

## Public Governance and Environmental Performance: An International Perspective

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**Abstract:** Purpose of the study is to examine the relationship of public governance and the national environmental performance. Background of the research is driven by the fact that countries located in the same geographic showed different environmental performance. It is believed that public governance will determine national environmental performance. The higher public governance index, the better national environmental performance will be. The subject of the research is the countries that are listed as world bank member. Objects of the research are public governance and environmental performance. Public governance was represented by variables, namely accountability, political stability, government effectiveness, regulatory quality, and control of corruption. Multiple regression analysis was applied in this research. The results showed that accountability, political stability, regulatory quality, and control of corruption have a positive and significant correlation with the national environmental performance. Meanwhile, variable accountability did not correlate with national environmental performance. Government effectiveness was dropped from the analysis due to there is multicollinearity.

**Keywords:** *Performance, Environmental, governance, Accountability, Multicollinearity*

### Introduction

One of the eight Millennium Development Goals (MDGs) introduced by the United Nations (UN) at the Millennium Summit in 2000 is environmental sustainability. At that Summit, it was achieved the United Nations Millennium Declaration agreement, which states that members involved in the meeting should achieve MDGs by the end of 2015. Long before the Millennium Summit is held, in 1992, the climate change convention was held in Kyoto, known as the Kyoto Protocol. In that event, treaty agreed upon

by the majority of countries participants that there is the need to reduce greenhouse gas emissions as a response to the occurrence of global warming. In 1992, the Earth Summit was held in Rio de Janeiro, which results in an agreement not binding agenda 21 with the theme sustainability development. The events initiated by the United Nations, it provided an understanding that environmental issues are an essential agenda for the international community and a challenge that must be met collectively between countries throughout the world (Scruggs, 1999)

The idea of sustainable development was inspired by the conditions of planet earth, which is increasingly unfriendly for shelter. There is global warming suspected by the melting of the polar ice sheets and rising sea levels, thinning ozone layer which results in exposure to ultraviolet light increasingly sharp earth, weather changes (Fiorino, 2010). Carbon gas emissions and disasters nature are things that are presumably caused by industrialization and exploitation of natural resources that are not environmentally friendly. The exploitation of natural resources by industries one side can lift the economy of the country, and the other side can also cause negative impacts on the environment in which the industry operates. In this case, the involvement of the state becomes significant to make sure sustainability development can be achieved

The industrialization that is concerned with the environment is influenced by two the main party, the industry itself and the government as the regulator. Practice environmentally friendly industry requires investment, and the cost is not cheap. With the principle of cost and benefit, it is deficient in expecting business organizations to conduct industry practices that are environmentally friendly with its awareness. It is, therefore, the role of the government which has compelling power becomes crucial for realizing the sustainability development

Sustainability development is one of the indicators of national environmental performance. Environmental performance is the main component besides social performance and economic performance to evaluate the overall performance of an entity (Breaban & Sandu, 2013). The dimensions of environmental performance measures involve many things. To make it easier to understand by stakeholders, the value of environmental performance is stated index number. It represents the accumulation of many dimensions of performance measures environment.

According to The Yale Center for Environmental Law & Policy, National Environmental Performance Index can be measured through nine dimensions which include health, quality air, water quality, water resources, agriculture, forests, fisheries, biodiversity diversity, and energy climate. Accumulation of these nine dimensions represents National Environmental Performance Index. The practice of industrialization and exploitation of natural resources, when those things are accumulated, it will represent an environmental performance of the country. Thus, the national environmental performance index is reflection industrialization and exploitation of natural resources within the country.

The level of national environmental performance index depends on the awareness of the business organization to carry out its business activities comply with environmental protection programs. It is, therefore, the role of the government as a regulator and monitor are crucial. National environmental performance is resulting from good state governance (Dasgupta, 2006; Rodrik 1997, Emerson et al., 2010). If a state's governance is good, it is expected that governance in industry practice and exploitation of natural resources is also in line. The World Bank describes that a measure of a state's governance can be identified from seven elements which include accountability, political stability and the absence of violence, government effectiveness, quality regulations, rules and legislation and control of corruption.

The Yale Center for Environmental Law & Policy works with The Center for International Earth Science Information Network each year releases an environmental performance index that covers 178 countries. Based on the index released by The Yale, it shows that the national environment performance index varies between regions and between continents. The countries which are

geographically close to each other can produce a very sharp difference. In 2014, environmental performance index Indonesia was in rank 112<sup>th</sup>, and Singapore ranked 4<sup>th</sup> out of a total of 178 countries. In Europe, the Swiss state was on rank 1<sup>st</sup> while Bosnia Herzegovina is at position 107<sup>th</sup>. From this phenomenon, it shows that environmental performance is not influenced by similarity or the geographical proximity of a country. There is a possibility that inherent characteristic of the country related to national environmental performance. In this study, the governance of a country is proposed as a variable that has an association with national environmental performance. Therefore, the question to be answered in this study is "the extent of governance a country has a role in achieving national environmental performance?"

The environmental performance of a country varies significantly between geographical regions and between continent. Many studies have linked that environmental performance is influenced by factors related to the economy as well as economic growth and per capita income. However, it is believed that there are other factors besides the contributing economic factors in achieving a national environmental performance; in this case, the intended factor is state governance. Understanding the factors associated with the national environment of a country is challenging. If we can understand the factors related to national environmental performance, then we can formulate the correct policies that support the achievement of national performance environment (Fiorino, 2011).

There is insufficient information available that explains the national environmental performance. It is caused by the absence of a theoretical approach to the empirical questions to understand variations in environmental performance between countries. There are still gaps or black boxes to explaining variations in

environmental performance cross-country perspective (Duit, 2015). More comprehensive studies are needed by including rational factors such as public governance. Furthermore, empirical testing has not been done by previous studies. Governance is a variable that has a rational relationship with environmental performance. However, there has not been much research at the country level. For this reason, study the relationship between public governance and national environmental performance becomes relevant.

Although environmental problems have the same character globally, investigations involving comparisons between countries make it possible to identify significant variables that affect environmental performance (Jahn, 1998). There have been many studies on the links between governance and environmental performance at the corporate level, but still limited in number studying at the state level with an international perspective. Because environmental problems are a global problem, hence it becomes relevant if the study of the environment is carried out with taking a broad scale, namely international. Furthermore, there are still many empirical kinds of researchers who study the relationship between environmental performance and governance between countries, but the results of the study not come consensus unanimously (Halkos et al., 2013). For this reason, with the existence of this study, it is expected these studies can provide input information or become reference material for future research and answer the inconsistency results of previous study. Purpose of this study is to reveal the association of public governance attributes namely accountability, political stability, government effectiveness, regulatory quality and control of corruption with the national environmental performance

## Literature Review and Hypothesis Development

### *Environmental Performance*

Environmental performance is defined as very diverse in each individual and organization. However, the essence of all definitions refers to the relevant measure with the protection of the environment which includes water, air, land, ecosystems, and sources natural resources (Bran et al., 2011, Grafton and Knowles, 2003). Scruggs (1999) defines environmental performance as a result of human response to environmental pollution problems. Whereas Alvarez (2014), defines that environmental performance refers to effects from business activities and the use of natural products, such as consumption of resources natural power, produce waste and emissions. The terminology of environmental performance, according to Duit (2005) related to efforts to overcome environmental degradation, which includes management of natural resources, and eliminating the practices that can endanger the environment. The national environmental performance can be understood as an effort by the government to provides public goods with an environmentally friendly approach. In this case, these efforts can be measured from the effort to protect habitat that will become extinct, reduce greenhouse gases for ecological systems better global (Duit, 2005).

National environmental performance is the result of various functions and factors that are not only limited to income, knowledge, and but also environmental conditions country (Djoundourian, 2012). Unlike the measurement of economic performance, which has established standards, the national environmental performance has no certain standard that is commonly used (Fiorino, 2011). The measure of national environmental performance varies in terms

of indicators used, and it depends on the institution that publishes it. Three indicators are widely used as a reference to assess a national environmental performance, namely, Environmental Performance Index (EPI), Environmental Sustainability Index (ESI) and Ecological Footprint (EF). EPI is the most popular measure of national environmental performance (Fiorino, 2010). EPI uses a comprehensive set of indicators that can represent the concept of environmental sustainability. EPI covers the measurement of national environmental performance including the extent of land, air pollution and energy consumption (Esty et al. 2005, 2006, 2008)

EPI is an environmental performance indicator published by The Yale institution Center for Environmental Law & Policy collaborating with Columbia University (Center for International Earth Science Information Network), the most ambitious collaboration project to measure a national environmental performance (Esty et al. 2008). EPI focuses on two objectives, namely reducing the environmental burden impact on human health and protection of ecosystems and natural resources (Alvarez et al., 2014, Emerson et al. 2012)). At EPI, the impact of environmental burdens towards human health is classified into indicators, namely, air pollution and water pollution. While the indicators of protection of ecosystems and natural resources the consists of the effects of air pollution on ecosystems, the effect of water pollution on the ecosystem, biodiversity and habitat, use of productive natural resources (forestry, fisheries, and agriculture) and environmental change (Alvarez, 2014). EPI ranks the environmental performance of a country involving two groups critical indicators of environmental health and ecosystem vitality. The indicator expressed on a scale, which is a measure of the national environmental performance (Hsu et al., 2013).

EPI ranks the country towards achievements related to policy the environment taken by the country is compared to the specified size by Yale and Columbia University network. EPI involves 25 indicators organized into ten category groups and two main environmental policies (environmental health and ecosystem vitality). The final score is obtained by using the average numbers are classified into five performance categories of very performance scales good to very bad (Breaban & Sandu, 2013)

### **Governance**

The terminology of governance is generally divided into two categories, namely governance terminology management that refers to corporate organizations and governance terminology that refers to government organizations. The slogan is good corporate governance, and good government governance is a reflection of the concepts of two governance meanings at different levels. Although in principle, the meaning meant is the same, namely good organization, but the forming components are different. In this chapter, the terminology is discussed are related to governance at the state or government level. World Bank in 1992 defines the governance of a country as a way of exercising power in state management for economic development and resources – resources social. It includes government processes chosen, monitored, and replaced, the capacity of the government to effectively formulate and implement policies, respect for the community and the conditions of the institutions that govern the economy and social interaction (Kaufmann and Kraay, 2007)

Governance is believed to be the key for government and business organizations in achieving the goals set. Without proper governance, government,

and business organizations in carrying out organizational functions will not work correctly as planned. In the context of the organization government, most researchers, policymakers, aid agencies, and beneficiaries recognize that good governance is a basic recipe to achieve sustainable development (Kaufmann and Kraay, 2007). Sustainable development cannot be separated from insight into good environmental governance. Weak management System, including the management of government, was indicated to have a negative influence on the environment (Halkos et al., 2013).

Many studies reinforce the opinion that environmental performance related to the country's governance. In 2002, Wang and Di did a study the determinants that influence environmental performance. The result concludes that national environmental performance is influenced by public governance. Przeworski et al. (2000) argue that economic growth does not directly affect national environmental performance, but it is mediated by public governance. Emerson et al. (2010) argue that public governance is not only as mediation factors for environmental performance, but also the main trigger for national environment performance. Dasgupta (2006), and Rodrik (1997) stated that public governance has a strong effect on the quality of the environment and becomes the main elements to understand the development and environmental performance. Measuring public governance still raises much debate about indicators used to represent a measurement. However, the World Bank has an indicators and has been using as a reference to assess public governance. The indicators is known as The Worldwide Governance Indicators (WGI). The World Bank identifies six dimensions for measuring public governance namely ; 1) Accountability, 2) Political stability, 3) Effectiveness of government, 4) Quality of regulation, 5) regulations and legislation and 6) Control of corruption



## **Accountability and Environmental Performance**

Government accountability is the form of accountability to the public for the use of public funds. Rationalization between accountability and environmental performance is that public funds are used one of which is for the interests of the wider community which includes the provision of health-supporting factors includes healthy air, water, and soil so that the quality of life of the community becomes increase. Rechtschaffen and Markell (2003) argue that in an era of accountability, the government is required to openly convey the performance, in this case, including government performance in terms of environmental quality.

Bianchini and Ravely (2011) argue that the relationship between government accountability and environmental performance is more related to economic factors. The state budget is collected from public funds (tax). Therefore, it must be accounted for back to society. Bianchini and Ravely referred environmental accountability definition to Bran et al. (2011) that increased competition in the market global and budgetary disciplines require accountability with a high level of discipline for all expenses, including those invested for environment interests.

Environmental accountability through several mechanisms and procedures such as environmental audit, accountability panel, community complaints board, and ombudsman institution (Grigorescu, 2010, Buntaine, 2015). One crucial element related to environmental accountability is public participation (Paddock, 2004). Active public participation can inspire the government about policies related to the environment taken and also the role of the public in carrying out the monitoring function. Rechtschaffen and Markell (2003) argue that weak accountability has an impact on administration from

infrastructure for environmental protection regulations. Therefore, the hypothesis is formulated as follows:

**Hypothesis 1:** *National environmental performance is positively associated with government accountability, the higher government accountability index, the higher national environmental performance will be*

## **Political Stability and Environmental Performance**

Political stability refers to conducive conditions in governmental covering internal, regional, and international political stability. Rationalization of stability politics with environmental performance is the same as political stability thinking with economic growth. Certain country with stable political conditions, investors will have the confidence to invest their capital in that country. The simple assumption of the stable political conditions associated with environmental performance conditions is that the country will focus on national development, which includes the development of environmental quality, and not preoccupied with political issues.

Kelleher et al. (2009) argue that environmental quality is dependent on government institutions and their chosen policies. It is explained that, if a country's political conditions are stable, then the policy formulated by the government have more orientation on national development purposes, in this case also includes policy related to environmental protection. Fiorino (2010) argue that there is growing evidence that links between environmental degradation political legitimacy, and political stability. Therefore, the hypothesis proposed as follows:

**Hypothesis 2:** *National environmental performance is positively associated with the political stability of government, the higher political stability index of the*

*government, the higher national environmental performance will be.*

### ***Government effectiveness and environmental performance***

Effective government terminology refers to the right advice in achieving goals. Effectiveness government indicates that the government can achieve the matters that are in line with development planning. Effectiveness of public administration and governance may be a trigger that is relevant to the quality of environment development, which relates with the quality of the bureaucracy, the competence of civil servants, independence civil servants from political pressure and government credibility with commitment policy (Alvarez, 2014). If government institutions function correctly, then collective problems related to environmental problems can be overcome (Duit, 2005). The effectiveness of government institutions related to environmental problems perhaps a reflection of the effectiveness of the overall government institution (Dasgupta, 2006) and more effective institutions will be more successful in combating environmental degradation compared to those who have weak institutions (Duit, 2005). There is a postulate that institutional arrangements have a tremendous impact on the environmental quality of a country (Jahn, 2008). The national environmental performance will be greatly influenced by a national commitment to environmental issues, policies, and problem-solving capacities (Fiorino, 2010).

Researches on the relationship between government effectiveness and environmental performance have been conducted previously. Esty et al. (2008) concluded that there was a positive relationship between government effectiveness with a national environmental performance index. The research conducted by Kaufmann et al. (2007) showed a positive correlation between government

effectiveness and performance reduction in greenhouse gas emissions, ozone health, and water quality. Therefore, the hypothesis is formulated as follows:

**Hypothesis 3:** *National environmental performance is positively associated with effectiveness government of the country, the higher government effectiveness index, the higher national environmental performance will be.*

### ***Regulations Quality and Environmental Performance***

Regulation is the rules and norms adopted by the government that has consequences in the form of fines or penalty for those who violate it (Coglianese, 2012). Regulation is a government instrument to realize the intended purpose achieved by the government, one of which is the public interest in creating a healthy living environment (Long, 1997). Regulations quality are regulations that can achieve effectively the goals determined by the government. The regulations are expected to support the achievement of national environmental performance targets (Esty and Porter, 2001). If the level of quality regulation is high, there are indications that the quality of environmental regulation is also the same. Scruggs (1999) argues that regulation is strict to provide incentives for businesses and governments to be more flexible in working together to achieve better environmental performance. Quality regulation can be identified from indicators of transparency, not discrimination and efficiency (OECD). Quality regulation help to realize and improve public policy objectives that include including safety, security, health, and environment (Treasury Board of Canada Secretariat, 2011). Therefore, the hypothesis is formulated as follows:

**Hypothesis 4:** *National environmental performance is positively associated with the quality of regulation, the higher*

*regulatory quality index, the higher national environmental performance will be*

### ***Control of Corruption and Environmental Performance***

The practice of corruption is detrimental not only to the state but also to the quality of the environment. The state may have regulations related to environmental protection. However, if in the implementation process of the regulation is not executed correctly, the purpose of environmental protection programs will not be achieved. The mode that often occurs on corruption cases in the context of environmental protection is the practice of bribery for parties that must carry out environmental protection activities to avoid penalty and fines. In this case, the enforcement of regulatory laws concerning the environment of the apparatus is very vital.

Researches that studies the relationship between the level of corruption of a country with national environmental performance are mostly consistent. Rothstein (2003) states that the weakness of corrupt institutions can raise the problem of environmental degradation. Fredriksson and Svensson (2003) put forward a theoretical model, that quality the environment is negatively affected by corruption and political instability. It implies that the higher the corruption that occurs, the smaller the national environmental performance will be. Welsch (2004) argues that corruption harms the environmental quality, and if developing

countries want to improve the economy and performance of the environment, the level of corruption must be reduced. In line with Welsch (2004), Kelleher (2009) also argues that countries that have low income can improve environmental and economic conditions by reducing the level of corruption. Meyer et al. (2003) who examined institutional factors and the rate of deforestation in 117 countries found a strong correlation between levels of corruption of a country with the rate of deforestation. Therefore, the hypothesis is formulated as follows:

**Hypothesis 5:** *National environmental performance is positively associated with the control of corruption, the higher control of corruption index, the higher national environmental performance will be*

### **Research Methods**

The population of this study was all countries that are members of the organization United Nations. Sampling technique was used in this study is the purposive method. The total sample was involved in this study is 178 countries. This study used secondary data, namely published Environmental Performance Index (EPI) by The Yale Centre for Environmental Law & Policy and World Governance Index (WGI) published by the World Bank. The sources data were obtained from official publications. Classic assumption test and correlation analysis were conducted in this study. Variable measurement presented as follows

**Table 1.** Variable Measurement

Variable	Dimension and elements	Measure
Environmental Performance	<i>Environmental Health</i> <ul style="list-style-type: none"> <li>▪ Health impacts</li> <li>▪ Air quality</li> <li>▪ Water and Sanitation</li> </ul>	Environmental Performance Index (EPI) Score



	<i>The vitality of the Ecosystem:</i>		
	<ul style="list-style-type: none"> <li>▪ Water resources</li> <li>▪ Agriculture</li> <li>▪ Forest</li> <li>▪ fisheries</li> <li>▪ biodiversity and habitat</li> <li>▪ climate and energy</li> </ul>		
Accountability	<ul style="list-style-type: none"> <li>▪ Democracy</li> <li>▪ Transparency</li> <li>▪ Political rights</li> </ul>	World Governance Index (WGI)	
Political Stability	<ul style="list-style-type: none"> <li>▪ Stability of government</li> <li>▪ The intensity of an internal conflict</li> </ul>	World Governance Index (WGI)	
Government Effectiveness	<ul style="list-style-type: none"> <li>▪ Quality of bureaucracy</li> <li>▪ Infrastructure Quality</li> <li>▪ Public satisfaction</li> </ul>	World Governance Index (WGI)	
Regulation Quality	<ul style="list-style-type: none"> <li>▪ The burden of government regulation</li> <li>▪ Practice competition is unfair</li> <li>▪ Freedom to invest</li> </ul>	World Governance Index (WGI)	
Control of Corruption	<ul style="list-style-type: none"> <li>▪ Corruption of the apparatus government</li> <li>▪ Public trust against politicians</li> </ul>	World Governance Index (WGI)	

## Results

### Data Normality Test

Normality Test is a statistical test to ensure that the sample is from the population that is normally distributed. A good correlation or regression test is a test that the data samples are normally distributed. Normality test shows that the sample distribution is not leaning on one part of the population group; it will but evenly represents the population. In this

study, the normality test was used is One-Sample Kolmogorov-Smirnov Test data with SPSS statistical tools. Research data are categorized as data that are normally distributed, if, from the test results, normality test, it shows that the significance value (Test Statistic) is higher ( $>$ ) than 0.05. The output of the normality test data presented in Table 2 indicates that all data variables come from samples that are normally distributed. It was indicated with all the significance values  $> 0.05$ . Therefore, it implies that the data represents the population.

**Table 2.** Data Normality test Results

Variable	Significance Kolmogorov Smirnov	Critical value	Data Distribution Conclusions
Corruption control	0.132	0.05	Normal
Governance effectiveness	0.072	0.05	Normal
Political stability	0.063	0.05	Normal
Quality of regulation	0.072	0.05	Normal
Accountability	0.70	0.05	Normal
Environmental performance	0.052	0.05	Normal

**Multicollinearity Test**

Multicollinearity test is a classic assumption test to identify a significant correlation between independent variables. A good linear model requires that inter-independent variables need to be free of mutual influence or correlation.

Independent variables is indicated no multicollinearity if tolerance value  $> 0.10$  or a Variance Inflation Factor  $< 10.00$ . The output of multicollinearity test indicates that there is one independent variable (governance effectiveness) is affected by multicollinearity.

**Table 3.** Test results Multicollinearity

Variable	Variance Inflation Factor	Critical value	Conclusion of Multicollinearity
Corruption control	6.715	10	No
Governance effectiveness	10.502	10	Yes
Political stability	2.635	10	No
Quality of regulation	7.887	10	No
Accountability	2.962	10	No
Environmental performance	6.715	10	No

The consequence of the occurrence of multicollinearity is that the variables were dropped from the analysis.

**Heteroskedasticity Test**

Heteroskedasticity test is a classic assumption test to ensure that there is no difference variant from each variable. Test

Heteroskedasticity in this study used Glejser test. The output of heteroskedasticity test is presented in Table 4. Residual value or data is not contained heteroskedasticity when the value of significance (Sig.)  $> 0.05$ . The results show that all variables indicate that the residual value  $> 0.05$ . Therefore, it implies that there is no Heteroskedasticity in the data used in this study.

**Table 4.** Heteroskedasticity test

Variable	Significance value	Critical value	Heteroskedastisity
Corruption control	0.709	0.05	No
Governance effectiveness	0.394	0.05	No
Political stability	0.989	0.05	No
Quality of regulation	0.071	0.05	No
Accountability	0.979	0.05	No
Environmental performance	0.709	0.05	No

**Correlation Analysis Results**

Correlation analysis is an analysis to identify relationships between the variables. The correlation analysis can be

used to identify the relationships between independent variables or independent variables and dependent variables. In this study, the correlation analysis is intended to know the relationship between

dependent variables and independent variables. After considering multicollinearity testing, independent variables in the study were corruption control, political stability, regulatory quality, and accountability. Variable, independent governance effectiveness in this study removed from the analysis because there has been multicollinearity. In this study, the correlation analysis was used is the Pearson correlation test.

Based on the Pearson correlation output in Table 5, it indicates that control of corruption, political stability, and regulatory quality is positively and significantly associated with national environmental performance. Nevertheless, accountability does not indicate a significant correlation with national environmental performance.

**Table 5.** Correlation test

Independent Variable Dependent Variable	Environmental performance	
	Coefficient Pearson (R) correlation	Conclusion Correlation
Corruption control	0.230**	Significant
Political stability	0.167*	Significant
Quality of regulation	0.193**	Significant
Accountability	0.102	Not Significant
**. $p < 0.01$ (1-tailed).		
*. $P < 0.05$ (1-tailed).		

## Conclusion

Based on the results of the statistical analysis shows that governance attributes, including corruption control, political stability, regulatory quality, are positively and significantly correlated with national environmental performance. Nevertheless, for the accountability attribute indicates there is a significant correlation with environmental performance. It implies that national environmental performance is associated with a governance attribute that has a direct relationship. Corruption control, political stability, and regulatory quality are attributes that are believed to have a direct relationship with national environmental performance. However, when it is identified from the magnitude of the correlation coefficient, it indicates a relationship that is not quite strong. Overall, the attribute of public governance is to have a relationship with national environmental performance. Therefore, if a country wants

to increase its environmental performance, the governance of the country must be corrected.

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