







REVIEW

Human development and health inequalities: a systematic review of the human development index in Ecuador and Latin America

Desarrollo humano y desigualdades en salud: una revisión sistemática del Índice de Desarrollo Humano en Ecuador y América Latina

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ABSTRACT

Introduction: human development in Latin America requires evidence that links the Human Development Index (HDI) with policy-relevant determinants; Ecuador is a critical case.

Objective: to map trends, methods, and policy links in HDI research (2010-2024) in Latin America, with a focused analysis of Ecuador.

Method: PRISMA-aligned systematic review of Web of Science and Scopus (Jan 1, 2010-Jun 29, 2024). Records were standardized in Python (pandas, bibtextparser), exported to CSV, and deduplicated by title-author (Web of Science priority). We removed 262 duplicates (10,9 %: 4 WoS; 258 Scopus) and harmonized keywords. Bibliometric and science-mapping analyses used Biblioshiny and VOSviewer (co-authorship, co-occurrence, thematic evolution), and h-indices were computed from WoS/Scopus.

Results: three robust clusters emerged: (1) economic development and public policy, (2) economy-environmental sustainability, and (3) education-gender. Motor themes include health policy, economics, education, and gender; core themes include inequality and sustainability. Output is dominated by the United States, United Kingdom, and China; Latin America contributes modestly, with Brazil as the main outlier. Education consistently appears as the strongest driver of HDI; GDP per capita and remittances are salient economic determinants; governance quality/state capacity are positively associated with HDI; FDI benefits depend on absorptive capacity. For Ecuador, stable institutions and clean, investment-friendly contexts correlate with better performance.

Conclusions: evidence supports inclusive, sustainable, equity-oriented policies centered on education and effective governance, and strengthening Latin American research capacity to close regional knowledge gaps.

Keywords: Human Development Index (HDI); Latin America; Ecuador; State Capacity; Public Policies; Inequality.

RESUMEN

Introducción: el desarrollo humano en América Latina exige evidencia que vincule el IDH con determinantes útiles para la política; Ecuador es un caso clave.

Objetivo: mapear tendencias, métodos y vínculos con política pública en estudios sobre IDH (2010-2024) en América Latina, con énfasis en Ecuador.

Método: Revisión sistemática alineada con PRISMA en Web of Science y Scopus (1 ene 2010-29 jun 2024). Estandarización en Python (pandas, bibtextparser), exportación a CSV y depuración por título-autor (prioridad

WoS). Se eliminaron 262 duplicados (10,9 %: 4 WoS; 258 Scopus) y se unificaron palabras clave. Análisis bibliométrico y de mapeo científico con Biblioshiny y VOSviewer (coautoría, coocurrencia, evolución temática) y cálculo de índices h.

Resultados: surgieron tres clústeres: (1) desarrollo económico y políticas públicas, (2) economía-sostenibilidad ambiental y (3) educación-género. Temas motores: política de salud, economía, educación y género; núcleo: desigualdad y sostenibilidad. La producción está dominada por EE. UU., Reino Unido y China; América Latina aporta modestamente, con Brasil como excepción. La educación destaca como principal motor del IDH; el PIB per cápita y las remesas son determinantes económicos relevantes; la calidad de la gobernanza/capacidad estatal se asocia positivamente con el IDH; los beneficios de la IED dependen de la capacidad de absorción. En Ecuador, instituciones estables y contextos pro-inversión se correlacionan con mejor desempeño.

Conclusiones: la evidencia respalda políticas inclusivas, sostenibles y de equidad centradas en educación y buena gobernanza, y fortalecer la capacidad investigadora regional para cerrar brechas de conocimiento.

Palabras clave: Índice de Desarrollo Humano (IDH); América Latina; Ecuador; Capacidad Estatal; Políticas Públicas; Desigualdad.

INTRODUCTION

The research question guiding this systematic review is: What are the trends and patterns in human development research and the Human Development Index (HDI) in Latin America since 1990, and what methodologies have been used in these studies? This question is fundamental to understanding how scientific knowledge about HDI has evolved in the region, identifying the most frequent methodological approaches, and detecting gaps in literature. To address this issue rigorously, the bibliometric analysis strategy was the one that the research team selected as the most appropriate. Although this strategy has its origin in medical studies,⁽¹⁾ this approach makes it possible to evaluate scientific production through the use of specific techniques, such as publication counting and citation analysis, which help to determine the influence and impact of studies in the field of social sciences thanks to their flexibility from their applied versions developed by software engineers.^(2,3,4) In addition, bibliometric analysis facilitates the identification of the most commonly used research methodologies,⁽⁵⁾ as well as the evaluation of the geographical and temporal distribution of research on the HDI, providing a broad and detailed view of academic development in this field.

This review analyzes the evolution of scientific production on human development and the Human Development Index (HDI) in Latin America since 1990, with emphasis on Ecuador and comparable countries. It identifies trends, methodologies, and research gaps, while assessing the impact of public policies on HDI. The review also examines the distribution and temporal evolution of studies by field, method, and coverage, comparing Ecuador with similar contexts to highlight distinctive approaches and policy applications in the region.

Human Development and the Human Development Index (HDI)

Human development is a broad and diverse concept,^(6,7,8,9) so to avoid biases and endless debates, it is advisable to use an objective and measurable indicator that is accepted by both international and national organizations. In this context, the Human Development Index (HDI) is adopted as the central reference and variable of interest for this systematic review.⁽¹⁰⁾ This study adopts the Human Development Index (HDI) as the country-level dependent variable to assess living conditions. The HDI aggregates three dimensions—health, education, and income. We analyze its determinants across social and institutional domains to explain well-being and human development and to inform public policy in Ecuador and comparable contexts.

The interaction between several factors influences the HDI results. According to Offe⁽¹¹⁾ and Martínez Franzoni⁽¹²⁾, the “welfare state” arises from the interaction of three main spheres: the market, the state and the family.^(13,14) Each of these fields has a specific impact on the components of the HDI: health, education, and income. The level, trajectory and nature of the impact of each area on the HDI components needs to be analyzed, using detailed national and subnational data. A pending cross-cutting aspect is to understand how decisions in these areas contribute to the configuration of the “welfare state”.

Because national economic management cannot be outsourced to the private sector, public administration sets policies to pursue a welfare state and higher living standards. Within political-institutional analysis, emphasizing state capacity and institutional robustness best frames the public sector’s effects on HDI and overall well-being.^(15,16,17,18)

In addition, according to Daron Acemoglu, Simon Johnson and James Robinson institutions drive development: inclusive institutions—broad participation and rule of law—sustain growth, while extractive institutions—elite power concentration—restrict opportunity and entrench poverty and inequality. Institutional adaptability and social inclusion explain cross-national differences, reinforcing the positive link between development and state

capacity embedded in robust institutions.^(19,20,21)

Guided by this theory, the review proceeds in three stages: (1) a global scan of trends in human development research; (2) a regional focus on Latin America with cross-regional comparisons; and (3) an in-depth synthesis for Ecuador, highlighting country-specific dynamics affecting human development.

This review aims to systematically map and synthesize the scientific literature on human development and the Human Development Index (HDI) in Latin America (2010-2024), with a focused analysis of Ecuador, to identify thematic and methodological trends and policy-relevant determinants that shape HDI in the region.

METHOD

Information sources, data extraction and search strategies:

From Jan 1, 2010, to Jun 29, 2024, papers were retrieved from Web of Science and Scopus. Records were harmonized in Python (pandas, bibtextparser), exported to CSV, standardized (authors/keywords), and deduplicated by title-author (WoS priority). A total of 262 duplicates were removed (10,9 %): 4 WoS (0,5 %) and 258 Scopus (16,7 %); plus 179 cross-database duplicates with citation mismatches. Search equations were developed collaboratively with the UNEMI team. We then conducted descriptive analyses (output, top authors/institutions/journals, time trends) and network mapping (Biblioshiny, VOSviewer). h-indices for authors and countries used Scopus/WoS (taking the higher count when discrepant). Influential documents were flagged via impact metrics.

Eligibility Criteria

The eligibility criteria focused on studies analyzing factors that promote human development, with emphasis on Ecuador and comparable contexts. Only research using the Human Development Index (HDI)—as dependent, independent, or within the UNDP framework (since 1990)—was included. Purely theoretical studies were excluded, favoring large empirical databases. Articles with at least 50 citations in Scopus or Web of Science were prioritized. Exceptions were made for case studies from countries with HDI levels similar to Ecuador, provided they addressed education, income, or health, or offered substantial observational data (e.g., surveys of students, professors, or officials in Bolivia).

The table 1 shows the decision-making flow for the inclusion or exclusion of articles in the systematic review. Each eligibility criterion is displayed with its corresponding indicator and a detailed description.

Table 1. Summary of document selection for Review

Eligibility Indicator	Detailed Description
Analysis Period (1990 onwards or inclusive)	Studies should address data from 1990 or consider this year as part of their analysis, since the HDI began to be systematically calculated by UNDP from that year onwards. (2615 documents)
Data Cleansing and Deduplication	Data cleansing and deduplication were performed to ensure the quality and relevance of selected Scopus and WoS articles, eliminating duplicate records and ensuring that each study was unique. (2170 documents)
Use of the HDI as a Central Variable	The study should use the HDI as a dependent variable, one of the independent variables, or use the concept of human development as defined by UNDP. (1733 documents)
Extensive Empirical Database	Theoretical studies are excluded. Only those that present extensive and empirical databases are included to ensure the robustness of the analysis. (1470 documents)
Selection of texts in Social Sciences (CCSS)	Articles from the area of Social Sciences were included because the knowledge linked to the HDI is strongly associated with these disciplines. (910 documents)
After considering the four criteria of the fields of science: economics linked to sustainable development, education, gender studies, and social and political institutions, 350 documents were reached.	
Criteria related to the Ecuadorian case:	
Academic Impact	Articles must have a minimum of 25 citations in the Scopus or Web of Science databases to ensure their relevance and quality within the academic community.
Similarity with Ecuador in the HDI	In case studies with fewer than 25 citations, articles should focus on countries with a similar HDI level to Ecuador, or share characteristics in education, per capita income, or health.
Case Studies with a Lot of Observations	For specific case studies, a considerable number of observations are required. For example, in research on Bolivia, only those with a high number of surveys or data collected are included. 55 documents
Total after applying the last three criteria	55 documents

The selected articles were grouped into three themes: (1) economic development and public policies, (2) economics, environment, and sustainability, and (3) education and gender, given the global relevance of gender gaps. The first two also address quality of life, including health and inequality, reflecting emerging interests in

the broader literature.

RESULTS

Before moving on to the detailed description of the three analytical fields identified in the literature, some quantitative data provided by the bibliometric review are reviewed.

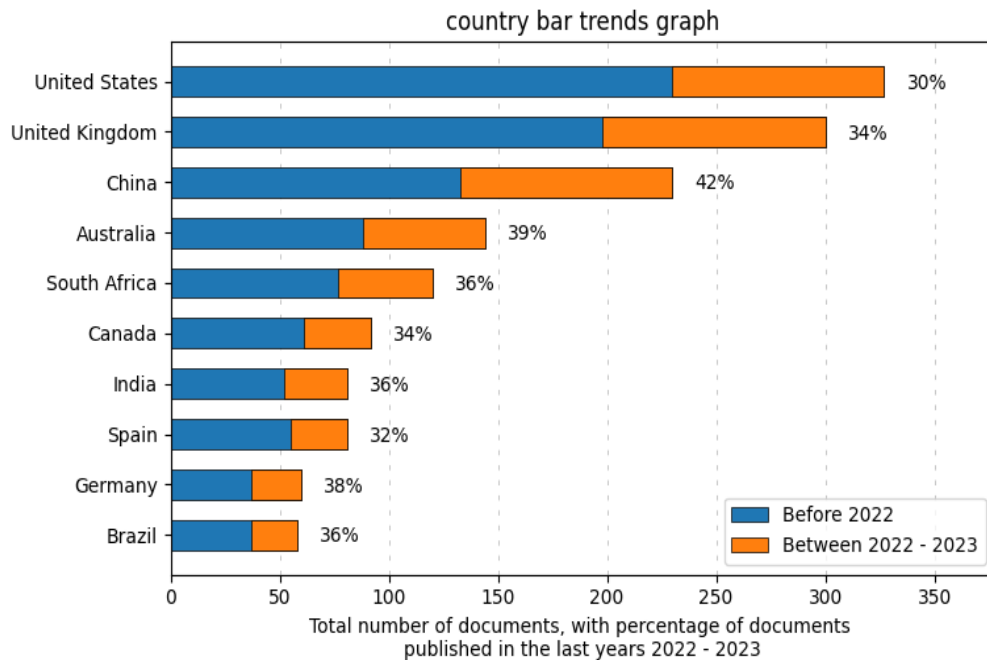


Figure 1. Publications by geographical criterion

The figure 1 highlights that the countries with the highest number of publications on human development are the United States, the United Kingdom, and China, with the latter standing out with the highest percentage of recent publications (42 %) between 2022 and 2023 (orange band). In contrast, publications prior to 2022 (blue stripe) predominate in the United States and the United Kingdom, reflecting a continuity in academic production since 2010. It is relevant to note that, among Latin American countries, only Brazil exceeds 50 publications, which positions the Latin American region significantly below global standards, with Brazil barely achieving a place in the world ranking.

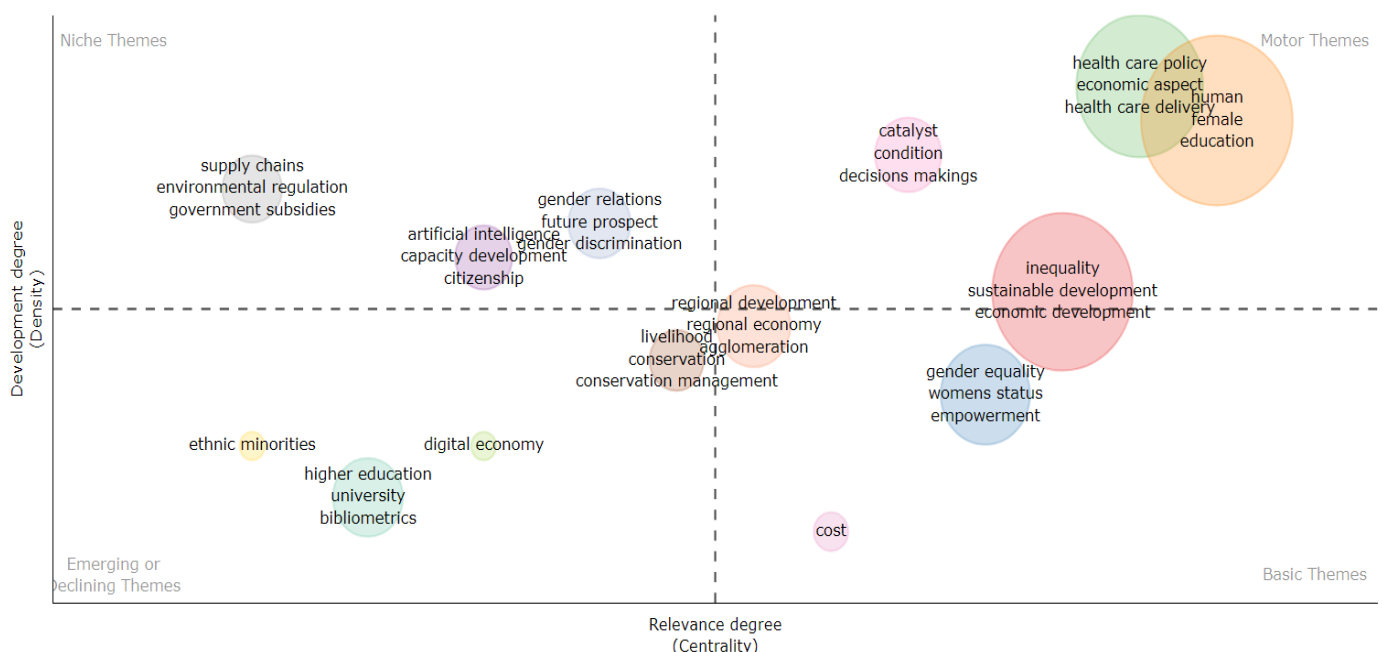


Figure 2 maps thematic evolution into four quadrants: Motor (health policy, economics, education, gender), Core (inequality, sustainability, gender equality), Niche (AI, environmental regulation, citizenship), and Emerging/Declining (digital economy, higher education). Overall, health, education, sustainability, and equality dominate, supporting three fields: public policy-economy; economy-environment; and education-gender.

The table 2 shows that research on this topic is broad and diverse, covering multiple dimensions such as education, economy, governance and sustainability.

Table 2. Summary of Evidence on Factors That Raise the HDI

Evidence of rising HDI	Document Number
Yes	41
Not indicated	14

Table 3. Factors associated with the increase in HDI

Main Category	Examples of Associated Variables	Impact on the HDI	Frequency (%)
Education	Tuition Rate, Education Spending, Access to Educational Technology	Increased human capabilities and equity	90 %
Economy and Income	GDP per capita, remittances, employment, social inequality	Improvement in quality of life and reduction of inequalities	85 %
Public Policies	Social programs, state investment, NGO programs	Poverty reduction and equity in services	80 %
Gender and Equity	Gender parity, female participation in politics and education	Reducing gender gaps	75 %
Innovation and Technology	Technological infrastructure, educational innovation	Improved productivity and equitable access	65 %
Socioeconomic Conditions	Household size, economic shocks, location	Increased economic security	60 %
Governance and Decentralization	Fiscal control, transparency, decentralized policies	Better resource management	55 %
Sustainability & Services	Access to water, environmental policies, resource management	Promoting sustainability	50 %
Social and Cultural Factors	Social capital, cultural barriers, community cohesion	Increased social cohesion	40 %

The findings show that education stands as the fundamental pillar for human development, being identified in 90 % of the studies reviewed. Variables such as enrolment rate, educational expenditure and access to educational technologies play a crucial role in building human capacities and reducing social inequalities. ^(22,23,24,25,26,27,28,29,30) These results confirm the relevance of education as a key driver to break cycles of poverty and inequality, aligning with international evidence on its transformative impact.

Development and public policies

Public policy mobilizes state resources for human development by strengthening institutions and capacity, aligning public-private expectations, and addressing macrostructural constraints. Evidence from global and Ecuadorian studies pinpoints variables that raise or lower HDI.

Using V-Dem data (1990-2019), Higashijima finds democratic quality positively affects HDI. ⁽³¹⁾ This statement is validated by an analysis of panel data covering the period from 1990 to 2019, thus updating previous studies on the relevance of institutional state capacities, such as those proposed by Hendrix (2010). The latter, in a factor analysis, showed that greater investment in military spending and increased tax collection can strengthen the state's capacity to distribute public goods and reduce conflicts in civil society, in a global study covering the period from 1978 to 2008. ⁽¹⁵⁾ In Ecuador, Ecotec researchers report that clean elections, pro-investment conditions, and a supportive international context improve economic performance. Using multiple regressions on Central Bank data (2007-2020), they infer that stable, secure institutions and consistent public policies foster development, ⁽³²⁾ a finding valid for countries with characteristics similar to Ecuador but even on other continents. ⁽³³⁾

Political economy research links institutions to economic performance. A global study (2002-2019) finds FDI boosts human development only where absorptive capacity—proxied by host-country human capital—is high. To

reach this conclusion, the study used United Nations trade and transport data, World Bank, and the Arjan H. Schakel Regional Authority Index.⁽³⁴⁾ Through the two-stage instrumental variable estimation technique (2SLS-IV), the authors show that countries with higher human capital and high per capita income make better use of foreign direct investment.⁽³⁵⁾

A global analysis (1950-2006) shows national economic growth yields stronger outcomes when paired with local decentralization; resilience to disasters and crises improves under coordinated, decentralized policies.⁽³⁶⁾ This finding was made possible by analyzing panel data using data from *The International Disaster Database*, the Regional Authority Index and the Economic Database *Penn World Table*.⁽³⁶⁾ The finding of Tselios and Tompkins is in line with the cases of OECD countries, indicating that fiscal decentralization contributes to improving the quality of government, which in turn reduces regional inequality and favors human development at the local level. This relationship, observed in the period between 1984 and 2005, was evaluated by means of a simultaneous equation model (SEM), using three-stage least squares estimators (3SLS) and a consistent estimator for heteroskedasticity and autocorrelation (GMM-HAC). The data used in the analysis were collected from OECD member countries and the *International Country Risk Guide*.⁽³⁷⁾ It is worth asking whether these public policies would also be effective for the Latin American context and Ecuador inclusive.

In the same line of argument, macroeconomic data suggests that a solid formal economy, in combination with a democratic regime, increases military effectiveness and, with it, the state's capacity to provide citizen security, a pillar of human development. This analysis, which covers the period from 1898 to 1987,⁽³⁸⁾ was replicated in subsequent research by Stephen Biddle, who extended the hypothesis until 2010. Biddle stresses the importance of the "modern security system" as a foundation for creating an enabling environment for development,⁽³⁹⁾ including in non-regular forces, such as guerrillas, warlords, or militias of non-state entities.⁽⁴⁰⁾

A two-century analysis (1810-2010) for Latin America links development to global-market dependence and post-independence institutions. Persistent inequality, macro-instability, and resource reliance shaped civil wars, export booms, state industrialization, and neoliberal reforms, using ECLAC, World Bank, and IMF data with comparative historical analysis.⁽⁴¹⁾

In the analysis of economic structural factors applied to local governments, following the approaches of Tselios and Tompkins, as well as Kyriacou and their collaborators, it is examined how structural aspects such as security, income inequality and corruption negatively affect the development of local governments in Latin America during the period 2002-2014. This study, based on data on the quality of public service from the Latin American Democratic Development Report (IDD-Lat) and in public opinion surveys of the Americas Barometer (LAPOP), uses descriptive statistics and comparative analysis to assess the implications of these factors on the performance of local governments in the region.⁽⁴²⁾

Studies of public health policies offer key explanations for the development of the sector. An analysis from 1980 to 2014 in 137 countries assesses neonatal mortality as an indicator of human development in relation to labor reforms by the International Monetary Fund (IMF). The study concludes that neoliberal adjustments tend to reduce access to health systems, which increases neonatal mortality, especially in developing countries, including much of Latin America. The research uses databases from the IMF, the World Bank and the *Global Burden of Disease Study*, and their findings, validated by regression analysis with correction for non-randomized selection, indicate a statistically significant relationship in countries where these programs were widely implemented.⁽⁴³⁾

Consistent with this line of analysis, another study explores how self-assessment of health by users of public systems is affected by social capital (measured through trust in institutions and civic participation) and economic inequality. This study, focused on eight Latin American countries (Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru and Uruguay) between 2010 and 2014, concludes that in contexts of high inequality, high levels of social capital contribute positively to improving health self-assessment.⁽⁴⁴⁾ Data were obtained from the World Bank and the World Values Survey and were analyzed using fixed-effect logistic regression.

In the Ecuadorian context, specific research found a meaningful relationship between participation in social organizations (first and second degree) and neurocognitive performance, measured through a neurocognitive performance index. This finding, valid for the period between 2007 and 2010, is based on a study of twelve farming communities in the provinces of Chimborazo and Tungurahua, and uses surveys and interviews applied to community members.⁽⁴⁵⁾ The results were obtained using generalized estimation equations (GEEs) to evaluate longitudinal associations, including the modifying effects of organizational participation.

These results are consistent with studies in similar demographic contexts, such as Ghana and Uganda. In Ghana, social organization and gender inequality have been observed to significantly impact nutrition and, therefore, population development.⁽⁴⁶⁾ In Uganda, participation in consultancy programs linked to international cooperation has been shown to improve the capacity of the population to access development resources.⁽⁴⁷⁾ Both studies are based on secondary data provided by the respective governments and direct interviews with the population.

Development, environment and sustainability

The COVID-19 pandemic exacerbated pre-existing social and economic inequalities, evidencing structural failures in economic and social systems that hindered governments' ability to respond to the crisis. In this context, Ashford et al.⁽⁴⁸⁾ They propose a set of more than 30 interventions aimed at reducing inequality and promoting sustainability. These measures include income redistribution through progressive taxation and a universal basic income, the creation of sustainable jobs through green work policies, and the state provision of essential goods such as education, health, and housing. In addition, the democratization of business ownership, the strengthening of balanced public-private partnerships, and the reform of the financial system to prioritize collective well-being are emphasized, all of which are aligned with Sustainable Development Goal 10 (SDG 10). They also present challenges related to other SDGs, such as those linked to the environment, due to the risk of fostering unsustainable consumption patterns. The authors argue that addressing inequality is essential to unlocking new solutions that drive sustainable and equitable development.⁽⁴⁸⁾

In line with these proposals, equitable access to water and sanitation, recognized as fundamental human rights in SDGs 6 and 10, remains a challenge in many developing countries. Bayu et al.⁽⁴⁹⁾ show that, in an analysis of 82 countries, inequalities in access to basic sanitation are more accentuated than those in drinking water. They also highlight that economic factors, such as the absorption capacity of external funds, have a greater influence on access to water, while the quality of water governance, including government effectiveness and regulatory quality, has a greater impact on sanitation. This study underscores the need for targeted policies and targeted funding for the most vulnerable populations. In addition, it states that sustainable water governance must integrate socio-political and economic approaches in a coordinated manner to meet the global development and human rights goals.⁽⁴⁹⁾

In the educational field, the “capillarity architecture” methodology has been applied as an innovative approach to promote environmental education in a Brazilian public university. According to Cassia-Sudan et al.⁽⁵⁰⁾, this methodology organizes hierarchical learning collectivities to implement local actions on seven campuses with the participation of more than 2 500 people. This model has facilitated the training of leaders in sustainability through workshops, socio-environmental diagnoses and educational activities. However, the authors recognize challenges such as institutional bureaucracy, lack of resources, and organizational resistance. Despite these limitations, they emphasize that the methodology encourages broad participation and critical thinking, although they warn about the risk of compromising educational quality in processes of massive expansion. This case exemplifies how environmental education initiatives require concrete investments and contextual adaptations to address material and cultural inequalities in the territories of application.⁽⁵⁰⁾

On the other hand, from a global governance perspective, six fundamental transformations are proposed to achieve the SDGs within the framework of the Paris Agreement.⁽⁵¹⁾ These include interventions in education, gender equality, health, energy decarbonization, food sustainability, sustainable cities, and the digital revolution. Each transformation integrates interdependent strategies adapted to national contexts, promoting collaboration between governments, businesses, and civil society. The authors emphasize the need to resolve conflicts between objectives, apply equity principles such as “leave no one behind,” and adopt circular approaches in the use of resources. These transformations require government coordination, blended financing and social mobilization to address structural challenges in a comprehensive and effective manner.⁽⁵¹⁾

Finally, from an analysis of the quality of governance, it is observed that it conditions the adaptive capacity of societies in the face of climate change.⁽⁵²⁾ Based on the Shared Socioeconomic Pathways (SSP) scenarios, the authors project that, under the “green road” scenario (SSP1), weak governance would almost disappear by 2050, while under the “rocky road” (SSP3) scenario, 30 % of the global population would still live in countries with low institutional quality. Even on optimistic trajectories, they identify critical time limits to improve governance and adaptive capacity. They underscore the importance of strengthening institutions and combating corruption in order to maximize the effectiveness of adaptation actions and the use of international financial resources. These findings reinforce the need to integrate governance into climate impact assessments and efforts towards sustainable development.⁽⁵²⁾

Development, gender and education

At the global level, education has occupied a prominent place in the framework of the Millennium Development Goals (MDGs) and, subsequently, in the Sustainable Development Goals (SDGs), one of the main purposes has been to promote equal access to education to promote human development and reduce social inequalities. In particular, one of the key objectives is to ensure equal access to affordable vocational training, eliminating gender and socio-economic disparities and promoting universal access to quality higher education.⁽¹⁰⁾ The PISA 2018 report, which assesses educational performance in 70 countries, highlights gender inequality as the most significant variable, surpassing factors such as the Gini index, HDI, GDP per capita and public spending on education. Using regression and clustering models, the study shows that this inequality especially affects educational outcomes in non-OECD countries.⁽⁵³⁾ Gender inequality in education reflects current lags,

highlighting the need to reduce gaps and create inclusive environments. Multivariate linear regression models and clustering techniques identified patterns that show their impact in various contexts, guiding policies to promote educational equality.⁽⁵⁴⁾

Promoting gender equality in education not only improves access to and quality of training, but also empowers women, contributing to the creation of fairer and more equitable societies. In addition, the promotion of an inclusive and equitable educational environment creates role models that inspire future generations, promoting diversity and equity at all levels of society. The research applied a participatory methodology, based on research-action, focused on training leaders in sustainability. It involved 2 500 participants from a Brazilian university, organized into learning collectives on seven campuses.⁽⁵⁰⁾

The COVID-19 pandemic exposed inequalities in access to education, especially in vulnerable contexts. In Chile, although it has high rates of school enrollment and completion compared to other OECD countries, gender gaps and regional and socioeconomic inequality persist, affecting vulnerable sectors more;⁽⁵⁵⁾ according to the authors it is necessary to review the “social contract” around the Chilean education system, promoting reforms that allow progress towards a more inclusive and equitable education, the research used categorical-thematic analysis of Chilean education laws, focusing on especially vulnerable students, to evaluate measures of the Ministry of Education during the pandemic.⁽⁵⁵⁾

In this context, the experience of other countries can be a source of learning and reflection, a study carried out in South Africa analyzes how historical and socioeconomic inequalities affect the quality of education and the professional development of teachers.⁽³³⁾ This research shows that, in societies with high levels of inequality, education systems often reproduce, rather than mitigate, existing disparities. Similarly, the analysis of school barriers in Ghana shows that, although significant progress has been made in school enrollment, girls continue to face limits to school access and problems in staying in the education system, the study explored barriers to school attendance in Ghana through surveys of 68 students and 52 caregivers. using descriptive analyses and regressions to assess economic, health, and gender perceptions.⁽⁵⁶⁾ The persistence of these barriers highlights the need to adopt specific policies that guarantee gender equity in education, so that girls and young women can access an education that allows them to develop their full potential.

“Buen Vivir” in Ecuador offers a comprehensive lens to address inequality and reframe education policy. Empirically, ENEMDU-2017 (children 5-14) analyzed correlations among subjective poverty, ethnicity, and school conditions, informing inclusion-oriented reforms.⁽⁵⁷⁾ This perspective offers a way to overcome the structural inequities that affect students in vulnerable situations, promoting an education that is in harmony with the sociocultural context of each community.

DISCUSSION

The systematic analysis shows that of the 55 documents reviewed there are 41 studies that show factors associated with the improvement of the Human Development Index (HDI).

In economic terms, variables related to household income, such as GDP per capita, remittances and the reduction of inequalities, emerge as essential determinants, cited in 85 % of the research. These contribute not only to the improvement of the quality of life, but also to access to basic services such as health and education, evidencing the direct connection between economic stability and social well-being.^(27,32,37,58,59,60,61,62) Public policies and governance are fundamental, with an 80 % impact on studies. Inclusive policies, state investments, and equity programs highlight the importance of managing resources efficiently.^(37,63,64,65,66,67,68) Governance and decentralization, although less common, strengthen administration and sustainability.

Gender equity emerges as a cross-cutting element, cited in 75 % of the publications. Variables such as the gender parity index in education and women’s participation in the political and economic spheres show their impact on reducing structural gaps and creating fairer and more inclusive societies.^(69,70,71,72,73,74,75,76,77) In addition, technological innovation, present in 65 % of the studies, reinforces its role as a catalyst for human development, improving productivity and promoting broader inclusion, although it also reveals challenges related to unequal access to these technologies.

HDI scholarship is dominated by the United States, United Kingdom, and China; Latin America contributes modestly, with Brazil as the main outlier. This gap—likely tied to institutional and budget constraints—calls for strengthening local research. FDI can lower HDI where absorptive capacity is weak (human capital, technology, stability).⁽³⁵⁾ Forte and Abreu argue that, in these contexts, FDI can exacerbate inequalities, crowd out local firms, and reduce tax revenues if it relies on tax incentives. Therefore, it is crucial to strengthen local capacities for FDI to generate sustainable positive impacts on human development.⁽²³⁾

The structural adjustment policies promoted by the International Monetary Fund (IMF) have been shown to have negative impacts on health equity, in developing countries. These reforms, aimed at liberalizing markets and fiscal austerity, tend to reduce access to health systems and increase neonatal mortality.⁽⁴³⁾ These policies can exacerbate inequity by weakening the state’s capacity to ensure equitable health services, especially in contexts where pre-existing conditions are already unfavorable. Thus, the IMF’s initiatives contradict the

sustainable development goals, by prioritizing economic goals over social and health equity.

In sum, this review supports a comprehensive human-development agenda: prioritize education and economic equity as primary drivers; align with SDGs; design inclusive, sustainable, context-responsive policies. It also urges closing Latin America's knowledge gaps by expanding scientific production and explicitly multidimensional approaches.

Limitations

This synthesis is region-bounded: it privileges Latin America—with emphasis on Ecuador—thereby limiting generalizability and potentially obscuring subregional heterogeneity. Evidence coverage depends on Web of Science/Scopus indexing (2010-2024); the exclusion of grey literature and regional databases (e.g., SciELO, RedALyC, LILACS) may introduce language and indexing bias against local outlets. As a bibliometric/systematic mapping review, no pooled effect sizes or formal risk-of-bias assessments were undertaken; thematic structures are sensitive to preprocessing, deduplication rules (WoS priority), and clustering thresholds (VOSviewer/Biblioshiny). Finally, HDI-centric eligibility may omit adjacent well-being constructs. Future research should broaden database inclusion, incorporate mixed-methods evidence, and extend cross-regional comparisons to strengthen external validity.

CONCLUSIONS

This analysis reveals that human development is a multidimensional phenomenon, in which education and the economy are predominant factors, not only because of their frequency in the studies analyzed, but also because of their cross-cutting impact on quality of life, social equity, and economic opportunities. The review highlights the urgent need to strengthen institutional capacity, especially in developing countries, to implement inclusive and sustainable policies that address structural inequalities, improve access to basic services, and promote technological innovation. It is also evident that variables related to governance, such as decentralization and transparency, play a crucial role in ensuring that public resources are used effectively to generate well-being. In this context, gender equity also emerges as a central dimension that cannot be ignored, given its influence on reducing education, labor, and political gaps.

On the other hand, the limited scientific production in Latin America, except for Brazil, highlights a significant gap in regional knowledge that limits the design of solutions adapted to local realities. This raises a call to action to promote interdisciplinary research and strengthen educational and scientific systems in the region, allowing not only to close disparities in global academic production, but also to contribute to the design of more effective and contextualized public policies. This effort is key to moving towards a more equitable and sustainable human development that integrates economic, social, and environmental dimensions.

REFERENCES

1. Khan KS, Zamora J. Systematic reviews to support evidence-based medicine: how to appraise, conduct and publish reviews. 3rd ed. Boca Raton: CRC Press; 2022. Available from: <https://www.routledge.com/Systematic-Reviews-to-Support-Evidence-Based-Medicine-How-to-appraise-conduct-and-publish-reviews/Khan-Zamora/p/book/9781032114675?srsltid=AfmBOorlp2Vb6isWlsFJMyAwPwbZbE-Tul7wV51kXRJjpOdH1A2wtZ5j>
2. Boland A, Cherry G, Dickson R. Doing a systematic review: a student's guide. 2nd ed. London: SAGE Publications Ltd; 2017. Available from: <https://us.sagepub.com/en-us/sam/doing-a-systematic-review/book272178>
3. Lasserson TJ, Thomas J, Higgins JP. Starting a review. In: Cochrane handbook for systematic reviews of interventions. New Jersey: John Wiley & Sons; 2023. p. 1-12.
4. Lefebvre C, Glanville J, Briscoe S, Littlewood A, Marshall C, Metzendorf M-I, et al. Searching for and selecting studies. In: Cochrane handbook for systematic reviews of interventions. New Jersey: John Wiley & Sons; 2023. p. 67-107.
5. Kitchenham BA, Budgen D, Brereton P. Evidence-based software engineering and systematic reviews. New York: Chapman and Hall/CRC; 2015. doi:10.1201/b19467.
6. Sen A. Development as freedom. 1st ed. Oxford: University Press; 1999.
7. Sen A. Choice, welfare and measurement. Oxford: Blackwell; 1982.
8. Nussbaum MC. Creating capabilities: the human development approach. Cambridge (MA): The Belknap

Press of Harvard University Press; 2011.

9. Klugman J, Rodríguez F, Choi H-J. The HDI 2010: new controversies, old critiques. *J Econ Inequal*. 2011;9:249-88.

10. Programa de las Naciones Unidas para el Desarrollo (PNUD). Índice de Desarrollo Humano (IDH). Human Development Reports. 2022. Available from: <http://hdr.undp.org/en/data>

11. Offe C. Review of The three worlds of welfare capitalism, Gösta Esping-Andersen. *Am J Sociol*. 1991;96:1555-7.

12. Martínez Franzoni J. Regímenes de bienestar en América Latina. Madrid (ES): Fundación Carolina; 2007. Available from: <https://www.fundacioncarolina.es/wp-content/uploads/2014/08/DT11.pdf>

13. Martínez Franzoni J. Tipos de regímenes de bienestar. In: Regímenes de bienestar en América Latina. Madrid (ES): Fundación Carolina; 2007. p. 12-32.

14. Martínez Franzoni J. Régimen de bienestar familiarista. In: ¿Arañando bienestar? Trabajo remunerado, protección social y familias en América Central. Buenos Aires: CLACSO; 2010. p. 83-112.

15. Hendrix CS. Measuring state capacity: theoretical and empirical implications for the study of civil conflict. *J Peace Res*. 2010;47:273-85.

16. Croissant A, Pelke L. Measuring policy performance, democracy, and governance capacities: a conceptual and methodological assessment of the Sustainable Governance Indicators (SGI). *Eur Policy Anal*. 2022;8:136-59.

17. Haggard S, Kaufman RR. Introduction: regime change during the third wave: from dictatorship to democracy and back. In: Haggard S, Kaufman RR, editors. Dictators and democrats: masses, elites, and regime change. Princeton (NJ): Princeton University Press; 2016.

18. Zurbriggen C, Travieso E. Hacia un nuevo Estado desarrollista: desafíos para América Latina. *Perfiles Latinoam*. 2016;24:259-81.

19. Acemoglu D, Robinson JA. Economic origins of dictatorship and democracy. Cambridge: Cambridge University Press; 2005. doi:10.1017/CBO9780511510809.

20. Acemoglu D, Robinson JA. Por qué fracasan los países: los orígenes del poder, la prosperidad y la pobreza. Deusto; 2012. Available from: <https://www.planetadelibros.com.ec/libro-por-que-fracasan-los-paises/317936>

21. Haggard S, Kaufman RR. Inequality and regime change: democratic transitions and the stability of democratic rule. *Am Polit Sci Rev*. 2012;106:495-516.

22. Shao Y, Kang S, Lu Q, Zhang C, Li R. How peer relationships affect academic achievement among junior high school students: the chain mediating roles of learning motivation and learning engagement. *BMC Psychol*. 2024;12:278.

23. Maniglio F, Barragán V. Education, science, and technology policies during Ecuador's Citizens' Revolution: between cognitive dependency and the struggle for the social state. *Lat Am Perspect*. 2022;49:18-30.

24. Nawaz F. The impact of non-government organizations on women's mobility in public life: an empirical study in rural Bangladesh. *J Int Womens Stud*. 2020;21:94-113.

25. Addai I. A contribution to the determinants of annual household education expenditure in Ghana. *Soc Sci Humanit Open*. 2022;6:100349.

26. Datzberger S. Why education is not helping the poor: findings from Uganda. *World Dev*. 2018;110:124-39.

27. Gaddah M, Munro A, Quartey P. The rich or the poor: who gains from public education spending in Ghana? *Int J Soc Econ*. 2015;42:112-31.

28. Benítez YG, Espinoza KC, Pérez VR. Niveles de comprensión lectora en alumnos de secundaria: una comparación por tópico. *Actual Psicol.* 2015;29:13-23.
29. Lopes Cardozo MTA, Sawyer J, Talavera Simoni ML. Machismo and mamitas at school: exploring the agency of teachers for social and gender justice in Bolivian education. *Eur J Dev Res.* 2015;27:574-88.
30. Unterhalter E. Measuring education for the Millennium Development Goals: reflections on targets, indicators, and a post-2015 framework. *J Hum Dev Capab.* 2014;15:176-87.
31. Higashijima M. Autocratization and development. In: *The Routledge handbook of autocratization.* London: Routledge; 2024. p. 349-61.
32. Macas-Acosta G, Macas-Lituma G, Vergara-Romero A. The internal and external factors that determined private investment in Ecuador 2007-2020. *Economies.* 2022;10:248.
33. Leibowitz B, Bozalek V, van Schalkwyk S, Winberg C. Institutional context matters: the professional development of academics as teachers in South African higher education. *High Educ.* 2015;69:315-30.
34. Shair-Rosenfield S, Schakel AH, Niedzwiecki S, Marks G, Hooghe L, Chapman-Osterkatz S. Language difference and regional authority. *Reg Fed Stud.* 2021;31:73-97.
35. Forte R, Abreu P. The impact of FDI on host countries' social welfare: a panel data analysis of 146 countries over the period 2002-2019. *Environ Sci Pollut Res.* 2023;30:12628-43.
36. Tselios V, Tompkins E. Local government, political decentralisation and resilience to natural hazard-associated disasters. *Environ Hazards.* 2017;16:228-52.
37. Kyriacou AP, Muinelo-Gallo L, Roca-Sagalés O. Regional inequalities, fiscal decentralization and government quality. *Reg Stud.* 2017;51:945-57.
38. Beckley M. Economic development and military effectiveness. *J Strateg Stud.* 2010;33:43-79.
39. Biddle S. *Military power: explaining victory and defeat in modern battle.* Princeton (NJ): Princeton University Press; 2010.
40. Biddle S. *Nonstate warfare: the military methods of guerrillas, warlords, and militias.* Princeton (NJ): Princeton University Press; 2021.
41. Bértola L. *El desarrollo económico de América Latina desde la independencia.* 1a ed. México: Fondo de Cultura Económica; 2013.
42. Andara Martos AE. Midiendo la calidad democrática de la gestión pública de los gobiernos locales de América Latina. *Provincia.* 2016;35:11-46.
43. Forster T, Kentikelenis AE, Stubbs TH, King LP. Globalization and health equity: the impact of structural adjustment programs on developing countries. *Soc Sci Med.* 2020;267:112496.
44. Vincens N, Emmelin M, Stafström M. Social capital, income inequality and the social gradient in self-rated health in Latin America: a fixed effects analysis. *Soc Sci Med.* 2018;196:115-22.
45. Orozco F, Mota E, Cole DC. Organisational participation and health among smallholder farmers: a longitudinal study in a Latin American context. *BMJ Open.* 2014;4:e004641.
46. Koryo-Dabrah A, Ansong R, Setorglo J, Steiner-Asiedu M. Food and nutrition security situation in Ghana: nutrition implications for national development. *Afr J Food Agric Nutr Dev.* 2021;21:18005-18.
47. Wight D, Ahikire J, Kwesiga JC. Consultancy research as a barrier to strengthening social science research capacity in Uganda. *Soc Sci Med.* 2014;116:32-40.

48. Ashford NA, Hall RP, Arango-Quiroga J, Metaxas KA, Showalter AL. Addressing inequality: the first step beyond COVID-19 and towards sustainability. *Sustainability*. 2020;12:5404.
49. Bayu T, Kim H, Oki T. Water governance contribution to water and sanitation access equality in developing countries. *Water Resour Res*. 2020;56:e2019WR025330.
50. Cassia-Sudan D, Gomes-Zuin V. Reflections on educational leadership for sustainability: a Brazilian case study. *Discov Sustain*. 2022;3:4.
51. Sachs JD, Schmidt-Traub G, Mazzucato M, Messner D, Nakicenovic N, Rockström J. Six transformations to achieve the Sustainable Development Goals. *Nat Sustain*. 2019;2:805-14.
52. Andrijevic M, Crespo Cuaresma J, Muttarak R, Schleussner C-F. Governance in socioeconomic pathways and its role for future adaptive capacity. *Nat Sustain*. 2020;3:35-41.
53. Mazurek J, Fernández García C, Pérez Rico C. Inequality and students' PISA 2018 performance: a cross-country study. *Comp Econ Res Cent East Eur*. 2021;24(3):163-83.
54. Mazurek J, Fernández García C, Pérez Rico C. Inequality and students' PISA 2018 performance: a cross-country study. *Comp Econ Res Cent East Eur*. 2021;24(3):163-83.
55. Gelber D, Castillo C, Alarcón L, Treviño E, Escribano R. COVID-19 and the right to education in Chile: an opportunity to revisit our social contract. *Int Rev Educ*. 2021;67:79-101.
56. Wolf S, McCoy D, Godfrey E. Barriers to school attendance and gender inequality: empirical evidence from a sample of Ghanaian schoolchildren. *Res Comp Int Educ*. 2016;11:152-71. doi:10.1177/1745499916632424.
57. Gonzalez-Tellez S, Efstathios S, Martinez M, Cevallos-Chamba D. Buen vivir, subjective poverty, and school conditions in 2017 Ecuador. *Poverty Public Policy*. 2023;15:447-63.
58. Tang T, Cuesta L, Tillaguango B, Alvarado R, Rehman A, Bravo-Benavides D, et al. Causal link between technological innovation and inequality moderated by public spending, manufacturing, agricultural employment, and export diversification. *Sustainability*. 2022;14:8474.
59. Hansen T. The foundational economy and regional development. *Reg Stud*. 2022;56:1033-42.
60. Mutea E, Hossain MS, Ahmed A, Speranza CI. Shocks, socio-economic status, and food security across Kenya: policy implications for achieving the Zero Hunger goal. *Environ Res Lett*. 2022;17:094028.
61. Van Lancker W, Ghysels J. Explaining patterns of inequality in childcare service use across 31 developed economies: a welfare state perspective. *Int J Comp Sociol*. 2016;57:310-37.
62. Sanchez-Loor DA, Zambrano-Monserrate MA. Causality analysis between electricity consumption, real GDP, foreign direct investment, human development and remittances in Colombia, Ecuador and Mexico. *Int J Energy Econ Policy*. 2015;5:746-53.
63. Anderies JM, Barfuss W, Donges JF, Fetzer I, Heitzig J, Rockström J. A modeling framework for World-Earth system resilience: exploring social inequality and Earth system tipping points. *Environ Res Lett*. 2023;18:095001.
64. Camminatiello I, Lombardo R, Musella M, Borrata G. A model for evaluating inequalities in sustainability. *Soc Indic Res*. 2023;165:1-20. doi:10.1007/s11205-023-03152-3.
65. Friedman J, York H, Graetz N, Woyczynski L, Whisnant J, Hay SI, et al. Measuring and forecasting progress towards the education-related SDG targets. *Nature*. 2020;580:636-39.
66. Buitrago RE, Barbosa-Camargo MI. Home country institutions and outward FDI: an exploratory analysis in emerging economies. *Sustainability*. 2020;12(23):10010. doi:10.3390/su122310010.
67. Hausken K, Moxnes JF. Innovation, development and national indices. *Soc Indic Res*. 2019;141:1165-88.

68. Shen K, Feng W, Cai Y. A benevolent state against an unjust society? Inequalities in public transfers in China. *Chin Sociol Rev.* 2018;50:137-62.
69. Asiimwe S, Nsibirano R, Namuggala VF. Interrogating police work spillover and intimate partner violence: experiences of female civilian survivors in Uganda. *J Gend Stud.* 2023;32:359-69.
70. Klasen S, Le TTN, Pieters J, Silva MS. What drives female labour force participation? Comparable micro-level evidence from eight developing and emerging economies. *J Dev Stud.* 2021;57:417-42.
71. Altuzarra A, Gálvez-Gálvez C, González-Flores A. Is gender inequality a barrier to economic growth? A panel data analysis of developing countries. *Sustainability.* 2021;13:367.
72. Saxon A, Ford JV. “Now, I am empowered. Now, I am a woman with spirit”: evaluating CARE’s public health work through a community-organizing framework in Sri Lanka and Bangladesh. *Int Q Community Health Educ.* 2021;41:241-58.
73. Llorente-Marrón M, Díaz-Fernández M, Méndez-Rodríguez P, González Arias R. Social vulnerability, gender and disasters: the case of Haiti in 2010. *Sustainability.* 2020;12:3574.
74. Nock D, Levin T, Baker E. Changing the policy paradigm: a benefit maximization approach to electricity planning in developing countries. *Appl Energy.* 2020;264:114583.
75. Byun Y. Government redistribution and public opinion: a matter of contention or consensus? *Int J Sociol.* 2019;49:204-21.
76. Patel-Campillo A, Bitia Salas García V. Un/associated: accounting for gender difference and farmer heterogeneity among Peruvian Sierra potato small farmers. *J Rural Stud.* 2018;64:91-102.
77. Kantor P, Morgan M, Choudhury A. Amplifying outcomes by addressing inequality: the role of gender-transformative approaches in agricultural research for development. *Gend Technol Dev.* 2015;19:292-319.

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