



The Effects of Gross National Income per Capita and Sustainable Development Goals on Stock Market Sustainability Index

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ARTICLE INFO

Article history:

Received May 27, 2026

Accepted June 10, 2026

Available online September 1, 2026

JEL Classification

E22, G15, M21, Q56

Keywords:

Gross National Income per Capita,
Purchasing Power Parity, Standard
of Living, Stock Market,
Sustainability-Related Index,
Sustainable Development

ABSTRACT

The article assesses the influence of Gross National Income per capita and Sustainable Development Goals (SDGs) on the likelihood of a stock market being covered by a sustainability index. The study uses ex post facto research design. The paper is different from previous analyses by assessing how living standard influences the likelihood of a stock market being covered by a sustainability index. The population consists of 217 countries selected from various economies. The sample size consists of 196 countries. Secondary data was used to actualize the study's objectives. The study used logistic regression model to examine the effect of living standards and SDGs on stock market sustainability index. The findings underscore the role of living standards and Sustainable Development Goals in influencing stock markets to be covered by sustainability-related index. The article documents the need to consider how the environment in which stock markets operate influence them to use a sustainability-related index. Belonging to the Upper Middle Income versus the Low-Income Classification, predisposes the log odds of stock market being covered by sustainability-related index to increase although insignificantly. The study recommends that national governments improve living standards and actualise the Sustainable Development Goals to enable stock markets institutionalise sustainability practices in listed companies. The study assists stock market policy makers to understand that country living standards affect the likelihood of a stock market being covered by a sustainability index.

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1. Introduction

The study is motivated by three factors in research and policy. The first factor is that country classification is a pointer to development outcomes. Nielsen (2011) argued that there is no simple defined concept of development. However, the World Bank formed a country classification model in 1978 dividing countries into three groups namely developing, industrialised, and capital-surplus-oil-exporting countries. In 1989, the World Bank introduced the high-income category where countries with a Gross National Income per capita above US\$6,000 are classified. This classification has been a subject of debate in the literature with respect to how they influence several country level initiatives especially with respect to sustainability reporting. Sustainability reporting involves the measurement, disclosure, and communication of corporate environmental, governance, and social performance aimed at providing transparent and accountable information to stakeholders (Centre for Financial Reporting Reform, 2021). Sustainability reporting is also used as a tool to gain the trust and confidence of corporate stakeholders. One of the stakeholders in sustainability reporting developments are the players in the business environment. The role of the Sustainable Development Goals (SDGs) in influencing the mechanisms of these players is often unaccounted for at the country level.

Alsayegh, Ditta, Mahmood and Kouser (2023) advocate that sustainability reporting and governance is important in actualising the SDGs. However, most of the literature focuses on the functions executed by corporate organisations in the profit maximising sector to actualise the SDGs. The Gross National Product (GNP) and other measures of economic performance including Gross National Income (GNI) are total entries in a country's official income and product accounts. However, there is more to wellbeing than a large Gross National Product (Peskin, 1981). Therefore, there is a need to assess the interest of stakeholders leading to greater emphasis on ESG factors in stock markets. Few studies focus on how living standards and the Sustainable Development Goals (SDGs) shape these stock market developments which are paramount in

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evaluating and clarifying country directions towards greater accountability for corporate sustainability performance, disclosure, and reporting.

Second, institutions play key roles in the level of sustainability reporting in countries. In a study comprising several countries, Ditta and Mahmood (2021) find that sustainability reporting affects sustainable development. Sustainability reporting in countries is influenced by institutions that have strong mechanisms and policies that drive corporate and government sector sustainability reporting. Some of these institutions include mechanisms towards mandatory sustainability reporting by stock markets. These markets aim at providing investors with economic, social, environmental, and governance information that constitute full disclosures to understand the state of corporate sustainability reporting in a country. Corporate entities in environments where the stock markets have strong enforcement mechanisms towards mandatory sustainability reporting have to comply or pay penalties for non-compliance. Alsayegh et al. (2023) posited that national governance which is a proxy for country level accountability has an important function in achieving the SDGs through actively engaging different stakeholders.

Third, policy makers advocate that institutions particularly those that represent governments and other interests can direct the course of organisations towards improved sustainability reporting. The Centre for Financial Reporting Reforms (2021) advocate the need for governments to use the established guidance provided by the Centre to establish institutional and regulatory frameworks for sustainability reporting and assurance, especially within the European Union (EU) and in line with the relevant legislation applicable in the EU. The objective of the guidance is to develop strong institutions that can effectively implement sustainability reporting frameworks. The frameworks will be used by the private and government sectors, respectively to actualise the goal of increased sustainability reporting. Based on these motivations for the current study, there is a need drawing from the absence of studies on the assessment of stock markets' sustainability initiatives based on the GNI per capita World Bank country classification. This absence is particularly noted in studies on sustainability developments as a function of GNI per capita.

The current study posits that wealthier countries have more resources to invest in sustainability. Wealthier countries are under more pressure to invest in sustainability due to the living standards. The study also posits that these countries have stricter rules for protecting the society and environment, making stock markets tend to initiate mechanisms that lead to the actualisation of national agenda. The current study also argues that high income countries have investors that are more interested in sustainable investments, and stock markets tend to initiate mechanisms that facilitate listed companies' compliance with sustainability-related rules and listing requirements. This article contributes to the overall sustainability reporting development and country classification research by exploring the unexplored country classification and articulating the differences that exist in countries' stock market sustainability developments based on country classification. The study is situated to advance the broad literature on the institutional effect and stock market sustainability initiatives. The study is cross-sectional because it assesses mechanisms put in place by stock markets across the countries in the World Bank GNI per capita classification. This classification will assist in understanding corporate sustainability reporting developments across country borders.

Across the world, there are different sustainability frameworks and guidelines that corporations use to report on sustainability performance. Yet, there is a dearth of empirical evidence on country-based stock market sustainability mechanisms and developments. There is also a dearth of empirical literature on how country income classifications affect country-based stock market sustainability mechanisms and developments. Corporations could be severely limited on how to report sustainability performance without strong enforcement mechanisms to initiate sustainability reporting. They could also be limited when there are no mechanisms to ensure that sustainability reports convey a true and fair view of their sustainability performance. The mechanisms that make companies initiate sustainability reporting and display accountability for the same include ESG-related training and coverage of stock markets by a sustainability-related index. The study explores the differences in stock market sustainability developments across 196 countries fitting into four of the GNI per capita classification of 2023.

Based on Figure 1, high income countries have higher GNI per capita (based on PPP). Using the institutional theory, this study emphasises country income, stock markets' sustainability mechanisms, SDGs, and region. The assessment establishes measurable impact goals, linking country income as living standards, SDG and stock market sustainability mechanisms within the context of countries across several regions. By researching into these issues, the study informs stakeholders and policies, providing in-depth analysis to facilitate the integration of sustainability in listed companies' disclosure and reporting agenda. The study advances the academic and practical issues in sustainability particularly drawing on how stock markets are influenced by institutional forces.

Figure 1 shows the GNI per capita of countries.

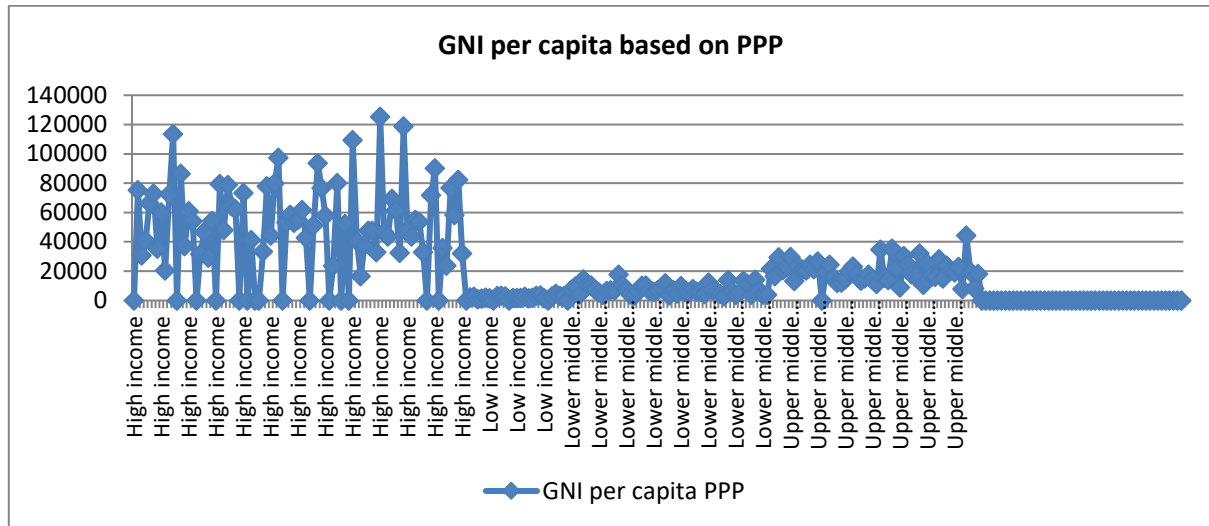


Figure 1. Gross National Income per capita (based on Purchasing Power Parity) 2023

Source: Authors' compilation from World Development Indicators (2025)

The study significantly contributes to countries' mechanisms to strengthen the knowledge-base of listed companies with respect to sustainability-related index. By examining the impact of country income on stock markets with sustainability-related index, the research aligns with SDG 17 (Partnership for the Goals). There is a need for stock markets, national governments, investors, companies, and other stakeholders to collaborate to actualise the SDGs. This collaboration will particularly assist companies to incorporate sustainability throughout their operations and reporting parlance. The study also significantly contributes to countries' mechanisms to strengthen how companies prioritise ESG factors and financial performance. This approach will assist investors with the knowledge of companies that are driven by maximising profit and sustainability performance, thereby ensuring that neither profits nor sustainability suffers at the cost of investors.

The rest of this article discusses the theories, conceptual framework, empirical literature, and hypotheses. In section three, the article discusses the methods. The fourth section provides the pictorial presentation, results, and discussion. The fifth section presents the study's conclusion, theoretical linkage, recommendation, policy implications, and suggestions for future studies.

2. Literature review

The study has segmented prior studies into four sections namely the institutional theory, stock markets sustainability initiatives, country income and stock markets sustainability initiatives, the conceptual framework, and empirical gaps and the study's contributions.

2.1 Institutional Theory

Meyer and Rowan (1977) are proponents of the institutional theory. The theory posits that organisations are influenced by the pressures stemming from the myriad of institutions that feature in the social and economic environment where they operate. The institutional theory examines how external pressures influence stock markets to initiate sustainability reporting mechanisms. Stock markets are influenced by country income and actualization of the SDGs. These characteristics mount pressures on stock markets to initiate ESG-related training or not. They also put pressures on stock markets to be covered by a sustainability-related index, further driving ESG accountability among listed companies. The absence of economic institutions can influence stock markets to refrain from being covered by a sustainability-related index. Stock markets incorporate practices based on the prevailing rationality institutionalised in society. One of the ideologies institutionalised in society is that high income countries tend to demand more accountability from organisations with respect to ESG performance. However, within societies and economies, individuals have interests in how stock markets should behave with respect to initiating mechanisms that guide listed companies on the path of sustainable development. These interests are often ignored in the institutional theory.

2.2 Stock markets sustainability initiatives

According to Harper (2025), sustainability can be traced to the Latin word *sustinere*. The word 'sustinere' means 'to sustain' and it was used to describe forestry practices involving harvesting only as much wood could be replaced by new growth. However, while earlier forms of the word sustainability were used with respect to the environment, recent uses of the word transcend to mean the ability to last over time. The

interpretation of the foremost use of the word 'sustainability' can mean the ability of forests to last over time, ensuring that the forest resources are not depleted.

The United Nations created the World Commission on Environment and Development (WCED) in 1983 to practically expand the discourse on environmental protection, economic development, and labour practices. The purpose of the Commission was to formulate enduring plans for sustainable development. One of the objectives of the report which was published in 1987 was to assist countries to proffer solutions to their specific environmental concerns. The report introduced the sustainable development concept, highlighting the linkages between social equity, economic growth, and environmental problems. The report proffered policy implications for handling the issues of concern that were a threat to future sustainability (Jarvie, 2025). The Brundtland Report has been referred to by academics, policy makers, national governments, and other stakeholders.

Ziegler, Wolff, Agu, Cortiana, Umair, Durfort, Neumann, Walther, Kristiansen and Lienkamp (2023) measured sustainability using eight Sustainable Development Goal metrics obtained from regions in Germany. The challenges posed by divergent global and local interests make it difficult for legislators from solving regional sustainability problems due to the absence of data. The sustainability measures portrayed the economic, ecological, and sustainability measures. These measures were selected from communities through public engagement. Li, Wang, Sueyoshi and Wang (2021) stated that the ESG principle includes environmental, social, and governance factors. The factor is usually applied in responsible investment and is a tool for assessing corporate organisations and their potential financial performance. ESG is a risk prevention mechanism for corporations. It is also a tool that is used to satisfy stakeholders' needs towards the actualization of the SDGs at the company level. Therefore, it is not surprising that stock markets create sustainability-related index.

Furthermore, stock market sustainability index is a mechanism through which listed companies are held accountable with respect to sustainability performance. De Dios-Alija, del Rio Caballero, Gil-Alana and Martin-Valmayor (2021) compared stock market metrics and sustainability. The study found high levels of persistence in all the stock market indices with no significant observable differences across the stock markets. Past events influencing the absolute and squared returns was found in the Dow Jones, Hang Seng markets, and Eurostoxx. Although, Goyal and Soni (2025) show that company's inclusion in the sustainability index was not value relevant, absence from the sustainability index is significantly value relevant. Kang, Viswanathan, White and Zychowicz (2022) found that sustainability equity displayed abnormal returns from 12 to 30 months after the index listing and the stocks did not generate excess returns before the index listing. Sustainability equity shares resulted into an enduring increase in stock demand and superior performance. Yilmaz, Aksoy and Tatoglu (2020) found that the inclusion or exclusion from the Borsa Istanbul Sustainability Index did not significantly affect stock returns and systematic risk (that is, betas) of listed companies. Contrary to excluded companies, the inclusion in the Borsa Istanbul Sustainability Index reduced the overall companies' risk, shielding them from reduction in the values of the stock in the event of a major crisis by improving their resilience.

2.3 Country income and stock market sustainability initiatives

From an institutional perspective, there is a focus on country income and developmental outcomes. Countries with higher national income are richer and people in high GNI per capita (PPP) have high standard of living. The PPP adjusts the GNI for price variations between countries, and it is premised on the assumption that the same basket of inventory is purchased across countries. GNI per capita (based on PPP) measures how much a currency can buy. High income countries have a higher living standard due to higher income amounts generated within the country and receipt of more foreign income. Ullah, Khan and Pinglu (2024) advocated that income distribution is a central value affecting sustainable development. Low income persons are often regarded as having low quality of life.

Country income accounts for the various costs of a basket of inventory in different national contexts and explains the standard of living in those nations notwithstanding the changing prices. GNI per capita (PPP) has been applied in studies. Nyachoti, Fwelo, Springer and Kelder (2023) assessed variations in COVID-19 vaccination due to GNI per capita of World Health Organisation (WHO) members in six WHO member regions. The results show that low GNI per capita WHO members had markedly lower complete vaccination exposure compared to high GNI per capita WHO members. Sterck, Roser, Ncube and Thewissen (2018) found that GNI per capita did not significantly predict health outcomes after controlling for other factors. The finding implied that allocation of development assistance for health should consider other institutional factors in addition to national income to increase impact on health outcomes. In the Gulf Cooperation Council, Adam and Alzuman (2024) assessed the influence of per capita income amongst other variables (Gross Domestic Product, sectoral composition, domestic credit, and Foreign Direct Investment) on employment timelines. Per capita income and GDP growth did not largely affect the employment timeline in the countries.

Despite the aforementioned uses of GNI per capita (PPP) in the literature, it has been criticised as unable to reflect the level of income disequilibrium in a country. It also does not reflect some fundamental indices of an individual's well-being such as access to health facilities, access to education, portable water, and sanitation. However, these limitations do not affect the current study because it is executed at the country level.

Notwithstanding, it is pertinent that development outcomes are assessed on the basis of country income, and compared to Gross Domestic Product (GDP) which measures economic output by estimating the aggregate value of goods and services created in a country over time, GNI per capita (PPP) provides a more accurate and balanced comparison of living standards between countries by adjusting for purchasing power variations. GNI per capita (PPP) is a more balanced estimate of wealth of a country relative to another country.

Empirical literature on stock market development and country income has developed steadily over the years, witnessing the need for scholars and policy makers to incorporate sustainability and ESG-related issues in stock markets research. Tasmaganbetov, Bolatowa, Agleshov, Tasmaganbetova, Yssengeldina and Zhanseitov (2018) found that stock markets in low and lower middle income countries did not significantly contribute to economic growth. This finding indicates that stock markets did not significantly affect economic growth. Further pointing to the roles that country income can play in influencing stock markets. Wang, Yu and Zhong (2023) document an important and positive influence of country-level ESG improvement on economic growth. The empirical influence observed is significant in high income countries and insignificant in countries that rely on natural resources. Country income level has been associated with a positive influence on stock market development, demonstrating that high income countries incline towards more developed stock markets compared to low income countries. Levine and Zervos (1996) noted a significantly robust relationship between stock market development and economic growth after controlling for black market exchange rate premium, inflation, government size, and financial depth. The dearth of existing literature on country environmental factors influencing stock market sustainability performance initiatives is a gap that the current study aims to fill.

Based on the World Bank country classification according to living standards, it is expected that the GNI per capita is associated with sustainable wealth. The SDGs of countries is a measure of how countries create wealth that transcends beyond generations. However, stock markets are important institutions that influence corporations to practice sustainable modes of behavior. One aspect of sustainability reporting stock market initiative is of interest in the current study. The study is interested in stock markets that are covered by sustainability related index. Due to country income classification's potential role to predict development outcomes, the current study posits that country classification influences stock markets that are covered by sustainability related index.

It is argued that corporate entities have important roles to play in ensuring that the SDGs are actualised. However, the role of corporate entities in contributing to the SDGs particularly through accounting and reporting sustainability performance has been argued to be a function of the institutional environment of the country where the company operates. Stock markets can shape the institutional environment of corporations in a manner that they assist the actualisation of the institutionalisation of sustainability reporting.

Institutional factors have important roles to play in the corporate environment. These factors could assist with more understanding of why certain countries have stock markets that are covered by sustainability related index.

Therefore, the hypotheses formulated in this study are:

- H₁ Gross National Income per Capita and Sustainable Development Goals significantly influence the likelihood of stock markets being covered by a sustainability-related index.
- H₂ Country Gross National Income classification significantly influences the likelihood of stock markets being covered by a sustainability-related index.

2.4 Conceptual Framework

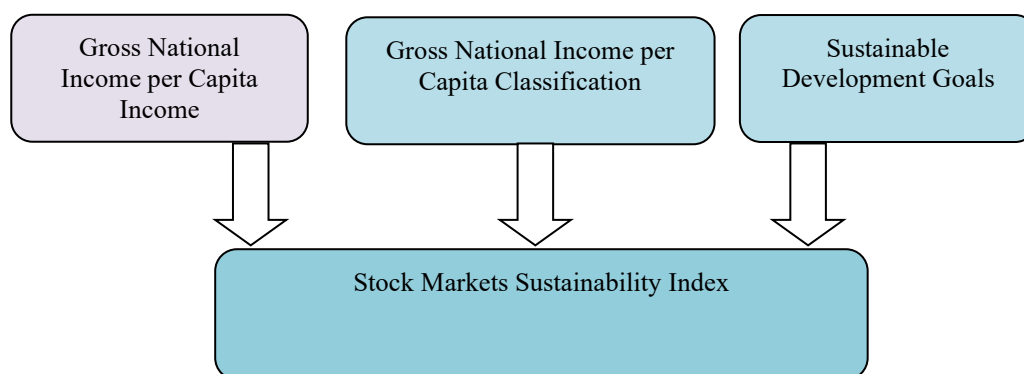


Figure 2. The Conceptual Model Framework

Source: Authors (2025)

2.5 Empirical gaps and the study's contributions

The literature discussions in the previous sections show the connections between country living standards, SDGs and stock market sustainability index. The issue has been addressed in separate studies assessing the extent of corporate sustainability reporting and alignment with the Sustainable Development Goals (Awuah, Yazdifar & Elbardan, 2024; Meng, Knapp, Brecht & Eckert, 2025; Singh, Rahman & Olan, 2021; Troy, Eng & Overton, 2025). But the issue has not been empirically assessed in relation to stock market sustainability index by deciphering between the World Bank classification of countries. There has been evidence with respect to stock market indices and sustainability (Bayar, Toader, Gavriltea & Yelkesen, 2024; de Dios-Alija, Caballero, Gil-Alana & Martin-Valmayor, 2024; Lawal, Jones & Lu, 2025; Parra-Domínguez & Dote-Pardo, 2025), but there is inability to arrive at a consensus on the relationship between country living standards and stock market sustainability index. To implement effective country strategies for assured alignment with the SDGs, it is expedient to investigate the relationship between country living standards and the extent to which a stock market is covered by a sustainability index. Economies around the world are faced with the need to align with the SDGs. However, institutions, especially the stock markets face serious challenges in aligning with this expectation. The changing country living standards and SDG scores underlie the demand for current research using data that documents recent stock market developments. It is these types of studies that can lead to impactful strategies that relate to improved country standards that influence stock market-related sustainability performance efforts.

3. Method

The study population consists of countries based on the World Bank Classification of countries according to the GNI per capita. The World Bank classifies countries into four income groups namely low, lower-middle, upper-middle, and high. This classification of countries reflects the development level and economic capacity of countries (Metreau, Young & Eapen, 2024). The population of the study comprises 217 countries. The study's sample size is a census of the entire population of countries included in the GNI per capita classification of the World Bank. However, due to missing data on GNI per capita, 21 countries were excluded from the study. The sample size of the study consists of 196 countries.

The study is interested in corporate sustainability developments stemming from stock markets that are covered by sustainability related index. The data was collected from secondary sources. Table 1 shows the variables and the sources of data.

Table 1. Variables and the Sources of Data

Variable	Measurement	Source
Dependent		
CSRI	Stock Market covered by sustainability related index Where 1 is for yes, the stock market is covered by sustainability related index 0 is for no, the stock market is not covered by a sustainability related index	Sustainable Stock Exchanges Initiative (2025)
Independent		
GNIP	Gross National Income per Capita (based on Purchasing Power Parity)	World Development Indicators (2025)
GNIC	Gross National Income per Capita (income classification) Where 4 is for high income 3 is for upper middle income 2 is for lower middle income 1 is for low income	World Development Indicators (2025)
SDGS	Sustainable Development Goal Score	Sachs, Lafortune & Fuller (2024)
REGN	The region of the country where 7 is for sub-Saharan Africa region 6 is for South Asia region 5 is for North America region 4 is for Middle East & North Africa region 3 is for Latin America & Caribbean region 2 is for Europe & Central Asia region 1 is for East Asia & Pacific region	World Development Indicators (2025)

Source: Authors' compilation (2025)

Two out of the nine criteria on the Sustainable Stock Exchange Initiative (2025) were used in the model specification. The two criteria are presented in Table 2 as follows.

Table 2 Stock markets covered by sustainability-related index

S/No.	Criteria	Number of Stock Exchanges	Number of Listed Companies	Domestic Market Capitalisation (US\$'million)
1	Market covered by sustainability-related index	49	50,465	115,653,928.820

Source: Authors' compilation from Sustainable Stock Exchanges Initiative (2025)

The criteria used in the study is stock market is covered by sustainability related index.

Table 3 Stock exchanges that offer ESG related training and are covered by sustainability related index

S/No.	Criteria	Number of Stock Exchanges	Number of Listed Companies	Domestic Market Capitalisation (US\$'million)
	Offers ESG related training Market covered by sustainability-related index	45	44,376	107,029,674.649

Source: Authors' compilation from the Sustainable Stock Exchanges Initiative (2025)

The stock markets that meet both criteria are fewer than those that are covered by sustainability-related index.

Model Specification

Based on Gujarati (2011), in explaining stock markets in relation to country income, the Linear Probability Model (LPM) is written as:

$$P_i = E(Y = 1 | X_i) = \beta_1 + \beta_2 X_i \dots \dots \dots (1)$$

Where X is the country income based on Gross National Income per Capita (Purchasing Power Parity) Y = 1 means the stock market offers ESG related training.

Rather use the next representation of stock market offering of ESG related training:

$$P_i = E(Y = 1 | X_i) = \frac{1}{1 + e^{-(\beta_1 + \beta_2 X_i)}} \dots \dots \dots (2)$$

We write the logistic distribution function as follows:

$$P_t = \frac{1}{1 + e^{-Z_i}} = \frac{e^Z}{1 + e^Z} \dots \dots \dots (3)$$

Equations (1) and (2) above are satisfied as Z_i ranges from $-\infty$ to $+\infty$, P_i ranges from 0 to 1 and P_i is nonlinearly related to Z_i

However, based on Equation (2) because P_i is nonlinear not just in X but in β 's there is an estimation problem due to the fulfillment of these requirements. Therefore, Ordinary Least Square cannot be used to estimate the parameters.

The logistic regression (Logit) model is estimated as follows:

$$L_i = \ln\left(\frac{P_i}{1 - P_i}\right) = \beta_1 + \beta_2 X_i + \mu_i \dots \dots \dots (4)$$

We then estimate the values of L_i

The data for the dependent variables are individual stock exchanges and not grouped data.

OLS is not feasible to estimate the values of L_i

However, $P_i = 1$ if the stock market offers ESG related training, and $P_i = 0$ if the stock market does not offer ESG related training.

There is one dependent variable. However, two logit models were estimated in the study.

Therefore, the first logit model is written as:

$$L_i = \ln\left(\frac{P_i}{1 - P_i}\right) = \beta_1 + \beta_2 GNIP_i + \beta_2 SDGS_i + \beta_3 REGN_i + \mu_i \dots \dots (5)$$

where GNIP is the Log of Gross National Income (Purchasing Power Parity)

SDGS is the Sustainable Development Goal Score
 REGN is the Country Region

The second logit model is written as:

$$L_i = \ln\left(\frac{P_i}{1 - P_i}\right) = \gamma_1 + \gamma_2 GNIC_i + \rho_i, \dots \dots (6)$$

Where GNIC is the Gross National Income per capita Classification

The data was analysed using Stata Software.

4 Results

4.1 Descriptive Analysis

Figure 3 provides the frequency analysis represented by percentage and cumulative percentage for the variables included in the study for 196 countries.

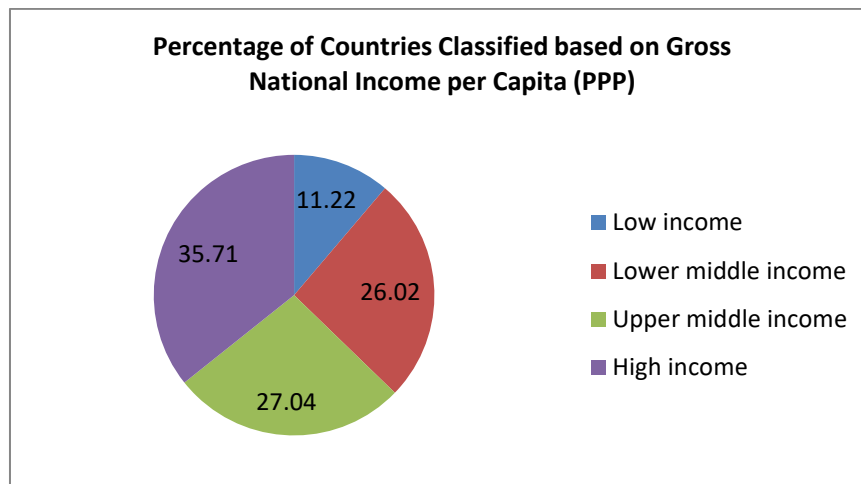


Figure 3. Gross National Income per Capita

Source: Authors (2025)

Based on Figure 3, out of the 196 countries included in the study, there are 22 low income countries representing 11.22 percent. There are 51 lower middle income countries representing 26.02 percent. There are 53 upper middle income countries representing 27.04 percent. There are 70 high income countries representing 35.71 percent. These numbers indicate that there is more high income to low income countries.

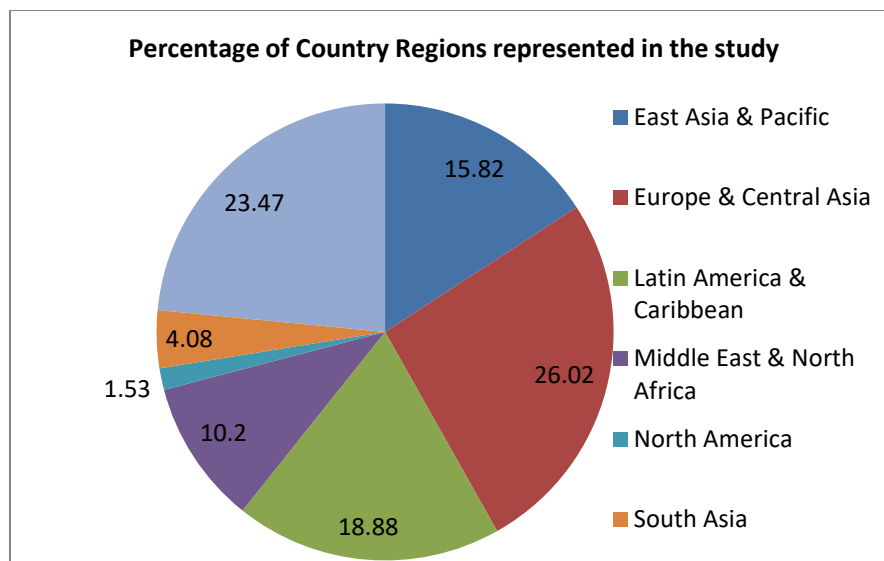


Figure 4. Country regions represented in the study

Source: Authors (2025)

From the results presented in Figure 4, the country regions represented in the study are Europe & Central Asia, Latin America & Caribbean, East Asia & Pacific, North Africa, North America, and South Asia, and Middle East. The region with the largest percentage of stock markets included in the study is the Europe &

Central Asia region. The Europe & Central Asia region accounts for more than one-fifth of the countries included in the study. The sub-Saharan African region accounts for about 23.47 percent of countries included in the study.

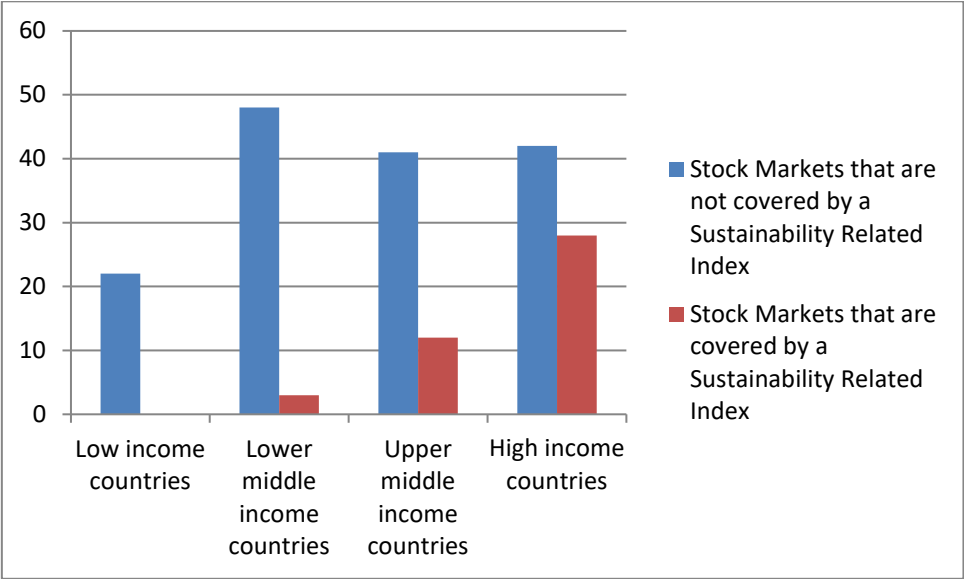


Figure 5. Stock Markets that are covered by a Sustainability-Related Index based on GNI per Capita Classification
Source: Authors (2025)

Based on Figure 5, lower middle income countries have the most stock markets that are not covered by a sustainability related index. High income countries have the most stock markets that are covered by sustainability related index. Low income countries especially those in the sub-Saharan African region need to develop institutional support for sustainability reporting.

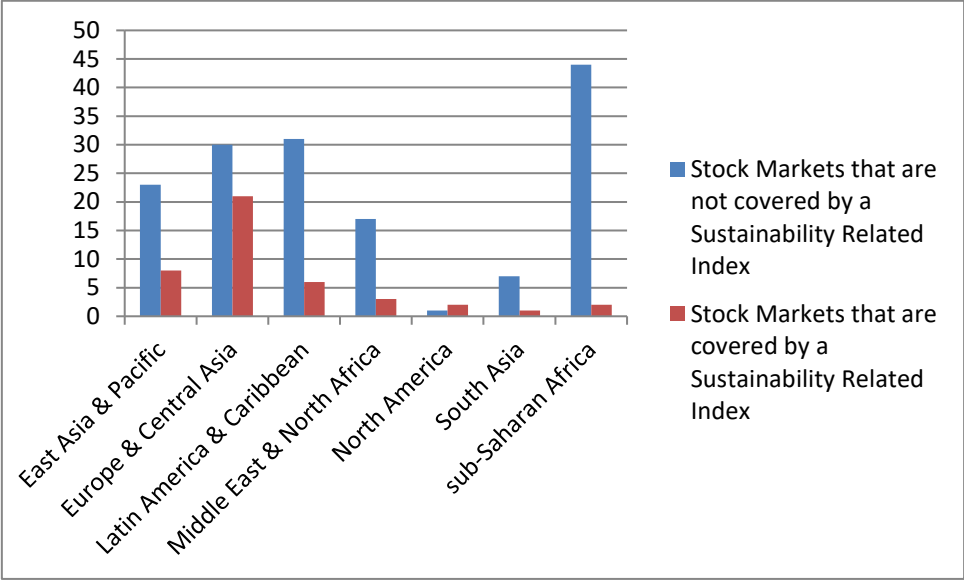


Figure 6. Stock Markets that are covered by a Sustainability-Related Index based on Region
Source: Authors (2025)

From Figure 6, the sub-Saharan African region has the most number of countries without stock markets that are not covered by sustainability related index. The European & Central Asian region have the most number of countries with stock markets that are covered by sustainability related index.

The univariate analysis represented by descriptive statistics for the variables included in the study for 196 economies. A total of 21 economies did not have data for Gross National Income per capita. The sample size was also divided into four groups on the basis of whether the stock exchange has a sustainability related index, or not. The results of the descriptive statistics are presented in Table 4 as follows.

Table 4. Descriptive Statistics of the Variables

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
CSRI	196	0.2194	0.4149	0	1
GNIP	196	28379.23	27211.13	920	125240
GNIC	196	2.8724	1.0273	1	4
SDGS	196	55.7092	27.5147	0	86.4
REGN	196	3.6173	2.1959	1	7

Source: Authors' Computation (2025)

From Table 4, the mean score for stock markets that offer ESG training is 0.4133 while the mean score for stock markets that are covered by a sustainability related index is 0.2194. This implies that of the 196 economies, the average score for stock markets that offer training and those that are covered by a sustainability related index is greater than 0. The mean Gross National Income per capita score is 28379.23. This implies that of the 196 economies, the mean GNI per capita score is greater than 28000. On the average, the world economies have above low income levels. The mean Sustainable Development Goal score is 55.7092.

4.2 Regression Results

Table 5. Regression Results for Stock Market covered by Sustainability Related Index, Gross National Income per Capita and Sustainable Development Goal (Controlling for Country Region)

Dependent Variable: Stock Market is covered by Sustainability Related Index

Method: Maximum Likelihood – Binary Logit

Convergence achieved after 8 iterations

Variable	Coefficient	Standard Error	Z Statistic	Probability
C	-15.1128	4.2523	-3.55	0.000
GNIP	0.0000	0.0000	2.72	0.007**
SDGS	0.1982	0.0603	3.28	0.001***
REGN				
2	-2.2656	0.8799	-2.57	0.010
3	-0.6323	0.8259	-0.77	0.444
4	-1.7033	1.0635	-1.60	0.109
5	4.7274	18.6997	0.25	0.800
6	-0.5445	1.3145	-0.41	0.679
7	-0.1564	1.1071	-0.14	0.888
Pseudo R² = 0.4426				
LR Statistic (8 df) = 91.27				

***p-value is less than 0.001

**p-value is less than 0.01

Source: Authors Computation (2025)

The likelihood ratio chi-square of 91.27 with a p-value of 0.0000 indicates that the CSRI model entirely fits significantly better than an empty model (that is, a model with no predictors).

Based on Table 5, GNIP and SDGS are statistically significant. The logistic regression coefficients indicate the variation in the log odds of the outcome for a unit increase in the independent variable. A coefficient of 0.000 indicates that a very small change in GNI per capita leads to a significant change in the log odds of the outcome occurring. A small increase in GNI per capita is significantly associated with a higher probability of the country having a stock market that is covered by a sustainability related index. For every one unit change in GNIP, the log odds of stock market covered by a sustainability related index (versus not covered by a sustainability related index) increases by 0.00003. For a unit increase in SDGS, the log odds of the stock market covered by sustainability related index increases by 0.1982.

Belonging to the Europe & Central Asia region versus the East Asia & Pacific region, predisposes the log odds of stock market being covered by sustainability related index to decrease by 2.2656. Belonging to the Latin American & Caribbean region versus the East Asia & Pacific region predisposes the log odds of stock market being covered by sustainability related index to decrease by 0.6323.

Belonging to the Middle East & North Africa region versus the East Asia & Pacific region predisposes the log odds of stock market being covered by sustainability related index to decrease by 1.7033.

Belonging to the North America region versus the East Asia & Pacific region predisposes the log odds of stock market being covered by sustainability related index to increase by 4.7274. Belonging to the South Asia region versus the East Asia & Pacific region predisposes the log odds of stock market being covered by

sustainability related index to decrease by 0.5445. Belonging to the sub-Sahara Africa region versus the East Asia & Pacific region predisposes the log odds of stock market being covered by sustainability related index to decrease by 0.1564.

Table 6. Regression Results for Stock Market covered by Sustainability Related Index and Gross National Income per Capita Classification
Dependent Variable: Stock Market is covered by Sustainability Related Index
Method: Maximum Likelihood – Binary Logit
Convergence achieved after 10 iterations

Variable	Coefficient	Standard Error	Z Statistic	Probability
C	-16.5707	845.4175	-0.02	0.984
GNIC				
2	13.7979	845.4177	0.02	0.987
3	15.3420	845.4176	0.02	0.986
4	16.1649	845.4175	0.02	0.985
Pseudo R^2 = 0.1576				
LR Statistic (3 df) = 32.50				

Source: Authors Computation (2025)

The likelihood ratio chi-square of 32.50 with a p-value of 0.0000 indicates that the CSRI model entirely fits significantly better than an empty model (that is, a model with no predictors).

Based on Table 6, GNIC is not statistically significant. The logistic regression coefficients indicate the predisposition of the log odds of the stock market being covered by a sustainability related index when belonging to the Lower Middle Income, Upper Middle Income, and High Income Classification versus the Low Income Classification.

Belonging to the Lower Middle Income Classification versus the Low Income Classification, predisposes the log odds of stock market being covered by sustainability related index to increase by 13.7979. Belonging to the Upper Middle Income Classification, versus the Low Income Classification, predisposes the log odds of stock market being covered by sustainability related index to increase by 15.3420. Belonging to the High Income Classification versus the Low Income Classification, predisposes the log odds of stock market being covered by sustainability related index to increase by 16.1649.

Table 7. Correlation results of the variables in the CSRI models – High income and Upper middle income categories

	CSRI	GNIP	SDGS
CSRI	1.0000		
GNIP	0.3412	1.0000	
SDGS	0.4342	0.1212	1.0000

Source: Authors' Computation (2025)

The results from Table 7 show that there is absence of high correlation between the independent variables. Therefore, the model is stable.

Table 8. Regression Results for Stock Market covered by a sustainability related index, Gross National Income per Capita and Sustainable Development Goal – 123 High income and upper middle income countries

Dependent Variable: Stock Market is covered by a sustainability-related index
Method: Maximum Likelihood – Binary Logit
Convergence achieved after 6 iterations

Variable	Coefficient	Standard Error	Z Statistic	Probability
C	-9.4593	3.0775	-3.07	0.002
GNIP	0.0000	0.0000	2.46	0.014**
SDGS	0.1084	0.0427	2.54	0.011**
Pseudo R^2 = 0.3116				
LR Statistic (3 df) = 48.35				

**p-value is less than 0.01

Source: Authors Computation (2025)

The likelihood ratio chi-square of 48.35 with a p-value of 0.0000 indicates that the CSRI model entirely fits significantly better than an empty model (that is, a model with no predictors). Based on Table 8, GNIP and SDGS are statistically significant. The logistic regression coefficients indicate the variation in the log odds of the

outcome for a unit increase in the independent variable. A coefficient of 0.000 indicates that a very small change in GNI per capita leads to a significant change in the log odds of the outcome occurring. A small increase in GNI per capita is significantly associated with a higher probability of the country having a stock market that is covered by a sustainability-related index. For every one unit change in GNIP, the log odds of stock market being covered by a sustainability-related index (versus not being covered by a sustainability-related index) increases by 0.00002. For a unit increase in SDGS, the log odds of the stock market being covered by a sustainability-related index increases by 0.1084.

Table 9. Correlation results of the variables in the CSRI models – Low income and Lower middle income categories

	CSRI	GNIP	SDGS
CSRI	1.0000		
GNIP	0.4490	1.0000	
SDGS	0.1680	0.3459	1.0000

Source: Authors' Computation (2025)

The results from Table 9 show that there is absence of high correlation between the independent variables. High correlation exists when two of the independent variables in the logit model are strongly related to one another. Strong association between the independent variables is indicated by a Pearson correlation coefficient of more than 0.70. Based on Table 9, there is no indication of strong correlation between Gross National Income per capita (PPP) and Sustainable Development Goals (SDGs). Therefore, the model is stable.

Table 10. Regression Results for Stock Market is covered by a sustainability related index, Gross National Income per Capita and Sustainable Development Goal – 73 Low income and lower middle income countries

Dependent Variable: Stock Market is covered by a sustainability related index

Method: Maximum Likelihood – Binary Logit

Convergence achieved after 7 iterations

Variable	Coefficient	Standard Error	Z Statistic	Probability
C	-9.5672	6.5406	-1.46	0.144
GNIP	0.0006	0.0003	1.92	0.055
SDGS	0.0066	0.1121	0.06	0.953
Pseudo R² = 0.4906				
LR Statistic (2 df) = 12.28				

Source: Authors Computation (2025)

The likelihood ratio chi-square of 12.28 with a p-value of 0.0022 indicates that the CSRI model entirely fits significantly better than an empty model (that is, a model with no predictors).

Based on Table 10, GNIP and SDGS are not statistically significant. The logistic regression coefficients indicate the variation in the log odds of the outcome for a unit increase in the independent variable. A coefficient of 0.0000 indicates that a very small change in GNI per capita leads to an insignificant change in the log odds of the outcome occurring. A small increase in GNI per capita is insignificantly associated with a higher probability of the country having a stock market that is covered by a sustainability related index. For every one unit change in GNIP, the log odds of stock market being covered by a sustainability-related index (versus not being covered by a sustainability-related index) increases significantly by 0.0006. For a unit increase in SDGS, the log odds of the stock market being covered by a sustainability-related index increases insignificantly by 0.0066.

5. Discussion and Conclusion

The results of the study are consistent with the institutional theory proposition. The stock market is an institution that provides coercive and normative pressures to listed organisations in a country. Stock markets provide minimum requirements for disclosures that should be included in corporate reports (United Nations, 2014). Hence, stock markets are best positioned to introduce sustainability reporting initiatives. The implications of the initiatives are diverse. First, stock markets can initiate voluntary disclosures. The purpose of voluntary disclosure requirements is to allow companies proactively disseminate sustainability performance information with stakeholders such as investors, shareholders, employees, creditors, regulators, relevant government authority, customers, and host communities. Voluntary disclosure requirements are particularly important when there is inadequate institutional enforcement of environmental, social, and governance reporting from other sources such as industry regulators, Securities and Exchange Commissions, and national government policies. Voluntary sustainability disclosures are incorporated in corporate reports to create a roadmap towards the gradual implementation of mandatory disclosure requirements.

Second, stock markets can impose mandatory disclosures. The purpose of mandatory disclosure requirements is to enhance the actualisation of the contribution of corporate entities towards the sustainable

development agenda. Mandatory disclosure requirements also create a uniform reporting regime where companies respond by complying or explaining their refusal to do so. These voluntary and mandatory initiatives connote that stock markets can influence companies sustainability performance and reporting. Empirical studies also show that stock markets react to the release of sustainability information (Du, Yu, Bhattacharya & Sen, 2017). The current study focused on one stock market development which is stock markets that are covered by sustainability related index. According to Kvasničková, Pilař, Fridrich, Kvasnička, Pilařová, Afsar and Gorton (2023), some disclosures have been skewed to be more prevalent in the sustainability reports emanating from developed countries compared to developing ones. For example, words connected with sustainable production and the environment was found to be more in developed countries than developing nations. Based on development, Kvasničková et al (2023) also found that developed countries focused more on supply chain emission and sustainable production. Conversely, developing countries focused more on human rights and education in their sustainability reports. Although, the study limited to 2020 and especially focused on reporting entities in the United Nations Global Impact database, the findings cannot be generalised because of the absence of a time-series analysis. However, the cross-sectional nature of the study is significant because it highlights the gap in developed and developing countries sustainability reporting perspectives. This gap can be further analysed on the basis of country income as developed countries are usually in the high income classification while developing countries are in the low income classification. However, due to the dearth in the literature on studies that have assessed stock market sustainability reporting initiatives, there is a need to discuss the findings of the current study along the line of corporate sustainability reporting itself rather than the regulatory approach that offers institutional oversight that is assessed in this study.

The results from the income classification presented in the two echelons in the empirical analysis show that there are contextual factors responsible for stock markets being covered by a sustainability-related index. The results from the high and upper middle echelon countries show that stock markets sustainability initiatives towards listed companies are largely influenced by country income (that is, the standard of living) and SDGs. The results from the high and upper middle echelon countries show that stock markets sustainability initiatives of being covered by a sustainability-related index (that is, listed companies prioritise ESG performance) are largely influenced by country income (that is, living standard) and SDGs. The results for low echelon countries are different from those obtained from the logistic regression involving 75 high and upper middle echelon countries.

Consequently, the findings of the current study infer that stock markets in the low echelon countries could be influenced by the political nature of stock markets, where listed companies are believed to be ethically responsible when they conduct their operations in line with ESG best practice and are deemed to be accountable for their sustainability performance because they are listed on stock markets that are covered by sustainability-related index.

The findings of the current study have serious implications for low echelon countries. Further research could study the influence of country region on the decision of stock markets to be covered by a sustainability-related index. A regional analysis could point to why there are similarities and differences in the regions with respect to these stock market initiatives towards improving corporate sustainability performance, disclosure, and reporting practices. Further research could identify and explain the relationship between stock market initiatives, country income, Foreign Direct Investment (FDI), and political regime in a country. The relationship between stock market initiatives, country income, FDI, and political regime could also explain why stock markets are covered or not covered by a sustainability-related index.

The study focused on countries based on GNI per capita (purchasing power parity). This indicator measures the average income per person in a country after adjusting for purchasing power parity (PPP). PPP is a theoretical exchange rate that makes the purchasing power of different currencies to be at equilibrium. GNI per capita (PPP) is a better measure of living standards across various countries. The current study delves deeper into the country factors that make stock markets being covered by sustainability related index. These initiatives are influenced by GNI per capita (PPP) and Sustainable Development Goals (SDGs). GNI per capita PPP also measures at the country level, the average education level per individual, the inflation influencing national currency, and the average global interest rates for loans. These measures of GNI per capita PPP have significant implications for stock market initiatives with respect to ESG and sustainability reporting. The findings point to the ability of countries with increased average levels of education per person to positively influence stock markets to be covered by sustainability related index. Stock markets that are covered by a sustainability related index assist investors and fund managers to assess responsible and ethical listed companies. Countries with better living standards tend to make people hold listed companies accountable for sustainability performance.

The findings of the current study fill the gap in the existing literature on factors influencing stock markets to institutionalise sustainability reporting. However, there is still a prominent area in the literature that can point to stock market's mechanisms to institutionalise sustainability reporting. A regional study assessing how stock markets are influenced to institutionalise sustainability reporting is pertinent and can also assist researchers understand the regional dynamics in the institutional and regulatory oversight for increased accountability for sustainability performance of listed companies.

Acknowledgements

The authors contributed equally to the conception and design of the study.

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