

P-ISSN: 2338-8617

E-ISSN: 2443-2067

Jurnal Ilmiah

PEURADEUN

Vol. 6, No. 2, May 2018



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JIP

The Indonesian Journal of the Social Sciences
www.journal.scadIndependent.org
DOI Prefix Number: 10.26811



ACCREDITED "B" by the Ministry of Riset, Teknologi,
dan Pendidikan Tinggi
from October 30, 2017 until October 30, 2022



THE ROLE OF PUBLIC GOVERNANCE IN ENVIRONMENTAL SUSTAINABILITY

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Received: Marc 17, 2018

Accepted: May 3, 2018

Published: May 28, 2018

Article Url: <http://journal.scadindependent.org/index.php/jipeuradeun/article/view/255>

Abstract

The purpose of the study is to investigate the relationship between public governance and environmental sustainability performance. The public governance in this study refers to indicators namely public accountability, government effectiveness, control of corruption, regulatory quality and political stability and rule of law. Meanwhile, environmental sustainability refers to country's environmental performance. The study was driven by phenomena that countries located in the same categorization of Geographic but have different environmental sustainability performance. The study involved 178 countries member of World Bank. Purposive sampling technique was used in this study. Public governance and environmental sustainability were treated as two independent variables. The degree of correlation between variables was analyzed using Bivariate correlation analysis. World Governance Index (WGI) was adopted as an approach to Public governance measurement. Environmental Sustainability was measured using Environmental Performance Index (EPI). The findings showed that Public governance indicators namely, public accountability, government effectiveness, rule of law, regulatory quality, control of corruption and political stability have a positive and significant correlation with environmental sustainability performance.

Keywords: *Governance, Sustainability, Environmental, Performance, Accountability*



A. Introduction

Environmental sustainability is one of the main points of Millennium Development Goals (MDGs) initiated by United of Nations on Millennium Summit occasion in the year 2000. The concept of Sustainable development explains that people can live in harmony with nature as well as prosperity without sacrifice environmental quality (Dernbach and Mintz, 2011). Many economic activities, especially industrialization and natural resources exploitation are believed causing deterioration of environmental quality. Global warming, ozone layer's depletion, natural disaster, climate changes are the harmful impact of irresponsible economic activities (Fiorino, 2010). Government involvement as the regulator is very pivotal in achieving environmental sustainability goals. Many factors are identified as contributors to the successful achievement of environmental sustainability goals. However, internal factors such as public accountability, government effectiveness, the ability of the state to combat corruption, the regulatory quality, domestic political stability and rule of law are believed playing a significant role for successful environmental sustainability goals achievement

A corruption can damage the environment through unethical behavior from both bureaucrats and business people (Sundström, 2013). Corruption and environmental sustainability have been recognized to have causal relationship, however, there is still limited empirical investigation conducted to prove it (Morse, 2006). In order to achieve sustainable development, infrastructure such as sufficient regulatory should be in place. Fiscal policy, monetary policy, and regulation are three fundamental aspects that shape economies and social welfare including sustainability development (OECD, 2010). The regulatory should have a good quality and enforcement power that make business practice aware of environmental issues. Regulatory quality is reflected by its effectiveness to achieve the purposes of regulation itself. State's awareness of environmental issues in proposing good quality of regulation will be a key factor achieving environmental sustainability. By having a good quality of environmental law and regulation, the law and regulation will have the power to force stakeholder from any actions lead to environmental destruction.

Ability to achieve environmental sustainability is typically also influenced by domestic factors. One of the crucial factors determines the achievement of environmental sustainability is domestic political stability. Domestic political stability will determine state's priority such as budget allocation and management of the government. Environmental issues may not get sufficient attention if the domestic political situation is unstable. The government may more focus on activities to stabilize the domestic politic situation than that of taking care of environmental issues. Neglecting environmental issues are found in many countries involved in an unstable domestic politic condition such as civil war, premature changing of nation's leader and military coupe. The unstable domestic politic condition, it will take consequences of state's priority in conducting national development including environmental sustainability program

Theoretically, the role of public governance in environmental sustainability is firm. However, empirical evidence to support the existing theory is not sufficient. Purpose of this study is to investigate empirically the correlation of good public governance practice and environmental sustainability performance. The results are expected to give contribution in terms of validation of existing public governance theoretical framework and adding valuable information for academic purposes.

B. Literature Review and Hypothesis Development

In the accountability era, the government is demanded to openly reveal the achievement performance including environmental sustainability performance. Sources of the government budget are from taxes and retributions collected from society and therefore it should be reported to society regarding the spending. The reporting of budget spending for the development healthy environmental is called as environmental accountability (Bianchini and Ravelly, 2011). Environmental accountability is through a set of procedures such as an environmental audit by the government, house of representative monitoring, whistle-blowing system and ombudsman institution (Grigorescu, 2010, Buntaine, 2015). One of the key elements to determine successful environmental sustainability program is public participation. Rechtschaffen and Markell (2003) argue that weak government



accountability will affect administration and regulations that are a concern related environmental protection and sustainability.

Hypothesis 1: The country with higher public accountability index will have a higher environmental sustainability performance

Simple bureaucracy, qualified and independent government apparatus and government credibility are important factors that determine successful environmental sustainability program (Alvarez, 2014). The problems related environmental could be effectively overcome if government institutions functionally well (Duit, 2005). A study by Huda (2018) found that professionalism and ethical engagement can contribute significantly to society at large by enhancing their abilities and improving their capacities for the wise. Effectiveness government institutions to overcome environmental problems is a reflection that the government institution could also effective to overcome others problems (Dasgupta, 2006). Effective government institutions will have the capability to succeed in term of combating environmental degradation compared to weak government institutions (Duit, 2005). There is postulated that institutional arrangement has a strong impact on country's performance of sustainability environment (Jahn, 2008). Success and failure of sustainability program are highly affected by the commitment of the country to environmental, policy and capacity to solve the problem (Fiorino, 2010). Esty *et al* (2008) revealed that the country that practice effective government tends to have better environmental performance compared to a country that less effective government. Study form Kaufmann *et al* (2007) found that government effectiveness is positively associated with decreasing greenhouse emission, increasing healthy ozone and increasing air quality.

Hypothesis 2: The country with high government effectiveness index will have higher Environmental sustainability performance

Corrupt behavior in public sector may have an impact on the development of environmental regulations and environmental protection law enforcement (Sundström, 2013). Poor government as result of century policy decision, mismanagement, and weak law enforcement can affect sustainable development including environmental protection program (Damania *et al*.

2003). Producing environmental legislation that takes the side to business organization, giving an easy penalty to environmental disturber, allowing the business permit to activity that endangers environmental quality are commonly found corruption practice through bribery from the private sector to government officials (Winbourne, 2002). Corruption intensity at the national level is positively associated toothless of biodiversity and the success of conservation program and negatively associated with environmental sustainability (Sundström, 2013). A study by Meyer et al (2003) found that there is a positive and significant correlation between corruption in public sector organization and deforestation. Kelleher (2009) suggest that the countries with low national income could improve their environmental performance by decreasing corruption.

Hypothesis 3: The country with high control of corruption index will have higher Environmental sustainability performance

Associated with environmental sustainability, regulatory quality will determine state's environmental performance (Esty and Porter, 2001). Scruggs (1999) suggests that tight regulatory give an incentive for business and the state for flexible cooperation in achieving better environmental performance. Regulatory that has well and beyond quality helps the state to achieve goals of public policy such as safety, health and environmental sustainability (Treasury Board of Canada Secretariat, 2011). Unqualified regulation leads to growth inhibition, undermining efforts to solve environmental problems and increasing citizen's doubt toward government (OECD, 2010). Achievement of environmental sustainability needs to be supported by qualified regulation. Environmental law is a fundamental aspect to achieve sustainable development goals. It facilitates power for government institutions for law enforcement toward any activities that undermine environmental quality (Dernbach and Mintz, 2011).

Hypothesis 4: The countries with high regulatory quality index will have higher Environmental sustainability performance

Khadka (2011) argues that Political instability is a barrier to achieve sustainable development along with corruption. Good governance practice in the public sector and socio-political stability are fundamental



antecedents to allow sustainability development can be achieved (Rees, 2006). Lichens (1998) argue that the future path of planet earth would be determined by rapid of industrialization, the uncertainty of ecological dynamics and social and political factor. A study by Didia (1997) in developing countries indicates that the country that has a higher level of democracy, it has the lower rate of deforestation. Conca and Wallace (2009) argue that poor environmental performance is indirectly driven by the unstable socio-political condition. The unstable socio-political condition may lead to poor environmental stewardship and increase vulnerability to a natural disaster (Conca and Wallace, 2009). National Environmental quality is indirectly influenced by country's socio-political factors (Grafton and Knowles, 2004). Research finding indicates that the level of corruption of the country and country's political instability has negative correlation with quality of environmental regulations (Karunanithi et al, 2011). Impact of the environment caused by economic changes depends on the political institution and decision making (Kelleher et al (2009). Fiorino (2010) argues that there is strong evidence that associates environmental degradation, politic legitimating, and political stability.

Hypothesis 5: The countries with high political stability will have higher Environmental sustainability performance

The rule of law is a fundamental factor that facilitates better functioning economy and it refers to qualified regulations and good governance (Ozanian, 2015). It is basis reference to evaluate whether certain business organization follows ethical business conduct or not (Ekici and Onsel, 2013). A country must *first* respect the rule of law before establishing sustainable health security program and environmental policies (Ozanian, 2015). The rule of law plays an important role to achieve environmental sustainability goals (Magrow, 2015). It supports achievement of environmental sustainability through environmental protection constitutions and legislation and its environmental law enforcement (International IDEA and IDLO, 2012). However, environmental sustainability will not occur automatically without the Rule of Law as a result of market forces (Magrow, 2015). The rule of law is essentials for the government regarding natural resources

protection program, preventing illegal natural resource exploitation, and basic law enforcement for sustainable development (Law and Versteeg, 2012). The environments a concern of international communities, but its sustainability depends on the national rule of laws and policies established (Anaya and Williams, 2001). The regulator must control business practice which is potential to act unethically including environmental destruction (Breslin, 2017).

C. Method

1. Variables

Two independent variables were involved in this study are public governance and environmental sustainability. Public governance variable was divided into sub-variables namely public accountability, government effectiveness, control of corruption, regulatory quality, political stability and rule of law.

2. Measurement

Public governance measurement was adopted from the model developed by the World Bank. World Governance Index (WGI) released by World Bank was used in this study to measure public governance variable. World Governance Index is an index to measure governance of the government worldwide conducted by World Bank yearly. Environmental Sustainability variable in this study refers to countries' achievement in terms of protecting and maintaining environmental quality from value degradation. Environmental Performance Index (EPI) was applied in this study to measure environmental sustainability. The Environmental Performance Index (EPI) ranks countries' performance on high-priority environmental issues in two areas namely protection of human health and protection of ecosystems. Measurement of Environmental Performance Index (EPI) is conducted and published by the Yale Center for Environmental Law & Policy (YCELP).

3. Data

The data was collected from open access data publication from the official website of World Bank and YCELP. The purposive sampling method was chosen in this study and involved 178 countries of 189



countries member of the World Bank. 11 countries were excluded from analysis due to lack of environmental performance data.

4. Analysis

Statistical analysis using descriptive analysis and correlation analysis was conducted in this study. The application of descriptive analysis was intended to reveal the basic characteristic of the data. Correlation analysis was adopted due to the study is believed fall into exploratory study categorization. The study still not supported by established theory and the literature studies the same topic is relatively limited. The study was designed to reveal the relationship between two independent variables. It was not intended to test the causal relationship but the association relationship

D. Research Finding

1. Descriptive Analysis

World Bank Developed measurement of governance of the countries around the world using six indicators namely public accountability, government effectiveness, regulatory quality, control corruption, rule of law and political stability. The measurement is transformed into an index widely known as World Governance Index (WGI). WGI identifies country's performance of public governance into scale range from +2.5 (maximum scale) to -2.5 Scale (Minimum Scale). The maximum scale indicates that the country has the highest public governance performance achievement and minimum scale refers to lowest achievement. The study involved 178 countries of 189 countries member of World Bank. Detail information describes the performance of the public governance of the sample is depicted in Table. 1.

Table 1. Descriptive Statistic

No	Variable	N	Minimum	Maximum	Mean	Std. Deviation
1	Public Accountability	178	-2.04	1.70	-.0599	.96057
2	Government Effectiveness	178	-2.17	2.25	-.0476	.98509
3	Regulatory Quality	178	-2.24	2.26	-.0355	.95744

4 Control Corruption	178	-1.83	2.29	-.0828	.99177
5 Rule of Law	178	-1.99	2.07	-.0725	.97030
6 Political Stability	178	-2.94	1.49	-.1302	.95295
7 Environmental Sustainability	178	36.73	90.68	67.3732	14.64699

Referring the information provided in Table 1, the sample has an overall average (mean) public governance performance in all attributes between -0.1302 and -0.355. The number indicates that the sample, in general, has the poor achievement of public governance (below moderate value = 0). Standard Deviation all attributes of public governance falls into high categorization, therefore it can be assumed that the sample has high variation in terms of public governance performance. Public accountability highest achievement goes to Norway (WGI = 1.70) and Eritrea has the lowest achievement (WGI = -2.04). Singapore obtains best performance in terms of its government effectiveness (WGI = 2.25) and Sudan is the worst (WGI = -2.17). The best achievement in regulatory quality is Singapore (WGI = 2.26) and the worst is Libya (WGI = -2.24). New Zealand is the best country in terms of control of corruption (WGI = 2.29) and Equatorial Guinea is the worst (WGI = -1.83). Rule of law the best achiever is Finland (WGI = 2.07) and Venezuela is the worst (WGI = -1.99).

Environmental Performance Index is indicator was used in this study to measure environmental sustainability. The index is the measurement to justify country's environmental performance achievement range from scale 0 (Minimum) to 100 (maximum). The higher index indicates that the country has better environmental sustainability performance. Information depicted in Table 1 indicates that the sample involved in the study has environmental sustainability performance above moderate value (EPI Mean = 67.37). The sample is also relatively heterogenic in terms of its environmental sustainability performance (Standard Deviation = 14.6). The country with the best performance of environmental sustainability is Finland (EPI = 90.68) and the worst is Eritrea (EPI = 36.73)



2. Correlation Analysis

Bivariate correlation analysis was applied to the consideration that the study is trying to understand the relationship between two independent variables. Pearson correlation was adopted due to that the data analyzed is ordinal scale. One-tailed correlation analysis was applied with the consideration that the direction of the relationship of proposed hypotheses can be predicted relatively convincing. The summary of the Pearson correlation test is depicted in Table 2.

Table 2. Correlation Analysis Matrix

No	Variables	1	2	3	4	5	6	7
1	Public Accountability	1						
2	Government Effectiveness	0.723*	1					
3	Regulatory Quality	0.749*	0.937*	1				
4	Control Corruption	0.766*	0.917*	0.881*	1			
5	Rule of Law	0.777*	0.953*	0.936*	0.958*	1		
6	Political Stability	0.696*	0.711*	0.672*	0.755*	.745*	1	
7	Environmental Sustainability	0.591*	0.761*	0.720*	0.615*	.679*	.523*	1

* $p < 0.01$ (1-tailed).

Based on the information stated in Table 2, among indicators of public governance indicates very strong correlation ($r > 0.7$, $p < 0.01$) except for indicator political stability that indicates strong correlation ($r = 0.696$, $p < 0.01$). It implies that indicator of public governance is one package that connects each other. By getting information of public governance indicator, the information can be used to predict another indicator of public governance relatively accurate. All of the indicators of public governance shows positive and significant ($p < 0.01$) correlation. The higher Index certain indicator of public governance will lead to higher Index another indicator.

The correlation between overall public governance indicator (public accountability, government effectiveness, regulatory quality, control corruption, rule of law and political stability) with environmental sustainability shows a positive and significant ($p < 0.01$) correlation. It implies that the performance of public governance of the country will determine its sustainability environmental performance. Even though the relationship is not causal, however through the results of the correlation as depicted in Table 2, we understand that governance practice in government institutions has a contribution to achieve sustainability environmental performance. If the government institution could implement good governance in all aspects of public services activities, it is expected to have a positive impact on sustainability environmental performance.

3. Hypothesis Testing

There are six hypotheses were proposed in this study. All of six hypotheses predict that indicators public governance has a positive correlation with environmental sustainability performance. It means that the higher performance of public governance, the higher environmental sustainability performance will be. Pearson Bivariate correlation statistical analysis with one-tail test model was used in this study to justify the hypotheses proposed. The summary of hypotheses proposed, testing and conclusion are presented in Table 3.

Table 3. Summary of Hypothesis Testing

No	Hypothesis	Correlation Coefficient	Conclusion
1	Public Accountability has a positive correlation with Environmental Sustainability Performance	0.591*	Supported
2	Government Effectiveness has a positive correlation with Environmental Sustainability Performance	0.761*	Supported
3	Regulatory Quality has a positive correlation with Environmental Sustainability Performance	0.720*	Supported
4	Control Corruption has a positive correlation with Environmental	0.615*	Supported



5	Sustainability Performance Rule of Law has a positive correlation with Environmental Sustainability Performance	0.679*	Supported
6	Political Stability has a positive correlation with Environmental Sustainability Performance	0.523*	Supported

* $p < 0.01$ (1-tailed).

The first hypothesis was proposed that Public accountability had a positive correlation with environmental sustainability performance. The result of statistical analysis indicated that the correlation was positive and significant ($r = 0.591$, $p < 0.01$). It means that practice of public accountability among government institution has an association with the capability of the country to achieve sustainability environmental performance. However, the degree of the correlation is only in moderate value ($r = 0.4$, $p < 0.01$). It implies that public accountability has fair influence in determining country environmental sustainability performance.

The second hypothesis examined the relationship of government effectiveness with environmental sustainability performance. The result of statistical analysis indicated that government effectiveness had a positive and significant correlation ($r = 0.761$, $p < 0.01$) with environmental sustainability. The degree of correlation showed that between those two independent variables had a strong correlation ($0.6 \leq r \leq 0.8$). It implies that Government Effectiveness Index is convincing indicator to predict country's environmental sustainability performance.

The third hypothesis tested the relationship between regulatory quality and environmental sustainability performance. The statistical analysis results indicated that regulatory quality and environmental sustainability performance quality had a positive and significant correlation ($r = 0.720$, $p < 0.01$). The degree of correlation showed a strong correlation between those two variables. It means that if a certain country has high score index of regulatory quality, that country high possibility to have a high score of environmental sustainability performance.

The fourth hypothesis argued that country's effort in terms of control of corruption would determine environmental sustainability performance. The

correlation analysis showed that control of corruption is positively and significantly ($r=0.615$, $p<0.01$) associated with environmental sustainability performance. It implies that efforts to combat corruption practice by the government institutions have high possibility to give impact on the achievement of the environmental sustainability program.

The fifth hypothesis examined whether the rule of law would influence environmental sustainability performance. The result of correlation analysis indicated that rule of law had a positive and significant correlation ($r=0.679$, $p<0.01$) with environmental sustainability performance. The magnitude of the correlation is on strong correlation categorization ($0,6 \leq r \leq 0,8$). It means that rule of law is very pivotal as basic infrastructure to support environmental sustainability program by the government.

The sixth hypothesis posited that highly political stability had higher environmental sustainability performance. Statistical analysis indicated that the correlation between political stability and environmental sustainability performance was positive and significant ($r = 0.523$, $p<0.01$). Even though the hypothesis is supported, however, the degree of the correlation is in moderate value ($0,4 \leq r \leq 0,6$). It implies that political stability as public governance attributes is questionable to have a role in influencing country capability to create environmental sustainability.

D. Discussion

The present study is a preliminary investigation of the relationship between six public governance indicators namely public accountability, government effectiveness, regulatory quality, control of corruption, rule of law and political stability. Results indicated that environmental sustainability performance was predictable based on all indicators of public governance. With this finding, it supports the theoretical framework that application of good governance principles in the governmental institution will contribute to environmental sustainability. However, the most convincing predictor is government effectiveness, rule of law, control of corruption, and regulatory quality. Those public governance indicators had a strong correlation with environmental



sustainability performance. Meanwhile, Public governance indicators namely public accountability and political stability had an only moderate value of correlation. Therefore, those indicators are still questionable in terms of the influence to environmental sustainability performance.

Learning from the findings of the study, it implies that government effectiveness played important role in achieving environmental sustainability program. The effective government will be achieved if planning, budgeting, controlling and performance measurement system is in place functionally. The government must have a strong commitment to combat corruption practice in public sector institution. By eradicating corruption practice among government's officials, unethical behavior such as receiving a bribe from the private sector can be avoided. The clean government reduced possibilities for an appropriate business practice that destructs and endangers the environment. Regulatory quality and rule of law determine the achievement of environmental sustainability through environmental law protection and law enforcement. By having rule of law and regulations that truly consider environmental protection, the governmental institutions have power to forces stakeholder to obey environmental sustainability program. Domestic political stability enables the state to continue national development program without any interfering. The state will have attention to develop the nation related to environmental protection program if the domestic political condition is stable. Public accountability is still required in achieving environmental sustainability even though the role is not convincing. However, since the environmental program is financed by taxes collected from the citizen, public accountability is a manifestation of budget spending responsibility

E. Conclusion

The study concludes that good public governance practice in governmental institutions has a positive implication to environmental sustainability performance. The higher index of public governance of the country, the higher environmental sustainability performance that country will be. Government effectiveness is the attributes of public

governance that is most promising in giving a contribution to environmental sustainability performance. Meanwhile, public governance attribute namely political stability is least likely associated with environmental sustainability performance. However, Overall, all public governance attributes have a strong correlation with environmental sustainability performance.

For further research, an extension of the time period of investigations is suggested. Longitudinal data panel with more countries involved is recommended. Furthermore, micro-level analysis of environmental sustainability such as health, air quality, water quality is the potential subject of the research to be conducted. By conducting more details investigation of environmental sustainability, we will get more specific information about an aspect of environmentally affected by control of corruption, regulatory quality, and political stability. The last, for future research, model analysis using regression analysis is recommended to be conducted

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