

The Impact of Globalization against Environmental Condition in Indonesia

Hadi Sasana^{1}, Jalu Aji Prakoso², Yuliani Setyaningsih³*

^{1*} Faculty of Economics and Business, Diponegoro University, Semarang – Indonesia

² Faculty of Economics, Tidar University, Magelang - Indonesia

³ Faculty of Public Health, Diponegoro University, Semarang – Indonesia

Abstract. Globalization led to the movement of goods, services, technology, capital and people no longer recognize the limits of the State. The main product of globalization was the inception of a multinational corporation, with characteristic expansiveness and exploratory. Expansive activities that are done naturally bring such potential negative impacts of pollution of water, soil, air, the destruction of forests, the habitats of flora and fauna. This research aims to analyze the impact of globalization is globally against environmental degradation in Indonesia during the period of 1990 – 2015. The results of the analysis showed a negative effect of economic globalization against environmental conditions (CO₂ emissions), while the influential social and political globalization is positive towards CO₂ emissions.

Keywords: **Globalization; KOF Index; Environment; CO² Emission.**

1. INTRODUCTION

Changes in people's lives increasingly dynamic and knows no bounds, the condition of these changes aim to achieve better living conditions. Interaction between countries to create a change being one form of dynamics changes of community life in parts of the world [1]. According to Heinemann [2], globalization is a process that is characterized by the rapid development of the doctrine of capitalism, i.e. the more revealing and globally the role of markets, investment, and production process of traditional companies.

According to Buchanan and Husynski [3], globalization will impact on a change condition quickly. Starting from cyber revolution, trade liberalisation, homogeneity of good and service in the world, to export activity orientate to the growth are the component of globalization phenomenon.

Distribution technology as one of product change can be spread evenly in all parts of the world. In globalization contained an understanding will be the loss of a single situation where a variety of movement of goods and services between countries all over the world can move freely and openly. With the opening of one country against another country, what happens is the inclusion not only of goods and services, but also technology, consumption patterns, education, culture and values of others. Openness among countries that created the globalization in all areas of life brings changes for life [4]. One of the positive impacts of globalization are seen from the specialties of a country in creating goods and services so that the activities arising out of international trade between countries. The increasingly specialized activities of the

production have the advantage of production efficiency. The result of the globalization presence seen when levels of direct investment in the form of the establishment of new industries in a country growing in then impact on rising carbon dioxide emissions significantly [5]. Environmental damage from globalization is becoming very important to notice because it has a broad impact on life.

Review on the impact of globalization has been a lot of discussion into the world. Concern of States to conduct a study on the result of human activity that is increasingly *borderless* world concern is based on in the future. One of manifestation of globalization can be seen through index KOF arrangement, namely globalization index, that have been compiled and-like Centre by Dreher [6]. The overall index of globalization composed of various aspects of the social, economic and political integration in the right perspective applied in the policy, as a response to the doubts openly indicator of economic and external direct investment usually was used to analyze the relationship between inequality and economic globalization.

The impact of globalization on the environment can be analyzed through several aspects such as trade, investment, capital flows and the most special can be seen from the level of Foreign Direct Investment (FDI). Those third element are the benchmark to find out the magnitude of the globalization impact on countries that became investment goals. The condition of the country tend to be experienced for developing countries and

* Corresponding author: hadisasana@live.undip.ac.id

have the availability vsources of raw materials [7]. The main region affected of industrialization tend to be in urban areas [8]. The City has a better accessibility level and supporting the industry activities. Direct influence often seen in industrial area of the city is the increased carbon dioxide (CO_2) emissions due to industrialization. Increased consumption of fossil energy in industrial activity contributes the increasing of carbon dioxide emissions in Indonesia [9]. However, the dilemma faced by developing countries regarding the consumption of fossil fuels becomes controvertion. The increasing of fossil energy consumption has a positive impact on economic growth in the country against the BRICS [10].

Efforts to cope with the impact of globalization continue to have a negative strived to reduce environmental degradation. Financial investment

2. LITERATURE REVIEW

According to Clark and Norris [11] globalization is defined as the process of creating a cooperation network among the principals are in place, through a couple of current media such as human, information and ideas, capital, and goods. Globalizations are the process of critiquing the boundaries of the State, combining the national economy, culture, technology and Government, and create complex relationships. Globalization is classified into several dimensions, such as:

- a. Economic globalization, characterized as the flow of goods with long distances, capital and services such as information and ideas that are accompanied by the exchange market.
- b. Political globalization is characterized by the disappearance of government regulations.
- c. Social globalization, described as the dissemination of ideas, information, imagery and human.

The influence of Globalization can be positive or negative. Positive impacts of the activities are multinational corporations (MNCs) encourage the

activities conducted between the countries in the world is one form of globalization in terms of the economy Foundation is one of the solutions reduce bad impact of the globalization pace. Investment activities of the corporate world is very attentive to the magnitude of the Fund are issued to industrial investment but should pay attention to the funding of environmental damage resulting from such investments [12]. This research was compiled to find out globalization impact against environmental conditions in Indonesia. So it is interesting to review more in depth on the globalization impact in Indonesia from the vulnerability of the environment.

dissemination of technology and practice management-oriented care for the environment. This condition only occurs when multinational corporations joining domestic companies that advance has been paying attention to the environmental impact. Conversely, when the presence of multinational companies who come to a country has no concern for the environment, it will have negative impact on environmental conditions. The condition is an example of the existence of the economic globalization on the environment.

The level of globalization of a country can be done using the KOF index Globalization (*Konjunkturforschungsstelle*). The value of the own KOF index was compiled by *Switzerland's Economic Institute* [13] and first published in 2002. Index of globalization composed of 23 variables are economic, social, and political. KOF index of globalization it has a scale of 1 to 100, where the higher its scale shows the level of globalization of the higher anyway. This General globalization composed index from the globalization economy, index of social globalization, and political globalization index, each of which has a weight of 36, 38 and 26 percent.

Table 1 The KOF Index Globalization according to ETH Zurich

Indicators	Contributions (%)	Sub Indicators	Contributions (%)	Variables	Weight
Economy Globalization	36	Actual flow	50	Trading Average	22
		Obstacles	50	Foreign Direct Investment Portopolio Investment <i>Income Payment to foreign nationals</i> Undiscovered Import Obstacle Rate Variance Level The Tax of International Trading	27 24 27 24 28 26

* Corresponding author: hadisasana@live.undip.ac.id

				The Obstacles of <i>Capital Account</i>	23
Social Globalization	38	Personal Contact	33	Phone Rate	25
				Transfer (percent to GDP)	3
				International Tourism	26
				The Population of Foreign Citizens	21
				International Letters Per Capita	25
		Information Flows	35	Internet Use (per 1000 People)	36
				Television (per 1000 People)	38
				Newspaper Trading (Percent of GDP)	26
		Size of The Cultural Proximity	32	The Amount Of Mc. Donald Outlet Restaurant (Per Capita)	44
				The Amount of Ikea Outlet (Per Capita)	44
				Book Trading (Percent of GDP)	11
Political Globalization	26	The Amount Ambassador	25		
		The Member of International Organization	27		
		The Paticipation of Security Council	22		
		PBB International Agreement	26		

Source: ETH Zurich, Managed

3. RESEARCH METHOD

This study uses secondary data and analyzed using techniques on Ordinary Least Square (OLS) to know the influence of globalization against the degradation of the environment (CO_2 emissions). Globalization Index measured by *Konjunkturforschungsstelle* (KOF) includes the dimensions of economic, social and political. Environmental degradation was measured

using the level of CO_2 emissions. The data used is data of globalization and environmental degradation time during the period of 1990 – 2015 in Indonesia. Analysis of linear regression is with multiple requiring preparation of mathematical model in order to find out the relation between variables. Model for analysis of this research is composed as follows:

$$\text{CO}_2 = f(\text{KOF 1}, \text{KOF 2}, \text{KOF 3}) \dots \quad (1)$$

$$\text{CO}_{2t} = \alpha_0 + \alpha_1 \text{KOF1}_t + \alpha_2 \text{KOF2}_t + \alpha_3 \text{KOF3}_t + \mu_t \dots \quad (2)$$

Notes:

- CO_2 : Total of carbon dioxide emission (CO_2)
- KOF 1 : Economy globalization index
- KOF 2 : Social globalization Index
- KOF 3 : Political globalization index
- α_0 : Intersep
- $\alpha_1, \alpha_2, \alpha_3$: Coefficient
- μ : Error term

* Corresponding author: hadisasana@live.undip.ac.id

4. RESULT AND DISCUSSION

The research data description below indicate that the average value of political globalization has the greatest value in Indonesia, namely 81.03. Economic globalization is currently second, amounting to 51.16 and social globalization has the smallest average 36.05. The mean values of the magnitudes of each index KOF shows the magnitude of globalization influence on

economic, social and political happening in Indonesia. The value of carbon dioxide emissions (CO_2) indicates the level of pollution in Indonesia during the period 1990-2015, with an average of 303.24.

Table 2 Carbon Dioxide Value (CO_2) and KOF Index in Indonesia

	CO2	KOF	KOF1	KOF2	KOF3
Mean	303.24	56.56	52.16	36.50	81.03
Median	289.00	59.04	51.38	36.80	81.11
Maximum	477.00	63.31	66.00	52.67	89.10
Minimum	157.00	44.23	44.12	20.42	67.53
Std. Deviation	94.94	5.99	6.53	9.32	6.37
Observation	25	25	25	25	25

Source: data managed

Multiple linear regressions using the OLS method is used to find out the influence of globalization against the level of environmental degradation. Observations

were made to the time series data index KOF and the level of CO_2 in Indonesia during the period of 1990-2015.

Table 3 Estimation Result with Dependent Variable of Carbon Dioxide Emission Value (CO_2)

Variables	Coefficients	Std. Error	t-Statistic	Prob.
KOF1	-1.937699	0.549934	-3.523513	0.0019
KOF2	7.279786	1.256590	5.793288	0.0000
KOF3	4.712090	1.907723	2.470008	0.0217
C	-242.2680	107.6133	-2.251282	0.0347

Regression estimation results show the value of R-squared of 97.3%, meaning of 0973 dependent variable can be explained by the independent variables and other is 2.7% is explained by other variable outside of the model. At the level of significance of $\alpha = 5\%$ with probability $F = 0.0000$. This condition indicates that together variable of economic globalization, the social globalization and political globalization influences the level of carbon dioxide (CO_2) emissions in Indonesia.

Partially, linear regression analysis results showed that economic globalization (KOF1) has a potential negative effect significantly to carbon dioxide emissions (CO_2) in Indonesia. The value of the variable of influence -1.9377, meaning that each occurs increasing of economic globalization by 1 unit, then carbon dioxide emissions decline (CO_2) amount 1.9377 ceteris paribus. The study of Doytch & Uctum, (2016) stated that the multinational investment increase in the destination country of the investment which is characterized by increasing amount of FDI did not bring a decrease in the environmental quality. Multinational -scale companies tend to be more considering the environmental impact resulting from industrial activity.

Social globalization (KOF2) has a positive influence significantly to carbon dioxide emission conditions (CO_2) in Indonesia. The value of the variable coefficient KOF2 of 7.2798, meaning that any increase in the amount of 1 unit of social globalization, then an increase carbon dioxide emissions of 7.2878 ceteris paribus,. The results of this research show that the social globalization influence has the highest advantaging of carbon dioxide emissions in Indonesia. In line with research Suneki [14], pointed out that globalization cause various problems in the field of culture, for example: loss of native culture of a region or a country, the occurrence of erosion of cultural values, decreased taste nationalism and patriotism, and lifestyle that increases did not match the custom. Study results of Riouset et al., stated that the active participation of the politicians in the discussion of the risk of the global environment and by creating a scientific grounding for the intergovernmental negotiations were able to reduce environmental degradation. Certainly, globalization of politics in terms of the perpetrators improvement of political insight will provide guidelines in addressing the issue of environmental damage.

* Corresponding author: hadisasana@live.undip.ac.id

Furthermore, the influence of political globalization (KOF3) has a positive influence significantly to carbon dioxide (CO_2) emissions in Indonesia. The regression coefficient of the variable political globalization amounting to 4.7122, which means that when there is an increase in the amount of 1 unit of political globalization, then an increase in carbon dioxide emissions amounted to 4.7122 units, ceteris paribus. Along with the results of this research, Sala-i-Martin [15] showed that there is a positive correlation between freedom and political rights against community growth. One form of political globalization is represented by a country's political decisions. As in the research of Sasana et al. energy subsidies encourage increased consumption of energy and the consumption of energy becomes carbon dioxide emissions at the height founders in Indonesia [16].

CONCLUSION

The results of the research conducted in this analysis get its conclusion as follows:

1. Economic globalization has negative influences and significantly to carbon dioxide emission conditions in Indonesia during the period of 1990 – 2015.
2. Social Globalization has a positive influence and significantly to carbon dioxide emissions in Indonesia during the period of 1990-2015.
3. Globalization has a positive influence and politics significantly to carbon dioxide emission in Indonesia during the period.

This research shows that economic globalization is illustrated through an industrial-scale capability of the multinational environment oriented towards supporting the efforts of the carbon dioxide emissions reductions. While the view of the social and political globalization, indicated by changes in lifestyle and the ability of politicians in formulating policy has a tendency to increase carbon dioxide emissions in Indonesia, so that will increase the environmental degradation.

REFERENCES

1. Riousset, P., Flachsland, C., & Kowarsch, M., Global environmental assessments: Impact mechanisms. *Environmental Science and Policy*, 77(2016), 260–267, (2017).
2. Heinemann, Friedrich. Does Globalization Restrict Budgetary Autonomy? A Multidimensional Approach, *Intereconomics* 35, 6: 288-298, (2000).
3. Buchanan, D.A., & Huczynki, A.A., *Organizational Behavioral*, 7 Edition, (2002).
4. Setyadi, S., Dampak globalisasi terhadap ketimpangan wilayah: studi di tujuh negara asean. *Jurnal Kebijakan Pembangunan Daerah*, 1, 59–70, (2012).
5. Jorgenson, A. K., & Kick, E. L., Globalization and Enviroment, *Journal of World-System Research*, IX, (2003).
6. Dreher, A., Does globalization affect growth? Evidence from a new index of globalization, *Applied Economics*, 38(10), 1091–1110, (2006).
7. Doytch, N., & Uctum, M., Globalization and the environmental impact of sectoral FDI, *Economic Systems*, 40(4), 582–594, (2016).
8. Masson, V., *Impacts of Global Changes in Cities. Reference Module in Earth Systems and Environmental Sciences* (1st ed.). Elsevier Inc., (2017).
9. Sasana, H., & Putri, A. E., The Increase of Energy Consumption and Carbon Dioxide (CO_2) Emission in Indonesia, *Icenis 2017*, 01008, 5., (2018).
10. Sasana, H., & Ghazali, I., The Impact of Fossil and Renewable Energy Consumption on the Economic Growth in Brazil, Russia, India, China and South Africa. *International Journal of Energy Economics and Policy*, 7(3), 194–200, (2017).
11. Dreher, Axel. Does Globalization Affect Growth? Empirical Evidence From a New Index. *Applied Economics*. Vol.38(10):1091-1110 · (2006)
12. Kim, Y. S., Latifah, S., Afifi, M., Mulligan, M., Burk, S., Fisher, L., ... Jenness, J., Managing forests for global and local ecosystem services: A case study of carbon, water and livelihoods from eastern Indonesia. *Ecosystem Services*, 31, 153–168, (2018).
13. Swiss Economic Institute. KOF Index of Globalization. University of Edinburgh (2017). <http://globalization.kof.ethz.ch/>
14. Suneki, S., Dampak Globalisasi Terhadap Eksistensi Budaya Daerah. *Ilmiah CIVIS*, II(1), 307–321, (2012).
15. Sala-i-Martin, Xavier (1997), I Just Ran Four Million Regressions, *NBER Working Paper* 6252
16. Sasana, H., Setiawan, A. H., Ariyanti, F., & Ghazali, I. The Effect of Energy Subsidy on the Environmental Quality in Indonesia. *Ijeep*, 7(5), 245–249, (2017).

* Corresponding author: hadisasana@live.undip.ac.id