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The Developmental Dimension of Algerian Foreign Policy in the Algerian Strategy

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ABSTRACT

This study examines the conceptual and organizational framework of the general land survey process and its governing authorities in Algerian legislation, as a fundamental gateway to clearing property titles and establishing the real property registration system pursuant to Order No. 75-74. The research addresses both the doctrinal and legal concepts of the land survey, distinguishing between its main types: the general survey (urban and rural) and the forest survey. It also highlights the administrative and organizational evolution, spanning from the establishment of the National Land Survey Agency in 1989 to its dissolution in 2021, the reintegration of its functions into the central administration and external services of the Ministry of Finance (Directorate General of National Domains), and its subsequent reorganization in 2024. Furthermore, the study reveals the rigorous structural and administrative hierarchy connecting the Central Administration, Regional Directorates, Provincial Directorates, Provincial Survey Committees, and Land Conservation Offices—acting as the direct local services responsible for publishing legal deeds, issuing land certificates, protecting property ownership, and digitizing real estate data.

Keywords: General Land Survey; Land Registry; Land Conservation Office; Directorate General of National Domains; Provincial Survey Committee; Real Estate Registration.

Introduction:

Algeria has adopted a set of policies and strategies aimed at achieving development across various fields. However, the success of these strategies remains dependent on the state's ability to adapt to the regional and international changes surrounding it. Algeria, as a state, is also affected by external variables. Therefore, it must adapt and adopt a course of action that enables it to address the transformations taking place in the region. This is clearly reflected in its foreign policy. Since external variables have a greater impact and play a significant role in determining the country's development trajectory, Algeria has been required to take measures aimed, on the one hand, at promoting development and, on the other hand, at strengthening its regional position and role. This may explain its efforts to confer a developmental dimension upon its foreign policy.

Keywords: Development; developmental dimension; foreign policy; strategy.

Introduction

Since the beginning of the third millennium, Algeria has found itself facing an extremely volatile international environment, in which the pressures of geopolitical transformations intersect with the imperatives of domestic development in an equation that calls for careful analysis and a comprehensive strategic approach. On the one hand, Algeria possesses a firmly established diplomatic legacy based on the principles of independence, non-alignment, and the right of peoples to self-determination, a rare strategic asset in a world witnessing major powers competing over spheres of influence and resources. On the other hand, its economy suffers from structural fragility resulting from heavy dependence on hydrocarbon rents, making every fluctuation in oil prices a real test of the resilience of the development model as a whole.

Algerian foreign policy has witnessed a qualitative shift in its guiding philosophy; after remaining for a long period a defensive policy centered on safeguarding sovereignty and consolidating the principles of non-intervention, it has gradually moved toward a constructive offensive philosophy seeking to employ its regional weight and develop the legal framework in the service of development objectives. This transformation is inseparable from accumulated objective pressures: declining hydrocarbon revenues during periods of falling prices, increasing social demand for employment, and the accelerating pace of competition for investment in the African and Mediterranean contexts. From this perspective, the problem addressed by the study revolves around: the extent to which the developmental dimension of foreign policy has succeeded in the Algerian strategy

To answer the research problem, the study addresses the following axes:

First axis: The position of development in Algerian foreign policy

Second axis: Diversification of the national economy and the requirements for moving away from the rentier model

Third axis: Foreign policy orientations in accordance with the achievement of sustainable development in light of global transformation

First axis: The position of development in Algerian foreign policy

The Algerian orientation in foreign policy does not emerge from an arbitrary assessment, but is established by an integrated constitutional system that constitutes the supreme legal framework governing the work of Algerian diplomacy.

First_ The constitutional and institutional embedding of the use of foreign policy and the effectiveness of economic diplomatic institutions

The 2020 Constitution came to consolidate the principles established in previous texts, adding developmental and economic dimensions to them

1__ **The constitutional and institutional embedding of the use of foreign policy:** previously, it had not enjoyed the same degree of clarity. Articles 28 to 32 regulate the legal boundaries of foreign policy within a framework that combines the constants of sovereignty with the requirements of active international engagement. The prohibition on resorting to war set out in Article 28/1 does not merely entail the negative character of abstention, but requires that negotiating diplomacy be the only legitimate instrument for managing disputes, which drives the development and maximization of economic negotiation capabilities. Likewise, the principle of non-interference set out in Article 28/2 has given Algeria strategic credibility that has made it an accepted mediator in regional conflicts, a credibility that can be leveraged to attract economic partnerships backed by guarantees of political neutralityⁱ

The constitutional framework is inseparable from a complementary legislative system encompassing the Investment Law, the Hydrocarbons Law, the Mining Law, and other economic legislation with external dimensions. This system underwent major transformations during the 2019-2023 period, initiated by the amended Hydrocarbons Law in 2019 and culminating in the new Investment Law in 2022, which represents the most significant legislative shift in the field of attracting foreign investment since independence, as it abolished the 49/51 rule restricting foreign ownership in most non-strategic sectors, opening the door to more balanced and attractive foreign partnerships. ⁱⁱ

Effectiveness and Limitations of Economic Diplomatic Institutions

The analysis of the reality of Algerian economic diplomacy and its relationship with attracting foreign direct investment reveals a striking structural gap, manifested in the

existence of complex legislative challenges that weaken Algerian competitiveness despite the country's promising natural assets. When we compare Algeria with a number of successful African countries, we find that the deeper problem is not the weakness of Algerian negotiating capacity in itself, but rather the weak institutional coordination among the various bodies concerned with the external economic portfolio. Each ministry operates according to its own administrative logic, and the messages directed at foreign investors often contradict one another because of this institutional fragmentation, creating confusion that diminishes the impact of the legislative achievements made.ⁱⁱⁱ

And second, the level of regional mediation, which has become a lucrative diplomatic return in African and Maghreb conflicts. And third, the level of multilateral partnership with China, the United States, Russia, and the European Union all at once^{iv}

One of the most prominent manifestations of this economic deployment is Algeria's joining the BRICS group as a partner in January 2024, in a step that entails engagement in an alternative platform for financing, investment, and technological exchange to the traditional Bretton Woods platforms, thereby providing greater room for autonomy in development choices. This accession is expected to open wide avenues for development financing through the New Development Bank NDB, which has announced its readiness to finance infrastructure and renewable energy projects in the new member states, directly serving Algeria's economic diversification process.^v

Third: Mechanisms of Algerian economic diplomacy and an assessment of its effectiveness:

Algerian economic diplomacy has evolved from a defensive model content with safeguarding sovereignty over resources into a constructive offensive model that seeks to leverage economic weight and upgrade the legal framework in the service of development objectives. Specialized researchers agree that three axes constitute the organizing structure of Algerian economic diplomacy: the energy axis, which uses hydrocarbon resources as a bargaining tool, the African partnership axis, which is based on South-South solidarity, and the technical cooperation axis, which mobilizes Algerian expertise to strengthen regional presence.

1_ Manifestations of Algerian diplomacy in Algerian foreign policy:

Bilateral investment protection agreements form the backbone of Algerian economic diplomacy, as Algeria had concluded more than 54 bilateral investment protection agreements with economic partners from various geographical regions by 2024. Algeria's accession to the African Continental Free Trade Area in 2021 also opened up a market of 1.4 billion consumers with a total GDP exceeding 3.4 trillion dollars, while negotiations with the European Union continue to amend the Euro-Mediterranean Association Agreement

concluded in 2002 in a manner that reflects shifts in the balance of economic weight. Researcher Mohamed Ourag notes that the effectiveness of these agreements is conditional on the degree of consistency between economic diplomatic discourse and internal institutional reform, so that the agreements do not become merely a quantitative asset without a measurable developmental impact^{vi}

– The developmental effectiveness of Algerian diplomacy:

The tools of Algerian economic diplomacy vary between structural tools of a strategic nature and operational tools with an immediate impact. At the level of structural tools, energy diplomacy represents the primary lever, relying on Algeria's position as the European Union's third-largest gas supplier, which provides a degree of negotiating leverage that is rare in historically unequal economic relations. Infrastructure diplomacy represents the second lever, as Algeria works to connect its African hinterland to road and railway networks through the Trans-Saharan Highway, which extends 4,500 kilometers toward Nigeria, thereby transforming it into a logistics transit hub with multiplied economic value^{vii}

Regarding the assessment of the developmental effectiveness of these tools, critical analysis reveals a clear gap between the quantitative stock of agreements and their qualitative impact on the ground. While Algeria concluded more than 87 economic and trade agreements during 2020-2024, specialized studies indicate that the proportion of these agreements that translate into actual implementation projects does not exceed 30%, due to weak follow-up and periodic evaluation mechanisms and overlapping jurisdictions among executive bodies. Researcher Lahliani Leila concluded that the effectiveness of Algerian economic diplomacy depends on the simultaneous reform of three areas: developing diplomatic cadres specialized in economic affairs, unifying channels of communication with foreign investors, and building a digital system to track the implementation of agreements and measure their actual developmental returns^{viii}

Axis Two: Diversifying the National Economy and the Requirements for Moving Away from the Rentier Model

When hydrocarbons account for more than 95% of exports and 40% of public treasury revenues, every drop in oil prices becomes a financial and social crisis, not merely a passing economic fluctuation. Algeria experienced this equation in all its severity during the 2015-2017 crisis, when the price of a barrel collapsed from \$115 to below \$30, depleting foreign exchange reserves at an alarming rate. The dimensions of this challenge emerge across three interconnected levels: the structural dimension related to the weak diversification of national production, the legislative dimension related to the effectiveness of the investment-attraction system, and the regional dimension related to comparisons with similar experiences and drawing lessons from them.^{ix}

First: The Position of Development in the National Economy and the Problem of Rentier Dependence

It is not appropriate to speak of genuine economic diversification without taking into account the actual structure of national production and exports. In terms of the export structure, hydrocarbons still account for more than 95% of total export value, while the share of non-hydrocarbon exports did not exceed 5.2% in 2023. This percentage remains far below its regional counterparts: Morocco 82%, Tunisia 78%, and Egypt 62%, placing the Algerian economy at the bottom of the regional neighborhood in terms of export diversification. In terms of the structure of manufacturing, data from the National Office of Statistics reveal that the contribution of this sector to gross domestic product did not exceed 7.4% in 2023, compared with an African average of 11.2% and a global average for developing countries of 16%^x

_ Transition from the Rentier Economy: Indicators of Dependence and the Scale of the Challenge

Several factors are intertwined in explaining this structural weakness: foremost among them are the limited vertical integration between industrial establishments and weak local supply chains, the concentration of economic initiative in the public sector, which accounts for more than 60% of total investment, and weak intersectoral linkages between the various economic sectors, depriving national production of the advantages of sectoral integration. Quantitative evidence of this fragility is available in international indicators, as Algeria ranks 97th globally in the Economic Complexity Index issued by Harvard University's Growth Lab, which measures the diversity and technological sophistication of exports, thereby revealing the limited capacity of the actual productive structure.^{xi}

Perhaps the most striking point when reading this table is that, according to the World Bank's 2024 Business Ready index, Algeria ranks last in the non-oil exports index among the countries listed, despite being among the richest in terms of natural resources. This paradox is not accidental but rather the result of what economists describe as the "paradox of plenty," whereby rent-based wealth reduces the economic pressure that drives forced structural diversification.^{xii}

Comparative studies of concentration and diversification indicators reveal that the primary determinant of success in countries similar to Algeria was not financial abundance, but rather full openness to foreign investment and the establishment of a legal and judicial framework that matches the best international standards. The Moroccan model, in which 82% of its exports are outside the oil sector, likewise reveals that planned sectoral diversification in automobiles, aircraft, phosphates, and tourism has produced more lasting results than broad diversification policies. Both lessons indicate that Algeria needs a systematic transition from a single-sector diversification model to a multi-sector diversification model in which

each sector has its own specialized strategy^{xiii}

Moreover, the non-oil exports rate of 5.2% in 2023, although it represents an improvement over 3.2% in 2019, remains a long way from the African average of 18.4%, and this structural gap does not reflect shortcomings in the legal framework or in natural resources, but rather a structural weakness in the productive competitiveness system that leaves Algeria's non-oil products unable to compete in foreign markets^{xiv}

In addition, the foreign direct investment indicator reveals a persistent gap between Algeria and the average of comparable African countries, which stood at \$3.1 billion in 2023 compared with only \$2.3 billion for Algeria. Research and development spending, at 0.6% of GDP, also remains below the minimum threshold recommended by UNESCO, namely 1% for developing countries seeking to build a knowledge economy, an indicator that partly explains Algeria's lag in the knowledge economy and technology despite the availability of qualified human resources. The ease of doing business indicator, at 53 points out of 100 in 2023, also reflects a slow improvement from 48 points in 2019, but it remains below the African countries' average of 58 points, indicating that the legislative reforms undertaken have not yet translated into a tangible improvement in the actual business environment.^{xv}

The financing gap and the limited role of the private sector in the diversification path

Behind the structural weakness lies a deep investment gap that hinders any serious path toward diversification. Although the national savings rate is not considered low—ranging between 30% and 38% of GDP in years of abundance—the volume of actual productive investment in non-hydrocarbon sectors remains below the required level. The International Monetary Fund explains this gap through the concept of unproductive rentier savings, meaning that a large portion of energy surpluses flows toward supporting public consumption instead of being directed toward investment in diversified productive sectors^{xvi}

And regarding private-sector financing, researcher Lachaach Mohamed's study, in his analysis of the principles and guarantees of Investment Law 22-18, revealed that the Algerian banking system suffers from a dual structural deficiency: on the one hand, it is dominated by six public banks that account for more than 85% of total assets and tend to finance projects with clear real-estate collateral, thereby depriving startups and new productive projects of the necessary financing. On the other hand, an estimated \$40 billion remains outside the formal banking system for Sharia-related reasons, representing a huge savings reserve that is not being deployed in productive investment. This reality has prompted the expansion of Islamic financing windows through Decree 23-89 of 2023 as an attempt to attract these savings and channel them toward development^{xvii}

Second: Transitioning away from the rentier economy through a system of legislative reforms

Investment Law No. 22-18, issued in July 2022, was not merely a technical amendment to previous texts, but rather the outcome of a long consultative process and accumulated economic pressures that pushed toward a genuine break with the logic of suspicion toward foreign capital that had characterized the Algerian legislative framework for decades. In addition to abolishing the 49/51 rule in most sectors, the law granted investors in priority sectors a package of graduated tax and customs incentives, and provided legal guarantees for the transfer of profits and for foreign investors to resort to international arbitration to settle disputes, away from the constraints of the local judiciary^{xviii}

Investment legislative reforms and their impact on the business climate

These reforms have resulted in a noticeable increase in foreign direct investment flows from 1.1 billion dollars in 2020 to 2.3 billion dollars in 2023, although these figures remain below Morocco's 3.3 billion or Egypt's 5.1 billion in the same year. The law also introduced a one-stop-shop system through the Algerian Investment Agency, which aims to process investment applications within no more than 72 hours for standard projects. These figures remain positive in their overall trajectory, but they indicate that the reform is still in its early stages^{xix}

An observer of the Algerian legislative reform trajectory during the 2019-2023 period will note a path characterized by a significant quantitative accumulation, although the verification of its qualitative outcomes remains subject to question. In terms of legislative volume, this period saw the enactment of six laws and executive decrees with a direct impact on the investment climate and economic diversification, a notable legislative record compared with the previous decade. In terms of substance, it is observed that the reforms were intelligently distributed across three complementary axes: liberalizing foreign ownership by abolishing the 49/51 rule, improving access to financing by expanding Islamic finance windows, and accelerating administrative procedures through the one-stop shop of the Investment Agency^{xx}

However, the estimated investment impact presented in the last column of the table requires a careful critical reading, as these estimates remain largely probabilistic rather than operational. The estimate of attracting between \$500 million and \$1 billion in additional annual investment as a result of the 2022 Investment Law, or attracting \$2 billion of outward savings through expanding Islamic finance, remains contingent on the extent to which these laws are actually implemented and on the extent to which the governance and judicial indicators surrounding them improve. UNCTAD data for 2024 indicate that foreign direct investment flows into Algeria amounted to \$2.3 billion in 2023, although the share that came directly in response to the new legislative reforms remains difficult to determine precisely in

the absence of systematic investment survey studies^{xxi}

Limits of Legislative Reform and the Requirements of Institutional Transformation

Contrary to some optimistic readings that view legislative reforms as the end of the process, an improved legal text is a necessary but insufficient condition for attracting investment at a transformative pace. Algeria suffers from a wide gap between the quality of the legislative framework and the quality of its actual implementation, a gap fed by three main sources: the absence of genuine independence of the commercial judiciary in the swift resolution of investment disputes, the complexity of administrative procedures that turn attractive legislative frameworks into discouraging bureaucratic mazes, and weak transparency in the public procurement system, which creates an atmosphere of mistrust among investors^{xxii}

Within this framework, governance indicators acquire considerable explanatory importance. The World Bank's Business Ready 2024 report notes that Algeria performs poorly on the contract enforcement indicator, with the average duration for resolving commercial disputes exceeding eight years according to official data. Algeria also ranks among the lowest in Africa in terms of property registration and access to credit for small and medium-sized enterprises. Therefore, what the system needs is not so much additional legislative reform as deep judicial and administrative reform that elevates the value of the legal text from the level of paper to the level of lived reality^{xxiii}

Third: Supporting foreign direct investment and promising diversification sectors

Algeria does not have the luxury of devising development strategies in isolation from comparative experiences; contemporary economic history is replete with successful and failed models of diversifying oil economies. Notably, the most successful countries are not always those richest in resources, but rather those that undertook structural reform at the height of abundance, not at the depths of scarcity. The United Arab Emirates, which four decades ago was an oil economy wholly dependent on hydrocarbons, is today a country in which non-oil exports account for more than 71%, through a systematic diversification strategy launched during a period of abundance rather than waiting for the crisis^{xxiv}

Promising Strategic Sectors and Development Investment Priorities

Broad diversification is of little use if it is not focused on specific sectors in which Algeria has an objective competitive advantage. A study by Ammari Zouheir, Saadoun Rafik, and Boutiara Antar, based on the ARDL model and drawing on the Norwegian experience, concluded that Algeria's policy of diversifying its economic base has failed to raise non-hydrocarbon growth rates in the long term, which necessitates concentrating efforts on specific sectors. In light of this, six strategic sectors stand out at the top of the priority list:

the renewable energy and green hydrogen sector, whose potential rests on the exceptional solar irradiation in southern Algeria; the mining and strategic minerals sector, where Algeria holds huge reserves of iron, phosphate, gold, and lithium, whose strategic value has been multiplying in the era of electric vehicles and storage batteries; and the food processing industry sector, where Algeria suffers losses of up to 30% of fruit and vegetable production due to weak processing capacity^{xxv}

And within the framework of improving the investment climate, as observed by Kosam Amina, promising sectors stand out, such as information and communication technology, where indicators point to a qualified human base comprising more than 20,000 software developers in a market that is not yet regulated, the desert and cultural tourism sector, which accommodates only 300,000 tourists annually despite its enormous potential, and the cultural and creative industries sector, rooted in Algeria's diverse civilizational heritage. These six sectors combined require investments ranging between 66 and 90 billion dollars over the next decade, a figure far below the expected cumulative surpluses from hydrocarbon exports if they are properly directed. Researcher Omar Abdelbaki has confirmed that reforming the higher education and scientific research system represents a fundamental pillar for all these sectors, as Algerian spending on research and development does not exceed 0.6% of GDP, compared with 1.5-3% in countries that have successfully diversified their economies^{xxvi}

The observer of the Algerian economic diversification trajectory reveals, in its entirety, the scale of the opportunities available and the weight of the legislative and institutional challenges that must be overcome. From a statistical perspective, it is clear that the six sectors combined require investments of between 66 and 90 billion dollars over the coming decade, a figure that may seem enormous but in reality represents less than a single cumulative Algerian surplus during a price upswing. The green hydrogen sector tops the list of investment needs, with an estimate ranging between 25 and 30 billion dollars, followed by the renewable energy sector at between 15 and 20 billion dollars, then the tourism sector at between 10 and 15 billion dollars^{xxvii}

Regarding the required legislative framework, the table shows that the green hydrogen sector is the most in need of new strategic legislation, namely the enactment of a national hydrogen law, which is still under consideration. In contrast, sectors such as the food industry and information technology have existing legal frameworks that need to be expanded and adapted rather than built from scratch. From a risk analysis perspective, the table highlights that the main risk factors common to the six sectors revolve around three areas: weak institutional coordination among the ministries concerned with each sector, the limited availability of human resources specialized in new technologies, and the slow mobilization of the financing required at the banking and investment levels. These three areas cannot be addressed through legislative reforms alone, but rather require a comprehensive institutional transformation to accompany each legislative reform and ensure its translation into tangible,

measurable results.^{xxviii}

Third Axis: Foreign Policy Orientations in Pursuit of Sustainable Development Amid Global Transformations

The picture of Algeria's strategies for adapting to regional and international changes is not complete without taking into account their profound sustainability dimension, which goes beyond the boundaries of foreign policy and the direct paths of economic diversification. Sustainable development, in its comprehensive sense that brings together the economic, social, and environmental dimensions within an integrated system, has today become the highest reference framework for any serious development policy in a world where growing consumption is in conflict with limited resources and escalating climate crises. Algeria finds itself facing three major sustainability challenges that cannot be postponed: the challenge of food security, whose fragility is worsening under the pressures of demographic growth and climate fluctuations; the challenge of the energy transition, which calls for building a post-hydrocarbon energy system before fossil fuels are depleted; and the challenge of comprehensive digitalization as a horizontal driver that enhances the effectiveness of other sectoral transformations, increases state efficiency, and opens up prospects for the knowledge economy.

First: Strengthening Food Security in the Face of Food Dependency

Algeria imports more than 45% of its basic food needs, a proportion that represents a huge financial burden on the balance of payments, exceeding nine billion dollars annually in some years. The issue is not limited to the volume of imports, but extends to the nature of what is imported; Algeria imports grains, wheat, vegetable oils, sugar, and powdered milk in huge quantities in sectors where the climate and agricultural land should provide a degree of relative self-sufficiency. The global supply chain crisis following the COVID-19 pandemic in 2020, followed by the grain crisis triggered by the Russian-Ukrainian war in 2022, revealed the extent of the vulnerability inherent in this dependence when Ukrainian grain shipments came to a halt, leaving the world facing an acute shortage that led to unprecedented food inflation.^{xxix}

Indicators of food vulnerability, its structural dimensions, and strategies for strengthening food security

At the level of the local agricultural structure, Algeria has 8.5 million hectares of agricultural land suitable for development, but the area actually cultivated does not exceed 3.7 million hectares, while the sector suffers from low productivity, fragmented land ownership, and short cold chains. Data from the National Office of Statistics reveal that Algerian wheat productivity for durum wheat does not exceed 17 quintals per hectare on average, compared with 44 quintals in France, 38 in Turkey, and 29 in Morocco, a gap that

reflects, first, the weakness of the technologies used and, second, the limited use of fertilizers, irrigation, and improved seeds^{xxx}

Addressing compound food vulnerability requires an integrated strategy centered since 2020 around three pillars:

_land reclamation programs in the south through drip irrigation projects in the areas of Ain Salah, Timimoun and Ouargla, which demonstrated in their pilot phase a production capacity more than three times that of their counterparts in the north.

_ Modernizing the agricultural system through precision agriculture and digital agricultural technologies AgriTech, which have begun to be used in a limited number of pioneering projects.

_Developing the food processing industry to reduce the rate of waste and provide cold chains and packaging that reduce agricultural losses from 30% to below 10%^{xxxi}

Second: Energy Transition Strategy Towards Renewable Energies

The energy transition in Algeria represents an existential imperative rather than merely a policy option that can be postponed; by 2040, Algeria's share of the European gas market will have declined significantly as a result of Europe's accelerated shift towards renewable energies within the framework of the European Green Deal. At the same time, domestic energy consumption is growing at a rate of 6% annually, meaning that gas reserves allocated for export will be eroded from two directions simultaneously: declining supply and growing domestic demand. Renewable Energy Law No. 04-09, amended in 2021, established the legal framework governing the attraction of investments in solar energy, wind energy, and geothermal energy, with the aim of reaching 22000 MW of installed renewable capacity by 2030^{xxxii}

_ : Energy Transition and the Renewable Energy System

In the Algerian energy sector, three main actors are responsible for managing this transition: the Algerian Renewable Energy Company Shaems, tasked with developing major projects, the Agency for the Development of Renewable Energy and Energy Efficiency APRUE, responsible for implementing efficiency programs, and Sonatrach, which is working to diversify its energy portfolio toward green hydrogen. However, the gap between planning ambitions and field implementation remains wide, as actual capacity installed by the end of 2023 did not exceed 800 megawatts, i.e. only about 3.6% of the target, revealing structural bottlenecks related to weak private financing, the absence of a transparent pricing system for renewable electricity, and the limited availability of specialized engineering personnel^{xxxiii}

: Green Hydrogen and the Sustainable Energy Diplomacy Challenge

Algeria possesses in its vast Saharan south solar irradiation reaching 2650 kilowatt-hours per square meter annually, one of the highest rates in the world, making it a natural candidate to lead green hydrogen production on a large export scale. Green hydrogen is hydrogen produced by electrolyzing water using renewable electricity without carbon emissions, making it the strategic alternative to natural gas in the post-hydrocarbon era. In this context, Sonatrach, in cooperation with European partners, is conducting a feasibility study for the production of green ammonia and liquid hydrogen within the framework of the SouthH2 Corridor project, which aims to transport renewable energy from southern Algeria to the heart of Europe through new and converted pipelines extending across Tunisia and Italy^{xxxiv}

The Algerian green hydrogen strategy revolves around three integrated pillars:

_ Building a production system based on solar and wind energy in the south, where natural resources are exceptionally abundant.

_ Developing infrastructure for transporting hydrogen, either by converting existing pipelines or by building liquefaction and maritime shipping facilities.

_ Building partnerships with the European Union, which is seeking to diversify its energy sources away from Russia. Technical estimates indicate that Algeria could export between 5 and 10 billion cubic meters equivalent of green hydrogen by 2035, which could place its energy revenues on the threshold of the post-oil-and-gas depletion era. Researcher Hamid Ali Zegdar has revealed that the horizon of Algerian hydrocarbon energy diplomacy will not exceed a decade and a half at best, making early investment in green hydrogen a strategic choice rather than a luxury^{xxxv}

However, achieving this ambitious goal requires a set of simultaneous structural measures: foremost among them is the enactment of a national hydrogen law that defines mechanisms for attracting investment, the pricing framework, and export conditions, and provides sufficient legal guarantees for foreign investors. Then, the establishment of specialized production zones in the south equipped with the necessary infrastructure, including renewable electricity grids, water electrolysis plants, and pumping and liquefaction facilities. In addition, the training of qualified national engineering and technical personnel to work in this emerging sector, which requires a parallel reform of technical and scientific education programs. In the comparative context, the German experience under its 2020 National Hydrogen Strategy reveals that the success of this sector depends on the synergy of the legislative framework with public investment and international partnership within one integrated system rather than in separate tracks.

Third: Comprehensive digitalization as a pillar of sustainable development transformation

Hadj Kaci Mohamed identified positive indicators in his study of Algeria's digital transformation that merit consideration; Algeria possesses a broad young human capital base comprising more than 20000 software developers and 350 qualified startups as of 2024, a human resource that can be rapidly expanded provided that an appropriate legislative and financing environment is available. The 2023 Finance Law adopted graduated tax incentives for the startup sector, while Algérie Télécom invested 120 billion dinars to expand fourth-generation networks and prepare for the launch of fifth-generation services. Institutionally, Algeria established the Innovation and Digital Development Fund FUND pursuant to a 2022 decision to provide seed financing for emerging technology projects, which is a step in the right direction although its actual financing capacity remains modest compared with the scale of the need^{xxxvi}

The reality of Algeria's digital transformation and comprehensive digitalization strategy

Digitalization is not merely an economic sector in its own right, but rather a horizontal driver that enhances the efficiency of all other sectors and multiplies their returns. Applying precision digital agriculture in the agricultural sector can increase productivity by between 20% and 35% without increasing the resources used. Applying the Smart Grid in the energy sector can reduce losses in distribution networks from the current 18% to below 8%. Applying e-Government services in the administrative sector can reduce the cost and duration of administrative procedures by 60%, which directly improves the Ease of Doing Business Index and makes the investment environment more attractive^{xxxvii}

The World Bank's 2023 report on digital transformation in North Africa concluded that Algeria has sufficient human and material resources to lead the regional digital transformation, but lacks comprehensive digital governance that places the digitization of government services at the top of the priorities instead of merely legislative provisions related to startups. In this context, the report recommends three priority measures: First, digitizing 80% of critical government services by 2027, including investment registration, the commercial register, and building permits. Second, issuing a legislative framework for the digital economy that includes data protection, cybercrime, and e-commerce within one integrated framework. Third, expanding fiber-optic infrastructure to cover 80% of rural areas by 2030 to ensure equitable digital access^{xxxviii}

The three challenges under consideration—food security, the energy transition, and comprehensive digitalization—share an essential common feature that makes addressing them simultaneously a necessity rather than a choice. Each entails a degree of technical and institutional achievement that can only be realized through confidence in the continuity of policies across successive governments, openness to international partnerships based on

knowledge transfer rather than merely importing equipment, and directing part of the hydrocarbon revenues available today toward building the foundations of sustainability capable of ensuring the flow of development returns after the depletion of hydrocarbon wealth.^{xxxix}

Conclusion

Algeria is making increasingly serious efforts to employ its foreign policy and diplomatic tools in service of national development objectives, along a path that combines tangible achievements with persistent structural gaps. At the level of foreign policy, energy diplomacy has produced tangible results in improving the terms of energy contracts and negotiating partnerships in green hydrogen, while the principle of non-alignment has provided a rare margin for strategic maneuver in a world of multipolar competition. At the level of economic diversification, the reforms introduced by the 2022 Investment Law, the Islamic finance framework, and the Start-up Companies Law represent positive cumulative steps, but they face institutional, judicial, and bureaucratic bottlenecks that limit their actual productive effectiveness.

These conclusions share the indication that the fundamental difference between Algeria and the countries most successful in diversification is not a difference in the abundance of resources or the quality of legislation, but rather a difference in deep institutional reform and readiness to make difficult decisions concerning the transformation of rent flows from consumer spending into sustainable productive investment. This is not an insurmountable conclusion but rather one indicating that the path is known and the tools are available, and that what is lacking is only sustained political will across successive governments and disciplined institutional implementation, far removed from the logic of short electoral cycles.

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