

Balancing the Four Dimensions of Sustainable Development in Algeria: Lessons from Selected International Experiences

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Abstract:

This study examines Algeria's progress toward sustainable development across four interconnected dimensions: economic, social, environmental, and institutional. It addresses the extent to which Algeria has achieved a balanced development pathway and identifies lessons that can be adapted from the experiences of Singapore, Japan, Malaysia, and India. Using a descriptive-analytical and comparative approach, the study assesses Algeria's performance through selected economic, social, environmental, and institutional indicators and compares it with the development mechanisms adopted by the selected countries. The findings show that Algeria has achieved notable progress in areas such as economic growth, electricity access, life expectancy, international reserves, and non-hydrocarbon activity. However, significant challenges remain, particularly hydrocarbon dependence, limited export diversification, water-resource pressure, low renewable-energy deployment, unemployment, and institutional constraints. The comparative analysis demonstrates that sustainable development cannot be achieved through a single transferable model. Accordingly, Algeria should adopt an adaptation rather than replication approach by selectively drawing on relevant mechanisms related to economic diversification, environmental governance, technological innovation, SME development, human-capital formation, resource management, and institutional effectiveness.

Keywords: Sustainable Development; Economic Dimension; Social Dimension; Environmental Dimension; Institutional Dimension; International Experiences; Algeria.

1. Introduction

Sustainable development is a concept that seeks to achieve a balance among economic growth, environmental protection, and social justice. It requires concerted long-term efforts to meet the needs of the present without compromising the ability of future generations to meet their own needs. Despite the significant challenges facing both developing and developed countries, many nations have succeeded in implementing policies and strategies that have enabled them to make considerable progress in this field. Among the most successful experiences in sustainable development is that of Malaysia, which has achieved remarkable

economic progress by adopting comprehensive policies in various areas, including the economy, education, and healthcare. Similarly, through the development of small-scale industries and the strengthening of infrastructure, India has managed to achieve sustainable economic growth and improve the quality of life of its citizens. Japan, too, has achieved significant progress in sustainable development by adopting policies that support small and medium-sized industrial enterprises. These international experiences can provide Algeria with valuable lessons for developing innovative solutions adapted to its specific needs. In Algeria, this issue is particularly important because of the country's historical dependence on hydrocarbons, the increasing social and environmental pressures, and the need to diversify the economy and achieve comprehensive development. Academic studies indicate that Algeria has made significant progress in adopting policies and strategies related to sustainable development; however, it continues to face structural challenges that hinder the full achievement of its objectives.

Despite the growing body of research on sustainable development in Algeria, relatively limited attention has been devoted to systematically benchmarking Algeria's economic, social, environmental, and institutional performance against diverse international development pathways. This study seeks to address this gap by comparing Algeria with selected experiences from Singapore, Japan, Malaysia, and India and by identifying policy mechanisms that can be adapted rather than directly replicated.

Main Research Problem: Based on the foregoing, the following central question can be formulated:

To what extent has Algeria achieved a balanced path toward sustainable development across the economic, social, environmental, and institutional dimensions, and what lessons can be adapted from selected international experiences to strengthen this pathway?

Sub-questions: The main research question gives rise to the following sub-questions:

1. What are the conceptual foundations and main dimensions of sustainable development?
2. What are the main development mechanisms adopted by Singapore, Japan, Malaysia, and India?
3. What is the current performance of Algeria across the economic, social, environmental, and institutional dimensions of sustainable development?
4. What are the main gaps between Algeria and the selected international experiences?
5. Which policy mechanisms can be adapted to Algeria's specific economic, social, environmental, and institutional context?

Objectives of the Study: This study seeks to achieve several objectives, the most important of which are:

1. Clarify the conceptual foundations and four dimensions of sustainable development.
2. Examine the main mechanisms underlying the selected international experiences.
3. Assess Algeria's current sustainable development performance across the economic, social, environmental, and institutional dimensions.
4. Identify the main structural gaps between Algeria and the selected international experiences.
5. Determine which international policy mechanisms can be adapted to the Algerian context.

Significance of the Study: Studying sustainable development and its current state in Algeria, in comparison with prominent successful international models, is highly significant because it provides a framework for understanding how to balance economic growth, environmental protection, and social justice. An examination of these experiences enables Algeria to draw lessons from the policies and strategies that have contributed to promoting sustainable development, while avoiding potential obstacles that may hinder progress. Furthermore, such studies contribute to proposing locally applicable solutions in different economic and social contexts. They can also strengthen Algeria's capacity to address environmental, social, and economic challenges, improve future planning, raise awareness of the importance of preserving natural resources, and secure better opportunities for future generations.

Methodology: The study adopts a descriptive-analytical and comparative approach. Singapore, Japan, Malaysia, and India were purposively selected as international cases because they represent distinct development pathways that offer policy lessons relevant to Algeria, particularly in resource efficiency and environmental governance, technological and industrial development, economic diversification, human-capital development, and small and medium-sized enterprise (SME) development and employment generation. The Algerian case is assessed using selected economic, social, environmental, and institutional indicators drawn from international databases and relevant academic studies. A comparative benchmark framework is then employed to identify the main structural gaps between Algeria and the selected international experiences and to derive policy mechanisms that can be adapted to Algeria's specific economic, social, environmental, and institutional context.

2. The Conceptual Framework of Sustainable Development

Sustainable development has become one of the fundamental concepts in economic, social, and environmental studies, given its association with achieving development, improving human well-being, and preserving natural resources. This concept emerged in response to the negative consequences of traditional development models, such as resource depletion, pollution, and the widening of poverty and social inequality.

2.1. Definition of Sustainable Development

Sustainable development was first formally defined in 1987 by the Brundtland World Commission, an international commission established to develop a global strategy for development. The Commission defined sustainable development as follows: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

This definition has become the most widely recognized and influential among the various definitions of sustainable development. It is now considered a fundamental basis for subsequent understandings of the concept. The definition incorporates two main ideas. The first is the concept of **needs**, particularly the essential needs of the world's poorest populations, which should be given the highest priority. The second is the idea of **limitations** imposed by states and governments on the environment and on its capacity to meet the current and future needs of society. (Nazai & Djelouli, 2022, p. 126)

Sustainable development refers to a form of development characterized by stability, continuity, and the capacity for long-term sustainability. It is not limited to one specific type of development, such as economic, social, or cultural development; rather, it encompasses all these forms. It is development that enhances the productivity of the land and its resources, relies on human resources, and takes into consideration the temporal dimension and the right of future generations to benefit from the Earth's resources. (Heicher, 2019, p. 40)

Sustainable development can also be understood as an economic activity that increases social welfare while exercising the greatest possible care in the use of available natural resources and minimizing environmental damage and degradation. (Ben Qarach, 2024, p. 512)

2.2. Dimensions of Sustainable Development

For the purposes of this study, sustainable development is examined through four interconnected and interdependent dimensions: economic, social, environmental, and institutional.

- **Environmental Dimension:** This dimension focuses on the management of natural resources. Environmental depletion is one of the factors that conflict with sustainable development. Therefore, systematic approaches must be adopted to address excessive consumption, population growth, pollution, unsustainable production patterns, water depletion, deforestation, and other related challenges. In other words, natural resources must be managed scientifically and rationally.
- **Social Dimension:** This dimension refers to the inherent right of individuals to live in a clean and safe environment in which they can carry out their activities, while ensuring their fair share of natural resources and environmental and social services. These resources and services should be used to meet their essential and complementary needs without reducing the opportunities available to future generations.
- **Economic Dimension:** This dimension involves adopting a long-term economic perspective in addressing development challenges in order to conserve effort, financial resources, and natural resources. The environment is regarded as an integrated economic entity and a foundation for development; therefore, its pollution and the depletion of its resources ultimately weaken future development opportunities.
- **Institutional Dimension:** This dimension consists of administrations and institutions capable of implementing sustainable development strategies through long-term programmes carried out by qualified individuals and organizations. These institutions formulate and implement social, economic, and environmental development policies. Accordingly, improving the quality of life, guaranteeing human rights, and providing an appropriate framework for individuals to fulfill their responsibilities toward society and the state all depend on the effectiveness of institutions and administrations in performing their functions and duties. (Satori, 2016, pp. 301–302)

2.3. Objectives of Sustainable Development

Sustainable development seeks to achieve a number of long-term objectives, the most important of which include the following:

- **Achieving population well-being:** Sustainable development seeks to reconcile the relationship between population and resources in order to maintain a balance between them. This can be achieved by regulating population growth and increasing economic growth at a rate exceeding the rate of population increase, while ensuring that development remains within the carrying capacity of available economic resources. Otherwise, the economic and social burdens placed on public institutions responsible for meeting the needs of the population will continue to increase. (Chine & Mezrag, 2021, p. 19)
- **Ensuring social equality:** This involves providing equal opportunities for all human communities, both present and future, and enabling them to improve their quality of life through access to employment, education, healthcare, social services, adequate housing, and all forms of human freedom, as well as through participation and integration in society.
- **Preserving environmental integrity:** This objective entails ensuring that environmental protection is incorporated into all social, cultural, and economic activities in order to preserve the vitality, diversity, and reproduction of terrestrial and marine species and natural ecosystems.
- **Improving economic efficiency:** This means promoting the optimal management of human, natural, and financial resources in order to meet the needs of human communities. This objective can be achieved through the shared responsibility of businesses and consumers in producing and consuming goods and services, as well as through the adoption of appropriate government policies. (Bouriche, Terbeche, & Momeni, 2021, p. 691)

To achieve sustainable development at the global level, the Member States of the United Nations adopted a sustainable development agenda comprising 17 goals to be achieved over a specified period. These goals are as follows:

- **No Poverty:** This goal involves targeting the most vulnerable groups, expanding access to resources and basic services, and supporting local communities affected by conflicts and climate-related disasters.
- **Zero Hunger:** This goal seeks to eliminate all forms of hunger and malnutrition by promoting sustainable agricultural practices, supporting small-scale farmers, and ensuring equal access to land, technology, and markets.
- **Good Health and Well-Being:** This goal aims to achieve universal health coverage and ensure access to safe, effective, and affordable medicines and vaccines for all.
- **Quality Education:** This goal seeks to provide equal opportunities for access to vocational training and education, eliminate disparities in educational access based on gender or wealth, and ensure quality education for everyone.
- **Gender Equality:** Greater gender equality can be achieved by strengthening policies and legislation that encourage women to assume leadership positions.
- **Clean Water and Sanitation:** This goal requires ensuring universal access to safe and affordable drinking water. It also involves protecting and restoring water-related ecosystems, including forests, mountains, wetlands, and rivers.

- **Affordable and Clean Energy:** This goal seeks to ensure universal access to affordable electricity by 2030 and increase investment in clean energy sources, such as solar, wind, and geothermal energy.
- **Decent Work and Economic Growth:** Effective measures must be adopted to eliminate forced labor, slavery, and human trafficking. These measures are essential to achieving the broader objective of full and productive employment and decent work for all.
- **Industry, Innovation, and Infrastructure:** Bridging the digital divide is essential to ensuring equal access to information and knowledge, as well as promoting innovation and entrepreneurship.
- **Reduced Inequalities:** This goal can be advanced by improving the regulation and supervision of financial institutions, encouraging development assistance and foreign investment in the areas most in need, and facilitating safe migration in order to reduce growing disparities.
- **Sustainable Cities and Communities:** Efforts should be made to make cities safe, resilient, and sustainable by ensuring access to safe and affordable housing and improving the living conditions of inhabitants of deprived neighborhoods.
- **Responsible Consumption and Production:** Food production and supply chains can be improved if consumers and retailers reduce global food waste per capita by half.
- **Climate Action:** Efforts should support the most vulnerable regions, including landlocked developing countries and small island developing states, in adapting to climate change. These efforts should be accompanied by measures aimed at reducing disaster risks.
- **Life Below Water:** Marine and coastal ecosystems should be protected by strengthening the conservation of ocean-based resources and ensuring their rational and sustainable use.
- **Life on Land:** This goal involves protecting, restoring, and promoting the sustainable use of terrestrial ecosystems, including forests, wetlands, drylands, and mountains. Halting deforestation is also essential to mitigating the effects of climate change.
- **Peace, Justice, and Strong Institutions:** This goal seeks to significantly reduce all forms of violence and to work with governments and local communities to find lasting solutions to conflict and insecurity.
- **Partnerships for the Goals:** Strengthening international trade and assisting developing countries in increasing their exports are essential to establishing a fair, open, and mutually beneficial rules-based global trading system. (Cheddad & Younsi, 2021, pp. 140–142)

2.4. Foundations for the Success of Sustainable Development

Establishing the concept of sustainable development requires the availability of several foundations that constitute its essential pillars. The most important of these are as follows:

- **Meeting the Human Needs of the Population:** This involves redirecting resources in a manner that ensures the fulfillment of society's needs and improves living standards. It also requires prioritizing poverty eradication, since a world characterized by poverty and inequality is more vulnerable to environmental, social, and economic crises. This entails ensuring a sustainable and stable population level that remains compatible with the productive capacity of ecosystems.

- **Sound Environmental Management:** The needs of the present cannot be met without compromising the ability of future generations to meet their own needs unless effective management systems are established to ensure the continued use of natural resources while respecting environmental limitations and avoiding waste.
- **Human Development:** Sustainable development cannot exist without sustainable human development. Human development is the process of expanding the choices available to individuals and communities. It includes building human capabilities by improving health, enabling society to make effective use of its acquired capacities, and promoting knowledge and education.
- **Environmentally Sound Technology or Clean Technology:** This requires redirecting technological development toward more environmentally compatible methods that use fewer resources and less energy while generating lower levels of pollution and waste. It also requires continuous investment in capacities that will ultimately enable societies to develop and produce clean technologies.
- **Self-Reliance and International Cooperation in Addressing Global Environmental Problems:** Sustainable development should be pursued within the framework of self-reliance and within the limits imposed by natural resources and sound resource management. Since sustainable development is a common objective for both developed and developing countries, and since natural systems and environmental problems do not recognize territorial boundaries, international cooperation is essential for advancing sustainable development.
- **Environmental Economics:** The economy serves as the nervous system governing the interaction between the environment and development. Accordingly, sustainable development depends on the ability to establish a balance between the economic system and the ecological system. (Bourahla, Sayhi, & El Hamza, 2022, pp. 124–125)

2.5. Requirements for Sustainable Development

Sustainable development aims to improve the living conditions of all people while preserving natural resources from depletion. Achieving this objective requires meeting a number of essential requirements, which can be summarized as follows:

2.5.1. Economic Requirements

Economic requirements include the following:

- Reducing excessive individual consumption of natural resources, particularly in industrialized countries compared with developing countries.
- Ensuring the rational and optimal use of natural resources by preventing waste and changing consumption patterns that threaten biodiversity.
- Addressing global pollution, particularly by developed countries, given their significant contribution to pollution and their possession of the financial, technological, and human resources needed to take the lead in adopting cleaner technologies.
- Reducing the dependence of developing countries on developed countries. Developing countries tend to specialize in labor-intensive goods and services, whereas developed countries tend to specialize in capital-intensive products, as reflected in the exports and imports of both groups amid differences in prices.

- Promoting the equitable distribution of resources, reducing income disparities, and combating unemployment through effective employment policies.

2.5.2. Social Requirements

Social requirements include the following:

- Managing demographic growth, as population expansion places considerable pressure on natural resources and on the ability of governments to provide various public services.
- Ensuring a balanced distribution of the population among different regions. Sustainable development seeks to promote rural development in order to reduce rural-to-urban migration by adopting measures related to agricultural reform and applying appropriate technologies to limit environmental impacts.
- Providing security and developing the education and healthcare sectors, while combating hunger by ensuring food security and eradicating poverty and illiteracy.
- Reducing unemployment by creating employment opportunities in various fields through the joint contribution of both the public and private sectors.

2.5.3. Environmental Requirements

Environmental requirements include the following:

- Protecting agricultural land from urban expansion, desertification, and erosion. This can be achieved by preserving vegetation cover and forests.
- Protecting surface water, groundwater, and freshwater resources in order to ensure adequate supply and improve the efficiency of water use in agricultural, industrial, urban, and rural development.
- Protecting the climate from global warming in order to enhance the ability of future generations to preserve the stability of the climate and of geographical, biological, and physical systems.

2.5.4. Technological Requirements as an Enabling Factor for Sustainable Development

Technology is treated in this study as a cross-cutting enabling factor rather than as a separate dimension of sustainable development. Technological requirements include the following:

- Using cleaner technologies in all fields, particularly in industrial areas and especially in developing countries.
- Intensifying research and development activities through the use of technology and the adoption of viable and sustainable methods and approaches.
- Involving private organizations alongside public institutions, particularly because private organizations rely extensively on modern technologies.
- Strengthening capacity-building in science, technology, and innovation in order to raise scientific and knowledge levels. (Touat, 2015, pp. 4–5)

3. Selected International Experiences and Their Relevance to Algeria

International experiences in sustainable development have become an important source of knowledge for adopting successful policies aimed at achieving a balance among economic growth, social justice, and environmental protection. Although these experiences differ according to the resources and circumstances of each country, they share several common

features, including long-term planning, investment in human capital, the promotion of innovation, and the improvement of resource-use efficiency.

3.1. Singapore's Experience in Achieving Sustainable Development through Quality of Life

Singapore launched its first Green Plan at the World Summit on Sustainable Development held in Johannesburg in 2002. Since then, the plan has been periodically reviewed and updated. The main motivation behind this initiative was the country's concern with quality of life and resource security, as well as its desire to maintain a clean and green image as a means of attracting investment. The plan includes regulatory systems and standards, pricing mechanisms, demonstration programmes, campaigns aimed at changing consumer behavior, information management, and other policy instruments. It addresses air quality, climate change, water and waste management, nature conservation, and public health.

The Singaporean government has invested substantial resources in achieving its environmental objectives, and most of the targets set for 2012 were achieved. In 2009, the Inter-Ministerial Committee on Sustainable Development launched the Sustainable Singapore Blueprint, a long-term framework that established ambitious sustainable development targets for 2030. These targets include energy efficiency, water consumption, air quality, public transportation, water catchment areas, and green buildings. One of the main factors behind Singapore's success has been its use of a comprehensive combination of policies and measures specifically designed for each environmental objective. (Mersli & Asnin, 2023, p. 159)

3.2. Japan's Experience in Achieving Sustainable Development

Japan's experience in technological and industrial advancement is considered one of the leading and most valuable experiences for many societies, particularly developing and emerging economies. Studies have shown that Japan's development was primarily driven by education. Although Japan did not possess the extensive human resources available in countries such as India and China, it succeeded in building a comprehensive development process and achieving significant national progress. The Japanese economic transformation was largely attributed by historians to the widespread expansion of education and the eradication of illiteracy, in addition to the development of higher education. Despite its progress, Japan continued to send educational missions to developed countries in order to benefit from their expertise. As a result, Japan became one of the world's major economic powers and a global leader in advanced technological achievements, including robotics.

Since the end of the Second World War, Japan has adopted a development model aimed at maintaining political and social stability. It followed a distinctive approach to industrial development by devoting considerable attention to development programmes and allocating resources to research and development. These forms of support, whether financial or marketing-related, directly contributed to the development of small industries. Small enterprises played an important role in the growth and prosperity of the Japanese economy. Through continuous development and industrialization, small enterprises continued to provide significant employment opportunities and maintained a leading role in all industrial sectors. They have also succeeded in coexisting with large industrial enterprises.

In general, Japan's economic growth can be divided into several stages:

The first stage: Economic reconstruction (1945–1960).

The second stage: Accelerated economic growth (1960–1970).

The third stage: Achieving economic stability (from 1970 onward).

The fourth stage: Formulating the 2030 Plan (the current period).

Several fundamental factors contributed to Japan's success in developing its industrial projects. The most important of these are outlined below:

- **A Clear Philosophy Supporting Small Enterprises:** Since the beginning of Japan's economic reconstruction, political and economic leaders had shared a coherent philosophy based on employing the largest possible proportion of the Japanese workforce, achieving high productivity, and increasing income. Accordingly, the prevailing economic philosophy viewed every individual as having two interconnected roles: a production role through employment, and a consumption and saving role through the income earned. This approach enabled Japan to increase production, maintain its continuity, and promote constant renewal.
- **Legislation Regulating Small and Medium-Sized Enterprises:** Japan established laws and regulations governing the activities of small enterprises. One of the most important was Basic Law No. 154, issued in 1963. This law provided the framework for policies that prioritized addressing financial difficulties and reducing production constraints facing small and medium-sized enterprises.
- **Policies for Identifying and Developing Small Industries:** Japan adopted measures to assist small enterprises by modernizing and improving their production structures. These measures included programmes designed to identify industrial sectors in need of modernization and technological advancement, as well as export-oriented industries whose development required the modernization of machinery and equipment. The government also encouraged the adoption of advanced technologies, simplified administrative procedures and regulations governing small enterprises, modernized the infrastructure of areas designated for such projects, strengthened quality control, and stimulated demand for products manufactured by small enterprises.
- **Financing Programmes and Assistance:** These programmes and forms of assistance included several measures, notably providing financing for small enterprises through the establishment of numerous financial institutions; creating a financing system for very small enterprises; introducing a tax system that encouraged the establishment of small industries in remote areas through tax exemptions; exempting small industries from employment and property taxes; and reducing taxes on undistributed profits.
- **The Subcontracting Programme:** Japan paid particular attention to subcontracting after the Second World War, partly because restrictions on the importation of certain production inputs encouraged small industries to manufacture goods that could no longer be imported. The government also promoted subcontracting by encouraging large factories to delegate important parts of the production process to small enterprises. By 1987, small enterprises represented approximately 75% of the industries involved in this system.

Before formulating the 2030 Plan, Japan had already been implementing integrated measures aimed at building a sustainable society through environmental, economic, and social

development. It also began establishing an inclusive and participatory society in which every individual could realize their full potential. In line with this approach, Japan reformed its relevant systems and adopted human security as a guiding principle underlying its foreign assistance. Issues such as healthcare, disaster-risk reduction, and gender equality—which are included among the Sustainable Development Goals—were placed at the center of Japan’s international priorities. Based on this experience, Japan played a leading role in shaping the 2030 Agenda, including both its individual goals and its overarching objectives. Japan seeks to serve as a global model in implementing measures aimed at achieving the Sustainable Development Goals. It also seeks to work domestically and in cooperation with other countries to build sustainable societies worldwide.

At the institutional level, and in accordance with the Implementation Guidelines, the Japanese government established a new governmental body on 20 May 2016 called the SDGs Promotion Headquarters. It is chaired by the Prime Minister and includes all cabinet ministers. The headquarters was established to strengthen cooperation among the ministries and government agencies concerned, provide comprehensive and effective executive leadership, and monitor measures related to the Sustainable Development Goals. (Bouzidi & Baissa, 2021, pp. 5–7)

3.3. Malaysia’s Experience in Achieving Sustainable Development

Malaysia is considered one of the countries with a distinctive development model. It transformed from a country suffering from social problems, poverty, inequality, ethnic conflicts, structural imbalances, and economic dependence into a modern and developing nation. This transformation was achieved through a national development model that enabled Malaysia to become an example of sustainable development. This progress can be illustrated through the development of several sustainable development indicators:

3.3.1. Economic Growth

Economic development is one of the fundamental dimensions of sustainable development. Since independence, Malaysia has adopted strategic policies aimed at developing its economy both qualitatively and quantitatively.

This progress can be observed through the development of economic growth rates. Malaysia’s gross domestic product recorded strong growth from 2002 onward, with only a few exceptions resulting from global economic crises, such as the 2008 financial crisis and the consequences of the COVID-19 pandemic in 2020. In 2022, however, the Malaysian economy recorded significant growth of 8.69% after recovering from the effects of the pandemic.

3.3.2. Structural Transformation of the Malaysian Economy

Since the implementation of the New Economic Policy in 1972, Malaysia’s economic structure has undergone major transformations. The country shifted from dependence on agriculture toward industrial growth. As a result, the contribution of industry to GDP increased from 13% in 1972 to 37.35% in 2022, while the contribution of agriculture declined from 31% to 6.39% during the same period. These changes reflect the success of Malaysia’s development policies in achieving structural economic transformation.

3.3.3. Unemployment

Unemployment is one of the most important economic issues affecting economic stability. In Malaysia, unemployment rates declined slightly between 2000 and 2016, ranging from 2.9% to 3.5%. This reflects the success of economic policies in creating employment opportunities and promoting economic stability.

Between 2000 and 2023, Malaysia made considerable progress toward achieving the Sustainable Development Goals through several key indicators reflecting improvements in the economic and social fields. For example, the extreme poverty rate declined significantly, reaching 0% in 2021, compared with 1.6% in 2003, demonstrating the effectiveness of social policies.

Other relevant indicators include the following:

- **Poverty:** The poverty rate declined significantly as a result of effective economic and social policies.
- **Undernourishment:** The rate declined steadily from 3.6% in 2011 to 2.5% in 2020.
- **Maternal mortality:** The rate declined continuously from 39.75 in 2000 to 20.9 in 2021, reflecting improvements in healthcare.
- **Under-five mortality:** The rate declined steadily, indicating improvements in child healthcare.
- **Education:** Malaysia achieved significant progress in primary school enrollment, which exceeded 99% in 2017, compared with 97.09% in 2000.
- **GDP per capita:** Malaysia recorded continuous growth in GDP per capita, which increased from USD 40,700 in 2000 to USD 54,500 in 2021, reflecting improvements in living standards and economic performance.

Malaysia achieved progress in sustainable development through several factors that contributed to the realization of its objectives and transformed its experience into a model worthy of consideration:

- **A favorable political climate:** Political stability helped accelerate the development process, while democratic decision-making contributed to consensus among the different ethnic groups and the government.
- **Expansion of infrastructure:** Economic infrastructure was significantly strengthened, particularly during the 1970s with the implementation of the New Economic Policy.
- **Attention to social development:** Malaysia invested in human development by improving education, healthcare, and public services, thereby enhancing the quality of life of its citizens.
- **Reliance on domestic resources:** Malaysia relied on domestic resources to provide the capital needed for development. The country also witnessed a significant increase in savings and investment rates.
- **Cautious engagement with foreign investment:** Foreign investment was gradually encouraged from the mid-1980s, while conditions were introduced to protect domestic producers and promote exports.
- **Long-term strategic planning:** Malaysia adopted long-term strategic planning and established clear future objectives through policies such as the New Economic Policy of

1972 and Vision 2020, launched by Mahathir Mohamad in the 1990s. These initiatives contributed to transforming Malaysia from a developing country into an industrialized and advanced nation.

Overall, Malaysia has achieved substantial progress in sustainable development, making it one of the countries with a noteworthy experience in this field. Through carefully designed economic and social policies, Malaysia succeeded in overcoming global economic crises and achieving comprehensive and sustainable development. (Hadioua & Raad, 2024, pp. 10–13)

3.4. India's Experience in Achieving Sustainable Development

The success of the Indian experience is largely attributed to the establishment of dedicated institutional and organizational frameworks for small and medium enterprises. These include the Small Industries Development Organization, the National Small Industries Corporation, and the Industrial Development Training Institute.

3.4.1. Financing Programmes and Assistance

These programmes include several forms of support, as follows:

- **Providing the necessary financing for small industries:** Financing is provided through several institutions, including commercial banks, the Industrial Development Bank of India, cooperative banks, and regional banks. India also adopted a loan-guarantee system for small industries by establishing reserves and providing financial grants for the purchase of domestic machinery through lease-purchase arrangements. In addition, special assistance was provided for the construction of factories in industrial cities. Various forms of assistance were also provided to industrial cities through the Reserve Bank of India in order to address potential losses affecting small industries. The government introduced a system of tax exemptions based on an inverse relationship, aimed at encouraging an industrial structure based on small-scale industries, thereby creating employment opportunities and reducing unemployment.
- **The subcontracting programme:** India is one of the largest countries to use subcontracting arrangements between small and large industries. This system takes two forms. The first involves contracts between small and large industries within the country, while the second involves contracts between domestic industries and large foreign industries. The purpose of subcontracting is to enable large industries to obtain the various parts and components they require at lower production costs.
- **Marketing Programmes and Assistance:** The Indian government provides various forms of assistance to enhance the efficiency of both domestic and international markets, including purchasing products from small industries at higher prices than those offered to large industries when the products are comparable in quality and other relevant characteristics; establishing export development offices to identify foreign orders and inform producers about available market opportunities; creating export-import institutions to provide loans to export-oriented industries; expanding authorization for the importation of raw materials used in the production of export goods; providing export-oriented industries with credit facilities under favorable conditions; and offering financial assistance to support specific types of exports.

It can therefore be concluded that India's experience, as a developing country, represents a valuable model in the development and advancement of small industries. This experience may

be adapted to create an integrated and coherent small-industry sector characterized by high labor intensity and strong employment potential. (Ahmed Saleh & Zaghir, 2013, pp. 97–98)

3.5. Algeria's Experience in Achieving Sustainable Development

In recent years, Algeria has adopted a set of reforms and programmes aimed at promoting sustainable development by diversifying the economy, strengthening environmental protection, encouraging renewable energy, and integrating environmental considerations into public policies. Despite these efforts, the results remain limited due to the continued dependence on hydrocarbons, weak productive diversification, and increasing social and environmental pressures.

Accordingly, achieving genuine sustainable development requires a shift from fragmented initiatives toward an integrated development model based on a diversified economy, effective environmental policies, and greater social justice.

Although the Algerian authorities have undertaken substantial interventions in the field of sustainable development, it should be noted that these interventions remain irregular and are not always subject to systematic evaluation of the results achieved. The main areas of intervention can be summarized as follows:

- **Water Pollution:** Ongoing projects focus on rehabilitating drinking-water supply networks and sanitation systems. These efforts include the rehabilitation of infrastructure in 10 cities with a combined population exceeding two million inhabitants, the rehabilitation of 24 water-treatment plants, and the development of partnership initiatives with European countries to improve the management and governance of water resources.
- **Air Pollution:** The government has adopted several measures in this area, including the selection of fuels and fuel by-products with lower pollutant levels and the transition toward new sources of electricity, particularly solar energy. Algeria also began promoting the widespread use of liquefied petroleum gas as a vehicle fuel and introduced unleaded gasoline. In 2009, approximately 40,000 vehicles had been converted to liquefied petroleum gas, and 160 stations were established throughout the country.
- **Urban and Industrial Waste:** A programme aimed at modernizing waste collection and disposal systems was scheduled to be implemented with the support of a USD 26 million loan granted to Algeria by the Islamic Development Bank. Urban waste and industrial residues remain among the most serious environmental concerns. Although approximately 50% of industrial facilities had been equipped with pollution-control systems, most of these systems were reportedly out of operation at the time.
- **Marine and Coastal Pollution:** The government sought to acquire the equipment necessary to combat oil pollution and to provide laboratory facilities. These efforts followed the financing provided by the Global Environment Facility for the Maghreb Programme to Combat Hydrocarbon-Related Pollution.
- **Forests and Steppe Protection:** The current strategy seeks to promote technical options accepted by farmers while taking environmental considerations into account. It also involves intensive efforts to rehabilitate approximately three million hectares of steppe and to give priority to land affected by erosion.

- **Protection of Cultural Heritage:** Archaeological and cultural heritage represents an important foundation of collective memory. For this reason, several projects have been launched to restore historical heritage and preserve cultural assets. These operations cover 18 provinces.
- **Environmental Education and Awareness:** An effective environmental policy is one that creates environmental awareness and connects the ecological system with the educational system. Accordingly, environmental lessons have been introduced at the primary education level, and a textbook on environmental education has been prepared for the second educational stage. In addition, radio and television programmes addressing environmental issues have been established, while public and private print media have contributed to discussing and disseminating ecological topics. (Khattaf & Ghayat, 2020, pp. 144–145)

3.5.1. The Main Contemporary Indicators of Sustainable Development in Algeria:

The following section presents the main contemporary indicators of sustainable development in Algeria, Sustainable development indicators are generally divided into four dimensions: **economic, social, environmental, and institutional**, as follows:

- **Economic Indicators:** Economic indicators constitute the primary basis for assessing Algeria’s ability to achieve sustainable development, as they reveal the strength of economic growth, the degree of diversification, the level of financial stability, and the extent of dependence on hydrocarbons.

The four dimensions should not be considered as separate components. Economic growth without social inclusion may increase inequalities; social development without environmental protection may undermine resource sustainability; environmental policies without economic and institutional capacity may be difficult to implement; and institutional reforms without effective economic and social outcomes may have limited developmental impact. Sustainable development therefore depends on the interaction and balance among the four dimensions rather than the isolated improvement of any single dimension.

Table (01): Economic Indicators of Sustainable Development in Algeria

Economic Indicator	Value/Trend	Interpretation
Gross domestic product growth	4.1% in 2023, declining to 3.6% in 2024	Growth remained positive but declined, indicating that economic momentum needs to be consolidated.
Non-hydrocarbon growth	4.2% in 2024	An important indication of the emerging expansion of sectors outside oil and gas.
Current account	Shifted into deficit in 2024	Reflects the continued vulnerability of the economy to fluctuations in hydrocarbon revenues.
International reserves	USD 67.8 billion, covering approximately 14 months of imports	Represents a source of financial strength and provides Algeria with an external safety margin.

Budget deficit	13.9% of GDP in 2024	A relatively high level that indicates pressure on public finances and the need for reform.
Non-hydrocarbon exports	USD 5.1 billion in 2023, equivalent to approximately 2% of GDP	Represents noticeable progress, but remains too limited to significantly restructure the economy.
Algeria's classification as an upper-middle-income country	Confirmed by the World Bank	Indicates an improvement in Algeria's development position, but does not in itself demonstrate the achievement of full sustainability.
Inflation	Declined from 9.3% in 2023 to 4% in 2024	Indicates a clear improvement in price stability and purchasing power.

Source: International Monetary Fund, 2024; and World Bank reports on Algeria, 2024–2025.

The table shows that the Algerian economy achieved positive growth during 2023–2024, despite its decline from 4.1% to 3.6%. Non-hydrocarbon sectors also recorded growth of 4.2%, suggesting the beginning of economic diversification. However, non-hydrocarbon exports, which amounted to USD 5.1 billion, remain limited and insufficient to reduce dependence on hydrocarbons significantly.

International reserves of USD 67.8 billion provide Algeria with a substantial financial safety margin, while the budget deficit, amounting to 13.9% of GDP, reflects considerable pressure on public finances. The decline in inflation from 9.3% to 4% represents a significant improvement in price stability. Overall, Algeria has achieved relative economic progress, but it still needs to diversify production, increase non-hydrocarbon exports, and strengthen the sustainability of public finances.

- **Social Indicators:** This dimension highlights the extent to which development affects the population through health, poverty, demography, and the labor market. A single indicator should not be interpreted in isolation, since an improvement in life expectancy, for example, does not necessarily imply the elimination of unemployment or social disparities.

Table (02): Social Indicators of Sustainable Development in Algeria

Social Indicator	Value	Year
Life expectancy at birth	76 years	2024
Share of the population living below the USD 3-per-day poverty line	0%	2011
Total population	47,435,312 inhabitants	2025
Annual population growth rate	1.3%	2025
Net migration	–27,531 persons	2025
Unemployment rate as a percentage of the total labor force	11.6%	2025
Population using safely managed sanitation services	62%	2024

Source: World Bank, Algeria Country Database.

The life expectancy figure of 76 years indicates significant progress in the health dimension and reflects the expansion of healthcare services and improvements in living conditions compared with earlier periods. However, this indicator represents a national average and does not, by itself, reveal regional disparities, the quality of healthcare services, or their distribution.

The unemployment rate of 11.6% in 2025 indicates that economic growth has not yet been fully translated into sufficient employment opportunities. This figure becomes even more significant when compared with the annual population growth rate of 1.3%. Continued population growth means that new entrants join the labor market each year, requiring the economy to create productive and stable employment rather than relying solely on growth generated by capital-intensive sectors.

The negative net migration figure of 27,531 persons indicates that the number of people leaving the country exceeds the number of arrivals according to the definition of the indicator. Although this figure cannot, on its own, be considered evidence of social deterioration, it may reflect the continued search by part of the population—particularly young people and skilled workers—for educational or employment opportunities abroad.

The rate of access to safely managed sanitation services, which reached 62% in 2024, indicates that access to essential services has not yet been fully achieved for the entire population. From a sustainable development perspective, it is not sufficient to provide water or sanitation networks; it is also necessary to ensure their safe and continuous management while reducing disparities between urban and rural areas.

The latest available poverty estimate dates back to 2011 and should therefore not be interpreted as a current measure of poverty in Algeria. The reported poverty rate of 0% under the USD 3-per-day poverty line in 2011 should be treated with considerable caution, as it is based on outdated data and reflects a narrow monetary measure that does not capture multidimensional poverty, variations in living costs, or income inequality. Accordingly, this figure should not be used as a standalone indicator for assessing Algeria's current social conditions.

- **Environmental Indicators:** This dimension measures Algeria's capacity to protect natural resources, provide environmental services, reduce emissions, and gradually shift toward more sustainable energy sources. These indicators are particularly important given Algeria's geographical position and its exposure to water scarcity, desertification, and climate change.

Table (03): Environmental Indicators of Sustainable Development in Algeria

Environmental Indicator	Value	Year
Population with access to electricity	100%	2024
Forest area as a percentage of total land area	0.8%	2023
Carbon dioxide emissions per capita	4 metric tons of CO ₂ equivalent per capita	2024
Total annual freshwater withdrawals as a percentage of internal resources	92%	2022

Electricity generated from renewable sources, excluding hydropower	0.9% of total electricity generation	2021
Population using safely managed sanitation services	62%	2024

Source: World Bank, Algeria Country Database.

The electricity access rate of 100% in 2024 represents a significant achievement in infrastructure and equal access to energy. However, this indicator measures access to electricity and does not necessarily measure its source, efficiency, cost, or environmental impact. It should therefore be considered alongside the renewable-energy indicator.

The share of electricity generated from renewable sources, amounting to 0.9% in 2021, shows that the energy transition remains very limited compared with the continued reliance on conventional energy sources. This reveals an important paradox: Algeria has achieved almost universal access to electricity, but it has not yet achieved a comparable transition toward sustainable electricity sources.

Carbon dioxide emissions of 4 metric tons per capita in 2024 indicate environmental pressure associated with energy consumption and economic activity. This figure should not be interpreted as high or low in absolute terms. Rather, it should be analyzed in relation to the scale of production, the type of energy used, and the evolution of emissions over time.

The freshwater withdrawal rate of 92% of internal resources in 2022 is an extremely sensitive indicator. It suggests that demand for water resources is approaching a very high level relative to available renewable resources. This increases the risks of water stress, particularly in the context of population growth and climate change. Water security therefore represents one of the major challenges facing sustainable development in Algeria.

The forest-area ratio of 0.8% of total land area in 2023 reflects the limited extent of forest cover at the national level. However, the national average may conceal substantial differences between northern and southern Algeria. This reinforces the need to combat desertification, forest fires, and land degradation, while linking environmental policy with urban planning and agricultural policy.

- **Institutional and Governance Indicators:** Sustainable development is not limited to economic, social, and environmental outcomes. It also requires institutions capable of producing data, ensuring transparency, involving citizens, and evaluating public policies. Institutional indicators therefore measure the state’s capacity to manage and monitor the development process.

Table (04): Institutional Indicators of Sustainable Development in Algeria

Institutional Indicator	Value	Year
Individuals using the Internet	77% of the population	2024
Seats held by women in the national parliament	8%	2025
Overall Statistical Performance Index	55.2 out of 100	2024
Foreign direct investment, net inflows	0.5% of GDP	2024

Intentional homicide rate	One homicide per 100,000 inhabitants	2023
Central government debt	No value available in the database used	—

Source: World Bank, Algeria Country Database.

The Internet-use rate of 77% in 2024 indicates the expansion of digital connectivity. This is important for developing e-government, improving access to information, and strengthening civic participation. However, a high Internet-use rate does not automatically imply the achievement of digital transformation. Such transformation also requires high-quality digital services, data protection, and equal access across regions and social groups.

The Statistical Performance Index score of 55.2 out of 100 in 2024 indicates a moderate statistical capacity that still has room for improvement. This indicator is particularly important for sustainable development because the quality of public decision-making depends on the availability of recent and disaggregated data by gender, age, region, and income. When data are incomplete or outdated, it becomes more difficult to measure poverty, unemployment, and social and environmental disparities accurately.

The proportion of women in parliament, which stood at 8% in 2025, reveals the limited level of women's political participation in the legislative institution. This indicator is important because sustainable development is not concerned solely with economic outcomes; it also depends on the extent to which decision-making processes include all social groups.

Foreign direct investment, which amounted to 0.5% of GDP in 2024, reflects the limited scale of external investment inflows relative to the size of the economy. This may indicate the persistence of obstacles related to the investment climate or the economy's greater reliance on domestic resources and public expenditure. From a sustainability perspective, the importance of foreign investment lies not only in its volume but also in its ability to transfer technology, create high-quality employment, and support green sectors and manufacturing industries.

The intentional homicide rate of one homicide per 100,000 inhabitants in 2023 indicates a relatively low level of this type of crime. However, it remains a limited indicator of institutional security and is not sufficient to assess governance quality, public trust in institutions, or the effectiveness of the justice system.

4. Cross-Country Synthesis and Benchmark Framework for Algeria

To identify policy lessons relevant to Algeria, the following table compares the main development mechanisms of Singapore, Japan, Malaysia, and India with Algeria's current gaps. the following comparative benchmark matrix is structured below:

Table (05): Comparative Policy Benchmark of Selected International Experiences and Adaptable Lessons for Algeria

Country	Primary Dimension	Development Mechanism	Evidence of Success	Algeria's Gap
Singapore	Environmental & Institutional	Resource efficiency and long-term planning	Water management and	High water-resource pressure

			green infrastructure	
Japan	Economic & Institutional	SME integration, R&D, and human capital development	Advanced industrial ecosystem	Weak technology–industry linkage
Malaysia	Economic & Social	Economic diversification and industrial policy	Structural economic transformation	Continued hydrocarbon dependence
India	Economic & Social	SME finance, entrepreneurship, and subcontracting	Employment-generating SME networks	Limited SME integration
Algeria	Four dimensions	Hydrocarbon-supported development	Electricity access, international reserves, and social gains	Uneven sustainability across dimensions

Source: Authors' compilation and analysis based on Ahmed Saleh and Zagher (2013); Bouzidi and Baissa (2021); Hadioua and Raad (2024); Mersli and Asnin (2023); World Bank (2025); and International Monetary Fund (2024).

What Can Algeria Learn from Singapore?

Singapore provides useful lessons in **resource** efficiency, environmental governance, institutional coordination, and long-term planning. Algeria could particularly adapt its approaches to water management, environmental monitoring, and the integration of sustainability into public policies. However, differences in geographical size, population, and economic structure prevent direct replication.

What Can Be Adapted from Japan?

Japan offers lessons in technological innovation, human-capital development, R&D, industrial modernization, and SME integration. Algeria could strengthen university–industry cooperation, technology transfer, applied research, and SME participation in industrial value chains. Nevertheless, Japan's advanced technological ecosystem cannot be reproduced directly.

What Can Be Learned from Malaysia?

Malaysia demonstrates the importance of economic diversification, industrial development, infrastructure, human capital, and social inclusion. Algeria can adapt these mechanisms to expand non-hydrocarbon sectors, strengthen productive industries, and link economic diversification with employment and social development.

What Can Be Adapted from India?

India highlights the role of SMEs, access to finance, entrepreneurship, subcontracting, and employment generation. Algeria could adapt these mechanisms by improving SME financing, simplifying support mechanisms, encouraging partnerships between large enterprises and SMEs, and strengthening domestic value chains.

What Cannot Be Transferred Directly to Algeria?

The development models of these countries cannot be transferred wholesale because they emerged under different historical, demographic, geographical, economic, and institutional conditions. Singapore's governance model, Japan's technological-industrial system, Malaysia's industrialization trajectory, and India's extensive SME ecosystem therefore require substantial adaptation before any elements can be applied in Algeria.

Adaptation Rather Than Replication

The comparative analysis indicates that Algeria should adopt an adaptation rather than replication approach. It can selectively combine Singapore's resource efficiency, Japan's technological and human-capital development, Malaysia's economic diversification, and India's SME mechanisms. Such adaptation should be aligned with Algeria's specific economic, social, environmental, and institutional conditions. Thus, international experiences should serve as sources of policy learning rather than ready-made models, with their relevant mechanisms selectively adapted to Algeria's specific economic, social, environmental, and institutional context.

5. Conclusion

Sustainable development in Algeria has made measurable progress, but this progress remains uneven across the economic, social, environmental, and institutional dimensions. The analysis shows that Algeria possesses important development assets, including natural and human resources, relatively strong financial capacity, broad access to electricity, and emerging growth in non-hydrocarbon sectors. Nevertheless, the continued dependence on hydrocarbons, limited diversification of exports, pressure on water resources, limited renewable-energy deployment, and institutional constraints continue to restrict the country's ability to achieve a fully sustainable development pathway.

The comparison with Singapore, Japan, Malaysia, and India demonstrates that successful development experiences are based on context-specific combinations of economic policy, institutional coordination, technological innovation, human-capital development, environmental management, and support for productive enterprises. Accordingly, Algeria does not need to replicate any foreign model in its entirety. Rather, it should selectively adapt relevant policy mechanisms to its own national circumstances.

The transition toward sustainable development therefore requires Algeria to move from fragmented interventions toward an integrated and measurable development framework that simultaneously promotes economic diversification, social inclusion, environmental protection, technological innovation, and institutional effectiveness. Such an approach would strengthen the country's capacity to transform its available resources into long-term and inclusive development outcomes.

The study reached a number of conclusions, the most important of which are as follows:

1. The comparative analysis demonstrates that Algeria's main challenge is not the absence of development resources, but the difficulty of converting these resources into a balanced and integrated development model across the economic, social, environmental, and institutional dimensions.

2. Singapore highlights the importance of environmental governance and resource efficiency.
3. Japan demonstrates the role of technological innovation and SME integration.
4. Malaysia illustrates the value of economic diversification and industrial policy.
5. India highlights the contribution of SME development, financing mechanisms, and employment generation.

The study also proposes a number of recommendations that could help Algeria strengthen its sustainable development path and achieve sustainable economic growth that benefits its citizens:

1. Accelerating economic diversification by expanding non-hydrocarbon production and exports.
2. Strengthening renewable energy development and reducing dependence on conventional energy sources.
3. Improving water-resource governance through efficient management, recycling, and demand-side policies.
4. Strengthening SMEs through financing, technological support, and integration into domestic and international value chains.
5. Investing in human capital through education, vocational training, research, and innovation.
6. Improving institutional capacity through better data systems, policy monitoring, evaluation, and digital public services.
7. Strengthening public-private partnerships in sustainable infrastructure and green investment.
8. Adapting international experiences rather than replicating them, with particular attention to Algeria's economic structure and institutional context.

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