



The role and importance of green finance in serving and achieving sustainable development in Algeria.

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Abstract:

Green digital finance is one of the most important tools that contribute to strengthening countries, commitment to climate action, as it is one of the most important pillars that support the development of a flexible system for a sustainable green economy, to play in the service of sustainable development through the case study of Algeria.

This study concluded that in Algeria the financial sector can play a crucial role in building a prosperous economy, and therefore Algeria must move to expanding in the field of green digital finance and developing appropriate mechanisms for the financial sector and the economic sector, as well as playing an important role in promoting dimensions of sustainable development.

Keywords: Green Finance, Financial Sector, Green Finance Mechanisms, Sustainable Development.

JEL Codes: G2, Q56, Q58, G18, O16.

1 .Introduction :

In reality, the effects of climate change are evident across various economic sectors, highlighting an urgent and essential need to establish a sustainable green economy capable of withstanding diverse environmental and climate-related challenges. Green finance has emerged as one of the modern and critical topics that warrant focused attention, as it represents a rapidly growing economic development model that directly relies on green investments aimed at addressing the interdependent relationship between natural environmental resources.

Furthermore, green finance encompasses a range of financial products and services that integrate environmental considerations throughout all stages of lending, risk management, and the promotion of environmentally responsible investments. It also serves as a catalyst for businesses and industries that contribute to reducing carbon emissions.

Given its reliance on clean energy sources and its role in environmental preservation, the emphasis on green finance is of great importance. In this context, Algeria is preparing to transition towards the adoption of this economic model.

1.1 Research Problem:

Based on the aforementioned considerations, the primary research question can be formulated as follows:

- ✓ **What is the role of mechanisms for developing green finance, and how can it contribute to supporting sustainable development in Algeria?**

1.2. Research Hypotheses:

The study is based on the following hypotheses:

1. First Headline :

- ✓ Green finance serves as an incentive for businesses and industries that contribute to reducing carbon emissions.
- ✓ Achieving global sustainable development goals requires investments in key sectors such as infrastructure, clean energy, water, and sanitation.
- ✓ Green finance is a form of financing directed toward environmentally related projects and is supported by various mechanisms, such as green banks and green bonds.
- ✓ The sources of green finance in Algeria are insufficient to achieve sustainable development.

1.3 .Research Objectives :

The research aims to :

- ✓ Examine the performance, objectives, and significance of green finance, as well as the tools associated with it.
- ✓ Explore the role and mechanisms for developing green finance and its contribution to promoting various dimensions of sustainable development.
- ✓ Gain a deeper understanding of sustainable development, its key aspects, and the expected economic benefits of transitioning to a green economy.
- ✓ Emphasize the ideas of the green economy and sustainable development while demonstrating how they relate to one another.

1.4. Research Significance :

The significance of this study lies in examining the importance of green finance, its development mechanisms, and its relationship with sustainable development in Algeria. This is achieved by exploring the objectives and role of green finance in promoting various dimensions of sustainable development. Additionally, the study highlights the importance, objectives, and dimensions of sustainable development while assessing the current state of green finance in Algeria, its mechanisms,

sources, and its overall impact on sustainable development.

1.5. Research Methodology :

This study employs a theoretical descriptive approach, given the scarcity of applied research in this area. The study looks at the condition of green finance today and gives a general overview of the industry and its subfields, its development mechanisms, and related financial products. Furthermore, it explores the various green finance products and services available.

1.6 .Research Structure :

The study is divided into three main sections :

- ✓ Theoretical Framework of Green Digital Finance
- ✓ Fundamentals of Sustainable Development
- ✓ The Current State and Development Mechanisms of Green Finance and Its Relationship with Sustainable Development.

2 .The Conceptual Framework of Green Digital Finance :

2.1. The Concept of Green Finance :

Green finance can be defined as financing directed toward projects that contribute to reducing emissions, optimizing the use of environmental resources, as well as reducing the consequences of climate change. This is achieved by steering banks and financial institutions toward environmentally conscious lending practices that consider ecological dimensions.

Green finance is defined by the Organization for Economic Co-operation and Development (OECD) as funding for business initiatives that protect the environment and its resources while increasing the effectiveness of natural resource use the overarching goal is to maximize these resources for future sustainability.

Accordingly, green finance can be regarded as the optimal approach to achieving balanced financing, directed toward environmentally friendly projects that help reduce harmful carbon emissions while integrating environmental considerations into financial decision-making.

It is clear from the above that green finance functions within the context of sustainable development, requiring a shift in financing patterns to account for environmental concerns. In other words, financing should be allocated to eco-friendly projects that contribute to pollution reduction, efficient natural resource utilization, and environmental conservation, ultimately supporting the objectives of sustainable development.

2.2. The Importance of Green Finance :

The significance of green finance is highlighted through the following key aspects:

- ✓ **Facilitating Investment in Key Sectors :** Green finance provides the necessary funding for various investments in agriculture, forestry, freshwater resources, fisheries, and other sectors. Over time, these investments contribute to improving soil quality, enhancing crop yields, and increasing the returns of key agricultural products.
- ✓ **Promoting Sustainable Long-Term Financing :** Green finance represents a crucial form of long-term sustainable financing that integrates environmental and social criteria into business and investment decisions. This ensures the funding of green projects that align with green economy strategies.
- ✓ **Enhancing Food Security in Africa:** Green finance plays a role in reducing food insecurity,

making the green economy one of the most effective mechanisms for boosting the efficiency and productivity of the agricultural sector. This, in turn, helps achieve long-term food security.

- ✓ **Improving Water Resource Efficiency :** Green finance enhances efficiency in the agriculture, industrial, and municipal sectors by optimizing water demand management. This reduces pressure on groundwater and surface water resources in both the short and long term.
- ✓ **Reducing Poverty and Supporting Sustainable Development:** By optimally utilizing natural resources and ecosystems, green finance contributes to poverty reduction while ensuring sustainable development. It facilitates the flow of benefits from natural capital directly to disadvantaged populations, improving their living conditions and economic opportunities.
- ✓ **Employment Growth and employment Creation :** Green finance helps to create and expand new employment possibilities, especially in industries like transportation, energy, and agriculture.
- ✓ **Decoupling Environmental Impact from Economic development :** Green finance advocates separating environmental deterioration and resource use from economic development. It is distinguished by a notable rise in investments in environmentally friendly industries, bolstered by changes to economic policies that improve their execution.
- ✓ **Reshaping Business, Infrastructure, and Institutions :** Green finance plays a crucial role in redesigning business models, infrastructure, and institutional frameworks to align with sustainable development objectives.
- ✓ Reducing waste and greenhouse gas emissions may be achieved by reducing the amount of energy and raw materials used in industrial processes that are not sustainable, green finance helps reduce waste generation and greenhouse gas emissions, thereby mitigating climate change impacts.
- ✓ **Expanding the Green Economy's Share in Economic Growth :** Green finance supports the increased contribution of green sectors to the overall economy, fostering a more sustainable and resilient economic model (Khanfar, 2014, pp. 56-57).
- ✓ **3 .Fundamentals of Sustainable Development :**
- ✓ **3.1. The Concept of Sustainable Development :**
- ✓ Environmental scientific studies consistently affirm the existence of a mutual interaction and reciprocal influence between economic and human activities on one hand and natural environmental elements on the other. These studies also highlight humanity's responsibility for environmental imbalances caused in the pursuit of economic growth. Moreover, sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
- ✓ As a new developmental philosophy, sustainable development has introduced fresh perspectives on the future of our planet. It is important to distinguish between growth and development, as the two terms are not synonymous. Development is a process aimed at achieving economic and social goals through quantitative and qualitative transformations. It must lead to tangible progress and improvements in living standards within a specific time and place. However, economic growth alone does not necessarily equate to development, as the absence of growth in a society does not automatically imply the absence of development.
- ✓ According to the aforementioned, sustainable development is development that takes into consideration environmental, social, and economic factors while meeting the demands of the current generation without sacrificing the capacity of future generations to satisfy their own

requirements.

✓ **3.2 .Dimensions of Sustainable Development :**

- ✓ In contrast to economic growth, sustainable development takes into account three important factors : social, environmental, and economic. According to the 1996 Earth Summit in Rio de Janeiro, Brazil, which recognized economic, social, and environmental development as the fundamental elements of sustainability, sustainable development is the meeting point of these three pillars.

✓ **3.2.1 The Economic Dimension :**

- ✓ The economic aspect of sustainable development aims to achieve several key objectives, including:
 - ✓ Minimizing the depletion of natural resources to safeguard the rights of future generations.
 - ✓ Ensuring equitable distribution of resources and reducing income disparities.
 - ✓ Reducing military expenditures to allocate resources toward sustainable development.
 - ✓ Regulating individual consumption of natural resources within reasonable limits.
 - ✓ Alleviating poverty levels in developing nations.
 - ✓ Enhancing living standards, well-being, and social welfare.
 - ✓ Promoting more efficient utilization of capital to ensure sustainability.
 - ✓ Aligning economic growth with environmental sustainability to achieve long-term balance.

✓ **3.3. The Social Dimension :**

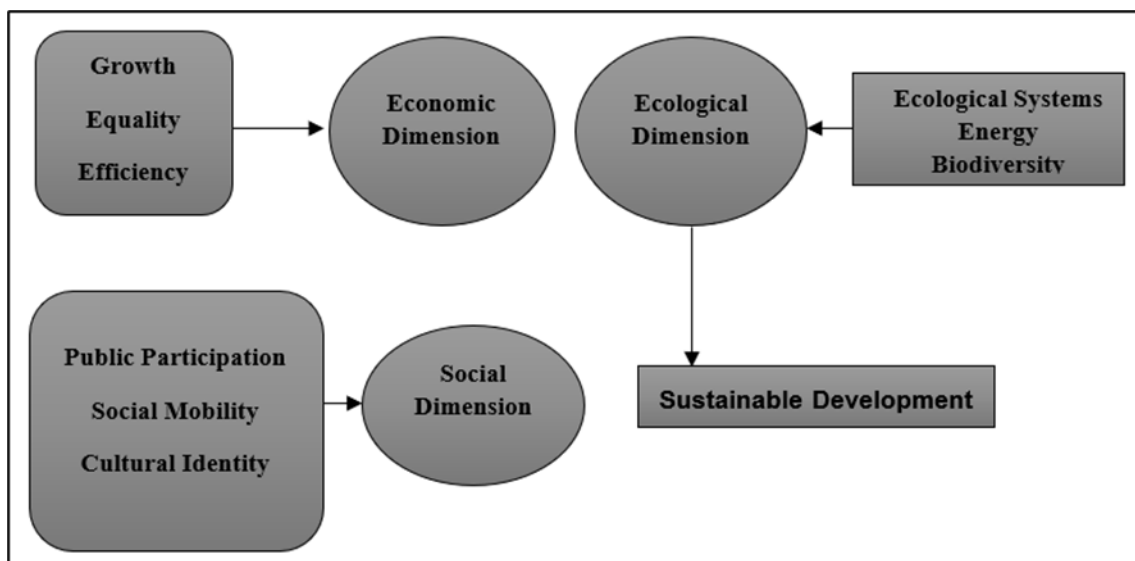
- ✓ The social dimension of sustainable development is achieved through:
 - ✓ Combating unemployment and improving living conditions by enhancing healthcare and education services.
 - ✓ Empowering women in society and ensuring the realization of their legitimate rights.
 - ✓ Addressing rapid demographic growth and ensuring a balanced population distribution.
 - ✓ Placing human development at the core of sustainability by investing in human resources.
 - ✓ Utilizing resources based on equity and justice to achieve fairness among individuals within the same generation and across future generations.

✓ **3.4. The Environmental Dimension :**

- ✓ The environment is a fundamental pillar of sustainable development because the exploitation of natural resources—which is essential for development in agricultural and industrial activities—inevitably has environmental repercussions. Therefore, it is crucial to respect environmental limits, as every ecosystem has a threshold for consumption and depletion that must not be exceeded. If these limits are breached, environmental degradation occurs. To prevent this, the following measures must be taken:
 - ✓ Preserving natural resources and minimizing pollution.
 - ✓ Preventing soil degradation by reducing the excessive use of pesticides and protecting vegetation and fisheries.
 - ✓ Safeguarding water resources and reducing water depletion.
 - ✓ Protecting the climate from global warming.

- ✓ Minimizing the destruction of biodiversity habitats and preserving ecosystems.
- ✓ Recognizing that natural resources contribute to wealth creation and should be managed sustainably.
- ✓ Additionally, technology plays a crucial role in sustainable development. It encompasses knowledge, skills, tools, and equipment used in the production of goods and services and serves as a powerful and influential tool in decision-making processes.
- ✓ Moreover, exploring clean and renewable energy sources, reducing greenhouse gas emissions, and protecting the ozone layer remain essential priorities for sustainable development (Hussein, 2022, pp. 397-398).

Figure no. 1- Dimensions of Sustainable Development



Source: (D'Alisa, 2007, p. 11).

3.5. Indicators for Measuring Sustainable Development :

The establishment and use of sustainable development indicators are essential to ensuring that development plans are based on accurate, effective, and relevant information. Experts in this field have sought to develop indicators that encompass the key environmental, economic, and social issues addressed by sustainable development. These indicators can be categorized as follows:

3.5.1 Economic Indicators

Economic indicators for measuring sustainable development include:

- ✓ Per capita contribution to the Gross Domestic Product (GDP).
- ✓ Savings rate trends.
- ✓ Investment share in GDP.
- ✓ Annual inflation rates.
- ✓ Trade performance through exports and imports.

3.5.2 Social Indicators :

Social indicators for measuring sustainable development include:

- ✓ Housing conditions.
- ✓ Population growth.
- ✓ Public health.
- ✓ Education.

3.5.3 Environmental Indicators :

✓ **Key environmental indicators include:**

- ✓ Assessing climate change by measuring carbon dioxide (CO₂) emissions and the spread of toxic substances. This is evaluated through the consumption rates of hazardous chemicals and pesticides used in agriculture.
- ✓ Monitoring ozone layer depletion and climate change.
- ✓ Measuring air pollution levels and harmful emissions that affect air quality.
- ✓ Assessing air pollutant concentration, which is measured through energy consumption levels (Nawal & Rabah, 2020, pp. 72-74).

✓ **4 .The Current State and Development Mechanisms of Green Finance and Its Relationship with Sustainable Development :**

✓ **4.1 .Domestic Sources of Green Finance in Algeria :**

- ✓ Algeria possesses significant potential that can enable self-financing if it relies on various local resources to support the green economy and environmental protection. Among these sources are :

✓ **4.1.1 Taxes and Fees :**

- ✓ As part of Algeria's green fiscal reform, the government has implemented various environmental taxes and fees aimed at curbing different types of pollution, particularly water and air pollution. The most notable of these taxes and fees include :
- ✓ A. Solid Waste-Related Fees
- ✓ Household waste disposal tax, ranging between 40 DZD and 100 DZD annually.
- ✓ Incentive fee for improper storage of medical waste generated by healthcare activities.
- ✓ Incentive fee for improper storage of hazardous industrial waste.
- ✓ Tax on plastic bags to reduce environmental harm.
- ✓ B. Tax on Polluting and Environmentally Hazardous Activities
- ✓ 9,000 DZD for establishments classified under declaration-based activities.
- ✓ 20,000 DZD for establishments requiring a permis from the Municipal People's Assembly President.
- ✓ 120,000 DZD for establishments under the jurisdiction of the Ministry of Territorial Planning.

C. Other Environmental Taxes :

- ✓ Tax on industrial liquid emissions to regulate wastewater discharge.
- ✓ Water quality conservation fee to ensure sustainable water management.

4.2 Environmental Funds and Institutions:

In response to environmental and climate challenges, Algeria has adopted sustainable green financing through the establishment of several funds and institutions dedicated to environmental preservation and climate protection. These include:

- ✓ The National Fund for the Environment and Coastline Protection.
- ✓ The National Fund for Regional Planning and Sustainable Development.
- ✓ The Fund for Infrastructure Development and Land Use Planning.
- ✓ The National Fund for Coastal and Beach Protection.

The Fund for Combating Desertification and Developing Pastoral and Steppe Areas (Hadadou, 2021, pp. 62-63)

4.3. The Current State and Mechanisms for Implementing Green Finance in Africa :

Every African country is a signatory to the Paris Agreement on Climate Change, the first global climate accord established in 2015. Most African nations have ratified this agreement and have committed to reducing carbon dioxide (CO₂) emissions through national programs, local financing, and budget allocations for green projects. Additionally, they have established national climate funds and fostered partnerships with the private sector, civil society, and local authorities.

Furthermore, many African countries are striving to improve access to international climate finance sources, such as the Green Climate Fund (GCF), which has allocated half of its global portfolio—equivalent to \$4.6 billion—to climate-related projects in Africa. Several African nations have already taken significant steps toward green transformation and its financing mechanisms, with some of the most notable cases including the following:

4.3.1 East African Countries :

Several East African nations, including Kenya, Uganda, Tanzania, and Ethiopia, have successfully provided clean solar energy to rural households. Although the allocated government budgets for transitioning to a clean environment remain relatively modest, African banks have also committed to global sustainable finance initiatives.

Kenya stands out as the leading country in East Africa's sustainable finance sector, guided by its Vision 2030, which aims to transition to a green economy and reduce greenhouse gas emissions by 30%. The Kenyan government has prioritized developing a green bond framework, accounting for approximately 95% of all green bonds issued in Africa. Additionally, Kenya has focused on promoting renewable energy projects, with particular emphasis on geothermal, wind, and biomass energy.

In 2017, Kenya launched the Green Bond Program through a public-private partnership to finance investment projects dedicated to environmental and climate protection. Subsequently, in 2019, Kenya issued its first green bond, valued at \$45 millions.

4.3.2 West and Central African Countries :

Despite Nigeria's heavy economic reliance on fossil fuels, the country is at the forefront of African nations transitioning toward clean energy sources. This transition is primarily financed through green bonds, which are issued in the Nigerian Stock Exchange under a structured framework. Nigeria was the first African country—and the fourth globally—to issue sovereign green bonds. The country's first sovereign green bond, introduced in December 2017, was a pioneering initiative in Africa, setting a precedent for other governments to follow.

Nigeria prioritizes projects aimed at reducing greenhouse gas emissions, supporting economic diversification, promoting sustainable growth, and ensuring development that benefits disadvantaged communities. This is particularly important given the country's projected greenhouse gas emissions, which could reach 900 million tons annually by 2030. To counteract this, Nigeria has committed to reducing emissions by 20% under its national development plan, set to be completed by 2030.

Additionally, Nigeria is actively expanding solar energy projects and launching afforestation initiatives across different regions to mitigate environmental degradation and support sustainable development.

4.3.3 Ghana's Green Finance Initiatives :

In Ghana, the government has actively encouraged the private sector to participate in sustainable development and the green transition. This involvement extends to planning and implementing climate adaptation measures, all within a developmental framework aimed at reducing carbon emissions. The country has pursued this goal by promoting clean energy adoption across various sectors, including cooking, lighting, and other energy-intensive activities.

To attract private sector investment in low-carbon green development, Ghana introduced the "Investor Guide," a strategic tool designed to facilitate private financing for sustainable projects. Additionally, efforts to enhance the business climate in Ghana have been accompanied by policy reforms and financial instruments managed by the government. These include:

- ✓ Full or partial government guarantees for sustainable projects.
- ✓ Debt and equity financing options to support green investments.
- ✓ Favorable tax and insurance schemes to incentivize sustainability.
- ✓ Equipment financing and concessional incentives for green initiatives.

Furthermore, Ghana has embraced innovative financing mechanisms, such as developing "market-ready green products" and establishing a Green Growth Fund. This fund will be replenished through commercial loan revenues, which will be directed toward environmentally sustainable projects.

4.3.3 Côte d'Ivoire's Green Finance Initiatives :

In Côte d'Ivoire, solar energy projects have been launched to provide electricity to households in remote areas that are not served by the national power grid. Given the high costs associated with such projects, banks have played a significant role in financing them. For instance, Société Générale has pledged to support sustainable development projects in Sub-Saharan Africa, including Côte d'Ivoire.

Additionally, the bank has backed the Structured Financing Platform for Sub-Saharan Africa, which has provided 18 million francs in financing for solar energy projects. This funding was structured as securitization for the repurchase of receivables generated from the sale of solar energy systems. Notably, this initiative represents the first large-scale local currency financing structure utilizing securitization techniques in the renewable energy sector.

4.3.4 Southern African Countries :

South Africa has the most developed bond market in Africa, accounting for 8.73% of all green bonds issued across the continent. The country initially introduced green bonds at the municipal level, with banks in Cape Town and Johannesburg issuing green bonds to fund local climate change mitigation and adaptation projects.

In October 2017, the Johannesburg Stock Exchange (JSE) launched the Green Bond Segment and established green listing rules to encourage further green bond issuances. This pioneering move has positioned South Africa as a gateway for green investment in Sub-Saharan Africa.

Moreover, Angola, a country heavily reliant on oil, has sought to capitalize on its abundant rivers by

creating investment opportunities in hydropower projects. Several projects have already been completed, while others remain under construction, aiming to achieve the ambitious goal of generating approximately 9,000 megawatts of hydropower by 2025 (Abbas, 2023, pp. 156-157).

4.4 Mechanisms for Green Finance and Investment :

Green finance aims to achieve two primary objectives:

- ✓ Mitigating the impact of climate change on economic and social systems.
- ✓ Promoting green growth, which integrates environmental sustainability with economic development.
- ✓ Various economic stakeholders are involved in adopting sustainable financing methods.

4.4.1 The Role of the Government :

Despite budgetary constraints and rigid operational systems, government financing remains effective, as governments hold executive authority over international agreements and can provide both financial and regulatory support to the green industry through:

- ✓ Encouraging private investment funds to allocate capital to green industries.
- ✓ Establishing environments and private capital market systems to support and promote green finance (Waneesi & Tahrawi, 2022, p. 09).

5. Conclusion and Recommendations:

Green finance is one of the key issues that increasingly captures the attention of governments and environmental protection agencies. The concept of green finance has gained significant global traction due to its importance, role, and impact on advancing the dimensions of sustainable development.

However, in light of the preceding discussion, several key findings can be drawn:

- ✓ The absence of comprehensive and well-adapted strategies for financing environmentally friendly projects across various sectors, such as agriculture and tourism, which continue to lag behind in terms of environmental sustainability.
- ✓ Algeria has made significant efforts to develop the sustainable energy sector and its associated technologies by adopting an alternative energy policy and establishing the necessary institutional and legal frameworks. However, these efforts remain partially unimplemented and face certain shortcomings, particularly as the government prioritizes meeting citizens' basic needs.
- ✓ Like many other countries, Algeria is striving to institutionalize the principles of environmental protection and sustainable development as part of its long-term economic advancement, leveraging its vast natural and economic potential.
- ✓ Emphasizing green financial products that ensure long-term integration with sustainable development objectives.

5.1 Recommendations :

Assessing the impact of environmental risks and climate change across various sectors, including the financial sector. Economic policies and programs play a crucial role in developing the financial sector to align with these environmental changes, which should, in turn, contribute to mitigating their effects and advancing sustainable development goals.

Encouraging international financial institutions, such as the World Bank and other global funding organizations, to actively support green finance initiatives.

Aligning investment strategies with sustainable development objectives by prioritizing efficient investment portfolios that enhance profitability and reliability while minimizing risks.

Strengthening the role of international organizations in advancing green finance and its associated financial products.

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