DOI: 10.52131/pjhss.2024.v12i4.2544

Pakistan Journal of Humanities and Social Sciences

Volume 12, Number 04, 2024, Pages 2987-2996
Journal Homepage:
https://journals.internationalrasd.org/index.php/pjhss

Governance and Sustainable Development: The Role of Environmental Performance at the Country Level

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ARTICLE INFO

Article History:
Received: June 27, 2024
Revised: November 02, 2024
Accepted: November 03, 2024
Available Online: November 04, 2024

Keywords:
Governance
Sustainable Development Goals
Environmental Performance

Funding:
This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

The objective of this study is to examine the role of environmental performance and governance in promoting sustainable development. This study employs secondary data spanning from 2015 to 2022 from different sources, including the World Governance Indicators Index, the environmental performance of the countries, and sustainable development goals. We used Eviews-9 software and applied panel regression techniques to analyses the data. We found that there was a negative impact of governance on sustainable development, and results suggested that the governments, policy makers, and other stakeholders have to change the existing model of governance to achieve sustainable development goals. In contrast, environmental performance positively affects sustainable development, indicating that in order to achieve sustainable development goals, the government, businesses, and other stakeholders must concentrate on the environmental performance of their respective nations. Moreover, a country's environmental performance mediates the relationship between governance and sustainable development goals. The findings indicated that environmental performance has a mediating role in achieving sustainable development and that governance alone is insufficient to do so. As a result, for the country to promote sustainable development goals, all stakeholders must support environmental protection initiatives.

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1. Introduction

In today's global economic forums, sustainable development is one of the most significant issues, and it has been a major focus of many studies carried out in the 20th and 21st centuries (Knežević, Vukadinović, & Gržinić, 2014). The term "sustainable development" was first used by the World Commission on Environment and Development in 1987 as a set of guidelines for social and environmentally responsible growth (Bebbington & Larrinaga, 2014). Therefore, sustainable development goals provide an ample framework for achieving sustainable development by addressing various interconnected goals, ranging from combating climate change to reducing poverty. A number of problems, including environmental deterioration, dissatisfaction with efforts to end global poverty and inequality, and socio-political and economic instability, have caused countries to change the economic growth paradigm with the new sustainable development model. switch from the paradigm of economic growth to the new model of sustainable development (Stojanović, Ateljević, & Stević, 2016). The challenge of how to accomplish sustainable development goals remains, even with the adoption of the new economic strategy. Companies operating in a country and elements of good governance—such as political stability, effective government, rule of law, voice, and accountability—play a critical role in the sustainable or unsustainable development of any country and are held responsible for their activities pertaining to such development (United Nations Development Programme, 2015). To address biosphere

pollution, inequality, poverty, climate change, and other current problems, the SDGs encourage cooperation among professionals, governments, businesses, and the general community (Makarenko & Plastun, 2017). Consequently, governments and other entities across the nation are now integrating the SDGs into their strategic planning procedures.

In order to achieve sustainable development, governance is essential since it controls the formulation, implementation, and oversight of policies. Accountability, transparency, and involvement of stakeholders are examples of good governance practices that can result in better resource allocation, efficient policy execution, and improved human outcomes. On the other hand, ineffective governance can result in resource mismanagement, social injustice, and corruption, all of which restrict the achievement of the SDGs (United Nations Development Programme, 2015). Sustainable development is thought to be a result of effective governance. The idea of governance is long-lasting. People want other people to govern over them. Many wars between different nations have been fought for administrative control. Governance encompasses the delivery of social services, environmental conservation, and humanitarian aid (Mushtaq, 2017). The United Nations Development Programme (2015) states that achieving sustainable development depends on both national and international governance as well as a conducive environment. As a result, it is regarded as an essential component of sustainable development. It was noted by Güney (2017) that governance has a positive effect on sustainable development. But he measured net saving as sustainable development and overlooked the concept of SDGs. This study considered SDGs to fill the research gap. Studies on sustainable development have been carried out in a variety of ways. For example, Mohammadi, Emadzadeh and Ansari (2012) mentioned that FDI has a positive impact on sustainable development. Kanie et al. (2019) stated that achieving SDGs requires a complete transformation of society at all levels. Additionally, Coimbra and Pereira (2013) discovered a positive relationship between economic development and governance. However, the aforementioned researches have overlooked the novel notion of SDGs. Consequently, national governance may influence SDGs even though it is not given much consideration in current literature. Thus this research fills the existing research gap by considering country's' governance indicators and SDGs.

Apart from the previously identified literature gap, this study is distinctive as it considers the country's environmental performance as a mediating factor in the relationship between governance and SDGs. Although it is often known that governance frameworks are essential for sustainable development, little is known about the precise mechanisms by which environmental performance mediates this relationship. Empirical research on how governance practices—like accountability, transparency, and regulatory frameworks—affect environmental performance and how that performance, in turn, influences the more general attainment of sustainable development goals is lacking. Because of the voluntary disclosure theory (Cho, Freedman, & Patten, 2012), nations with superior environmental performance typically engage in more sustainable practices that might contribute to the accomplishment of SDGs. Addressing this gap is crucial to developing governance models that improve environmental stewardship and SDGs. Therefore, the objective of this study is to examine the role of environmental performance in the relationship between governance and SDGs. Thus, this study is useful for different stakeholders like governments of the country, practitioners, academicians, and regulators. To proceed with the study, section 2 presents a literature review of recent studies. Section 3 provides detail explanation of the methodology, including the data sources. Section 4 presents results and discussions, while Section 5 concludes the study.

2. Literature Review

2.1. Governance and Sustainable Development

Sustainable development is a global challenge that requires international cooperation and collaboration (Sampedro, 2021). Stoddart, Mattoni and McLevey (2020) define sustainable development as the effective and fair provision of resources across generations and within generations while letting socioeconomic activity to continue within the boundaries of a predetermined ecosystem. According to Robert, Parris and Leiserowitz (2005) sustainable development focuses on human activities and their capacity to meet needs and their basic requirements without depleting or exhausting the available productive resources. This prompts reflection on how people should live their economic and social lives by utilizing the ecological resources available for human progress. Effective global governance mechanisms are essential to address transboundary issues, such as climate change, biodiversity loss, and sustainable

resource management (Mushtaq, 2017). Governance refers to the structures, systems, and processes through which decisions are made and implemented, and plays a crucial role in the pursuit of sustainable development (Popescu & Mandru, 2022). There is a need for inclusive and equitable global governance frameworks that promote cooperation among nations, foster technology transfer, and provide adequate financial resources for sustainable development (Biermann, Kanie, & Kim, 2017). Sustainable development requires governance systems that are adaptive and resilient to change (Bianchi & Richiedei, 2023). Effective governance is essential for accomplishing the goals of sustainable development, which comprehend economic, social well-being, prosperity, and environmental sustainability (Hussainey, Elsayed, & Razik, 2011). Sustainable development is influenced by a variety of factors, such as per capita income (Makarenko & Plastun, 2017), societal change (Kanie et al., 2019), better financial management (BULUT, 2019), and political economy (Fritz, Verena; Kaisar, Kai; Levy, 2009). However, majority of these studies have ignored the notion of governance of the country and SDGs. Therefore, this paper proposed the following proposition:

Hypothesis 1: There is positive association between governance and SDGs.

2.2. Environmental Performance and SDGs

The environmental performance is crucial for assessing the effects of a company's operations from social and ecological perspective (Marrucci, Daddi, & Iraldo, 2024). The environmental performance addresses environmental pressure and quality that can address a nation's environmental issues (Jaffeer, 2011). The majority of the information disclosed in environmental disclosure is qualitative and non-financial, and the relevant authorities do not offer more specific guidelines about the structure and content of environmental disclosure based on its unique characteristics. Since there are no clear standards for the evaluation of accounting and auditing, managers can manipulate more easily in this situation (Solomon, Daminabo, & Uzor, 2016; Tan et al., 2015). According to Gupta and Goldar (2005) and Cho, Freedman and Patten (2012), a company's poor environmental performance can have detrimental effects on its stock price and reputation, which in turn can lead to a reduction in senior managers' self-interest (Berrone & Gomez-Mejia, 2009). Better governance could help the nation's poor environmental performance and pave the way for the SDGs to be accomplished. According to voluntary disclosure (Testa et al., 2018), organizations that perform poorly in terms of the environment are inclined to confuse their performance with that of companies that perform well in terms of the environment. They will typically release independent reports that are less credible and fair in form; in terms of content, they will typically divulge more ambiguous and erroneous words, employ less quantitative information that can be observed and verified, and have a lower reading rating. Investors are so perplexed and unable to completely evaluate the company's genuine environmental performance, which may readily cause the market to generate opinions that are favourable to management skill and the company's worth (Abrams, Han, & Hossain, 2021). In contrast, companies that fulfil their environmental obligations better disclose corporate environmental performance in a transparent and credible manner, and their disclosure texts are more objective. This helps investors make decisions, reduces uncertainty, and raises the market valuation of the company (Seelos & Mair, 2007). As a result, management compensation and reputation are improved (Quintana-García, Marchante-Lara, & Benavides-Chicón, 2022). Wu and Li (2023) pointed out that environmental performance has a significant and positive impact on the financial performance of the company. However, they ignored the notion of SDGs. Therefore, the company's environmental performance promotes the nation's environmental performance, which may lead to the SDGs being achieved. Thus, the researchers proposed the following hypothesis:

Hypothesis 2: There is a positive impact of environmental performance of the country on SDGs of the country.

2.3. Governance and Environmental Performance

According to research by Barakat and Hussainey (2013), businesses that operate in nations with stronger governance typically exhibit higher-quality environmental disclosure throughout Europe. Uyar et al. (2022) conducted an analysis on the correlation between environmental reporting by public sector organizations and governance indicators. They emphasized that there is a strong correlation between public sector organizations' reporting on environmental and governance indicators. The influence of various institutional systems of governance on environmental outcomes has been the subject of numerous study streams. A

body of research looks at how a nation's level of democracy and its institutional framework affect environmental regulations (Fredriksson & Wollscheid, 2007). Other writers have investigated the impact of various legal systems (Meiners & Yandle, 1998) as well as the structure and size of government (Bernauer & Koubi, 2009) on the governance of the environment. Some early studies anecdotally indicated the presence of corruption and poor quality of government in areas where the environment is degrading (Welsch, 2004). Malerba (2020) also pointed out that corruption is deteriorating environmental performance. Since then, a significant amount of study has been conducted to examine how corruption affects environmental performance. However, to the best of our knowledge, none of the studies pointed out the effect of the governance index on environmental performance. Thus this study proposes the following proposition:

Hypothesis 3: There is positive effect of governance on environmental performance.

Several researchers such as Alsayegh et al. (2023); BULUT (2019); Momen (2021); Omri and Ben Mabrouk (2020), have suggested that governance causes SD. Similarly, other researches, for instance (Cho, Freedman, & Patten, 2012; Gupta & Goldar, 2005), and Testa et al. (2018), have pointed out the relationship between SDGs and environmental performance. Furthermore, better governance has a positive relationship with environmental performance (Bernauer & Koubi, 2009; Uyar et al., 2022). However, earlier studies ignored how governance influences the SDGs. Thus, how governance can lead to environmental performance, which can lead to SDGs, may be explained by some unseen, underlying process. Thus, we proposed the following hypothesis:

Hypothesis 4: Environmental performance mediates the association between governance and SDGs.

3. Methodology

This study relies on secondary data sources for the nations where scores for governance indicators, environmental performance, and SDGs are available for the entire period, 2015 to 2022. We used the Consumer Price Index (CPI), Global Competitive Index (GCI), and GDP (growth rate and per capita) as the control variables. In order to analyze the data, E-views-7 software was used for data analysis. A balanced panel of 100 country-year observations were used in data analysis. Preliminary analysis, like descriptive statistics, correlations, and unit root tests, was conducted for initial data screening. After that we applied panel regression models to find the relationships among variables. For mediation analysis we used Sobel test (Sobel, 1982) and followed the (Baron & Kenny, 1986) criteria. This study uses sustainable development goals index for the country as the SDGs performance for respective country. Every year the World Bank publishes world governance indicators for each country. This research uses the average of governance indicators as a governance to determine how governance affects SDGs. The environmental performance of the nation was consider as mediating variable. The researcher collected data from the Environmental Performance Index database. The study used the global competitive index (GCI) as a control variable because it includes various macroeconomic factors, such as market size, health, financial market development, institutional infrastructure, education and training, labour market efficiency, business sophistication, and innovation. Similarly, consumer price index (CPI), and the gross domestic product (GDP) both per capita and growth were chosen as control variables because they may have an effect on the SDGs. Data related to control variables were collected from their respective data bases.

4. Results and Discussion

Descriptive statistics for the variables are presented in Table 1.

Table 1: Descriptive stats

	SDGs	WGI	EPI	CPI	GCI	GDP_GR	GDP_PC
Mean	67.29025	53.09519	54.45543	6.929914	50.53413	2.581311	20229.83
Median	70.50346	54.07734	53.27500	2.156346	49.00000	2.976280	11533.10
Maximum	86.47724	98.79230	90.68000	557.2018	96.00000	24.37045	133590.1
Minimum	38.44942	0.882308	15.47000	-3.233389	6.000000	-27.99455	216.8267
Std. Dev.	11.82488	28.74237	18.68479	32.63326	19.31680	4.420758	23697.93

Source: Authors generated table using E-Views software.

The mean values of SDGs, governance (WGI), environmental performance index (EPI), consumer price index (CPI), global competitive index (GCI), GDP growth (GDP-GR), and GDP per capita (GDP-PC) are 67.29025, 53.09519, 54.45543, 6.929914, 50.53413, 2.581311, and 20229.83, respectively. Maximum values for the indicators are SDGs, WGI, EPI, CPI, GDP-GR, and GDP-PC, which are 86.47724, 90.68000, 557.2018, 96.00000, 24.37045, and 133590.1, respectively. These figures represent the peak performance of the countries considered in the research. However, the minimum value shows the lowest value in the data set. In this case, the minimum values are 38.44942, 0.882308, 15.47000, -3.233389, 6.000000, 27.99455, and 216.8267 for SDGI, WGI, EPI, CPI, GCI, GDP-GR, and GDP-PC, respectively.

Table 2: Correlations

Correlations and Multicollinearity Matrix for WGI, SDG, EPI, GDP, CPI, and GCI

	SDGs	WGI	EPI	CPI	GCI	GDP_GR	GDP_PC
SDGs	1.000000	0.003891	0.720223	-0.104032	0.122688	-0.030394	0.652697
WGI	0.003891	1.000000	-0.034595	-0.070024	-0.078207	-0.021250	-0.077056
EPI	0.720223	-0.034595	1.000000	-0.090923	0.092343	-0.029441	0.610646
CPI	-0.104032	-0.070024	-0.090923	1.000000	0.065840	-0.111345	-0.017824
GCI	0.122688	-0.078207	0.092343	0.065840	1.000000	0.014723	-0.034270
GDP_GR	-0.030394	-0.021250	-0.029441	-0.111345	0.014723	1.000000	-0.043232
GDP_PC	0.652697	-0.077056	0.610646	-0.017824	-0.034270	-0.043232	1.000000

Source: Authors generated table using E-Views software.

SDGs have a positive correlation with EPI and GDP_PC. This suggests that nations with higher SDGs tend to have higher environmental performance and GDP per capita. SDGs have a positive correlation with GCI. The correlations between GDP_PC and SDGs and EPI are positive. Similarly, governance of the country has a positive relationship with SDGs. However, it has a negative correlation with EPI, CPI, GCI, GDP_GR, and GDP_PC. Results suggest that most of the countries focused more on social development rather than economic development.

Table 3: Unit Root Test

Unit root for WGI, SDG, EPI, GDP, CPI, GCI.

No	Variable	Statistics	Probability	Integration
1	WGI	-5.747291	0.0000	Stationary
2	SDGs	-2.447537	0.0146	Stationary
3	EPI	-2.776761	0.0056	Stationary
4	GCI	-5.752708	0.0000	Stationary
5	CPI	-3.617438	0.0003	Stationary
6	GDP_GR	-15.8608	0.0011	Stationary
7	GDP_PC	-38.7447	1.0013	Stationary

Source: Authors generated table using E-Views software

The unit root test for WGI indicates that the variable is stationary at level. This means that the statistical properties of world governance indicators are relatively constant over time. Furthermore, the unit root test for SDGs suggests that the variable is stationary at level. This implies that the statistical properties of sustainable development goals remain relatively constant over time. Similarly, all other variables were stationary at level except GDP_PC. This implies that the statistical properties of gross domestic product per capita may change over time. Therefore, it requires additional analysis, such as differencing or modelling with integrated time series methods, to account for their time-varying nature. Thus GDP_PC was stationary at the 1st level difference.

Table 4 demonstrates that controlling the effects of GDP_GR, GDP_PC, CPI, and GCI, the effect of governance on SDGs was negative but significant (B = -0.034877, P = 0.0144). Results indicate that there is a negative relationship between governance and SDGs, which means that the governance system that exists now is governed by rules, which is quite different from governance through goals. Results were in line with the previous study of Kanie et al. (2019). They pointed out that the existing governance system is inefficient to achieve SDGs. Because most of the countries focused more on their economic well-being rather than societal well-being. A different group of stakeholders, including those from the industrial sector, practitioners, researchers, policymakers, and societal groups, are brought together through governance via goals to identify common issues and formulate broader strategies to achieve SDGs.

Consequently, to overcome this problem, the government of the country, policymakers, and other stakeholders must have to cooperate with each other to change the current governance mechanism.

Table 4: Regression Results

Dependent Variable: SDGs

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	42.52592	1.105469	38.46866	0.0000
WGI	-0.034877	0.014218	-2.453025	0.0144
CPI	-0.024461	0.010529	-2.323149	0.0205
GCI	0.046595	0.013058	3.568400	0.0004
GDP_GROWTH_RATE	-0.174831	0.056645	-3.086409	0.0021
GDP_PER_CAPITA	5.80E-05	1.71E-05	3.390372	0.0007
EPI	0.440612	0.013055	33.74997	0.0000
R-squared	0.648189			
Adjusted R-squared	0.645099			
F-statistic	209.7308	Durbin-Watson stat	0.675	4359
Prob(F-statistic)	0.0000			

Source: Authors generated table using E-Views software.

Dhaoui (2019) mentioned that before creating effective governance, it is essential to establish the organized structures to pursue the economic, social, and environmental sustainability goals. Because the institutional element serves as essential for governance to foster conditions that support the functioning of SDGs systems, allowing the government to engage in growth strategies more responsibly, successfully, and efficiently. Results also support the change theory's basic premise that once economic participants sign the contract and to achieve the goals, they set primacies, distribute resources, create or alter appropriate strategic structures, and include the public and organizations (Ostrom et al., 1999). According to findings, increasing governmental control would be ineffective and would lower the level of living in such nations, which would create a negative impact on SDGs. Therefore, these institutions must be changed and developed over time to achieve SDGs.

Table 5: Regression Results

Dependent Variable: Environmental Performance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-364.3388	14.64094	-24.88493	0.00
WGI	8.949714	0.753978	11.86999	0.00
GCI	4.769978	0.198108	24.07770	0.00
CPI	-0.045986	0.006707	-6.855999	0.00
GDP_GR	-0.743405	0.075838	-9.802595	0.00
GDP_PC	-8.92E-05	0.000143	-0.621993	0.53
R-squared	0.981937			
Adjusted R-squared	0.981807			
F-statistic	7545.386	Durbin-Watson stat		1.481987
Prob(F-statistic)	0.000000			

Source: Authors generated table using E-Views software.

Table 5 demonstrates that the country's environmental performance is significantly and positively impacted by governance (B=8.95, P=0.00). The F test was significant at the 5% level, which shows that the model was suitable to test the effect of governance on the environmental performance of the nation. The findings showed that national government significantly influences the environment of the country. Results were similar to the previous study of (Chang, Dong, & Liu, 2019). They pointed out that effective governance systems shape policies, rules, and regulations and sustainable practices to improve the overall environmental performance of the country. Therefore, regardless of the magnitude of its effects, good governance is essential to preserving and enhancing the quality of the global environment. To promote effective resource reuse and reiteration for greater environmental protection, strong governance must be institutionalized. Because governments have the authority to enforce waste management procedures, emission regulations, and pollution control measures. By requiring industries to adhere to predetermined criteria, these measures directly lessen environmental harm. Furthermore, government-mandated reporting requirements and accountability frameworks promote openness and motivate businesses to comply with environmental standards, which

frequently results in improved environmental performance. This study also implies that government initiatives can promote an innovative and sustainable culture, since public funding for environmental research and green technologies opens up opportunities for long-term development. Government influence also supports worldwide initiatives to solve problems like climate change and biodiversity loss by assisting in coordinating national environmental goals with international accords like the Paris Agreement. In summary, these results highlight the importance of government actions in promoting significant environmental advancement and can significantly impact the attainment of sustainable development objectives.

4.1. Result of Mediation Analysis

Mediation analysis was done using (Baron & Kenny, 1986) criteria. We used the Sobel test (Sobel, 1982) for mediation analysis. Table 6 shows the results of mediation.

Table 6: Mediation Results

Impact of GI on SDGs. DV=SDGs	Path-A Effect of GI on EPI. DV=EPI	Path-B Impact of EPI on SDGs. DV=SDGs
WGI -0.035(0.012) ***	8.95(0.75) ***	
EPI		0.44(0.013) ***

Source: Authors generated table using Sobel test.

Table 6 shows that there was a significant but negative impact of governance on SDGs (B= -0.039; P=0.01). Similarly, environmental performance has a significant positive impact on SDGs. impact on SDGs (B=0.44; P=0.00). Moreover, governance has a significant and positive impact on the environmental performance of the country (B = 8.95; P = 0.00). The findings were in line with the criteria set forth by Baron & Kenny (1986) to examine the mediating role of EPI in the relationship between governance and national SDGs. In order to assist the fourth step of the mediation analysis, this study employed Sobel's (1982) test. According to the Sobel test's statistical results, the direct impact of governance on SDGs was considerably reduced when a mediator, environmental performance, was included (T=11.197; P=0.00). Consequently, the proposition was accepted as the association between a country's governance and SDGs is mediated by environmental performance. Results were consistent with previous studies of (Alsayegh et al., 2023). They pointed out that the association between governance and SDGs is mediated by sustainability reporting. According to the findings, national governance alone is insufficient to accomplish the SDGs; however, if national governance placed greater emphasis on the nation's environmental performance, it would aid in SDG achievement. The findings also corroborate the voluntary disclosure theory. According to voluntary theory, corporations in the nation would be better able to achieve the SDGs if they paid greater attention to environmental performance. The findings have many implications for the nation's government, legislators, regulators, and other interested parties. Based on findings, it is suggested that the government and other stakeholders should focus on environmental performance in order to support the nation's SDGs.

5. Conclusion, Policy Recommendations and Research Limitations

This study aimed to determine the role of environmental performance and governance in achieving the SDGs at the national level. E-Views software was utilized to analyze secondary data, and panel regression techniques were employed. We concluded from our findings that governance significantly but negatively affects the SDGs, and we recommended that policymakers and other stakeholders modify the current governance model. We found a positive impact of environmental performance on SDGs, which suggested that every stockholder in the country must actively participate in the protection of the environment of the country. Results also indicated that governance has a significant and positive impact on the environmental performance of the country. Finally, environmental performance showed a mediating role in the relationship between governance and SDGs. According to mediation results, governance alone is insufficient to fulfil the SDGs; rather, environmental performance is a factor in the SDGs' achievement. As a result, the nation's government, businesses, and the general public must all actively participate in environmental protection in order to fulfil the SDGs. Thus this study concludes that governance and environmental performance play a significant role in achieving SDGs at the country level. This study contains numerous limitations that point to potential directions for further research. First, this analysis is based on data which was available on the World Bank' database. Only World Bank data set is not enough to conduct data analysis, other reliable sources like may be used to collected more comprehensive data for further analysis.

Second, this research uses country-level data further research may be conducted on corporate level dataset. Third, this paper includes governance, environmental performance, and SDGs. Further research may be conducted to include other country-level variables e.g., geographic, cultural, and demographic aspects of the country.

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