promotion*. Dar Al-Hamid for Publishing and Distribution, 2nd edition, Amman, Jordan.
2. Ahmed Sharif Al-Assi (2006), *Promotion and public relations: An Introduction to marketing communications*. University House, Alexandria, Egypt.

10.2.Theses:

1. Omar Sharif, (2006/2007), The use of renewable energies and their role in sustainable development: a case study of solar energy. [Doctoral dissertation in economic sciences, Hajj Lakhdar University], Batna, Algeria. 2.
2. Zawya Hallam, (2012/2013), The role of renewable energy economics in achieving sustainable development: A comparative study between Algeria, Tunisia and Morocco. [Unpublished Master's thesis, Farhat Abbas University], Setif, Algeria.

10.3.Articles:

1. Sofiane Bouzid, Mohamed Issa, (2017), Mechanisms for developing and developing the exploitation of renewable energies in Algeria. *Journal of Finance and Markets*, Volume Three, Issue 6, University of Mostaganem, Algeria, p. 116.
2. Al-Khawaja, Muhammad Ola (2006), Globalization and sustainable development. *The Arab Encyclopedia of Knowledge for Sustainable Development*, Volume 1, 1st edition, Arab House of Science, Beirut, Lebanon, p. 454.
3. Samir Boukhtala et al (2017), Towards achieving sustainable development dimensions in Algerian cement industry sector institutions: A study analysis of Algerian public institutions during the period (2000-2016). *Al-Bahith Magazine*, No. 17, Kasdi-Merbah University, Ouargla, Algeria, p. 326.
4. Mahdi Sahar Ghailan et al. (2013), An analytical study of the most important indicators of sustainable development in Arab and developed countries. *Journal College of Administration and Economics*, 5th issue, University of Babylon, Iraq, p. 33.
5. Ramzi Boudraja (2017), Renewable energies and their role in achieving sustainable development: Germany's experience as a model. *MILAF Journal of Research and Studies*, Issue 5, Mila University Center, Algeria, pp. 606-607.
6. Ali Falak, Rachid Salmi, (2016), Renewable energies as an entry point for achieving sustainable development: with reference to the case of Algeria and some Arab countries. *Journal of Statistics and Applied Economics*, issue 25, Algeria, pp. 98-99.
7. Farouhat Hadda, (2012), Renewable energies as an entry point for achieving sustainable development in Algeria: A study of the reality of an application project Solar energy in the Great South of Algeria. *Al-Bahith Magazine*, Issue 11, Kasdi-Merbah Ouargla University, Algeria, p. 151.

10.4.Interventions:

1. Farida Kafi, April 7-8 (2015), Policies and strategies for exploiting and developing renewable energy in Algeria: a comparative study between the Desert Tech and Desert Solar Breeder projects, the first conference on: Use policies for energy resources between the requirements National development and securing international needs, Setif 1 University, Algeria.
2. Kaltoum Wakley, Mounia Khalfawi, April 23-24 (2018), The global shift towards renewable and clean energies is imperative to achieve Sustainable development: presenting the experience of the energy revolution in Germany, the Fifth International Forum on Renewable Energy Strategies and its role in achieving sustainable development: A study of the experiences of some countries, University of Blida 2, Algeria.

3. Rachid Zargat and others, April 23-24, 2018, Solar energy as one of the renewable energy sources in Algeria, Forum International Conference on Renewable Energy Strategies and their Role in Achieving Sustainable Development, University of Blida 2, Algeria.
4. Mohamed Ratoul, Mohamed Madahi (November 20-21 (2012) The renewable energy industry in Germany and Algeria's direction of energy projects Renewable energy as a stage for securing fossil energy supplies and protecting the environment, "The Case of the Desertac Project", International Forum on Behavior Economic institutions in light of the challenges of sustainable development and social justice, Kasdi Merbah University, Ouargla, Algeria.
5. Mohamed Salmi, Al-Darraji Madraq, April 23-24, 2018, Algeria's stakes and experience in the field of renewable energy, Scientific Forum The Fifth International Conference on Renewable Energy Strategies and their Role in Achieving Sustainable Development, Study of the Experiences of Some Countries, University of Blida 2, Algeria.
6. Bouabida Sharifa Mazouz Nachida (April 23-24 (2018), The role of renewable energies in activating sustainable development: with a focus on the case of Algeria, Fifth International Scientific Forum Renewable energies strategies and their role in achieving sustainable development Study of the experiences of some countries, University of Blida 2, Algeria.
7. Abdel-Razzaq Fawzi, Hasnawi Belbal, April (2015), The problem of energy transformation as a mechanism for achieving energy security in light of international developments: Presentation of the German model, the first conference on: Utilization policies for energy resources among the requirements National development and securing international needs, Setif 1 University, Algeria.

10.5.University publications:

1. Djamel Eddine Dahia, (2019), *International marketing and communication Publication*, addressed to Master's students majoring in marketing communication, Algeria.

Laws

1. Article 3 of Law No. 01/30 of July 19, 2003 relating to environmental protection within the framework of sustainable development, Official Gazette of the Republic of Algeria issued on July 2, 2003.

Internet sites:

International Energy Agency website: www.iea.org Date of visit: January 2024.

<https://www.iea.org/energy-system/energy-efficiency-and-demand/energy-efficiency>

10.6.Translated From Arabic sources:

1. Djamel Eddine Dahia, (2019), *Marketing and International Communication publication*, addressed to master's students specializing in marketing communication, University of Blida 2, Algeria, p. 52.
2. Thamer Al-Bakri, (2009), *Marketing communications and promotion*. Dar Al- Hamed for Publishing and Distribution, 2nd edition, Amman, Jordan, p. 70.
3. Ahmed Sharif Al-Assi, (2006). *Promotion and public relations: An introduction to marketing communications*, University House, Alexandria, Egypt, p. 32.
4. International Energy Agency website: www.iea.org Date of visit: January 28, 2019.
5. Farida Kafi, (2015). Policies and strategies for the exploitation and development of renewable energy in Algeria: A comparative study between the Desertec and Solar Breeder projects, the first conference on: Policies for the use of energy resources between national development requirements and securing international needs, Setif University 1, Algeria, p. 3.
6. Kaltoum Wakli, Mounia Khalfawi, (2018), The global shift towards renewable and clean inevitable for achieving energies is sustainable development: Presenting the experience of the energy revolution in Germany, The Fifth International Forum on Renewable Energy Strategies and Their Role in Achieving Sustainable Development: Studying the Experiences of Some Countries, University of Blida 2, Algeria, p. 3.

7. Sofiane Bouzid, Mohamed Issa, (2017). Mechanisms for developing and developing the exploitation of renewable energies in Algeria, *Journal of Finance and Markets*, Volume Three, Issue 6, University of Mostaganem, Algeria, p. 116.
8. Rachid Zorgot et al., (2018), Solar energy as one of the renewable energy sources in Algeria, *International Forum on Renewable Energy Strategies and Their Role in Achieving Sustainable Development*, University of Blida 2, Algeria, pp. 3-4.
9. Mohamed Ratoul, Mohamed Madahi, (2012), The renewable energy industry in Germany and Algeria's approach to renewable energy projects as a stage to secure fossil energy supplies and protect the environment, "The Case of the Desertac Project", *International Forum on the Behavior of Economic Institutions in Light of Sustainable Development and Social Justice Challenges*, Kasdi Merbah University, Ouargla, Algeria, p. 141.
11. Al-Khawaja Muhammad Ola, (2006), Globalization and sustainable development. *The Arab Encyclopedia of Knowledge for Sustainable Development*, Volume One, First Edition, Arab House of Science, Beirut, Lebanon, p. 454.
12. Samir Boukhatala et al., (2017). Towards achieving the dimensions of sustainable development in the institutions of the Algerian cement industry sector: An analytical study study of Algerian public institutions during the period (2000-2016), *Al-Bahith Magazine*, No. 17, Kasdi Merbah University, Ouargla, Algeria, p. 326.
13. Article 3 of Law No. 30/01 of July 19, 2003 relating to environmental protection within the framework of sustainable development, *Official Gazette* of the Republic of Algeria issued on July 2, 2003.
14. Bouabida Sherifa, Maazouz Nachida, (2018), The role of renewable energies in activating sustainable development: with a focus on the case of Algeria. Fifth International Scientific Forum on Renewable Energy Strategies and their Role in Achieving Sustainable Development Study of the Experiences of Some Countries, University of Blida 2, Algeria, p. 9.
15. Omar Sharif, (2007). *The use of renewable energies and their role in Sustainable development: A case study of solar energy in Algeria*. [Unpublished Doctoral dissertation, Hajj Lakhdar University), Batna, Algeria, pp. 148-149.
16. Mahdi Sahar Ghailan et al., (2013). An analytical study of the most important indicators of sustainable development in Arab and developed countries. Issue Five, *Journal of the College of Administration and Economics*, University of Babylon, Iraq, p. 33.
17. Ramzi Boudarja, (2017), Renewable energies and their role in achieving sustainable development: Germany's experience as a model, *Milave Journal of Research and Studies*, Issue 5, Mila University Center, Algeria, pp. 606-607.
18. Ali Fellag, Rachid Salmi, (2016), Renewable energies as an entry point to achieving sustainable development: With reference to the case of Algeria and some Arab countries. *Journal of Statistics and Applied Economics*, Issue 25, Algeria, pp. 98-99.
19. Zwawya Ahlam, (2013), *The Role of renewable energy economics in achieving sustainable development: A comparative study between Algeria, Tunisia and Morocco*. [Unpublished Master's Thesis, Farhat Abbas University], Setif, Algeria, pp. 143-144.
20. Ferouhat Hadda, (2012), Renewable energies as an entry point for achieving sustainable development in Algeria: A study of the reality of the solar energy application project in the Great South of Algeria," *Al-Bahith Magazine*, No. 11, Kasdi Merbah University, Ouargla, Algeria, p. 151.
21. Abdel-Razzag Fawzi, Hasnawi Belbal, (2015), The problem of energy Transition as a mechanism for achieving energy security in developments: Light of international presenting the German Model, First Conference on: Utilization Policies for Energy Resources between National Development Requirements and Securing International Needs, Setif 1 University, Algeria, pp. 5-6.