



Social and Economic Impacts of Renewable Energy Development in Morocco in the Context of International Relations: Opportunities and Challenges

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Abstract. The ongoing conflict in Ukraine and the imminent risk posed by climate change are compelling factors that need the strategic imperative to enhance energy source diversification, encompassing the integration of renewable energy sources (RES). This study investigates the role of Morocco as a border nation in promoting the development and implementation of Renewable Energy Technologies (RET) within the Middle East and North Africa (MENA) region. This paper provides an analysis of the present global context, focusing on Morocco's diplomatic ties with the European Union (EU) and adjacent countries, with an evaluation of its energy landscape. Additionally, this study examines the socioeconomic implications associated with the implementation of Moroccan policies and initiatives aimed at promoting the adoption and utilization of renewable energy sources. Additionally, it evaluates the social and economic consequences resulting from the implementation of Moroccan policies and programs aimed at fostering the development of renewable energy.

Keywords: renewable energy development, Morocco, European Union, society and economy, international relations.

1 INTRODUCTION

Modern society continues to rely extensively on nonrenewable resources, and fossil fuels continue to account for approximately 80 to 85 percent of the total energy supply [1]. But as nonrenewable energy sources are depleted, the world faces a severe energy crisis as well as the challenge of climate change. These have enormous effects on society, the economy, and the environment. Consequently, it becomes crucial to discover reasonable means of rationalizing our energy needs and to investigate other non-exhaustible energy resources [2]. Energy transition strategies are proposed in this context.

Numerous papers and examine the potential of renewable energy in Morocco from various angles, concentrating on the development of the country's national energy strategy and the technological means used for renewable energy, with a particular emphasis on solar energy. Several papers evaluate the current status of Morocco's energy strategy through an in-depth analysis of the principal renewable energy projects completed or

under development in Morocco and develop a road map for Morocco to achieve its renewable energy and energy efficiency goals by 2030 [3].

In this paper, we examine the macro-factors that have created the renewable energy market in Morocco from a historical perspective, as well as the opportunities and challenges of this green strategy in the international context, based on previous and ongoing research and findings. In light of the international context, we also examine whether Morocco is a viable blue ocean for renewable energy investment from the perspective of an investor. In addition, it discusses the organization of the Moroccan energy sector in light of its green strategy and the prospective impact of this strategy in light of the regulatory framework.

2 CONTEXT OF RENEWABLE ENERGY DEVELOPMENT IN MOROCCO

2.1 Western-style democratization and transition and neoliberal economic reforms in Morocco

Morocco's society is characterized by a democratic political transition to a western model and an economic transition to a market economy model. The reform process in Morocco has been significantly influenced by both the EU and its individual members. France and Spain imposed the Moroccan protectorate at the beginning of the twentieth century in order to incorporate Morocco into their colonial system and shape its political, economic, and social structures to formally resemble these characteristics of their protectorates. As a member of the Arab nations, Morocco was also favored by European nations due to its historical origins. The EU and Morocco have a lengthy history of economic and political ties. Over the past several decades, Morocco has received substantial EU funding to support its economic and social development, and it is currently the largest beneficiary of EU assistance in the Mediterranean. In the past decade, Morocco has undertaken a number of significant reforms, resulting in a level of political liberalism unprecedented in the region. This resulted in the development of multilateral initiatives such as Desertec, Medgrid, and the Mediterranean Solar Program [4].

In addition, Morocco has implemented a market economy model for its transformation on the economic front. This resulted in the abandonment of collective agriculture and a centrally planned economy, and the encouragement of individual economic activity and private enterprise. Morocco's transition to a market economy resulted in economic development and the creation of wealth. Morocco elected to restructure its economy along neoliberal lines. This significant change in the country's economic structure also resulted in significant political changes. To satisfy the new requirements of neoliberal reforms, the state bureaucracy and public administration had to be reduced. The well-known market liberalization, deregulatory measures, fiscal discipline, and privatization of industrial activities and public services comprised the government's new arsenal for reducing the public deficit.

2.2 Motivation for development of renewable energy

Morocco, unlike other North African nations, has very few proven hydrocarbon reserves [5]. Rabat has relied heavily on imported oil and gas to satisfy its growing energy demands for decades. Aware of the financial and environmental consequences of this reliance, the Moroccan government has pursued a dual strategy in recent years: the exploitation of the country's latent renewable energy resources and the promotion of energy efficiency. In addition, the EU partnership has proven indispensable to the launch and execution of this strategy.

The renewable energy potential of Morocco is viewed favorably by European nations for two major reasons. Geographically speaking, Morocco is the closest North African nation to Europe. Due to the short distance, exporting electricity and other forms of energy from Morocco to Europe is simpler and less expensive. Second, Morocco experiences greater socioeconomic and political stability than the majority of its eastern neighbors and has consistently embraced pro-Western policies. Morocco has actively supported relevant EU policies, such as the solar energy project and the completion of the world's largest solar thermal power station, the Noib natural power station; and the signing of energy cooperation agreements or international treaties aimed at promoting renewable energy development, energy interconnectivity, and energy technology innovation, thereby enhancing its strategic position and material resources. Due to its distinct geographical location and energy transition policies, Morocco is in a unique position to analyze the impact of renewable energy markets on developing countries' economic efficiency.

The country's rapid population growth, urbanization, and economic expansion indicate an increase in energy consumption and a widening supply-demand gap. This reliance on imported fossil fuels has exacerbated the country's trade and budget deficits. In order to assure energy supply security, the country has adopted a new national energy strategy based on the aggressive development and utilization of renewable energy sources. It has been pursuing sustainable development for a number of years and has increased its investments in the renewable energy sector.

Renewable energy development is a win-win situation for both Morocco and the European Union. First, the development of renewable energy can help Morocco reduce its reliance on imported oil, thereby lowering its energy supply costs and enhancing its energy security. In addition, Morocco has an abundance of renewable energy sources, including solar energy, wind energy, and water energy, among others. By maximizing the use of these resources for the development of renewable energy, it is possible to not only create more job opportunities, but also safeguard the environment, reduce carbon emissions, and achieve sustainable development. For the EU, cooperation with Morocco to develop renewable energy can also offer many benefits. The EU can import renewable energy from Morocco, thereby contributing to the EU's efforts to increase the proportion of green energy and reduce carbon emissions. Second, cooperation in the development of renewable energy can further strengthen the relationship between the EU and Morocco in the energy sector and promote the growth of the economy and commerce.

3 NUMEROUS OPPORTUNITIES EXIST FOR MOROCCO TO CULTIVATE RENEWABLE ENERGY SOURCES

3.1 Durability and economic viability of energy sources

Morocco does not produce fossil energy sources such as oil and natural gas and imports more than 95% of its basic energy sources. However, traditional energy supplies are susceptible to fluctuations in international oil prices and geopolitical risks, which creates energy security uncertainty. Renewable energy, on the other hand, has the benefits of self-sufficiency and reduced reliance on imported energy, which can enhance the stability and sustainability of energy supply and reduce the country's energy sector risk. The graph below depicts the evolution of Morocco's electricity consumption. In accordance with the Sustainable Development Goals, the ultimate objective is a more diverse electricity system with a substantial contribution from renewable energy sources. As show in figure 1.

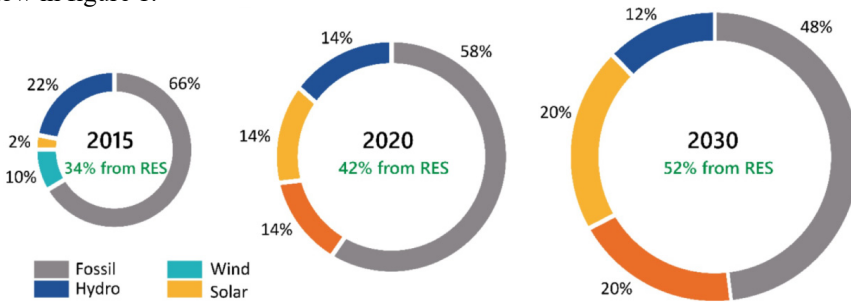


Fig. 1. Installed capacity in Morocco[6]

3.2 Urban effects of greenhouse gas reduction

In comparison to global levels, Morocco's GHG emissions are low, but they are expected to increase considerably in the coming years due to the rapid expansion of the energy generation and construction industries. Over the past several decades, Morocco has established a strategy for the development of renewable energy sources. The most typical example is the development of solar energy technology in Morocco, which will enable the country to reduce its energy reliance and decrease its electricity costs. Morocco is currently one of the first countries in the Middle East and North Africa to reduce fossil fuel subsidies and implement energy efficiency measures, a feat that many Western nations have failed to achieve. By encouraging the use of renewable energy sources, it is possible to reduce the demand for conventional energy sources, thereby reducing greenhouse gas emissions and air pollution.

3.3 Economic expansion

On the one hand, the installation and operation of renewable energy facilities can play an important role in increasing production and generating employment. "Green" positions - employment in the renewable energy sector - reduce unemployment and contribute to sustainable economic development. Renewable energy creates 7.49 full-time equivalent employment for every \$1 million spent on energy efficiency. [7] The development of renewable energy can also contribute to the amelioration of social issues such as inequality. The Moroccan Center for the Development of Renewable Energy was founded in 1982. In collaboration with the United Nations Development Program, it has provided 200 energy bureaus with financial and technical assistance. Besides, the development of renewable energy sources has resulted in a successful diffusion of electricity in Morocco. The government initiated the Rural Electrification Program in 1996. And enhanced access to electricity has contributed to a sustained economic growth rate of 4 to 5 percent per year and a substantial increase in electricity demand. [8]

4 OBSTACLES TO THE GROWTH OF RENEWABLE ENERGY IN MOROCCO

4.1 Financial limitations

Financial constraints are the greatest economic barrier, which are inextricably linked to the high initial capital, investment, installation, and operating costs of renewable energy initiatives, including solar photovoltaic products in solar energy technologies. In addition, the inherent cost recovery problems, the increase in counterfeit and pirated products, the inability to pay, and inadequate access to credit are impediments to the development of renewable energy, as noted in the review of many of these studies. Moreover, even in regions where renewable energy is competitive, economically disadvantaged groups such as impoverished rural households may not be able to afford innovative business models or financing costs associated with the use of renewable energy.

4.2 Lack of technological advancement

Morocco is a developing country in transition from a low-value agricultural producer to an exporter of renewable energy. Industrialization and productivity are prerequisites for the transition of economies from producing and exporting primarily agricultural products to more sophisticated manufacturing with higher economic value added. The low skill level of the labor force, the lack of innovative capacity, and the absence of investment in research and development pose a significant obstacle to the development of renewable energy in Morocco. In addition to limited knowledge and skills, inadequate installation and maintenance, and unreliable and low-quality components, this technology issue is also plagued by other obstacles.

4.3 Political dangers of international cooperation

Geopolitical uncertainties also cast a shadow over Euro-North African renewable energy cooperation in terms of political risks. European countries opposed Morocco's territorial sovereignty over Western Sahara, which directly led Morocco to proclaim the suspension of its energy cooperation with Germany in May of 2021. Future hopes for a "green energy backbone" in Morocco must coexist with the impact of the Ukraine conflict on the energy market and geopolitical tensions with its neighbors. In response to the Russia-Ukraine conflict, Europe has accelerated its energy decoupling from Russia and is pursuing energy cooperation with North Africa more aggressively. However, Algeria and Morocco have maintained a fraught relationship, drawn swords, and a military situation in recent years. Algeria severed the Maghreb-Europe gas pipeline (GME), as a means of reducing Morocco's benefits as a transit point for energy transportation following the severance of diplomatic relations between the two nations. In addition, the Moroccan-Algerian border has been closed for nearly three decades preventing the transport of products by road.

5 CONCLUSION

Although Morocco's development of renewable energy has many problems to be resolved, it cannot be denied that, as a traditionally energy-poor country, the development of renewable energy does bring the hope of an energy transition for Morocco, for the country's energy security to solve the problem of laying the foundation for the country's energy security and to promote the growth of the country's energy market economy, and is conducive to assisting in the resolution of a number of inequalities. In addition, as the most dynamic component of the current energy mix, renewable energies have tremendous potential to address the issue of sustainable development in Morocco. If Morocco is able to actively resolve the barriers to the development of renewable energy, its energy transition and economic development could be accelerated and more successful, and its investment opportunities could be diversified.

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