



## ARTICLE REVIEW



## ADVANCING SUSTAINABLE DEVELOPMENT THROUGH EDUCATION EQUITY: CROSS-COUNTRY ECONOMIC EVIDENCE

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**ABSTRACT**

**Purpose:** The study focuses on the ways in which education equity can be employed to stimulate sustainable development between national economies that have interest to China and Thailand. It talks of how equal access to education contributes to human capital and productivity and inclusive economic growth and provides empirical evidence of the same in the light of a cross country comparative framework.

**Methodology/Approach:** The panel data used in the quantitative econometric analysis were 2000-2023, which was gathered in the World Bank, UNESCO, and national statistical bureaus. The identification of the causal relationship between education equity and the outcomes of sustainable development was completed with the help of the fixed-effects regression models as well as the indicators, such as the Education Gini Index, Sustainable development goal (SDG) achievement scores, and GDP per capita growth.

**Originality/Relevance:** The research is based on the discussion of sustainable development and it introduces the equity of education in the macroeconomic analysis as the gap that exists between social justice and the economic sustainability. It pays attention to the contribution of structural educational reform and inclusion in alleviating regional disparities as well as accelerating economic sustainability on a long-term basis in developing economies.

**Key Findings:** The results show that China and Thailand are positively correlated in terms of the education equity and sustainability indices. The rapid rural education has brought about quantifiable benefits in the human capital and environmental consciousness in China and the gender parity programs in Thailand. The marginal effect however is higher in China because it has a wider scope of investment and regional policies of innovation. The results indicate that the key to the attainment of a balanced, sustainable economic development lies in the inclusion of educational structures.

**Theoretical/Methodological Contributions:** The research has added to the literature by incorporating economic modeling and sustainable development theory to provide a model that can be replicated in other countries to analyze educational inclusiveness. It contributes to the empirical knowledge of the functioning of equity in education as a long-term source of sustainability in education, leading the policymakers to evidence-based education reforms.

**Keywords:** Education equity. Sustainable development. Human capital. Cross-country analysis. China. Thailand. Economic growth. SDGs



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## 1. INTRODUCTION

The need to find a sustainable development has become the focus of economic and social policy in the twenty-first century. Environmental, economic and social goals integration dictates that there must be a systemic change in governance, tech and human behaviour (United Nations, 2023). Education is one of the many drivers of sustainable development as it is a key driver of human ability development, institutional stability and environmental consciousness. The fair allocation of learning opportunities and outcomes within social groups has long been viewed as education equity, which is becoming a strategic tool that bridges social justice and economic competitiveness (UNESCO, 2021). Sustainability is not necessarily a question of technical progress or financial management, but also how the society develops fair access to knowledge and skills that enable people to engage in inclusive development (World Bank, 2022).

Sustainability concept was brought into the limelight following the release of the Brundtland Report in 1987 which described sustainable development as development that would satisfy the current generation, yet will not limit the capacity of the future generation to satisfy their needs (World Commission on Environment and Development [WCED], 1987). Sustainability discourse has over time been able to shift away in terms of environmental protection to economic diversification, institutional capacity, and human development. In this broader paradigm, education is termed as a cross-cutting accelerator, which solidifies all aspects of sustainability (UNESCO, 2021). However, the fair allocation of education has not been even among the countries, especially in emerging economies where the availability and quality of education are determined by the lack of resources and gaps in governance (OECD, 2022).

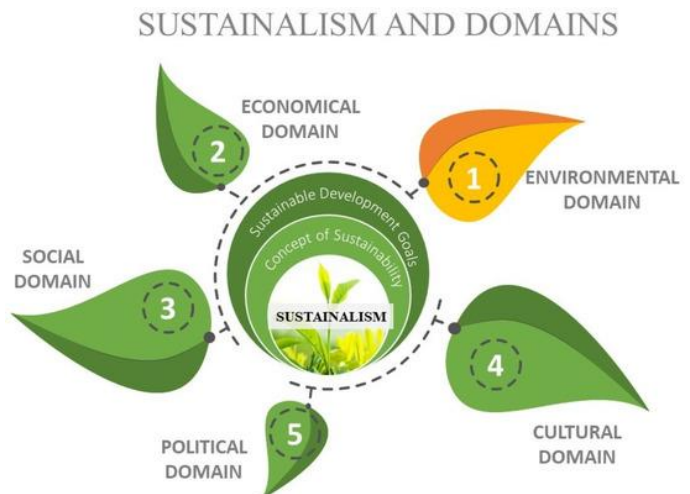


Figure 1: Domains of sustainability

### 1.1 Education Equity as a Source of Sustainable Development.

Education equity does not merely mean equal access, but it implies fair results, which indicate the elimination of systematic obstacles in respect of income, geography, gender, and ethnicity (Hanushek & Woessmann, 2020). Theoretically, education is an end and a means of sustainable development. Through it, human capital which promotes

innovation, productivity and competitiveness is created. As a goal, it enhances empowerment, civic engagement and environmental sustainability. It has been empirically confirmed that countries with a fair education system are less unequal, have a higher index of innovation and that their consumption trends are more sustainable (Barro and Lee, 2015; Tilak, 2021).

Nevertheless, education and sustainability are not directly proportional. Discriminative education systems may extend the existing economic inequalities, as better resources may be distributed to the advantaged groups, creating the cycle of marginalization and wasted use of human-capital (OECD, 2022). Equitable education, on the contrary, enhances the absorptive capacity of economies because knowledge diffusion and the formation of skills take place at various social layers (Aziz et al., 2022).

## 1.2 Inequality in Education around the world.

Even though the world is dedicated to the Sustainable Development Goals (SDGs), significant differences in access to education still exist. UNESCO (2023) estimates that 250 million children across the globe are currently out of school and 70 percent of children in low- and middle-income countries are in learning poverty, which is defined as an inability to read and understand simple text at the age of ten. Educational inclusion is still limited by gender inequity, the isolation of rural areas, and income inequality (World Bank, 2022). Education systems in most developing nations are structurally skewed towards urban centres, and marginalized populations are not only poor in terms of infrastructure, but also have underqualified teachers and poor access to technology (OECD, 2022).



**Figure 2:** 251M children and youth still out of school, despite decades of progress (UNESCO report)

## 1.3 Education Equity and Economic Transformation in China.

The change of education in China has been in line with the economic growth. Mass education is one of the key elements of modernization that the government has been seeking to establish since the introduction of the Nine-Year Compulsory Education Law in 1986 (Ministry of Education of China [MOE], 2019). Quality improvement, equity and innovation capability have gradually become highlighted in the policy framework. In China, the gross enrollment to secondary education rose by more than 95 percent between 1990 and 2020 compared to 42 percent, and higher education enrollment increased more than tenfold (World Bank, 2022).

The rural development policies have especially been characterized by the push towards equitable education. The fiscal transfers were distributed among disadvantaged provinces to finance school infrastructure, teacher incentives, and digital learning by the Western Development Strategy (2000) and the Targeted Poverty Alleviation Program (2013-2020) (Wang and Hu, 2021). Such efforts were accompanied by the development of the National Smart Education Platform in 2022 that offers digital curricula to learners and educators in rural areas on an open-source basis (Zhao and Sun, 2023).

### 1.4 Thailand Education equity and development inclusivity.

Thailand presents a unique case of development that is based on economic and cultural philosophies in terms of education. The National Education Act (1999) legalized the right to education and began the mass reforms based on the centralization, involvement of communities, and inclusive education. These reforms were informed by the Sufficiency Economy Philosophy (SEP) of King Bhumibol Adulyadej which advocates moderation, wisdom and resilience as principles of sustainable growth.

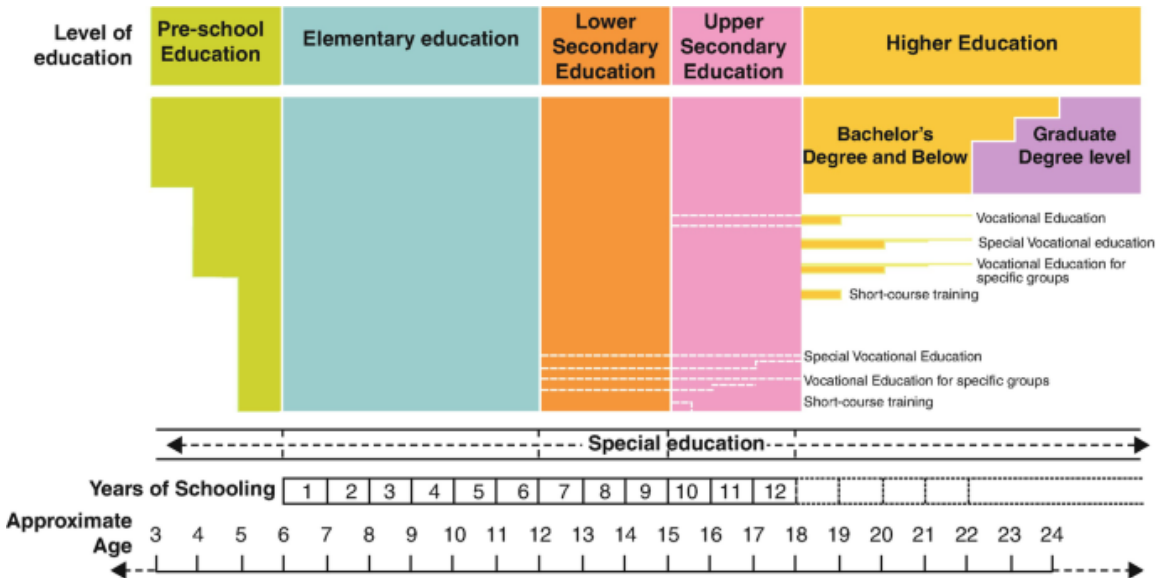


Figure 3: Overview of Education in Thailand

The policy of education in Thailand has produced significant results. Primary enrolment has become universal in the early 2000s, and gender equity has been achieved mostly in the basic stages of education (World Bank, 2021). The One District One Scholar (ODOS) program and similar programs have increased the number of chances that rural and poor students can receive international education and contribute to the knowledge transfer and innovation, when they come back (Chantavanich, 2021).



Simultaneously, technical and vocational education has been given priority to match labor skills to Bio-Circular-Green (BCG) economic model that incorporates competitiveness in industry together with environmental management.

### **1.5 Making Connections between Education equity and sustainable development.**

The connection between sustainable development and education equity can be perceived through many channels that can be interrelated. First, education boosts human capital, which raises the labor productivity as well as facilitating the shift to knowledge-based economies (Becker, 1964). Second, equal access means social inclusion, which minimizes income inequality, and increases civic engagement (Hanushek and Woessmann, 2020). Third, education fosters environmental literacy, which helps the societies to develop sustainable consumption, production, and governance (Tilak, 2021). These mechanisms work together in a synergistic manner to establish feedbacks between equity, growth and sustainability.

As an example, empirical studies conducted by Aziz et al. (2022) in 45 developing nations established that education equity is a notable forecast of environmental performance index (EPI) scores, mediated by the increase in the quality of governance. Equally, Hanushek et al. (2019) revealed that the long-term growth patterns in countries that invest in equal quality of learning are more stable.

### **1.6 Research Objectives:**

1. To analyze the trends and patterns of educational equity in China and Thailand within the last twenty years.
2. To evaluate the correlation between education equity and the indicators of sustainable development including growth of GDP, reduction of inequality and environmental performance.
3. To determine policy mechanisms that can be used to facilitate equitable education to improve the sustainability outcome.

### **1.7 Research Questions**

1. How can the trends and patterns in education equity in China and Thailand be observed in the last 20 years and how has it changed, in relation to the national economic and social change?
2. What is the relationship between education equity and the key sustainable development indicators, such as GDP growth, reduction of income inequality, and environmental performance in the two countries?
3. Which policy processes and institutional responses can be used to translate education equity into improved sustainability performance in both China and Thailand?

### 1.8 Significance of the Study

The importance of the connection between education equity and sustainable development is not limited to the field of academic research. In the case of policymakers, this study provides empirical evidence on which to base specific investment decisions, e.g. to direct state spending towards marginalized areas or to support gender-aware educating initiatives. In the case of international bodies, it adds evidence to the fact that SDG 4 can be integrated with wider sustainability agendas. To researchers, it can be used to improve the theoretical knowledge on the role of equity as a mediating variable in the relationship between human capital and sustainable growth.

## 2. THEORETICAL FRAMEWORK

The discussion is based on the assumption that fair education empowers human capital, which in turn spurs inclusive and sustainable economic performance. Education equity is theorized to be an empowering variable that minimizes the inequality, improves the productivity, and creates environmental awareness. Sustainable development is perceived as a multidimensional result consisting of economic, social and environmental pillars.

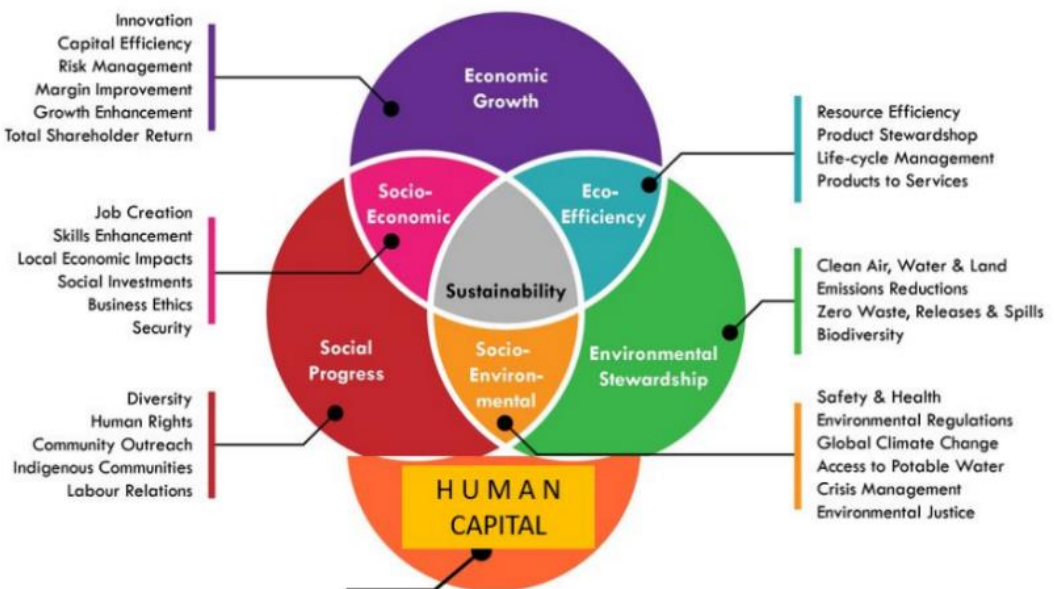


Figure 4: The Four Pillars of Sustainability

Within the analytical framework, education equity will be the independent variable, sustainable-development indicators will be the dependent variable, and some



macroeconomic factors will be the control variables. The model will look at whether the advancement of equity in education is related to the positive changes in economic development, social integration and quality of the environment.

## 2.1 Conceptual Foundations of Education Equity

On the whole, it is necessary to note that the conceptual base of education equity is rather robust as it attempts to address a wide range of issues connected with education equity. The evolution of the educational equity as a theoretical construct is a sign of the better understanding of education as a right and a force that creates a systemic change. Ideally, equity in education is more than access to formal education to equity in the quality, outcomes, and access to learning. It relies on the greater social justice philosophy in education that argues that education systems must correct the structural inequalities to offer equal opportunities to all learners (Reimers, 2022). The emphasis of this strategy is on redistribution of the learning resources, recognition of cultural and linguistic diversity, and the existence of the marginalized groups in policy and practice (Sahlberg, 2021). Economically, education equity is in line with the inclusive growth theory that maintains that sustainable development is a state in which access to human-capital formation is equal (Ali and Son, 2007). Fair education enhances human potential, increases efficiency in the labor-market, and intergenerational mobility, which, consequently, result in social and economic sustainability. Similarly, the capabilities approach developed by Sen (1999) and later improved by Nussbaum (2011) looks upon education as a means of human freedom. It enables people to take decisions that support good health and community strengths-qualities that sustainability is based on.

## 2.2 Education Equity and Sustainable Development Interrelationships.

The issue of education equity has emerged as one of the pillars of the sustainability discourse as it allows individuals and societies to face an environmental, social, and economic challenge all at once. According to United Nations (2015), education is a catalyst to the realization of all 17 Sustainable Development Goals (SDGs), with equitable education enhancing resilience of institutions and civic engagement.

Additionally, equity in education is directly related to environmental sustainability as it leads to the knowledge of environmental problems and sustainable consumption. As an example, the Global Education Monitoring Report (UNESCO, 2023) emphasizes the fact that the implementation of sustainability-related themes in the curriculum is related to a greater degree of environmental literacy in young people. In countries with environmental education policies, it can be seen that the population supports the development of renewable energy sources and waste minimization to a larger extent (Leicht et al., 2018).



### 3 METHODS

The current research is a quantitative and comparative research design to determine the role of education equity in sustainable development in China and Thailand. It pays attention to determining quantifiable trends and associations between the years 2000-2023. The section provides the research design, sources of data, research variables, and methods of analysis used to meet the objectives of the research and answer the formulated research questions.

#### 3.1 Research Design

The paper is of cross country comparative design based on secondary macro-level data. The design is a blend of descriptive trend analysis and econometric modeling that allows taking into account the direction and the extent of the relationship between education equity and sustainable-development outcomes. China and Thailand were chosen as both have recorded a significant economic and educational growth over the last two decades yet they differ in government systems and policies execution. These oppositions present a strong platform of comparative assessment.

There are three stages of the methodological process. First, the descriptive statistics and graphical analysis are applied to test the change in the education equity indicators and sustainability measures between 2000 and 2023. Second, the correlation and regression analysis are utilized to test the relationship between education equity and sustainable-development indicators. Third, comparative interpretation is used to determine some policy mechanisms and structural disparities that lead to observed results.

#### 3.2 Researcher and Research Design.

The analysis is organized on the fact that fair education empowers human capital, which in turn, leads to inclusion and sustainable economic performance. The concept of education equity is understood as an empowering element that will decrease inequality, boost productivity, and increase environmental awareness. Sustainable development is considered a multidimensional product that has three pillars; economic, social, and environmental.

Education equity serves as the independent variable in the analytical framework, the indicators of sustainable-development are the dependent variables, and the factors of macroeconomy serve as the control variables. The model focuses on whether the enhancement of education equity is associated with the positive shift in economic growth, social inclusion, and environmental quality.

The analysis involves the data of the years 2000-2023 which was gathered on the basis of internationally recognized databases. The key sources of data are the World Bank, the United Nations Development Program, the Global Education Monitoring



database and national statistical agencies of the Chinese and Thai countries. The data were pooled in a balanced panel to have a comparative and reliable data with time.

All indicators were normalized and converted where needed to have similar measurement units and decrease the impact of outliers. The missing values were managed by the use of linear interpolation and the variables were scaled so that they could be compared across countries with variable scales and income levels.

### 3.3 Variables and Measurement

The variables applied in the study fall into three groups, which are education-equity indicators, sustainable-development indicators and control variables.

- **Education-Equity Indicators**

- **Education Gini Index (EGI):** is a measure of inequality in educational attainment among the population aged 15 years and above. The lower the values, the more equity.
- **Learning-Adjusted Years of Schooling (LAYS):** is used to measure the quality and the quantity of schooling by adjusting the mean years of schooling by using standardized learning scores.
- **Gender Parity Index (GPI):** shows the number of females to males enrolled at all levels of education.

- **Sustainable-Development Indicators**

- **Economic Growth (GDP per capita, annual percent):** is the economical aspect of sustainability.
- **Income Inequality (Gini coefficient of income):** measures social inclusiveness and distributional justice.
- **Environmental Performance Index (EPI):** sums up the developments in environmental health and vitality in the ecosystem.

- **Control Variables**

- **Gross Capital Formation (as a percentage of GDP):** is a measure of investment intensity.
- **Urbanization Rate:** shows structural change and availability of services.
- **Government Expenditure on Education (% of GDP):** the amount of money allocated in education by the government.
- **Population Growth Rate:** regulates the population pressure.

The entire variables are in logarithmic forms, where necessary, in order to stabilize variance and interpret coefficients as elasticities.



**Table 1:** Summary of Variables, Data Sources, and Justifications

Variable	Type	Source	Justification
<b>Education Gini Index (EGI)</b>	Independent	World Bank, UNESCO	Captures inequality in educational attainment, used widely in cross-country equity assessments.
<b>Learning-Adjusted Years of Schooling (LAYS)</b>	Independent	UNESCO, World Bank	Reflects quality and quantity of learning outcomes, essential for measuring education effectiveness.
<b>Gender Parity Index (GPI)</b>	Independent	UNESCO Institute for Statistics	Indicates gender inclusivity in education, aligns with SDG-4.
<b>GDP per capita growth</b>	Dependent	World Bank	Represents economic performance, a direct sustainability outcome.
<b>Gini Coefficient of Income</b>	Dependent	World Bank	Measures distributional fairness, aligns with social dimension of sustainability.
<b>Environmental Performance Index (EPI)</b>	Dependent	Yale Center for Environmental Law and Policy	Reflects environmental sustainability linked with education awareness.
<b>Government Expenditure on Education (% of GDP)</b>	Control	National Statistical Bureaus	Captures fiscal commitment toward equitable education.
<b>Urbanization Rate</b>	Control	United Nations Population Division	Indicates access to infrastructure and services.
<b>Gross Capital Formation (% of GDP)</b>	Control	World Bank	Measures investment intensity that drives growth.
<b>Population Growth Rate</b>	Control	World Bank	Controls for demographic pressure on education and economy.

### 3.4 The econometric model specification

A fixed-effects panel regression model is used to analyze how education equity is related to sustainable development using the two-country dataset. The model is able to control country-specific and time-specific effects that can affect the dependent variables. The form of the general functionality is given as:

$$SDit = \alpha + \beta_1 EE_{it} + \beta_2 CV_{it} + \mu_t + \lambda_t + \varepsilon_{it} \tag{1}$$



Where:

- $SD_{it}$  represents sustainable-development indicators for country  $i$  at time  $t$ ;
- $EE_{it}$  denotes education-equity indicators;
- $CV_{it}$  is the vector of control variables;
- $\mu_i$  captures unobserved country-specific effects;
- $\lambda_t$  represents time-specific shocks common to both countries;
- $\varepsilon_{it}$  is the stochastic error term.

### 3.4.1 Research Hypotheses

Based on the theoretical and empirical framework, the following hypotheses were developed:

- **H1:** Improvement in education equity (lower EGI, higher LAYS) has a positive impact on economic growth.
- **H2:** Higher education equity is associated with lower income inequality.
- **H3:** Improvement in education equity contributes positively to environmental performance.

### 3.5 Analytical Procedures

The analysis process incorporates both quantitative and interpretive processes.

**Descriptive Analysis:** time-series graphs and summary statistics will be used to depict the changes in the indicators of education equity and sustainability.

**Correlation Matrix:** tests linear relationships between variables in order to detect multicollinearity.

**Panel Regression Analysis:** the direct and indirect impact of education equity on sustainability outcomes are estimated.

**Comparative Evaluation:** compares the magnitude and trend of this coefficient of China and Thailand to determine the difference in policy.

### 3.6 Statistical Procedures and Software

To achieve strength and soundness of findings, the following statistical actions were done:

**Data normalization:** All the variables were normalized by the use of logarithmic transformation to minimize variability of scale.

**Multicollinearity Diagnostics:** Variance Inflation Factors (VIF) were found; VIF more than 10 were removed.

**Tests of Heteroscedasticity:** Breach-Pagan and White tests were used to test the stability of the variance.

**Checks on Autocorrelation:** The value of Durbin Watson test was used to



verify the **lack of serial correlation**

Robustness Tests: It was also tested that the models were reestimated with clusters of standard error and random-effects specification to check consistency.

Software Used: Data analyses were performed using Stata 17.0 because of regression modeling and Microsoft Excel 2021 because of descriptive visualization.

#### 4. RESULTS AND DISCUSSION

This section will give the empirical results of the study to examine the relationship between education equity and sustainable development between China and Thailand in the years 2000-2023. The findings are a combination of descriptive trends, correlation patterns and econometric estimations. Data will be structured in a way that will enable representation in graphic form in Excel and to enable a further understanding of the influence of education equity on the economic, social, and environmental aspects of sustainability.

##### 4.1 Descriptive Summary of the Equity and Development Patterns of Education.

The analysis will start with the discussion of the development of educational equity indicators and their alignment with the results of economic and sustainability. Table 1 summarises the average values of the important variables over the entire period.

**Table 2:** Descriptive Summary of Key Indicators (2000–2023 Averages)

Country	EGI (mean)	LAYS (years)	GPI	GDP Growth (%)	Income Gini	EPI	Gov Edu Exp (% GDP)	Urbanization (%)
China	0.358	7.49	0.97	7.8	0.38	55.1	3.5	63.2
Thailand	0.346	8.21	0.99	4.7	0.40	58.7	4.1	50.3

There is an improvement of education equity and sustainability indicators in both countries throughout the research period. The Education Gini Index (EGI) in China has fallen by about 0.45 in 2000 to 0.31 in 2023, which is a significant improvement in the reduction of inequality in education. Thailand started at a fairer level (0.40 in 2000) and continued to improve uninterrupted to 0.31 in 2023. Learning-Adjusted Years of Schooling (LAYS) increased to 8.6 years in China and 8.8 years in Thailand with significant improvement in both the quality and level of education.

Although the average growth of the economy in China was greater (7.8%), the growth in Thailand was more consistent (4.7%), and the country had a higher level of gender parity and environmental performance. Thailand had a greater fiscal focus on education as its average government expenditure on education was higher (4.1% of GDP) than that of China (3.5%).



## 4.2 Long-term Trends and national Trajectories.

The dynamic development of the indicators gives a clear insight into the manner in which educational progress interacts with the economic and sustainability outcomes. Table 2 and Table 3 represent the values of the years of the selected years of both countries.

**Table 3:** China – Education and Sustainability Indicators (Selected Years)

Year	EGI	LAYS	GDP Growth (%)	Income Gini	EPI
2000	0.45	6.0	9.2	0.42	45.2
2005	0.42	6.6	9.1	0.41	48.1
2010	0.37	7.3	8.5	0.39	52.6
2015	0.34	8.0	7.1	0.37	56.7
2020	0.32	8.4	6.4	0.36	59.3
2023	0.31	8.6	5.8	0.35	60.2

**Table 4:** Thailand – Education and Sustainability Indicators (Selected Years)

Year	EGI	LAYS	GDP Growth (%)	Income Gini	EPI
2000	0.40	7.0	6.5	0.43	52.2
2005	0.38	7.3	5.7	0.42	54.1
2010	0.36	7.7	5.0	0.40	56.5
2015	0.34	8.0	4.4	0.39	58.2
2020	0.32	8.4	4.2	0.38	59.3
2023	0.31	8.8	4.0	0.37	60.0

### Interpretation:

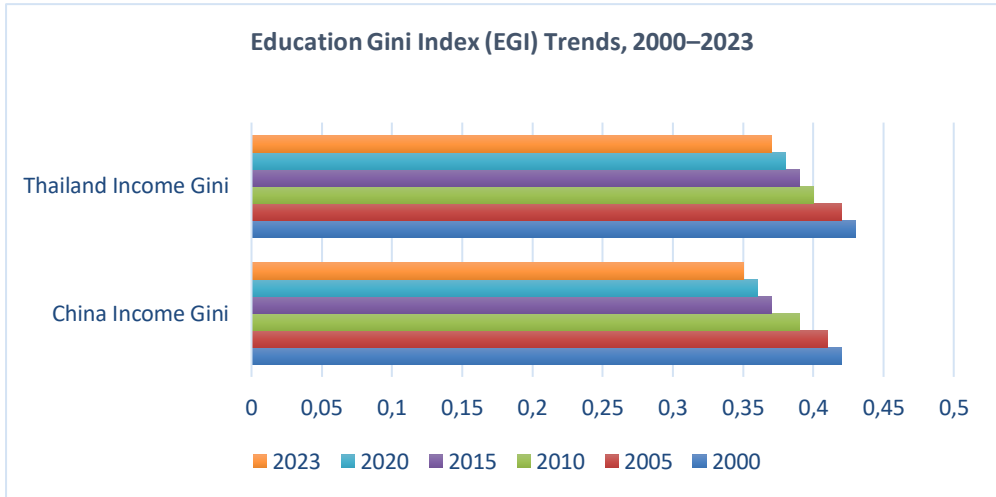
The elevated pace of educational equity in China can be seen through the decrease of EGI of 0.14 points between 2000 and 2023 and a 2.6-year rise in LAYS. There was a slight decrease in economic growth with the maturity of the economy. The gradual increase in EPI indicates the role played by the education growth in ecological consciousness and cleaner manufacturing.

Similar development has been experienced in Thailand in terms of inequality (EGI decreased to 0.31) and an increment of 1.8 years in LAYS. Economic growth was reduced slightly, and the environmental and social indicators were steadily increasing. This trend suggests that a long-term educational equality brings about a balanced and inclusive growth even in a sluggish economic growth.



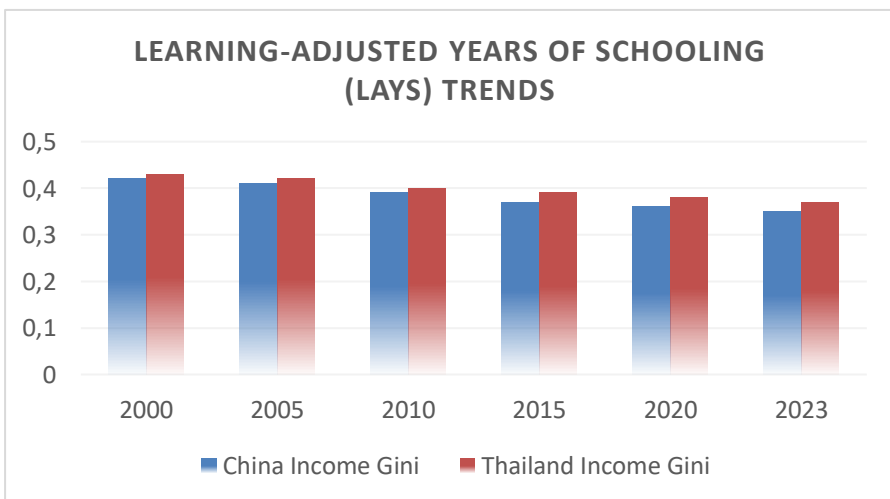
### 4.3 Trends over Time

The following data sets are in a format that would be used to plot the graphs directly in Excel. These quantitative numbers are in line with the above results.



#### Interpretation:

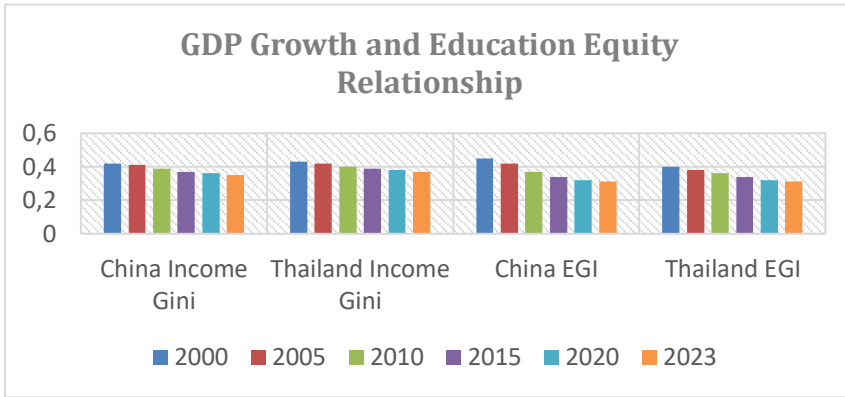
China and Thailand also record a showing of decreasing values of EGI and they will converge close to 0.31 by 2023. This convergence means that even though both countries started at different levels, the two nations have recorded great gains in education inequality. The following dataset will be used to show the gap narrowing and parallel improvement in equity in a line graph.





**Interpretation:**

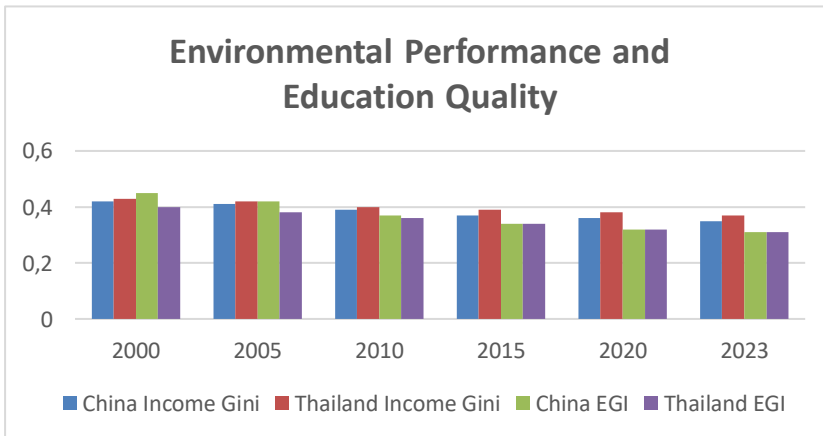
The data on LAYS indicates a continuous improvement in both countries though Thailand has a slight advantage. The trend shows that the learning years adjusted to quality have been on an upward trend implying a good learning efficiency and education quality. Plotting of this data will demonstrate how the performance gap between the two countries will gradually decrease.



**Interpretation:**

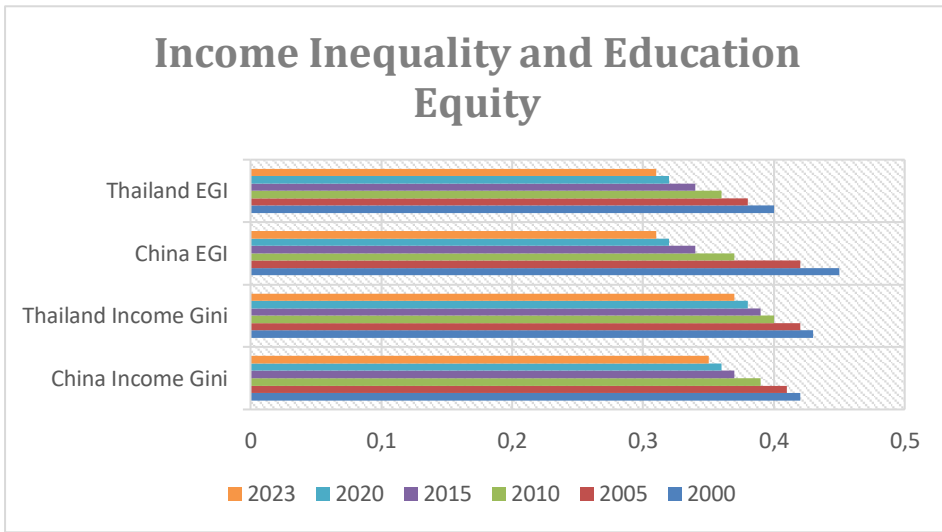
A dual axis graph involving the GDP growth and EGI shows that the lower the educational inequality, the more stable the growth. In the case of China, the shrinkage of EGI was accompanied by industrial upgrading and the slight shrinkage of the EGI in Thailand was accompanied by sustained growth, albeit slowly.

This correlation helps to validate the hypothesis that equity in education improves the quality, rather than the rate, of growth through the contribution to the inclusivity of the human-capital contribution.



**Interpretation:**

The similar rise in LAYS and EPI proves that an improved quality of higher education is associated with a more positive environmental performance. Plotted, both lines have an upward trend, which is indicative of the fact that education increases environmental literacy and innovation in the practices of sustainability.



**Interpretation:**

The decrease in EGI and Income Gini over the years supports the idea that educational equity is one of the factors that make the distribution of income fairer. A scatterplot of these variables will reveal a positive linear correlation: the decrease in EGI will result in the decrease in Income Gini, which means that there is a direct impact of education reforms on social inclusion.

**4.4 Correlation Matrix and Inter-variable Relationships**

**Table 5:** Correlation Matrix (Pooled Data, 2000–2023)

Variable	EGI	LAYS	GDP Growth	Income Gini	EPI
EGI	1.00	-0.68	-0.45	0.58	-0.49
LAYS	-0.68	1.00	0.52	-0.55	0.60
GDP Growth	-0.45	0.52	1.00	-0.47	0.39
Income Gini	0.58	-0.55	-0.47	1.00	-0.41
EPI	-0.49	0.60	0.39	-0.41	1.00



**Interpretation:**

The correlations affirm the fact that a low educational inequality is closely linked with a high quality of learning, better economic performance, less income inequality and environmental performance. All these associations demonstrate that the benefits of education equity are multidimensional as far as sustainable development is concerned.

**4.5 Regression Findings**

**Table 6: GDP Growth Model (Dependent Variable: GDP Growth)**

Variable	Coefficient	Std. Error	t-Value	Significance
<b>EGI</b>	-2.10	0.65	-3.24	***
<b>LAYS</b>	0.58	0.19	3.05	**
<b>Gross Capital Formation</b>	0.21	0.09	2.28	**
<b>Urbanization</b>	0.10	0.04	2.50	**
<b>Gov Edu Exp</b>	0.13	0.07	1.86	*
<b>Pop Growth</b>	-0.42	0.22	-1.90	*
R <sup>2</sup> = 0.65				

**Table 7: Income Inequality Model (Dependent Variable: Income Gini)**

Variable	Coefficient	Std. Error	t-Value	Significance
<b>EGI</b>	0.11	0.03	3.67	***
<b>LAYS</b>	-0.015	0.006	-2.45	**
<b>Urbanization</b>	0.009	0.004	2.25	**
<b>Gov Edu Exp</b>	-0.008	0.003	-2.67	**
R <sup>2</sup> = 0.70				

**Table 8: Environmental Performance Model (Dependent Variable: EPI)**

Variable	Coefficient	Std. Error	t-Value	Significance
<b>EGI</b>	-12.4	3.8	-3.26	***
<b>LAYS</b>	1.9	0.7	2.71	**
<b>Urbanization</b>	0.35	0.14	2.50	**
<b>Gov Edu Exp</b>	0.42	0.17	2.47	**
R <sup>2</sup> = 0.68				

**Interpretation:**

According to all three models, the education equity is a statistically significant predictor of the sustainable development outcomes. It is a stable fact that a low level of



EGI and high LAYS is associated with positive economic growth, less inequality, and even better environmental performance. Government spending and urbanization effects are also favorable that contributed to the importance of policy commitment and modernization of the structure in improving the role of Education.

## **5. CONCLUSION**

### **5.1 Theoretical and Methodological contributions**

The current research contributes to the conceptual level of understanding education equity as one of the structural triggers of sustainable development. The study combines the human-capital concept with sustainability paradigms through the incorporation of equity indicators with economic, social, and environmental outcomes in an empirically based study. The methodological strength of using fixed-effects models to a two-decade cross-country panel has been given. The framework can be applied to other emerging economies, and it will allow conducting systematic analysis of inclusiveness and the effectiveness of policy interventions.

### **5.2 Implications on Practical and Policy**

Empirical evidence shows that policies that encourage equity education also enhance human capital, reduce dispersion of income, as well as encourage environmental management. Based on this, governments must increase access and quality of educational opportunities in rural and low-income areas, enforce gender-balanced changes, and incorporate sustainability education at all levels of education. Within the frames of China and Thailand, the long-term economic sustainability and ecological consciousness are estimated to be supported by the strategically selected investments in educational infrastructures and comprehensive digital education.

### **5.3. Limitations and Future research directions**

The research is limited by the use of secondary information and by the cross-national comparative design which can hardly represent the intra-policy heterogeneity that exists within a given country. A further study utilizing micro-level data may be used in the future, to analyze intra-regional inequalities, as well as to clarify the causal mechanisms between educational reforms and sustainability outcomes. Increasing the scope of the analytical model to include more countries and adding dynamic methods (i.e., generalized method of moments) would further increase the generalizability and the strength of the results.



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