

Environmental Impact of Financial Market's Development in Algeria

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Received: 27-08-2024

Accepted: 08-12-2024

Abstract

This study examines the relationship between environmental sustainability and financial market development in Algeria, focusing on the channels through which financial development may influence environmental outcomes. Rather than estimating this relationship empirically — a task constrained by current data limitations, particularly regarding Algeria's capital market — the study develops a conceptual framework identifying three principal transmission channels: credit allocation, capital market development, and regulatory-institutional design. The analysis draws on the Environmental Kuznets Curve hypothesis and on comparative evidence from other African financial markets, and examines Algeria's regulatory landscape, including its efforts to harmonize with European Union environmental standards. The findings suggest that Algeria's financial system has historically been structurally oriented toward public financing needs rather than environmentally sustainable private investment, though there are indications of gradual institutional progress. Achieving long-term environmental and economic sustainability requires integrating environmental risk criteria into credit allocation, deepening capital markets under stronger governance standards, and aligning regulatory frameworks with international environmental finance standards.

Keywords:

Financial market development;
Kuznets' hypothesis;
Renewable energy investments;
Green finance.

JEL Classification Codes: Q56 ; G10;
Q58 ; F64.

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1. INTRODUCTION

The relationship between the environment and the financial market has been a topic of extensive research and analysis over the past few decades. Environmental finance, which centers around investment strategies aimed at conserving and protecting nature, has emerged as a prominent subject of study. The implications of the direct as well as indirect influence that financial development exerts on the environment have garnered significant attention in recent years, particularly in the context of environmental policy formulation and implementation. It is well-established that there exists a correlation between economic development and environmental degradation. Numerous studies have delved into the complexities of this relationship, with some extending the Kuznets' hypothesis. This hypothesis posits that as real income increases, environmental damage initially worsens before eventually improving. In other words, there seems to be an inverted U-shaped curve that depicts the fluctuating trends in annual pollution levels with respect to income growth across different stages of development. Understanding this intricate interplay between the environment and the financial market is crucial for devising effective strategies to address environmental challenges. By comprehending the mechanisms driving the relationship between economic growth and environmental impacts, policymakers can better shape environmental regulations and policies that safeguard our ecosystems, natural resources, and overall planetary well-being. It is imperative to strike a balance between economic prosperity and environmental sustainability, and this necessitates a comprehensive understanding of the underlying dynamics between the two. Only with this knowledge can we hope to foster a harmonious coexistence of robust financial systems and a thriving, ecologically sound environment. The integration of environmental considerations into financial decision-making processes is essential for achieving sustainable development. Recognizing the interconnectedness of economic activities and ecological health, governments, financial institutions, and investors are increasingly incorporating environmental criteria into their investment strategies. This shift towards environmentally sustainable finance involves the integration of environmental risks, opportunities, and impact assessments into investment decisions. It also encompasses the promotion of green and low-carbon initiatives, the development of sustainable financial

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products, and the adoption of transparency and reporting standards. Moreover, the importance of environmental, social, and governance (ESG) factors in financial markets has gained traction in recent years. Investors and companies alike are recognizing that incorporating ESG criteria can lead to long-term value creation and risk mitigation. Environmental factors, such as climate change, resource depletion, and pollution, have a direct impact on the financial performance of businesses and investment portfolios. Furthermore, social and governance considerations, including human rights, labor practices, and corporate ethics, can influence the reputation, customer loyalty, and regulatory compliance of companies. To effectively address the environmental challenges we face, collaboration among diverse stakeholders is crucial. Governments, businesses, civil society organizations, and individuals must come together to drive sustainable practices and investments. This includes fostering innovation and technology transfer, promoting sustainable consumption and production patterns, and enhancing environmental education and awareness. By working collaboratively, we can create a more resilient and sustainable future for generations to come. In conclusion, the relationship between the environment and the financial market is complex and multifaceted. It requires a comprehensive understanding of the interdependencies and trade-offs between economic growth, environmental sustainability, and social well-being. By integrating environmental considerations into financial decision-making processes and promoting sustainable investment practices, we can strive towards a greener and more prosperous future. Together, we can build a harmonious coexistence between robust financial systems and a thriving, ecologically sound environment.

The process of financial development and evolution is showing a fast pace in the last decades in the entire world, where all governments are intensely promoting foreign and domestic investment activities within their countries. However, the major questions that need the soonest answers are to what extent there is a negative or positive relationship between financial development and environmental degradation. As for Algeria, there is an increasing government interest in promoting investment activities, especially those that contribute to the greening of the country. As such, renewable energy sources have

received the first priority investments in the last decade, being second in governmental priorities.

2. Background of Financial Markets in Algeria

The Algerian stock exchange was established in 1969, but it is only in the second half of the year 1990 that the state embarked on structural adjustments planning of the Algerian economy which resulted in the creation of eight new financial instruments regulated by an independent regulatory body dubbed 'The Higher body of Regulation of the Financial Market' (Conseil Du Marché Financier) (Haouas, Ochi, & Mohamed Ali, 2024). This regulatory body also oversees the financial transactions and enforces the rules and regulations which enhance the performance of the stock exchange by freeing the market from monetary instability and constraints. It is important to note that the objectives of the financial instruments created were to facilitate democracy, openness, transparency, dynamism, modernism with the ultimate goal of promoting stock exchange integration into the world economy (Khlif, Ahmed, & Manzurul, 2020).

The creation of the eight financial instruments was also realized as an answer to reforming the fiscal management process of the country due to the urgency and preoccupations about the crisis of the public constructive system at stake which weighed heavily in the balance of payments as there was a slow penetration of new means of funding social financial activities which were not giving real results (Tan, et al., 2022). It was necessary to distinguish the public bank and the public enterprises, and the authorities wished to guarantee the survival of the public company on the only edge of the market. Following the deregulation scope of the Algerian stock exchange, the management of the dominant capital took shape along convoluted phases with the aim of modernizing national firms to withstand the competition of the world market.

3. Environmental Issues in Algeria

As already seen, climatic conditions are identified among the basic pillars of Algeria's economy, being in addition the essential criteria for the territorial localization of all ecological balances (Bouraiou, et al., 2020). It is also known that the nature of the terrain, being harsh, arid, semi-arid, and desert, is a hindrance to human activities. However, its assets are better used and more efficiently managed when necessary (Schilling, Hertig, Trambly, & Scheffran, 2020).

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Having in mind the regional discrepancies observed in natural and physical endowment, territorial scarcities or abundant natural input will generate income distribution and hence the challenge for prosperity in the planet of tomorrow (Bellout, Vaz, & Penfound., 2020).

Development, in both the sense of industrialization and big urban concentrations entwined in the present market economic system, traditions, and lifestyle of populations, causes irreversible consequences to the environment and its negative effects, such as air pollution, water pollution, waste disposal, and dispersion of urban and industrial habitat, leaving major repercussions (Kherbache & Molle, 2023).

So, to remedy these problems, technological solutions to environmental problems have a limit. In effect, in certain phases of the economic-urban development process, the risks to the environment tend to slip constantly. These externalized costs well translate the transfer in the future of the economic, social, and environmental problems we are facing.

4. Link between Financial Markets and Environmental Impact

Economic development generates diverse repercussions on the environment, in proportion to its scale. The literature examining the link between economic growth and the environment is extensive, dating back to the 1950s and expanding considerably from the 1990s onward. Several studies (Nasrollahi, Hashemi, Bameri, & Taghvaei, 2020), (Yang & Khan, 2022), and (Zameer, Humaira, Zafar, Abdul, & Avik, 2020) test this relationship at a broad level, incorporating a wide range of economic characteristics and increasingly refined environmental measurement approaches. The financial markets themselves, however, have rarely been examined directly within this literature; extending the analysis to this sphere is therefore useful for testing conventional growth models in the specific context of the Algerian economy.

Building on this literature, the working hypothesis adopted in this study is that a significant presence of the financial system within the economy is positively correlated with the evolution of environmental degradation, given the current composition of Algeria's financial system. In this system, the private sector is oriented predominantly toward credit markets rather than the stock exchange (Khlif, Ahmed, & Manzurul, 2020), with bank lending constituting the principal channel

of private financing. Sound credit allocation would, in principle, favor environmentally sound projects; where it does not, this reflects an information-driven moral hazard problem (Hadri & Benbouziane, 2024). The literature underscores the central role of information asymmetry in financing decisions, and generally finds only a weak empirical relationship between the cost of capital and environmental performance in bank-dominated systems such as Algeria's. As the cost of capital rises, banks tend to extend credit selectively to borrowers presenting an adequate margin of safety in management and a low probability of insolvency (Mebarki, 2016); sound environmental practices can serve as an additional, favorable signal to lenders (Hacini, Mohammedi, & Dahou, 2022).

5. Case Studies of Environmental Impact in Financial Markets Development

Recent studies of the impact of Africa's financial markets on the environment can be presented through three main cases: the South African case, the Egyptian case, and the Tanzanian case.

First, South African financial markets are considered the most developed in Africa and one of the pillars of the capitalist economy of the country. South African's financial market served in the 90s as a heartbeat of the ecology of the OECD's negative institutions (Morema & Bonga-Bonga, 2020). These markets have been accused of contributing to the high level of pollution and negative ecological effects resulting from the activities of forsaken firms installed near industrial estates and off some major South African cities including Johannesburg and Cape Town. The end of the apartheid regime and the policies adopted by the Mandela government could favor a positive recovery of these financial establishments.

The second case is the Egyptian one. Its stock market is presented as a reference for the stock markets of the Middle East and North Africa. Rapid urban and industrial expansion in ecologically sensitive areas — including parts of the Nile Delta — has raised longstanding concerns about the adequacy of environmental oversight relative to the pace of financial and urban development, with authorities at times criticized for insufficiently regulating construction activity in these zones (Valipour et al., 2020).

The third case is the Tanzanian case. In 1995, the Tanzanian government launched the Tanzania Enterprise Growth Market

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(TEGMARKET) project. The objective is to reduce poverty and protect the environment by promoting the development of small and medium-sized enterprises (SMEs) by offering them easier access to financial resources. After two years, evaluators noted that the low level of governance of some small enterprises, including a number of very sensitive artisanal activities to the environment, did not allow investors to trust them. This resulted in a negative image of the TEGMARKET and investment income was extremely small. The stock exchange had become an opaque breeding ground for some industrialists and a nest of corruption. The introduction of corporate social responsibility (CSR) in TEGMARKET companies was the main positive environmental recommendation on the proposal (Yang, Zhang, Wang, & Chen, 2024). If we consider this impossibility as a liberalization of morality and ethics, it can be admitted that the Algerian practitioner has saved TEGMARKET from a real disaster, at least temporarily, and the creation of ecological standards may be the case. Advertised by certain Algerian leaders and the hearts themselves since mid-2000, the creation of the Algerian stock exchange comes at a time when, in North Africa, the functioning of financial establishments may already pose moral and ethical problems in relation to the protection of the environment. There is not much discussion about this subject yet; some observers emphasize only a few imperfections.

6. Regulatory Framework for Environmental Protection in Algerian Financial Markets

6.1. Carbon Emissions and Financial Market Development in Algeria

The management of carbon emissions constitutes a growing concern for financial markets in Algeria, particularly in the context of a strengthening global consensus around the transition to cleaner energy sources. Algeria's economy has traditionally relied on hydrocarbon revenues, which makes the decarbonization process structurally complex, yet it also creates an opportunity: aligning economic policy with international sustainability standards could position Algeria to attract green investment flows that support both environmental objectives and financial sector development (Khurram, Zeraibi, & Zaman, 2022).

From a financial risk perspective, carbon-intensive sectors are increasingly exposed to regulatory and market pressures at the international level, raising the vulnerability of investments directed

toward them. Algeria can reduce this exposure by diversifying investment portfolios and identifying sustainable investment alternatives, while continuing to support economic growth. The development of green financial instruments, together with the integration of Environmental, Social, and Governance (ESG) criteria into investment decisions, could contribute to a more resilient and diversified financial sector (Khurram, Zeraibi, & Zaman, 2022).

Investment in renewable energy sources—particularly solar and wind power—offers a pathway to strengthen energy security and reduce reliance on fossil fuels. Such investment could also stimulate the emergence of new economic sectors, including renewable energy technologies and related infrastructure. However, translating this potential into measurable outcomes requires coordinated action among policymakers, financial institutions, and other stakeholders, as well as robust regulatory frameworks capable of channeling capital toward sustainable projects.

In this context, aligning Algeria's regulatory frameworks with international, and particularly European, standards in areas such as environmental disclosure, green taxonomy, and carbon trading mechanisms becomes crucial. Without such alignment, Algerian financial markets risk lagging in adapting to the requirements of international carbon markets and missing opportunities to integrate into cross-border green finance channels. Enhancing transparency and disclosure of environmental risks in investment portfolios can also increase foreign investor confidence and lower the cost of capital for sustainable projects.

Although Algeria possesses substantial natural potential in solar energy, transforming this advantage into concrete investment opportunities requires institutional reforms, such as developing a green bond market, introducing tax and credit incentives for low-carbon projects, and strengthening the capacity of financial institutions to assess environmental risks. Improving the business environment, simplifying administrative procedures, and ensuring policy stability are all critical factors for attracting private investment into the renewable energy sector.

In conclusion, transitioning to a low-carbon economy is not without challenges, but it represents an opportunity to positively redefine Algeria's economic trajectory. By embracing sustainable strategies, diversifying investment portfolios, and forging a robust pathway toward

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a greener future, Algeria can ensure long-term economic resilience while reducing carbon emissions. This transformation calls for close collaboration between policymakers, financial institutions, and various stakeholders, all working together toward a shared vision of sustainable development (Khurram, Zeraibi, & Zaman, 2022).

6.2. European Engagement and Harmonization with European Union Environmental Legislation

Closer engagement with European Union environmental and financial regulatory standards represents an important avenue for strengthening Algeria's environmental finance framework. As carbon-related disclosure requirements become an increasingly central feature of cross-border commercial and financial activity, harmonizing Algerian regulation with EU environmental legislation — particularly regarding emissions reporting, green taxonomy classification, and carbon-related financial instruments — would help Algerian financial markets avoid falling behind international requirements and would facilitate their integration into emerging carbon and green finance markets.

7. Challenges and Opportunities for Sustainable Development

There is now a higher awareness of sustainable development and environmentalism in Algerian society. This awareness leads to a change in society and economic needs. In this part, we focus on the Algerian context to analyze its relation with the development of financial markets. We intend to present some environmental challenges facing Algerian society, financial institutions, and the stock market, and draw policy implications based on the evidence analyzed in our paper.

Algeria experienced a second generation of comprehensive policy efforts to develop financial markets starting in 2000 (Nwani, Effiong, Okpoto, & Okere, 2021). The primary objective of this policy is to transform the banking system into a real tool that promotes sustained and successful socio-economic growth.

Our analysis has shown that the way the banking system allocates savings remains oriented towards supporting the state budget and public companies at the expense of the private sector, which it marginalizes (Hadjeris, 2021). This orientation promotes the dependence of the Algerian economy on volatile hydrocarbon prices. However, with adequate development of the stock market, the monetary ballast of the commercial public debt would unfold some of its functions, as would the banking settlements, which otherwise serve the new segments of the

financial market incorporated into the SGDM. By encouraging savings, the bond markets strengthen the financing most consistent with sustainable development by investing long-term (Talahite, 2021).

We propose some regulatory decisions aimed at enhancing the role of markets in the promotion of sustainable development in Algeria. We believe that the Algerian institutional framework has a positive influence on the financial system. The institutional mechanisms designed to develop Algerian society are shown to promote the good quality of the banking system through ex ante incentives guaranteed to engender healthy, private financial institutions.

8. Theoretical Framework: Channels of Transmission between Financial Development and Environmental Degradation in Algeria

8.1. Rationale for a Conceptual Approach

Given current limitations in the availability of consistent, disaggregated time series data on Algeria's financial markets — particularly regarding stock market capitalization and green investment flows prior to the 2010s — this study adopts a conceptual and analytical framework rather than an empirical estimation strategy. This approach allows for a systematic examination of the mechanisms through which financial development may influence environmental outcomes in Algeria, drawing on the theoretical foundations established in the finance-environment literature (Section 4) and the comparative case evidence discussed in Section 5. The framework identifies three principal transmission channels: the credit allocation channel, the capital market channel, and the regulatory-institutional channel.

8.2. The Credit Allocation Channel

The banking system remains the dominant component of Algeria's financial system, with credit markets substantially outweighing the stock exchange in both volume and economic significance (Khlif, Ahmed, & Manzurul, 2020). Within this context, the direction of credit allocation constitutes the primary channel through which financial development affects environmental outcomes.

Historically, the Algerian banking system has allocated savings predominantly toward financing the state budget and public enterprises, at the relative expense of private-sector financing (Hadjeris, 2021). This orientation has two environmentally relevant implications. First, it

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perpetuates the structural dependence of the Algerian economy on hydrocarbon-related revenues, since public financing needs are themselves closely tied to fluctuations in hydrocarbon export earnings. Second, it constrains the emergence of a private green finance segment, as small and medium-sized enterprises operating in renewable energy or environmentally sensitive sectors face comparatively limited access to credit — a pattern consistent with the information asymmetry problems documented by Hadri and Benbouziane (2024).

Under conditions of asymmetric information, banks tend to extend credit preferentially to borrowers presenting a low probability of insolvency and a demonstrable safety margin in management practices (Mebarki, 2016). Where environmental performance is not systematically integrated into credit risk assessment, this lending behavior does not necessarily favor environmentally sustainable borrowers, and may in some cases favor established, carbon-intensive incumbents over newer green-sector entrants lacking a comparable credit history. This constitutes a structural, rather than incidental, barrier to green credit allocation.

8.3. The Capital Market Channel

The Algiers Stock Exchange (SGBV), despite having been established in 1969 and reformed substantially following the structural adjustment period of the 1990s, remains limited in depth and liquidity relative to comparable exchanges in the region, such as those of Egypt or South Africa (Section 5). This limited development constrains the capital market channel in two respects.

First, a shallow equity market restricts the ability of environmentally oriented firms to raise long-term capital through public listing, limiting the emergence of dedicated green financial instruments such as green bonds or sustainability-linked equity offerings — instruments that have played a documented role in channeling savings toward long-term sustainable investment in other contexts (Talahite, 2021).

Second, the comparative case evidence reviewed in Section 5 — notably the Tanzanian TEGMARKET experience — illustrates that capital market development in the absence of adequate corporate governance standards can itself generate adverse environmental and

reputational outcomes, as weak oversight of listed enterprises undermines investor confidence and discourages the very capital inflows needed to finance a green transition. This suggests that capital market depth alone is an insufficient condition for positive environmental outcomes; the quality of market governance and disclosure standards constitutes an equally important determinant.

8.4. The Regulatory-Institutional Channel

The third channel operates through the regulatory and institutional framework governing financial markets and their interaction with environmental policy. As discussed in Section 6, Algeria's regulatory harmonization with European Union environmental standards remains at an early stage. In the absence of binding requirements for environmental risk disclosure, ESG reporting, or mandatory green investment quotas, financial institutions face limited institutional incentive to internalize environmental externalities in their lending and investment decisions.

The institutional mechanisms established since the 2000s to reform the banking system have primarily targeted socio-economic development objectives rather than environmental ones specifically (Nwani, Effiong, Okpoto, & Okere, 2021). Consequently, environmental considerations have tended to enter financial decision-making indirectly, if at all, rather than through a dedicated regulatory architecture. Strengthening this channel would require the introduction of explicit environmental criteria into prudential regulation, the development of a national green taxonomy, and closer alignment with international disclosure frameworks — steps that would also facilitate Algeria's integration into cross-border environmental finance markets, including carbon markets, as noted in Section 6.2.

8.5. Synthesis: An Integrated Conceptual Model

Taken together, these three channels suggest that the relationship between financial development and environmental degradation in Algeria is not a direct, mechanical one, but is mediated by the composition and governance quality of financial development rather

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than its volume alone. This distinction is consistent with the Environmental Kuznets Curve literature more broadly (Nasrollahi et al., 2020; Yang & Khan, 2022), which increasingly emphasizes that the turning point of the EKC — the income level beyond which further growth improves rather than worsens environmental outcomes — is not automatic, but conditional on the emergence of institutions and financial instruments capable of redirecting capital toward sustainable ends.

For Algeria specifically, this implies that continued expansion of the financial system, in the absence of complementary reforms in credit allocation practices, capital market governance, and environmental regulation, is unlikely by itself to generate a favorable environmental trajectory. Conversely, targeted reforms addressing each of the three channels identified above — even in the context of a financial system that remains comparatively shallow by international standards — could plausibly accelerate the transition toward the declining segment of the environmental Kuznets curve.

Table 1 — Summary of Transmission Channels

Channel	Current Constraint in Algeria	Potential Policy Lever
Credit allocation	Bank credit oriented toward the public sector and state budget financing	Integrate environmental risk criteria into credit risk assessment; targeted green credit lines for SMEs
Capital market	Shallow equity market; limited green financial instruments; governance concerns for smaller listed firms	Deepen the SGBV; introduce green bonds; strengthen listing and disclosure standards
Regulatory-institutional	Incomplete alignment with EU/international environmental finance standards	Develop a national green taxonomy; mandate ESG disclosure; align with EU environmental legislation

Source: By author

9. Conclusion and Policy Recommendations

This study examined the relationship between financial market development and environmental sustainability in Algeria through a conceptual framework identifying three principal transmission channels: credit allocation, capital market development, and regulatory-institutional design. Rather than estimating this relationship empirically — a task constrained by current data limitations, particularly regarding Algeria's capital market — the study offers a systematic account of the mechanisms through which financial development may shape environmental outcomes, informed by the broader empirical literature and by comparative evidence from other African financial markets.

The analysis suggests that Algeria's financial system has, to date, been structurally oriented toward supporting public financing needs rather than environmentally sustainable private investment, a pattern reinforced by asymmetric information problems in credit markets, limited capital market depth, and an incomplete regulatory framework for environmental risk integration. Addressing these constraints would require: (i) the introduction of environmental risk criteria into bank credit assessment; (ii) measures to deepen the Algiers Stock Exchange while strengthening corporate governance and disclosure standards for listed firms; and (iii) closer regulatory alignment with international environmental finance standards, including those of the European Union, to facilitate Algeria's participation in emerging carbon and green finance markets.

Future research, contingent on improved data availability, should seek to test the channels identified here empirically — for instance through SVAR or panel cointegration methods applied to disaggregated financial and environmental indicators — in order to quantify the relative strength of each transmission channel and formally assess the existence and turning point of an environmental Kuznets curve for Algeria.

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