

# Sustainable Development as a Strategic Factor in Ecuador's Economic Growth: A Socioeconomic and Environmental Analysis

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## Abstract

This study analyses sustainable development as a strategic factor for interpreting Ecuador's economic growth during the 2015–2024 period. The research was conducted using a quantitative approach and a non-experimental, longitudinal design, utilizing secondary data from official national and international sources. Through a literature review and descriptive analysis, key economic, social, and environmental indicators were evaluated, including Gross Domestic Product (GDP), poverty rate, Gini coefficient, Human Development Index (HDI), and carbon dioxide (CO<sub>2</sub>) emissions. The results reveal that although the Ecuadorian economy experienced phases of recovery and expansion—particularly following the COVID-19 crisis—these improvements did not translate into sustained progress in the social and environmental dimensions. The persistence of poverty, inequality, and polluting emissions reflects structural vulnerabilities linked to a reliance on extractive sectors, limited production diversification, and susceptibility to external shocks. The study concludes that sustainable development serves as an indispensable analytical framework for assessing the quality of growth by integrating variables that extend beyond GDP. Finally, the paper underlines the urgency of strengthening policies for energy transition, production matrix diversification, and social investment to steer the country towards a more balanced and inclusive economic model.

**Keywords:** Sustainable Development – Economic Growth – Social Equity – Environmental Sustainability – Ecuador – Economic Resilience – Public Policy.

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How to cite: Sigcho, E.L., Suconota, J.L., Salcedo, V.E. (2026). Sustainable Development as a Strategic Factor in Ecuador's Economic Growth: A Socioeconomic and Environmental Analysis. *Sapientiae*, 12(1), e120103.  
<https://doi.org/10.37293/sapientiae121.03>



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SAPIENTIAE: Ciências Sociais, Humanas e Engenharias  
Universidade Óscar Ribas, Luanda, Angola  
ISSN Versão Impressa 2183-5063 ISSN Versão Digital 2184-061X  
Vol. 12 (1). Julho - Dezembro 2026  
<http://publicacoes.uor.ed.ao/index.php/sapientiae/>

sapientiae

Received: 29/04/2026  
Accepted: 11/06/2026  
Published: 15/07/2026

# O desenvolvimento sustentável como fator estratégico no crescimento econômico do Equador: uma análise socioeconômica e ambiental

## Resumo

O estudo analisou o comportamento do desenvolvimento sustentável como fator estratégico para interpretar o crescimento econômico do Equador no período de 2015 a 2024. A pesquisa foi desenvolvida sob uma abordagem quantitativa, com delineamento não experimental e longitudinal, baseada na utilização de dados secundários provenientes de fontes oficiais nacionais e internacionais. Foram empregados a revisão documental e a análise descritiva de indicadores econômicos, sociais e ambientais, entre eles o Produto Interno Bruto (PIB), a taxa de pobreza, o coeficiente de Gini, o Índice de Desenvolvimento Humano (IDH) e as emissões de dióxido de carbono (CO<sub>2</sub>). Os resultados demonstram que a economia equatoriana apresentou períodos de recuperação e expansão, especialmente após a crise provocada pela pandemia de COVID-19; contudo, essas melhorias não se refletiram de forma permanente nos indicadores sociais e ambientais. A pobreza, a desigualdade e as emissões de poluentes apresentaram variações que evidenciam a persistência de vulnerabilidades estruturais associadas à dependência de setores extrativistas, à limitada diversificação produtiva e aos impactos de crises externas. Conclui-se que o desenvolvimento sustentável constitui uma abordagem estratégica para avaliar a qualidade do crescimento econômico, ao possibilitar a consideração não apenas da evolução do Produto Interno Bruto, mas também de suas dimensões sociais e ambientais. O estudo destaca a necessidade de fortalecer políticas de diversificação produtiva, transição energética, eficiência produtiva e investimento social, com vistas a promover um crescimento econômico mais equilibrado, inclusivo e sustentável.

**Palavras-chave:** desenvolvimento sustentável, crescimento econômico, equidade social, sustentabilidade ambiental, Equador, resiliência econômica, políticas públicas.

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## El Desarrollo Sostenible como Factor Estratégico en el Crecimiento Económico del Ecuador: Un Análisis Socioeconómico y Ambiental

## Resumen

Este estudio analizó el desarrollo sostenible como factor estratégico para interpretar el crecimiento económico del Ecuador durante el periodo 2015–2024. La investigación se desarrolló bajo un enfoque cuantitativo y un diseño no experimental de carácter longitudinal, empleando datos secundarios de fuentes oficiales nacionales e internacionales. A través de una revisión documental y un análisis descriptivo, se evaluaron indicadores económicos, sociales y ambientales clave, tales como el Producto Interno Bruto (PIB), la tasa de pobreza, el coeficiente de Gini, el Índice de Desarrollo Humano (IDH) y las emisiones de dióxido de carbono (CO<sub>2</sub>). Los resultados revelan que, si bien la economía ecuatoriana experimentó fases de recuperación y expansión —particularmente tras la crisis del COVID-19—, estas mejoras no se tradujeron en avances sostenidos en las dimensiones social y ambiental. La persistencia de la pobreza, la desigualdad y las emisiones contaminantes refleja vulnerabilidades estructurales vinculadas a la dependencia de sectores extractivos, la escasa diversificación productiva y la susceptibilidad ante choques externos. Se concluye que el desarrollo sostenible es un marco analítico indispensable para evaluar la calidad del crecimiento, integrando variables que van más allá del PIB. Finalmente, el estudio subraya la urgencia de fortalecer políticas de transición energética, diversificación de la matriz productiva e inversión social para orientar al país hacia un modelo económico más equilibrado e inclusivo.

**Palabras clave:** Desarrollo Sostenible – Crecimiento Económico – Equidad Social – Sostenibilidad Ambiental – Ecuador – Resiliencia Económica – Política Pública.

# Introduction

Sustainable development has established itself as a cornerstone in the formulation of economic strategies by integrating economic growth, social equity, and environmental protection. In a global context shaped by climate change, inequality, and the overexploitation of natural resources, nations have re-evaluated their development models in favor of more sustainable and resilient approaches. From this perspective, sustainable development represents not only a normative principle but also a strategic component to guide long-term economic decisions and public policies (Santos, 2025).

In the Ecuadorian context, this issue acquires particular relevance due to the economy's historical dependence on natural resources, specifically the oil and extractive sectors. Although this structure has sustained periods of economic growth, it has also generated vulnerabilities associated with international price volatility, environmental degradation, and limited production diversification. Consequently, sustainable development emerges as a highly pertinent framework for analyzing the quality of the country's economic growth and its structural challenges (Barboza et al., 2025).

This research is rooted in the necessity of examining the behavior of Ecuadorian economic growth from a multidimensional perspective. To achieve this, a matrix of economic, social, and environmental indicators is considered: Gross Domestic Product (GDP), as a measure of economic dynamics; the poverty rate and the Gini coefficient, as proxies for social inclusion and income distribution; the Human Development Index (HDI), as a composite indicator of well-being, education, and health; and carbon dioxide (CO<sub>2</sub>) emissions, as an expression of the environmental impact associated with economic activity.

The selection of these indicators is grounded in institutional and academic literature regarding sustainable development, green economics, and the multidimensional measurement of development. The 2030 Agenda posits that sustainable development requires the inseparable integration of economic, social, and environmental dimensions (Carrillo et al., 2026), while green growth frameworks emphasize production efficiency, the reduction of environmental externalities, and the preservation of natural assets (Parrales et al., 2025). Furthermore, the human development paradigm contends that a country's progress cannot be evaluated solely by increases in GDP, but must incorporate advancements in well-being, capabilities, and living conditions (Villalobos, 2023). In this regard, the selected indicators make it possible to interpret whether Ecuadorian economic growth has advanced toward a more inclusive, equitable, and environmentally sustainable model (Sagbay et al., 2025).

The theoretical foundation of this study is derived from contemporary approaches that understand economic growth through its interactions with human capital, institutional quality, innovation, and environmental sustainability. Under this framework, sustainable development does not replace economic growth; rather, it expands its interpretation by incorporating criteria of life quality, equity, and natural resource preservation (Acevedo et al., 2025). Within this scope, the Sustainable Development Goals (SDG) constitute a valuable international benchmark to contextualize the economic, social, and environmental dimensions of the analysis, particularly concerning social inclusion, decent work, reduced inequalities, climate action, and the responsible management of natural resources (Rey, 2025).

Therefore, this study aims to analyze the behavior of sustainable development as a strategic factor for interpreting Ecuador's economic growth during the 2015–2024 period, considering economic, social, and environmental indicators linked to the principles of the 2030 Agenda and the SDGs. This analysis provides insight into whether the country's economic evolution has moved toward a more balanced, inclusive, and sustainable path, or whether structural limitations persist

## Theoretical Framework

that hinder the consolidation of a model compatible with long-term economic, social, and environmental sustainability.

### Foundations of Economic Growth and Sustainable Development

The evolution of economic thought regarding growth has progressively incorporated social, environmental, and institutional dimensions. Traditional approaches, which focused primarily on capital accumulation, productivity, and output expansion—such as those advanced by Solow and Kuznets—have been fundamental to understanding economic expansion. However, they remain limited when explaining contemporary development challenges, particularly in natural resource-dependent economies like Ecuador (Espinosa, 2024). Within this context, literature on green growth, environmental innovation, and sustainable development economics highlights the necessity of linking economic growth with productivity, technological innovation, and environmental sustainability as prerequisites for sustaining long-term development (Dechezleprêtre et al., 2023).



Contemporary economic growth is increasingly understood as a process that entails not only increased output but also structural transformation, resource-use efficiency, and adaptive capacity in the face of social and environmental challenges. Technological innovation and transition policies toward sustainable economies reduce environmental externalities, stimulate new productive sectors, and enhance national competitiveness (Prados de la Escosura & Sánchez, 2023). Along these lines, green innovation functions as a critical mechanism to align economic performance with sustainability, given that it fosters production processes that are both more efficient and less intensive in their consumption of natural resources (Braude et al., 2024).

Furthermore, recent economic thought explicitly acknowledges the role of institutions, human capital, and social inclusion in building a more resilient growth trajectory. Institutional quality directly shapes the stability of public policies, while human capital drives productivity, innovation, and structural transformation. These elements are highly critical for the Ecuadorian case, where a deep reliance on extractive sectors, environmental vulnerability, and persistent social gaps demand targeted strategies to diversify the economy, strengthen domestic capabilities, and improve the resilience of the development model (Chiriboga et al., 2024).

From this perspective, the sustainable development paradigm expands the traditional understanding of economic growth by evaluating not merely its magnitude, but its underlying quality, equity, and long-term durability. While classical frameworks prioritized capital accumulation and productive efficiency, contemporary approaches emphasize the imperative of balancing growth, social inclusion, and environmental protection. Consequently, sustainable development provides a highly pertinent theoretical framework to analyze Ecuadorian economic growth, particularly given its status as a natural resource-dependent economy confronting acute structural challenges in both social and environmental domains (Méndez, 2023).

### **Conceptualization of Sustainable Development**

Sustainable development is conceptualized as a multidimensional approach that integrates economic growth, social inclusion, and environmental protection. This vision has been systematically reinforced by the 2030 Agenda and the Sustainable Development Goals (SDGs), which posit that development must meet current needs without compromising the resources and opportunities of future generations. From this perspective, sustainable development transcends frameworks centered solely on economic growth, incorporating criteria of well-being, equity, and environmental sustainability (Fernández, 2023).

This approach demands a coherent orchestration of economic, social, and environmental policies, given that development challenges cannot be effectively addressed through a single dimension. Carballo and Morales (2025) emphasize that sustainable development must be understood from a systemic perspective, wherein economic growth represents one component of a broader process oriented toward human well-being and natural resource preservation. In this sense, sustainable development is not limited to productive expansion; it fundamentally evaluates the quality of growth, its capacity for inclusion, and its broader impacts on the environment.

Furthermore, scholars such as Rivera et al. (2025) have incorporated institutional and governance dimensions as vital elements for operationalizing sustainable development. Strategic coordination among the State, the private sector, and civil society is essential to guarantee public policies that are both coherent and sustained over time. Consequently, sustainability should not be viewed merely as a static outcome, but as a dynamic process that relies on institutional capacity, civic participation, and strategic planning.

The economic dimension of sustainable development is also inherently linked to a structural transition toward greener, more inclusive, and resilient productive models. Ruíz (2026) highlights that economic sustainability requires proactive investment in natural capital, the internalization of environmental externalities, and policies aimed at strengthening adaptive capacity in the face of external shocks. Therefore, sustainable development entails not only economic expansion, but long-term structural stability, social equity, and environmental preservation.

### **Relationship Between Economic Growth and Sustainable Development**

The relationship between economic growth and sustainable development has been extensively addressed within the frameworks of environmental economics, green growth, and the economics of sustainable development. These perspectives acknowledge that while economic growth can generate productive and social benefits, it can also exert pressure on natural resources when driven by intensive consumption, energy, and extraction patterns. In response to this tension, contemporary approaches suggest that growth can be directed toward more sustainable models through technological innovation, productive efficiency, and the responsible use of resources (Reyes, 2023).

The concept of decoupling has gained prominence within this debate, proposing that economies can expand without a proportional increase in their environmental impacts. In this regard, the transition to clean energy, energy efficiency,

and green innovation makes it possible to reconcile economic growth with the reduction of pollutant emissions. This perspective redefines growth, viewing it not merely as productive expansion, but as a process that must account for its social and environmental effects (Pallás De Mier, 2025).

In developing economies, the sustainability of growth depends on factors such as productive structure, institutional quality, technological level, and implemented public policies. Díaz and Sosa (2025) note that, in certain contexts, economic growth may initially be associated with higher levels of environmental degradation; however, the adoption of clean technologies and stricter regulations can mitigate these impacts. Consequently, economic growth does not inherently guarantee sustainable outcomes; rather, it requires adequate institutional, productive, and environmental conditions.

From this perspective, green financial policies, climate regulation, and the allocation of resources toward sustainable activities are considered essential elements for advancing toward inclusive, resilient, and low-carbon growth. These mechanisms enable the generation of economic benefits without deepening social inequalities or compromising natural resources. As a result, sustainable development emerges as a necessary framework for evaluating the quality of economic growth and its long-term viability (Baquero et al., 2025).

### **Sustainable Development as a Strategic Factor**

Sustainable development has acquired a strategic character within contemporary economic analysis, becoming integrated as a central pillar in public policy formulation and corporate strategy design. Sustainability is no longer conceived solely as an environmental or social objective; instead, it is positioned as a fundamental component of competitiveness and long-term economic growth. This perspective acknowledges that the generation of economic value can be aligned with the resolution of social and environmental challenges, shaping a more comprehensive approach to development (Merino et al., 2024).

When understood strategically, sustainability drives innovation and productive transformation by fostering the development of new products, technologies, and more efficient business models. Economic value creation is no longer confined to profit maximization; rather, it incorporates the capacity of organizations to respond to social and environmental challenges, thereby strengthening their competitive positioning in the market. This approach demonstrates that sustainability not only mitigates risks associated with external factors but also generates economic opportunities linked to the transition toward more sustainable economies (Garófalo & Arguello, 2024).

From a macroeconomic perspective, embedding sustainable development as a strategy implies incorporating policies aimed at promoting inclusive, resilient, and low-carbon growth. Contemporary economic planning recognizes the necessity of integrating environmental and social criteria into the design of fiscal, energy, and industrial policies to ensure an effective transition toward sustainable development models. Consequently, sustainability is framed as an investment that contributes to future economic stability, particularly in contexts characterized by climate change and increasing pressure on natural resources (Mazzucato, 2023).

The strategic approach to sustainable development also highlights the importance of governance, innovation, and stakeholder cooperation as essential elements for its implementation. The articulation among governments, the private sector, and civil society enables the coordination of actions and the creation of synergies aimed at achieving common development goals. The incorporation of emerging technologies and digitalization processes reinforces this dynamic by facilitating the transition toward more efficient and sustainable productive systems (Garcia, 2025).

### **Sustainability and Long-Term Economic Growth**

Sustainability and long-term economic growth have become pivotal themes within the frameworks of economic sustainability, green growth, and environmental economics. These paradigms argue that the traditional growth model, predicated on the intensive utilization of natural resources, exhibits inherent structural limitations regarding its long-term viability if it fails to integrate social and environmental criteria. From this perspective, sustainability is not conceptualized as a constraint on growth, but rather as a prerequisite to guarantee its continuity, stability, and adaptive capacity in the face of global challenges (Villar, 2023).

Sustainable economic growth depends on the capacity of economies to innovate, decarbonize their productive systems, and enhance resource efficiency. Investments targeted toward green economies contribute to mitigating environmental impacts while simultaneously driving emerging productive sectors, employment, and innovation. Consequently, sustainability can act as a catalyst for structural transformation, particularly within contexts of economic recovery and productive transition (Montalvo, 2025).

From the standpoint of green growth and eco-innovation, sustainability can bolster productivity when coupled with appropriate policies, regulatory frameworks, innovation incentives, and sustainable financing mechanisms. The adoption of clean technologies, energy efficiency, and the promotion of sustainable economic activities foster productive



opportunities without exacerbating environmental degradation. In this regard, long-term economic growth necessitates the integration of environmental criteria into economic and productive planning (Quiroz, 2023).

Furthermore, sustainability is intrinsically linked to economic resilience against global crises, such as climate change, pandemics, or financial disruptions. Incorporating natural capital into economic analysis acknowledges that natural resources constitute a fundamental baseline for human well-being and productive activity. Likewise, social inclusion and the reduction of inequalities strengthen social cohesion and economic stability—essential preconditions for consolidating enduring and sustainable growth (Preciado et al., 2024).

### **The Role of the Sustainable Development Goals**

The role of the Sustainable Development Goals (SDGs) is fundamental in shaping a model that integrates economic growth with environmental sustainability and social well-being (Agurto & Salcedo, 2025). Broadly speaking, these goals promote a comprehensive approach based on inclusive growth, the generation of quality employment, the enhancement of productivity, and the promotion of innovation—factors that contribute to the consolidation of more equitable and resilient economies (Delgado et al., 2026).

Furthermore, the SDGs transversally incorporate the environmental dimension into development strategies, fostering policies aimed at climate change mitigation and the sustainable use of natural resources. This integration drives the transformation of productive systems toward more sustainable frameworks, wherein economic growth is articulated with environmental protection through innovation and efficiency processes (Covane, 2023).

In this context, the SDGs represent both opportunities and challenges, particularly in developing countries. The transition toward sustainable models can generate emerging productive and labor opportunities; however, it also entails challenges related to the adaptation of traditional sectors. This necessitates the implementation of public policies that ensure a balanced and socially just transition (González, 2025).

Achieving the SDGs demands a strategic approach based on the coordination of economic, social, and environmental policies, as well as the strengthening of sustainable financing and international cooperation. Within this framework, financial systems play a key role by channeling resources toward sustainable activities, thereby contributing to the consolidation of a more balanced, inclusive, and long-term sustainable development model (Arrocha et al., 2025).

## **Methodology**

The present study analyzes the relationship between sustainable development and economic growth in Ecuador using an approach based on economic, social, and environmental indicators. A non-experimental, longitudinal design is adopted to observe the evolution of the variables over time and to understand their behavior within the context of the country's comprehensive development (Navarrete et al., 2025).

The research is conducted utilizing the deductive method, as it originates from general theoretical foundations regarding economic growth and sustainable development, and subsequently analyzes their manifestation within the Ecuadorian context based on macroeconomic, social, and environmental indicators. This approach allows for the interpretation of variable dynamics in accordance with previously established theoretical principles, thereby facilitating the understanding of sustainable development as a strategic driver of economic growth (Andrade & Trujillo, 2023).

This study employs a quantitative approach based exclusively on secondary data obtained from official national and international sources. The primary sources include the Central Bank of Ecuador (BCE, 2023), the National Institute of Statistics and Censos (INEC), the World Bank, the United Nations Development Programme (UNDP), the Economic Commission for Latin America and the Caribbean (ECLAC), and international statistical databases such as World Bank Data and Worldometer (2026). The analytical period spans from 2015 to 2024, enabling the evaluation of indicator behavior across a consistent time horizon. This approach ensures the objective measurement of the variables and the construction of empirical evidence derived from previously published information (Lara et al., 2024).

The scope of this research is descriptive-explanatory, as it describes the evolution of the selected indicators and analyzes their behavioral patterns in relation to economic growth and sustainable development. Rather than performing statistical correlation calculations or econometric inferences, the analysis is grounded in the interpretation of trends, variations, and behaviors observed within the data series. This approach allows for an understanding of the structural relationships between the variables without establishing direct causality (Guevara & Urcia, 2024).

The research design is non-experimental and longitudinal. It is non-experimental because the variables are not manipulated; instead, they are observed exactly as they manifest in reality. It is longitudinal because it analyzes time

series data, which enables the observation of the evolution of economic, social, and environmental indicators across the 2015–2024 period, thereby facilitating the identification of structural shifts in the behavior of sustainable development in Ecuador (Cleve & D’Elia, 2024).

The primary data collection technique is documentary review, based on the systematization of secondary data from the previously mentioned official sources. The dataset includes indicators such as Gross Domestic Product (GDP), poverty rate, the Gini coefficient, the Human Development Index (HDI), and CO2 emissions. These indicators were selected due to their relevance in representing the economic, social, and environmental dimensions of sustainable development, ensuring a comprehensive analysis of the phenomenon under study (Beltrán, 2025).

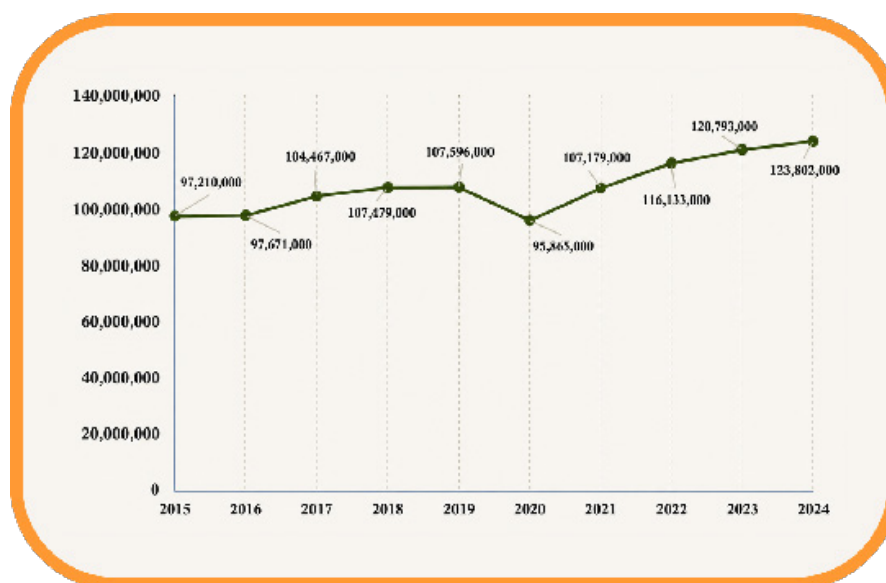
Data analysis is conducted through descriptive statistics, utilizing measures of trend and behavior such as percentage variations, temporal evolution, and historical series comparisons. Correlation models and inferential procedures are intentionally excluded, given that the objective of the study is to interpret the evolution of the indicators and their conceptual relationship with sustainable development. This framework allows for the identification of relevant patterns and trends required to analyze Ecuador’s economic growth from a sustainability perspective (Banda & Fernandez, 2024).

The study is governed by fundamental ethical principles, guaranteeing transparency in data usage, accurate citation of sources, and adherence to academic integrity. Since the research relies on public and open-access data, its utilization is strictly restricted to academic purposes, preventing any form of data manipulation or distortion (Barahona et al., 2024).

## Results

### The Economic Dimension of Sustainable Development in Ecuador

The economic axis constitutes a fundamental dimension within sustainable development, as it allows for the evaluation of an economy’s capacity to generate long-term growth, stability, and well-being. In the case of Ecuador, economic analysis becomes particularly relevant due to the country’s historical dependence on extractive activities, especially the oil sector, which has conditioned the behavior of Gross Domestic Product (GDP) and the viability of economic growth (Rojas et al., 2024). The evolution of this indicator enables the identification of the country’s primary economic fluctuations, as well as the structural vulnerabilities that affect the stability and resilience of the national economy.

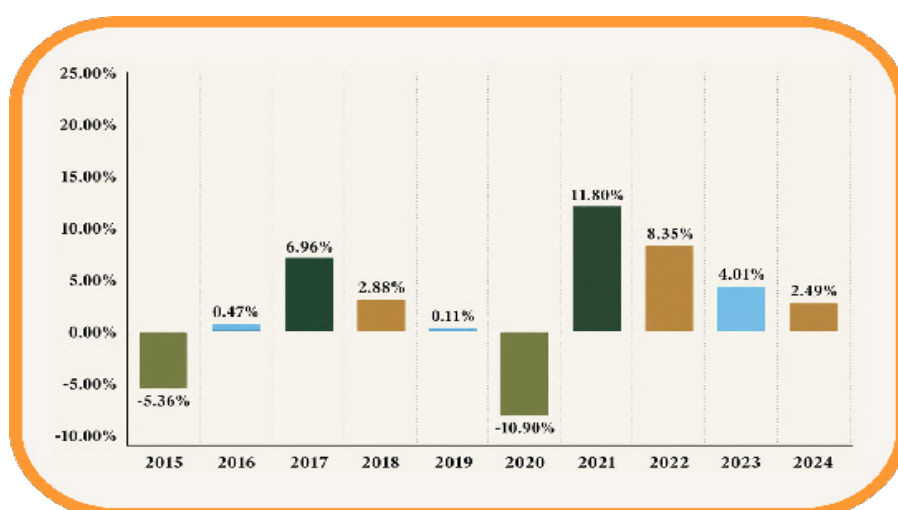


**Figure 1.**  
Evolution of Ecuador’s Gross Domestic Product (2015–2024).

**Note:** Data obtained from the Central Bank of Ecuador (BCE, 2023).

The evolution of Ecuador's real GDP during the 2015–2024 period demonstrates a trajectory characterized by phases of deceleration, contraction, and recovery. In 2015 and 2016, relatively low levels were recorded, with values of 97,210,000 and 97,671,000 USD, respectively, which were associated with the decline in international oil prices and a regional economic slowdown. This situation reflected the vulnerability of the Ecuadorian economy to exogenous factors due to its high dependence on oil exports, a condition that adversely affected fiscal revenues, public investment, and national productive dynamics (Álvarez et al., 2025). Between 2017 and 2019, a moderate recovery was observed, with values exceeding 107 million USD, driven by a partial improvement in the external environment, domestic consumption, and a degree of macroeconomic stability; nevertheless, the productive structure remained reliant on primary and extractive sectors, thereby limiting the consolidation of diversified and sustainable growth.

The year 2020 represented the sharpest contraction of the period, with a GDP of 95,865,000 USD as a consequence of the COVID-19 pandemic, the suspension of economic activities, mobility restrictions, and the decline in international trade (Sosa, 2022). From 2021 onward, a sustained recovery became evident, reaching 123,802,000 USD in 2024, the highest value within the analyzed series. This recovery was linked to economic reactivation, international trade, and an increase in productive and export activities. Nonetheless, growth continued to be underpinned by extractive sectors and traditional activities, highlighting ongoing challenges for long-term economic sustainability. In this regard, the persistence of a model dependent on natural resources constrains the country's capacity to transition toward a more diversified, innovative, and environmentally sustainable economy.



**Figure 2.**  
Annual growth rate of Ecuadorian GDP (%).

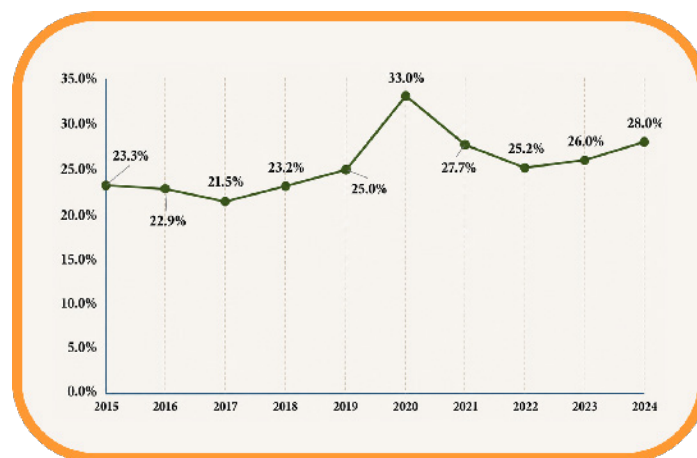
**Note:** The annual GDP growth rate was calculated based on the percentage change in Gross Domestic Product data obtained from the Central Bank of Ecuador (BCE, 2023).

The annual GDP growth rate illustrates with greater precision the fluctuations of the Ecuadorian economy during the analyzed period. In 2015, a contraction of -5.36% was recorded, followed by a minimal growth of 0.47% in 2016, reflecting the impacts of the oil shock and the regional slowdown. In 2017, a significant recovery of 6.96% was observed; however, between 2018 and 2019, growth decelerated once again, underscoring structural difficulties in sustaining a continuous economic expansion.

The sharpest decline occurred in 2020, when the rate reached -10.90% as a result of the economic impact of the COVID-19 pandemic, the suspension of productive activities, a decline in exports, and a reduction in domestic consumption. In contrast, growth rates of 11.80% and 8.35% were recorded during 2021 and 2022, respectively, driven by economic reopening and the recovery of international markets. Nevertheless, from 2023 onward, growth exhibited a progressive deceleration, dropping to 2.49% in 2024, which highlights the limitations of maintaining high growth over time. This behavior confirms the vulnerability of the Ecuadorian economy to exogenous factors and its reliance on extractive activities, emphasizing the necessity of strengthening productive diversification, technological innovation, and long-term economic sustainability (Barrera & Flórez, 2024).

### The Social Dimension of Sustainable Development in Ecuador

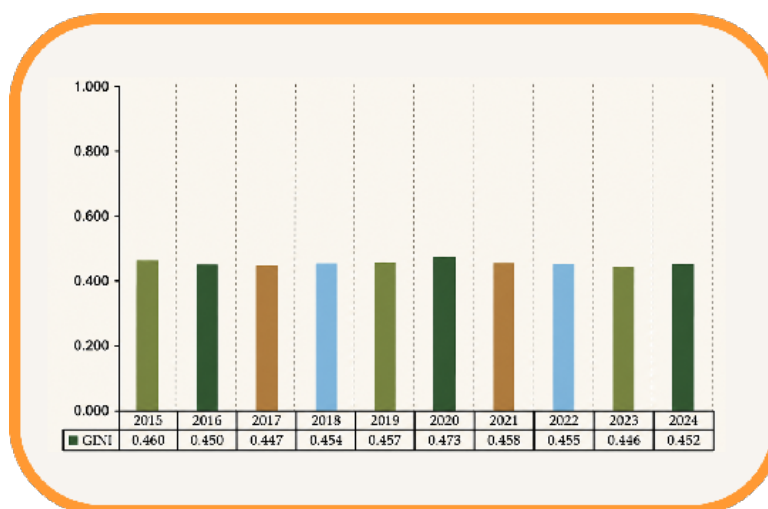
The social axis of sustainable development allows for the evaluation of an economy's capacity to generate welfare, inclusion, and improved living conditions for the population. Sustainable economic growth is not confined solely to increases in production or national income; it also entails poverty reduction, the mitigation of inequalities, and the strengthening of human development. In the case of Ecuador, the analysis of social indicators is fundamental to determining whether the economic growth experienced in recent years has effectively translated into sustained social improvements and a more equitable distribution of development benefits (Sabando et al., 2025).



**Figure 3.**  
Evolution of the poverty rate in Ecuador (2015–2024).

**Note:** Data obtained from Datosmacro (2025), based on official statistics from the Central Bank of Ecuador and national statistical institutions.

The evolution of the poverty rate in Ecuador during the 2015–2024 period reveals significant fluctuations associated with economic performance as well as social and external factors. Between 2015 and 2017, a progressive reduction in poverty was observed, moving from 23.3% to 21.5%, which reflects a relative improvement in living conditions and a context of greater economic stability. However, from 2018 onward, the indicator began to rise, reaching 25.0% in 2019 as a result of economic deceleration, the reduction in public investment, and the deterioration of labor conditions.



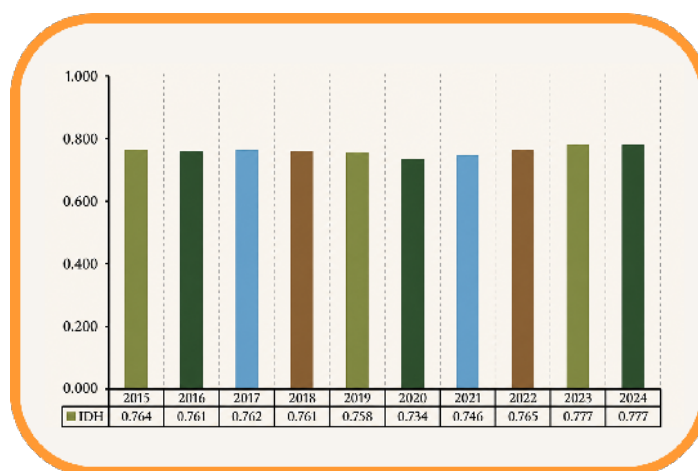
**Figure 4.**  
Evolution of the Gini coefficient in Ecuador (2015–2024).

**Note:** Data obtained from the World Bank, Poverty and Inequality Platform (2026), based on primary household surveys from government statistical agencies and national departments of the World Bank. Author's own elaboration.

The situation worsened in 2020, when poverty rose to 33.0%—the highest value recorded during the analyzed period—due to the impact of the COVID-19 pandemic on employment, household income, and productive activities. Between 2021 and 2023, a partial recovery was evidenced, with a reduction to 25.2% in 2022; nevertheless, in 2024, poverty increased again to 28.0%. This behavior demonstrates that social improvements remain fragile and sensitive to the structural limitations of the Ecuadorian economic model, highlighting the need to strengthen employment policies, social investment, and vulnerability reduction in line with a vision of inclusive sustainable development.

The trajectory of the Gini coefficient in Ecuador during the 2015–2024 period highlights variations in the levels of income distribution inequality. Between 2015 and 2017, the indicator decreased from 0.460 to 0.447, reflecting a moderate improvement in terms of social equity, which was associated with a phase of relative economic stability, social spending policies, and the strengthening of domestic consumption. However, from 2018 onward, inequality rose again, reaching 0.473 in 2020—the highest value within the analyzed period—as a result of the economic and social crisis triggered by the COVID-19 pandemic, job losses, income reduction, and the suspension of productive activities.

Between 2021 and 2024, a partial recovery was observed, although persistent fluctuations evidence structural gaps in income distribution. In 2023, the coefficient reached 0.446, its lowest level in the recent period; nevertheless, in 2024, it increased slightly to 0.452. These results demonstrate that Ecuadorian economic growth still exhibits constraints in consolidating an equitable distribution of its benefits, thereby emphasizing the necessity of strengthening public policies aimed at employment generation, vulnerability reduction, and the promotion of a more inclusive and sustainable growth model (Ariza et al., 2025).



**Figure 5.**

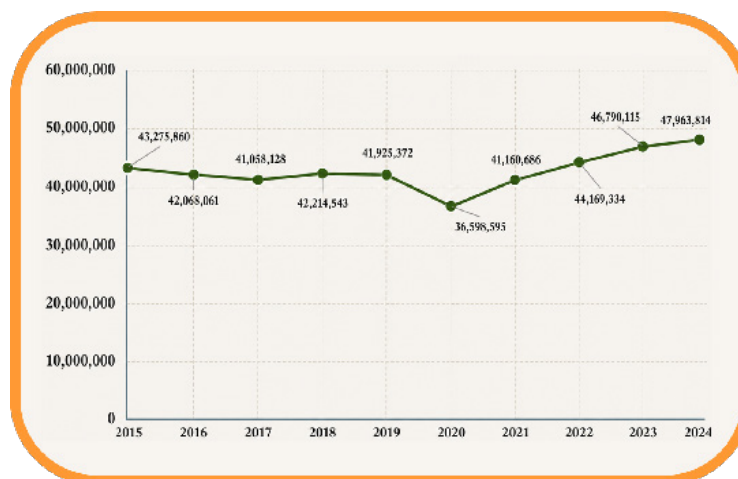
Evolution of the Human Development Index (HDI) in Ecuador (2015–2024).

**Note:** Data obtained from DatosMacro, based on official statistics from the United Nations Development Programme (UNDP, 2023). The Human Development Index (HDI) incorporates dimensions related to health, education, and income.

### The Environmental Dimension of Sustainable Development in Ecuador

The environmental axis constitutes an essential dimension within sustainable development, as it allows for the evaluation of the impacts generated by economic activities on natural resources and the environment. Sustainable economic growth requires balancing productive expansion with ecosystem preservation and the reduction of pollutant emissions. In the case of Ecuador, this analysis acquires particular relevance due to the high dependence on extractive activities such as oil and mining—sectors that have historically contributed to economic growth but have also generated substantial environmental pressures. The study of carbon dioxide (CO<sub>2</sub>) emissions allows for the determination of the environmental sustainability level of the Ecuadorian economic model and its relationship with the country's growth dynamics (Tenecota et al., 2024).

The evolution of CO<sub>2</sub> emissions in Ecuador during the 2015–2024 period demonstrates that the national productive model continues to exert high environmental pressure. Between 2015 and 2019, emissions remained relatively stable, fluctuating between 41 and 43 million metric tons annually, reflecting the continuity of an economic structure anchored in extractive activities, transport, power generation, and the intensive use of fossil fuels. Although the country exhibited moderate growth levels during these years, the emission data indicate that economic activity remained dependent on sectors with a high environmental impact.



**Figure 6.**

Evolution of CO<sub>2</sub> emissions in Ecuador (2015–2024).

**Note:** Data obtained from Worldometer (2025), based on international statistics on fossil carbon dioxide (CO<sub>2</sub>).

In 2020, emissions decreased to 36,598,595 metric tons—the lowest value of the period—due to the partial suspension of economic activities, mobility restrictions, and the reduction in transportation and industrial activity during the COVID-19 pandemic. However, from 2021 onward, emissions resumed an upward trend, reaching 47,963,814 metric tons in 2024, the highest value in the data series. This behavior underscores that the post-pandemic economic recovery continued to rely on traditional, carbon-intensive activities without a significant structural transformation toward more sustainable productive models. Consequently, the environmental sustainability of Ecuadorian growth necessitates the strengthening of policies focused on energy transition, productive efficiency, emissions reduction, and the promotion of sustainable economic activities, integrating climate action as a core component of the comprehensive analysis of sustainable development.

## Discussion

The findings obtained allow for a descriptive characterization of Ecuador's economic growth and the primary indicators associated with sustainable development during the 2015–2024 period. In accordance with the study's methodological scope, the discussion focuses on the descriptive interpretation of the evolution of GDP, poverty, the Gini coefficient, the Human Development Index, and CO<sub>2</sub> emissions, without establishing statistical relationships or causal effects between variables. In this sense, the results show that Ecuadorian economic growth experienced periods of recovery, particularly following the crisis triggered by the COVID-19 pandemic; however, this recovery was not accompanied by permanent improvements across all social and environmental indicators. This behavior aligns with Márquez et al. (2020), who argue that economic growth should not be evaluated solely by increases in production, but also by its implications for social well-being and environmental sustainability.

The evolution of poverty and the Gini coefficient demonstrates that social progress in Ecuador has been partial and unstable. Although a reduction in poverty and inequality was observed in certain years, these indicators deteriorated during episodes of economic slowdown and external crises, most notably in 2020. Arbeláez and Parra (2020) point out that economies dependent on extractive sectors typically face greater difficulties in consolidating processes of inclusive and sustained development due to revenue volatility and the persistence of structural gaps. In the case of Ecuador, the analyzed data reflect this phenomenon, as the post-pandemic economic recovery did not completely eradicate conditions of social vulnerability.

The results regarding CO<sub>2</sub> emissions indicate that the Ecuadorian economic model continues to face substantial environmental challenges. The temporary reduction in emissions recorded in 2020 was primarily a response to the contraction of economic activity during the pandemic, whereas the subsequent recovery was accompanied by a renewed increase in pollutant emissions.

The behavior of the Human Development Index shows moderate advances in population well-being, although structural limitations related to inequality, employment, and equitable access to opportunities persist. The decline of the HDI during the pandemic and its subsequent recovery reflect the fragility of social indicators in the face of external crises. Meza (2025) posits that sustainable development requires the joint strengthening of the economic, social, and environmental dimensions, as isolated economic growth does not guarantee permanent improvements in the quality of life. The descriptive results of the present study concur with this perspective, given that the increase in GDP was not always accompanied by sustained improvements in social indicators.

Based on the review of the indicators, sustainable development can be conceptualized as a strategic factor to guide Ecuador's economic growth, insofar as it allows for the evaluation of economic performance not merely through GDP expansion, but also through its social and environmental dimensions. Carvajal et al. (2026) note that the transition toward more resilient economies requires public policies targeted at innovation, productive diversification, energy transition, and institutional strengthening. Within this context, the results support the argument that Ecuadorian economic growth must be complemented by sustainable strategies that enhance social inclusion, reduce vulnerabilities, and promote a more responsible management of natural resources.

The productive structure's dependence on extractive sectors remains a major constraint to advancing toward a more sustainable growth model. The pressure exerted on natural resources, vulnerability to exogenous shocks, and limited productive diversification condition both the economic and environmental stability of the country. Uquillas and Padilla (2024) highlight the importance of economic resilience and risk management in the face of economic crises or natural disasters. In the case of Ecuador, this perspective is highly relevant, as the analyzed indicators demonstrate the need to strengthen innovation, productive diversification, and value-added generation.

In the environmental domain, the increase in CO<sub>2</sub> emissions following the economic recovery underscores the need to reinforce environmental sustainability strategies. The continuity of carbon-intensive activities constrains the possibility of consolidating a more balanced development model. Mora and Escobar (2024) emphasize that environmental management and renewable energies are key elements for transitioning toward sustainable productive frameworks. In this regard, the descriptive results of the study illustrate the importance of promoting energy efficiency, the transition to renewable energy sources, and the effective regulation of activities with high environmental impacts.

Conjointly, the discussion indicates that sustainable development constitutes a strategic framework to interpret Ecuador's economic growth from a broader perspective than one that is strictly production-oriented. The descriptive analysis of the indicators shows that economic recovery does not always translate into permanent social and environmental improvements (Pérez, 2025). Consequently, Ecuadorian economic growth needs to be articulated with public policies focused on productive diversification, social inclusion, innovation, energy transition, and institutional strengthening, in order to advance toward a more balanced, resilient, and sustainable development model.

## Conclusions

- The findings obtained indicate that sustainable development constitutes a strategic framework to interpret Ecuador's economic growth from a broader perspective than one that is strictly economic. The descriptive analysis of indicators such as Gross Domestic Product, poverty, the Gini coefficient, the Human Development Index, and CO<sub>2</sub> emissions revealed that, during the 2015–2024 period, the country recorded stages of economic recovery; however, these were not always accompanied by sustained improvements in social inclusion and environmental sustainability.
- The trajectory of Gross Domestic Product shows that the Ecuadorian economy maintained a dynamic marked by fluctuations, particularly during the crisis caused by the COVID-19 pandemic and the subsequent economic recovery. Nevertheless, the observed evolution also reflects the persistence of structural vulnerabilities associated with a dependence on extractive sectors, limited productive diversification, and the need to strengthen innovation. Consequently, the country's economic growth needs to be oriented toward sectors that are more resilient, productive, and compatible with the principles of sustainable development.
- The analyzed social indicators show that improvements in poverty and inequality have been partial and unstable. Although progress was observed in specific years, the pandemic deepened conditions of social vulnerability and adversely affected income, employment, and opportunities across various segments of the population. The subsequent recovery did not entirely eradicate these gaps, demonstrating that economic growth must be complemented by policies focused on social investment, decent employment, education, social protection, and equitable access to basic services.

- From the environmental dimension, the trajectory of CO<sub>2</sub> emissions demonstrates that the Ecuadorian economic model continues to present significant challenges regarding sustainability. The reduction in emissions recorded in 2020 was primarily a response to the contraction of economic activity, whereas the subsequent reactivation was accompanied by an increase in emissions. This highlights the need to strengthen strategies for energy transition, productive efficiency, environmental regulation, and the promotion of sustainable economic activities that reduce dependence on fossil fuels and natural resources.
- The analysis conducted provides an understanding that sustainable development offers a strategic framework to assess the quality of Ecuadorian economic growth, considering not only GDP expansion but also its social and environmental impacts. In this sense, the Sustainable Development Goals (SDGs) serve as an analytical benchmark to contextualize the economic, social, and environmental dimensions of development, although this study does not directly evaluate their compliance. The integration of these dimensions is necessary to move toward a more balanced, inclusive, and sustainable growth model.
- It is recommended to strengthen public policies aimed at diversifying the productive matrix, thereby reducing reliance on extractive activities and promoting sectors with higher added value, innovation, and sustainability. Likewise, it is necessary to drive social investment programs that contribute to reducing poverty, improving the distribution of opportunities, and enhancing the living conditions of the population, particularly within the most vulnerable sectors.
- It is also recommended to promote national environmental sustainability strategies by fostering renewable energy, energy efficiency, clean production, and more effective environmental regulations. Coordination among the State, the private sector, academia, and civil society is key to advancing toward more sustainable and resilient productive models capable of responding to the country's economic, social, and environmental challenges.
- Among the main limitations of this study is the exclusive use of secondary data from official sources and available statistical databases, which restricts the analysis to information published for the 2015–2024 period. Furthermore, the research was developed using a descriptive approach; hence, econometric models, correlation analyses, or statistical tests were not applied to establish quantitative associations or causal effects between the variables. Similarly, some indicators may present methodological differences depending on the source consulted, which must be taken into consideration when interpreting the results.
- For future research, it is suggested to expand the analysis using more robust statistical techniques, such as correlations, regressions, or time-series models, to examine with greater precision the joint behavior of economic, social, and environmental indicators. It would also be highly relevant to incorporate additional variables—such as public investment, employment, social spending, renewable energies, sector productivity, or institutional quality—in order to deepen the study of sustainable development and its role within Ecuador's economic growth.

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