

The Role of Environmental Diplomacy in Promoting the Energy Transition Pathway

“An Analysis of the Cooperation Between Algeria and the European Union”

Dr. Maidi Hadjer¹, Dr. Amouri Nassima², Dr. Morsli Mohamed^{*1}

¹University of Algiers 1

²University of Algiers 3

¹University of Algiers 1

(Corresponding Author): *E-mail: hlorse@hotmail.com

Received: 15-03-2023 Accepted: 29-05-2023 Published: 01-06-2023

Abstract:

This article aims to address the role of environmental diplomacy in promoting the energy transition pathway through cooperation between Algeria and the European Union. This cooperation is reflected in energy policies that aim to achieve environmental security through investment in renewable energy and green economy initiatives. These efforts represent the Algerian state's diligent endeavors in formulating energy policies that meet the needs of its citizens while also seeking to preserve the rights of future generations to the Earth's resources, as environmental pollution poses real threats in terms of health, economy, politics, agriculture, demography, and ecology. In this context, Algeria, like other countries, has included the environmental agenda among its national priorities and has undertaken various reforms, including prioritizing investments in renewable energy through the adoption of an energy transition program in partnership with the European Union.

Keywords: Environmental diplomacy, energy transition, Algeria, European Union, cooperation.

Tob Regul Sci. TM 2023;9(1): 2495-2511

DOI: doi.org/10.18001/TRS.9.1.172

Introduction:

Experts in the field of energy have pointed out the possibility of depletion of traditional energy sources, which threatens the rights of current and future generations to meet their energy needs. Additionally, there are warnings about the negative environmental consequences resulting from the use of traditional energy resources. This necessitates the search for alternative energies that can achieve sustainability and ensure environmental protection. In this regard, many countries worldwide have embraced the challenge of energy transition, which relies on renewable energy sources. These countries have developed various plans and strategies to contribute to the energy transition, taking into account disparities in the strength of renewable energy sources and the

availability of necessary technologies for investing in alternative energy. This situation calls for energy diplomacy to enhance cooperation and partnership between nations. Algeria is one of the countries that have made efforts to activate energy diplomacy in order to promote the use of renewable energy. The European Union has been a significant and active partner for Algeria, benefiting from its technological and financial capabilities in this field.

To address the topic of this article, we will attempt to answer the following problem:

- To what extent has the partnership with the European Union contributed to implementing the energy transition strategy in Algeria?

This problem branches out into several sub-questions:

- What is the concept of environmental diplomacy, and what is the content of energy transition in Algeria?

- What is the legal framework for partnership in renewable energy between Algeria and the European Union?

- Has the adoption of the European Union's energy strategy in Algeria contributed to the success of the energy transition pathway?

To answer the problem, we have formulated the hypothesis:

The greater the level of cooperation between Algeria and the European Union in the field of energy transition and investment in renewable energy, the more positively it will impact new infrastructure projects aimed at achieving energy transition and mobilizing technology and capital to support sustainable development in Algeria.

The importance of our study, titled "The Role of Environmental Diplomacy in Promoting the Energy Transition Pathway: An Analysis of Cooperation between Algeria and the European Union," lies in the following:

- Providing a comprehensive analytical review of the Algerian-European partnership in renewable energy investment.
- Clarifying the inevitability and commitment of the European Union to the partnership agreement with Algeria from a long-term perspective.
- Highlighting the necessary elements, whether legal or institutional, to achieve the common goals of the Algerian-European partnership in line with the interests of both parties.
- Algeria represents a reliable partner for the European Union in the field of energy.

As for the research methodology and proposed approaches:

Our study relies on a case study approach, specifically the partnership agreement between Algeria and the European Union, considering it as the cornerstone of a solid and strategic partnership. Additionally, we employ a historical methodology to trace the evolutionary path of environmental diplomacy and the history of relations between Algeria and the European Union in the field of renewable energy.

The first axis: Conceptual Framework of the Study "Environmental Diplomacy-Energy Transition"

Diplomacy is considered a fundamental tool for any state in its dealings with other countries, whether at the regional or global level. Diplomatic relations are vital mechanisms for creating effective communication and cooperation in times of peace and war. In this context, we will provide a conceptual definition of environmental diplomacy.

First - Environmental Diplomacy

A - Diplomacy, in linguistic terms

According to the comprehensive dictionary of meanings, the term diplomacy refers to the political representation of a country and the management of its foreign affairs with foreign nations. It is the art of peaceful political relations between states. The origin of the term diplomacy can be traced back to the Greek word "Diploma," which means a document issued by those in power and political leaders of cities, granting certain privileges to its bearers. Until the 17th century, diplomacy referred to official documents and archives, and the term diplomacy, as commonly understood now, was not used until the end of the 18th century to refer to foreign representatives who hold letters of credentials from their countries. It was also used in the sense of negotiation¹.

B - In technical terms:

Alan Platini defined diplomacy as the expression of a specific policy, directed through a network of appropriate communications towards a goal. It is also considered a crucial mechanism for organizing relations between nations within the framework of addressing crises faced by the international system. Diplomacy is regarded as one of the noblest professions bestowed by the modern state². Diplomacy is defined as a means for allies to cooperate and a method for adversaries to resolve conflicts without resorting to force³. Philippe Cayet's definition is considered one of the most comprehensive and accurate definitions as it does not only focus on diplomacy between states but includes all individuals of international law, particularly international organizations that practice diplomacy. He stated that diplomacy is the means by which an individual of international law manages foreign affairs through peaceful means and negotiations⁴.

C - Environmental diplomacy

The continuous changes at the international system level have resulted in significant issues related to protecting economic interests and addressing social threats with security dimensions. Examples of such issues include illegal immigration and the problems associated with environmental degradation worldwide. These issues have imposed themselves on the international political agenda due to their transboundary nature⁵.

It is important to note that the pollutants of a particular country do not stop at its political borders but cross thousands of miles to impact the environment and well-being of people from other nations, both present and future generations. Decision-makers worldwide have come to realize the close and mutual link between economic growth and its components, on one hand, and the utilization of natural resources, which is a factor that alters the environment. The issue of environmental pollution encompasses several dimensions, with some of the most important ones being⁶:

- 1- Air pollution resulting from the release of various toxic gases and smoke that harm health.
- 2- Pollution of water sources due to the discharge of industrial waste, including chemicals, nuclear materials, and petroleum, which can impact marine resources and maritime uses.
- 3- Land use as a repository for disposing of a portion of human activity waste.
- 4- Food pollution, greenhouse gas emissions, and climate change.

Thus, environmental security has become a fundamental and central issue of utmost importance. The challenges of protection themselves constitute a security problem that requires international cooperation and a high level of awareness⁷.

The interest in environmental issues and the right to live in a healthy environment has gained prominence at the international level since the early 1970s. This has resulted in the convening of conferences and the conclusion of legal agreements to clarify responsibilities and address environmental threats, among the most important of which are:

The United Nations Conference on the Environment was held from June 5th to June 16th in Stockholm in 1972. It was the first international gathering to discuss environmental protection, aiming to achieve shared visions and principles to guide nations in preserving and developing the human environment. It also explored ways to encourage governments and international organizations to take the necessary steps to protect the environment⁸.

- 1- The International Convention on Civil Liability for Oil Pollution Damage, Brussels 1969, is an international agreement that establishes the liability and compensation framework for damage caused by oil pollution. The convention outlines the obligations of shipowners and operators in the event of an oil spill and provides a system for determining liability and facilitating compensation for the damages incurred. It sets limits on the liability of the shipowner, establishes a fund to compensate victims of oil pollution, and outlines the procedures for making claims and resolving disputes. The convention aims to ensure that adequate compensation is provided to those affected by oil spills and to encourage preventative measures to minimize the risk of such incidents.
- 2- London Convention 1972: The London Convention aims to preserve the marine environment by preventing pollution caused by the dumping of wastes and harmful substances into the oceans and seas.
- 3- Geneva Convention 1979 on Long-Range Transboundary Air Pollution: The Geneva Convention aims to protect the environment and public health from air pollution resulting from human activities that can cross national boundaries.
- 4- Vienna Convention 1985 on the Protection of the Ozone Layer: The Vienna Convention aims to protect the ozone layer in the Earth's atmosphere and regulate the use of substances that cause the transfer of harmful chemicals to the ozone layer and their negative effects on the environment and human health⁹.

Non-governmental organizations have also shown interest in environmental issues. For example, a non-governmental organization was established in The Hague in 2002 to increase political attention to environmental security for the purpose of achieving peace and sustainable development¹⁰.

The Rio de Janeiro Conference, held on June 4, 1992, resulted in the emergence of the concept of sustainable development and recognition of the right to development. It also emphasized the integration of environmental considerations into development pathways and acknowledged the shared responsibility of present generations in preserving the rights of future generations without compromising their ability to do so¹¹.

The Kyoto Protocol, aimed at reducing environmental pollution and addressing the issue of global warming, was organized in December 1997 in Japan. It emerged in the context of conflicting perspectives between industrialized countries, which called for environmental initiatives, and developing countries, which demanded financial assistance. The Kyoto Protocol marked a significant turning point as finance ministers from 104 countries, excluding the United States, reached an agreement on a roadmap to extend the Kyoto Protocol beyond 2012. This was done to continue combating the phenomenon of global warming and climate change¹².

In 2002, the Johannesburg Declaration was issued, which reviewed the progress made in implementing the Agenda 21. It resulted in the development of action plans in specific areas such as water, energy, and climate change. Years later, in 2009, the United Nations Climate Change Conference was held in Copenhagen, Denmark, followed by several conferences aimed at finding solutions to climate change. Some of the significant conferences include:

The Cancun Agreements (2010): Held in Cancun, Mexico, this conference aimed to advance international efforts in addressing climate change, including mitigation, adaptation, finance, and technology transfer¹³.

The Paris Agreement (2015): The landmark agreement reached in Paris, France, aimed to limit global warming to well below 2 degrees Celsius above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5 degrees Celsius. It also emphasized the need for countries to enhance their climate change adaptation and mitigation efforts¹⁴.

The Katowice Climate Change Conference (2018): Held in Katowice, Poland, this conference focused on finalizing the implementation guidelines for the Paris Agreement and strengthening global cooperation on climate action.

These conferences and agreements represent global efforts to address climate change and work towards a sustainable future.

As for the general definition of environmental diplomacy:

This term is used to describe the diplomatic tools and approaches that deal with global environmental issues. It represents a form of international cooperation that seeks to protect the environment and promote sustainable development. This field involves the use of negotiation, mediation, and other tools to resolve environmental conflicts. Environmental diplomacy is considered one of the key mechanisms for implementing a global approach to sustainable development, as it requires collaborative efforts from governments, individuals, and companies to achieve economic growth while considering environmental considerations and the rights of future generations to a healthy environment. Environmental diplomats are tasked with developing policies that enhance environmental protection.

With this, environmental security has become a crucial and central issue of utmost importance. The challenges of environmental protection, in and of themselves, represent a security problem, despite being linked to human behavior and awareness¹⁵.

Secondly, the content of energy transition in Algeria:

Concerns about energy led by the fear of losing export capabilities and the growing domestic demand have led to a recent debate on the need for "energy transition". This means exploring renewable energy options that meet the requirements of sustainable development and the new international standards for climate change. In the Climate Convention COP2, Algeria confirmed its commitment to reduce greenhouse gas emissions by 7% to 22% by 2030. In 2011, it adopted the "National Program for Renewable Energy and Energy Efficiency 2011-2030", which aims to expand the use of renewable energy in electricity generation to reduce reliance on natural gas as the dominant source of energy production. This program was modified in 2015 but retained its broad objectives. Energy transition refers to shifting from a national model of energy production and consumption to another model, according to a comprehensive vision. We can summarize the main goals of the energy transition process as follows:

- 1- Diversification of the Economy: Energy transition in Algeria aims to diversify the overall economy's resources.

- 2- Preservation of Fossil Energy Resources: It aims to preserve fossil energy resources.
- 3- Diversification of Energy Sources and Reducing Dependency on Fossil Fuel Resources such as oil and gas.
- 4- Environmental Protection and Contribution to International Efforts in Reducing CO₂ Emissions:

The energy transition program aims to achieve a percentage mix of energy in electricity production, with renewable energy contributing to around 27%. This means that by 2030, approximately 40% of the total electricity production dedicated to domestic consumption will come from renewable energy sources (see Figure 1). This involves establishing a capacity equivalent to 22,000 megawatts, with around 10,000 megawatts of it being exported, while the rest is directed towards domestic consumption¹⁶.

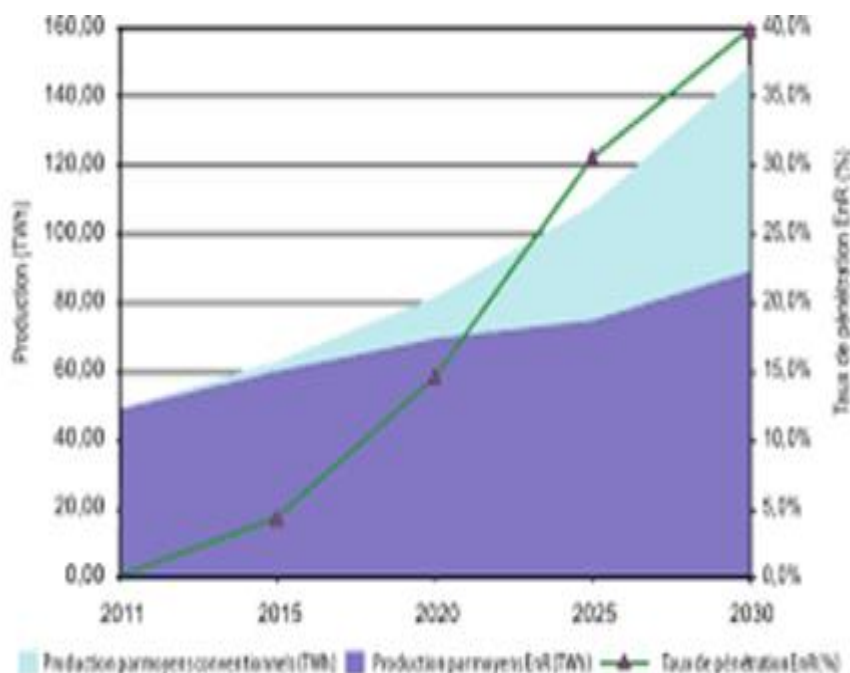


Figure 1: Penetration of renewable energies in the national production in TWh

Source: Algerian Program for the Development of New and Renewable Energies and Energy Efficiency Extract from MEM Monday, April 25, 2011.

Algeria currently produces only around 400 megawatts from renewable energy sources and owns 22 solar power plants, including hybrid plants that combine gas and solar energy. According to the government plan, the production level was supposed to reach 4,500 megawatts by 2020, which means that what has been achieved is less than 10% of the targeted level within the specified timeframe. It seems clear that achieving a capacity of 22,000 megawatts by 2030 is an elusive goal. In fact, some officials now even talk about producing 6,000 megawatts by 2027, which is a significant setback. Achieving the ultimate goal is also not easy, considering that it would require, on average, the construction of 120 power plants with a capacity of 50 megawatts each, which means building ten plants annually. This rate cannot be reached under the current conditions due to bureaucratic procedures, the financial shortfall experienced by the national electricity company Sonelgaz, and the lack of a strong and specialized private sector¹⁷, the need to

search for a partnership to ensure the success of the energy transition path through a partnership with the European Union is crucial.

The second aspect: The legal framework for renewable energy partnership between Algeria and the European Union.

Algeria possesses significant natural resources that can be harnessed for its economic development and contribute to securing European energy supplies. Its geographical proximity to Europe and the presence of physical infrastructure provide several relative advantages. Transitioning to renewable energy represents an opportunity for economic and social development in Algeria, especially if the European Union is its primary economic partner. Additionally, Algeria is an important energy supplier for the European Union. Therefore, establishing a renewable energy partnership between Algeria and the European Union holds great potential for mutual benefits and collaboration¹⁸.

We will seek to elucidate the motives for Algerian-European Union cooperation in the field of renewable energy and the legal framework to encourage environmental diplomacy to promote the transition to renewable energy within the partnership between Algeria and the European Union.

Firstly, the motives for Algerian-European cooperation in renewable energy:

Studies conducted by the German Aerospace Center (DLR) show that Algeria has solar energy potential that is equivalent to 60% of the current electricity consumption in the European Union. The eventual depletion of hydrocarbon resources is an imminent reality that Algeria is preparing for. Algeria seeks to secure not only its own financial needs but also the energy production requirements of its infrastructure¹⁹.

As Algeria is a member of OPEC and the Gas Exporting Countries Forum, it is considered a major producer of gas and the third-largest producer of oil in Africa. Algeria primarily serves as a significant source of conventional energy, especially for Southern Europe. Approximately 60% of its total exports are in the form of gas, transported through gas pipelines, while about 40% is in the form of liquid exports²⁰.

The economic, demographic, and urban growth in partner Mediterranean countries exert significant pressure on electricity production. This contributes to an increasing demand for energy in these countries. Meeting the rising energy demand poses a dual challenge of the cost of hydrocarbon imports and securing supplies from both the north and the south. Consequently, the energy sector will require massive investments in production, transmission, storage, and distribution over the coming decades. Therefore, Algeria will continue its efforts to diversify this energy mix to better secure their supplies²¹.

In order to meet current and future energy requirements, policymakers and decision-makers have faced the crucial challenge of preserving the environment from pollution and climate change in the face of increasing demand for fossil fuels. Reports from experts of the United Nations World Natural Resources Assessment Program have indicated that the Mediterranean Sea is one of the hotspots for climate change. Climate change has already led to rising sea levels and more severe drought conditions, significantly impacting agriculture, fishing, tourism, coastal areas, and overall infrastructure. This necessitates the transition to renewable and clean energy sources to mitigate these effects and ensure environmental sustainability²².

The possibility of depleting hydrocarbon reserves is increasingly evident. Fuels account for 97% of export revenues and over 60% of the state budget's income. Studies indicate that with the

current rate of exploitation, by 2030 there could be a loss and waste of the available natural resource. This necessitates the need to diversify energy sources and shift towards seeking sustainable alternatives²³.

The energy transition is also considered a crucial factor in attracting technology and transferring expertise in the field of renewable energy. The partnership with the European Union in the context of renewable energies has exemplified the mutual reliance between the parties, contributing to the longevity of this partnership to the benefit of both sides.

Secondly, the legal framework for promoting environmental diplomacy to consolidate the energy transition: The development of energy transition-related relations is based on the following foundations:

The Euro-Mediterranean Agreement between the European Union and Algeria: The Partnership Agreement signed between Algeria and the European Union on April 22, 2002, constitutes the legal framework governing relations between the Union and Algeria in political, economic, trade, social, and cultural fields.

The Kyoto Protocol and the Paris Agreement on climate change: Algeria adheres to its international commitments in the field of climate change, including the Kyoto Protocol and the Paris Agreement²⁴.

Recognizing the importance of the existing relations within the framework of the Euro-Mediterranean work, the establishment of a link between Algeria and the European Union was initiated to enhance cooperation goals in the field of energy. The emphasis on developing partnerships between Algerian and European companies in priority areas, including the environment, renewable energy, and energy efficiency, was reiterated in Article 61, paragraph 3 of the agreement²⁵.

The energy crises have highlighted the European Union's need to work with its neighbors on energy security and diversification of sources and routes. This was reaffirmed by the European Commission's report issued on February 18, 2015. The EU is committed to enhancing energy dialogue and sustainable energy sources with neighboring countries such as Algeria. This cooperation aims to develop more efficient and climate-resilient economies. It involves exchanging joint research to phase out fossil fuels and preparing long-term reports. The EU is also committed to supporting cooperation within the European Neighborhood Policy by securing funding for the sustainable energy transition in Algeria²⁶.

Thirdly, the Memoranda of Understanding associated with the establishment of a strategic partnership between Algeria and the European Union:

Algeria claims to have a strong relationship with the European Union, which takes into account the specificities of each partner as stated in the European Neighborhood Policy review in November 2015. Based on this, the two parties agreed in March 2017 on the common priorities of the partnership, which are divided into five components:

- 1- Political dialogue, governance, rule of law, and promotion of fundamental rights.
- 2- Comprehensive cooperation and social and economic development.
- 3- Partnership in energy, environment, and sustainable development.

To enhance dialogue and cooperation in the field of energy, a Memorandum of Understanding on the establishment of a strategic partnership between Algeria and the European Union in the energy sector was signed in Algeria on July 7, 2013, by the Prime Minister and President of the European Commission, Mr. José Manuel Barroso²⁷.

This memorandum provides a framework for cooperation to discuss common interests in the following areas:

- 1- Energy security and economic development.
- 2- Technological innovation and environmental preservation.
- 3- Renewable energy and energy efficiency.
- 4- Reform of the legislative and regulatory framework.
- 5- Exchange of information on medium and long-term energy demand and supply, particularly in the hydrocarbon sector, and the development of solar energy.

Through this memorandum, Algeria and the European Union aim to collaborate on these important aspects to promote mutual benefits and address key challenges in the energy sector.

As part of the implementation of this memorandum of understanding, an administrative arrangement was signed in Algiers on May 5, 2015, regarding the methods of implementing the strategic partnership between Algeria and the European Union in the field of energy. This arrangement establishes a high-level dialogue between the two parties, holding annual meetings in Algiers and Brussels at the level of experts and ministers. Several activities have been carried out under this dialogue, including the first edition of the Algerian-European Business Forum dedicated to energy, which took place in Algiers on May 24, 2016. This forum brought together more than 500 Algerian and European companies. The second Algerian-European Business Forum on energy was held on October 11 and 12, 2022, in Algiers, representing a tangible achievement and an example of the dynamism of this cooperation. Within this framework, both parties agreed to commit to achieving the goals of the Paris Agreement and sustainable development regarding climate change, promoting investment in renewable energy and low-carbon hydrogen, and reducing methane emissions from fossil energy industries. One of the significant measures implemented under this partnership is the "Taka Nadifa" support program for the renewable electricity sector in Algeria, with joint funding from the European Union and Algeria amounting to 10 million euros. This program continued until March 2023²⁸.

The third axis: Evaluation of the European Union's energy strategy in Algeria.

During the annual meeting of the political dialogue on energy between the European Union and Algeria, held on April 11, 2017, in Algeria, Mr. Miguel Arias Cañete, the European Commissioner responsible for Climate Action and Energy, affirmed that Algeria is considered a secure and reliable strategic partner for Europe. It is also recognized as a key energy supplier and will continue to be so in the medium and long term.

The plans derived from the energy strategy have been implemented within the framework of the Algerian-European partnership through a range of ongoing and future projects. These projects aim to enhance cooperation and collaboration between the European Union and Algeria in the energy sector.

First- Dual Cooperation Schemes:

One of the main foundations of cooperation that Algeria sought to implement with the European Union is manifested in the form of the following plans:

1- The Mediterranean Solar Plan (PSM):

The initiative to develop the Mediterranean Solar Plan (PSM), launched on July 13, 2008, aims to accelerate the implementation of renewable energy projects in the eligible eight Mediterranean partner countries: Algeria, Egypt, Jordan, Lebanon, Morocco, Palestine, Syria, and Tunisia. This initiative is a joint effort between the European Investment Bank, the European Commission,

the German Development Bank, and the Union for the Mediterranean. The project is financed by the European Neighborhood Investment Facility, under the supervision of the European Commission”²⁹.

The plan aims to enhance the implementation and financing of projects in the key sectors of renewable energy, energy efficiency, and their grid integration. The project helps overcome a major obstacle to the realization of renewable energy projects. Furthermore, this important initiative aims to accelerate the production of energy from renewable sources in order to meet the increasing demand in Mediterranean countries.

Some of the projects funded by the Mediterranean Solar Plan include:

Renewable Energies: Technologies that have proven their viability, including wind energy, solar energy (photovoltaic and concentrated solar power), sustainable biomass, and small-scale hydropower.

Energy Efficiency and Conservation in specific sectors such as industry, housing, and transportation.

Integration into the national grid of electricity production units from renewable sources.

Establishment of legislative, regulatory, and institutional frameworks that adapt to the significant development of sustainable and profitable projects in the field of renewable energies, especially solar energy.

Development of energy efficiency and demand management measures aimed at achieving energy savings of 20% by 2025 compared to 2005.

Development of electrical interconnections between Mediterranean region countries and the establishment of an incentive system for the export of renewable electricity from the southern and eastern Mediterranean to Europe.

Additionally, technical assistance provided by the plan includes support in developing standard specifications for alternative energy, assessing and auditing renewable energy resources in the field, conducting environmental impact studies, and analyzing the economic impact of projects.

2- The CES-MED Project: Promoting Sustainable Energy Development in Mediterranean Cities

The CES-MED (Cleaner Energy Saving Mediterranean Cities) project was launched in 2013 to support the efforts of countries in the southern Mediterranean, including Algeria, in addressing the challenges of sustainable development policies. These challenges include the rising carbon dioxide emissions and the disparity between electricity and energy consumption supply and demand. Consequently, the energy sector in Algeria faced challenges in adopting renewable energy sources³⁰.

The plan proposed awareness campaigns and measures to support the implementation of these actions. In order to execute this plan, municipal energy teams were formed, involving the public authorities from the Ministry of Environment, Ministry of Energy, and local authorities. These teams were developed by the end of 2015. The project identified five strategic objectives to be implemented in the aforementioned provinces³¹:

- 1- Enhancing energy efficiency in buildings, including public facilities.
- 2- Promoting renewable energy applications in urban areas.
- 3- Developing sustainable urban transport systems.
- 4- Implementing sustainable energy and climate action plans at the local level.
- 5- Strengthening the capacities of local authorities and relevant stakeholders in sustainable energy planning and management.

The CES-MED project aimed to support the achievement of these strategic objectives in order to promote sustainable energy development in Algeria.

3- The SUDEP Project: Supporting Cities in the Southern Neighborhood in Implementing Renewable Energy Projects for Urban Development :

The population of urban cities along the Mediterranean Sea has reached 165 million people, and it is expected to increase by another 80 million by 2025. Approximately 80% of the total population is concentrated in these areas. Consequently, the need for investment in various sectors will significantly rise in the coming years. As energy is closely linked to all aspects of sustainable development—economic, social, and environmental—it plays a crucial role in increasing energy demand and prices. Based on this, cities can play a vital role in promoting sustainable transformation by utilizing renewable energy sources³².

The European Commission launched a call for the regional program "Urban Renewable Energy Pilot" with a total budget of 8.25 million euros, benefiting neighboring countries including Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine, and Tunisia. This initiative aimed to address energy-related challenges from September 2015 to September 2017. The project's specific objectives were:

- 1- Increasing energy efficiency and promoting energy savings and renewable energy sources: The program aimed to enhance energy efficiency measures, encourage the adoption of energy-saving practices, and promote the use of renewable energy sources in the participating countries.
- 2- Improving the capacities of neighboring countries in the field of renewable energy: The project aimed to enhance the knowledge and skills of the participating countries in renewable energy technologies, policies, and practices. This objective aimed to strengthen their ability to develop, implement, and manage renewable energy projects effectively.
- 3- Establishing a set of replicable actions in the region: The program aimed to develop a collection of best practices, guidelines, and replicable models for renewable energy projects. These actions could be reproduced and adapted in the participating countries and other regions, promoting the widespread adoption of renewable energy solutions.

The "Urban Renewable Energy Pilot" program sought to support the transition towards a sustainable and renewable energy future in the neighboring countries by fostering energy efficiency, promoting renewable energy sources, and building capacities in the field of renewable energy.

Secondly, Perspectives of Cooperation

Algeria has embarked on a new era of sustainable energy by launching several programs for renewable energy development in partnership with the European Union. The Algerian government's vision is based on the development of inexhaustible resources. In the implementation of renewable energy programs, the following initiatives have been undertaken:

1- Energy Efficiency Program:

As part of promoting responsible energy use and protecting available natural energy resources from depletion, and in order to regulate the implementation of alternative energy programs and optimize their consumption, Algeria has responded to the goals of sustainable energy transition by dedicating itself to the Energy Efficiency Program. This program involves measures that require behavioral adjustments and equipment improvements.

The objective of this program is to introduce energy efficiency measures in three sectors: construction, transportation, and industry. This is achieved by encouraging the establishment of

a local industry for manufacturing high-performance lamps, solar water heaters, and thermal insulation. The program encourages both local and foreign investments. One of the main goals that Algeria seeks to achieve is the installation of solar energy capacity up to 22,000 megawatts by 2030 for the domestic market, along with a reduction of carbon dioxide emissions by 193 million tons. Additionally, maintaining the option of exporting to European countries is a strategic objective if market conditions permit. Furthermore, it is necessary to achieve energy savings by 2030 in all sectors, including construction, public lighting, transportation, and industry³³.

1- meetMED Project - Facilitating Energy Transition in the Mediterranean Region:

To enhance cooperation among countries in the South and East Mediterranean region in the adoption of renewable energies, the meetMED project was launched on April 23, 2018, in Barcelona. In its first phase, the project is carried out in partnership with the Regional Center for Renewable Energy and Energy Efficiency (RCREE) to define the vision and pathway for energy transition in the Mediterranean region. The project is expected to be completed within two years, from 2018 to 2020, with a total cost estimated at 1.5 million euros. It is funded by the European Commission as part of the European Neighborhood Policy and benefits the following countries: Algeria, Tunisia, Jordan, Lebanon, Greece, Spain, Portugal, France, and Italy. The project aims to:

- Promote renewable energy policies and strategies in the participating countries.
- Facilitate the exchange of experiences, knowledge, and best practices among Mediterranean countries in the field of renewable energy.
- Enhance regional cooperation and collaboration to overcome common challenges in energy transition.
- Support the development of a favorable investment environment for renewable energy projects.
- Foster dialogue and cooperation between stakeholders, including governments, private sector entities, civil society organizations, and research institutions.
- Contribute to the achievement of sustainable development goals and climate commitments in the Mediterranean region.

The meetMED project plays a significant role in promoting sustainable energy transition and cooperation in the Mediterranean region, aligning with the shared goals of the participating countries and the European Union³⁴.

The success achieved by the meetMED project in its first phase encouraged the European Commission to allocate an additional funding of 5 million euros for the second phase. This funding aims to support and accompany the implementation of the project starting from April 7, 2021. New objectives have been added, focusing on enhancing energy security in the beneficiary countries: Algeria, Egypt, Jordan, Lebanon, Libya, Morocco, Palestine, and Tunisia. The support is aimed at facilitating their transition to a low-carbon economy.

The project's Secretariat, in collaboration with MEDNER members (Mediterranean Energy Regulators), presented the MEETMED2 project to the European Commission. MEETMED2 aims to enhance the capacities and capabilities of the support mechanisms through the following mechanisms:

- 1- Providing technical and advisory support to participating countries in implementing sustainable energy strategies and developing renewable energy projects.
- 2- Promoting knowledge exchange and technology transfer in the field of renewable energy and energy efficiency.

- 3- Developing institutional capacities of energy-related entities in the beneficiary countries through training and human resources development.
- 4- Enhancing regional cooperation and bilateral exchanges among participating countries in the field of sustainable energy.
- 5- Supporting and enhancing national legislation and policies related to sustainable energy and improving the investment environment.

Through these mechanisms, the MEETMED2 project aims to strengthen capacities and ensure the sustainable development of energy in the Mediterranean region³⁵.

The intensive program for the renewable energy sector primarily focuses on electricity in Algeria, which has been recognized as a strategic partner in the energy field with the European Union since 2015. The partnership program aims to assist the Algerian government's two programs: the National Renewable Energy Plan 2015-2030 (PNDER) and the Algerian Program for Energy Transition 2015-2030 (PNEE). This support will serve as a companion to the national authorities in promoting an economic model based on energy transition, circular economy, and sustainable development.

One example of the transition towards adopting renewable energy within the Algerian-European partnership is the Algerian-German cooperation. This cooperation involves implementing significant projects related to an experimental energy activation network for the economic sector (REEE), which was launched on July 22, 2019, in collaboration with the Ministry of Energy and the German Agency for International Cooperation (GIZ). The main objective of this project is to optimize energy consumption in the industrial sector³⁶.

Some of the future projects planned within the framework of Algerian-European bilateral cooperation to enhance the sustainable energy transition include:

1- Exporting Green Hydrogen to Europe:

This project represents the first practical step for Algeria in harnessing alternative energy, specifically "green hydrogen." Studies indicate that Algeria is poised to play a significant role in the production and export of competitively priced green hydrogen, particularly to the European market. Based on this, the Ministry of Energy and Energy Efficiency has emphasized the future transition towards developing the hydrogen sector, specifically green hydrogen³⁷. The project, in collaboration with a German gas company with extensive experience in renewable energy production, aims to establish a real-life model for green hydrogen production in Algeria. This project will utilize solar energy and seawater desalination to produce approximately 50 megawatts of electricity. Germany was chosen to benefit from its expertise in this field. The green hydrogen will be transported through various means, including green ammonia and gas pipelines connecting Algeria to Italy. Algeria possesses energy capacities reaching 2,000 kilowatts per square meter of solar energy. The "GalSi" pipeline between Algeria and Italy, which was put on hold ten years ago for hydrogen export to Europe, will be utilized. This is especially relevant given the escalating Russian-Ukrainian conflict, which will increase global demand for hydrogen as an alternative to Russian gas³⁸.

According to the government's action plan to implement this project, a program has been launched to assess the national policy and available means for its implementation and the results thereof, with a vision towards 2050. This includes an invitation from the European Commission to engage in the actual utilization of green hydrogen, which is linked to the capabilities of Algeria's national fuel company, Sonatrach, to carry out the previously announced investments

estimated at around \$42 billion by 2027 for research, exploration, and the development of energy alternatives.

In this context, Professor Chemseddine Chitour emphasized the necessity of launching the transition to green hydrogen without delay, noting that the estimated oil reserves of 12 billion barrels would only cover a period of 15 years at the current rate of exploitation. In contrast, the gas reserves of 2,500 billion cubic meters could be utilized for approximately 20 years. Therefore, Algeria is urged to develop its strategy with leading countries in these fields, particularly Italy and Germany³⁹.

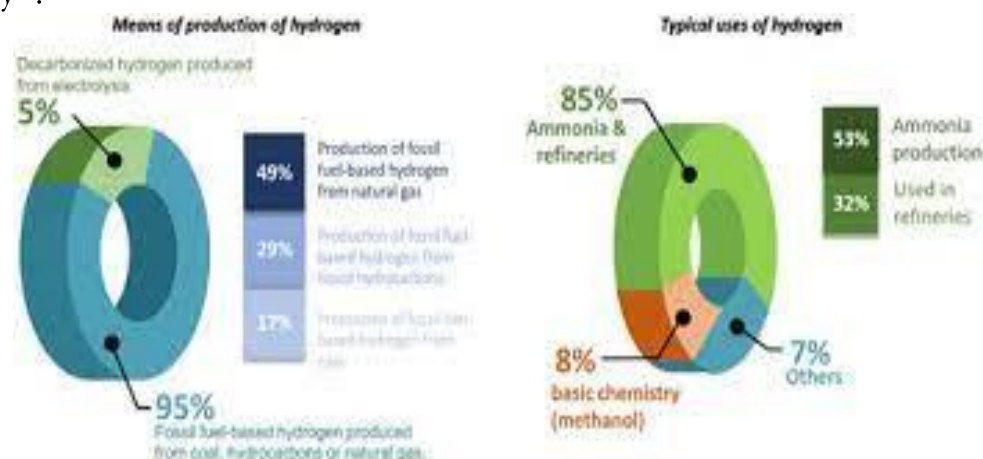


Figure 2: Current production and use of hydrogen.

Source: Dr. Stefan Drenkard, Dr. Atom Mirakyan; Tractebel, Exploratory Study on the Potential of Power-to-X (Green Hydrogen) for Algeria, Algerian-German Energy Partnership, Germany: GIZ is responsible for the content of this publication on behalf of the Federal Ministry for Economic Affairs and Energy (BMWi), November 2021, p. 20.

2- Valorization of Biogas from Waste:

One of the pioneering projects in ensuring a secure energy transition and promoting renewable energy is the valorization of biogas from waste. This project focuses on converting waste into renewable biogas with similar characteristics to natural gas, serving as a viable alternative. The biogas can be used for heat and electricity production, allowing households to meet their energy needs through a combination of solar energy.

To enhance partnership between Algerian government sectors, unify efforts, and exchange experiences with the European Union in the waste-to-energy sector, a partnership agreement was signed between the National Waste Agency of Algeria (AND) and the Commission for Renewable Energy and Energy Efficiency (CEREFE) on Wednesday, January 11, 2023, in Algiers. The agreement aims to develop a joint action plan for utilizing biogas from waste and non-recyclable solid organic waste as fuel for energy production within the framework of sustainable development⁴⁰.

The agreement also emphasizes the development of studies and the implementation of pilot projects for energy production from biogas at the technical landfill centers. These projects will significantly pave the way for the development of the biogas recovery sector by carrying out pilot projects to generate electricity from methane gas produced from waste. Ms. Amal Asma, Director of Green Economy Development, highlighted that waste produces a liquid state after its degradation in the form of biogas, which, in the absence of oxygen, transforms into methane gas

that can be used as an energy source and for electricity production through combustion. The annual waste production is estimated at around 11.1 million tons, and its environmental impact cost exceeds 127 billion dinars annually.

Conclusion

In conclusion, it can be said that within the framework of Algeria's pursuit of energy transition, which aims to meet national needs and ensure energy sustainability for future generations, the strategy of partnership and cooperation with the European Union (EU) has been a priority in the national policy to achieve national transition. This is to gain sufficient experience and skills in this field.

Algeria has focused on the European experience due to its proven successes on the ground, particularly in utilizing modern and advanced technologies. Algeria seeks to enhance energy cooperation by adopting partnership projects. Algeria is an important partner for EU countries, both as a producer and consumer market. Most EU countries have expressed their desire to invest in renewable energy in Algeria, while Algeria considers this partnership important for technology transfer and technical assistance that EU countries can provide.

Based on the analysis presented regarding the role of environmental diplomacy in promoting the energy transition path and the cooperation between Algeria and the European Union, the following recommendations are proposed:

- Strengthen the relationship between Algeria and the European Union within the framework of priorities that serve the principles of dialogue, mutual respect, and consideration of common interests. The relationship between the two parties is longstanding, and Algeria is closely linked to EU countries, particularly in the energy sector, while Europe aims for a long-term partnership with Algeria.
- Utilize the partnership with the European Union to invest in renewable energy sectors, gain expertise and technology, and not limit the partnership to the energy aspect, specifically in terms of natural gas. Define and frame the cooperation between the two countries based on a mutually beneficial approach.
- Implement the planned projects within the energy cooperation framework with the European Union.
- Support Algerian programs through Sonatrach, the national energy company, and enable Algeria to enter international and European markets for electricity, considering that Algeria is a country that produces significant amounts of electrical energy.
- Encourage foreign investment in Algeria, especially from European countries, and work on launching collaborative projects in the field of scientific research and renewable energies.
- Establish industrial infrastructure that focuses on the industrial and agricultural sectors, reduce imports, and stimulate the national economy without diminishing the prominent role of energy in the economy. Energy is the foundation of all development, and ensuring energy security achieves the development of agriculture and industry.

In summary, Algeria's pursuit of energy transition and its partnership with the European Union reflect its commitment to sustainable development and the promotion of renewable energies. By leveraging the cooperation and experiences of European countries, Algeria can further enhance its energy sector, contribute to the global transition to clean energy, and drive economic growth and environmental protection.

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