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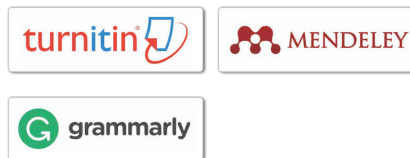
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# The Effect Of Economic Development On The Fulfillment Of The Right To A Good And Healthy Environment In South Kalimantan Province

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## Abstract.

*The right to a good and healthy environment is a human right guaranteed by the 1945 Constitution. Human rights in the field of the environment are very important, therefore the government should be present in ensuring that citizens get a good and healthy environment. The fulfillment of the right to a good and healthy environment is strongly influenced by variables outside the law such as economic variables, poverty, unemployment, and the Human Development Index (HDI). Because of that, This study aims was to exploring the relationship of sectoral regional income (SRI), poverty, unemployment and Human Development Index (HDI) in specific region to the environment quality. Indicators used in this research are SRI of the industrial sector, mining sector, agricultural/plantation /forestry/fishery/livestock sectors, poverty, unemployment and HDI. The type data used is secondary data from the Department of Environment, the Department of Energy and Mineral Resources, and also the Central Bureau of Statistics of South Kalimantan Province for the period 2006 – 2020. Because of that, This research using secondary data from Central Bureau of Statistics for period 2006 – 2020. The method used in this study is descriptive quantitative using structural equation model. Our results from this study were (1) SRI of the industrial sector, mining sector, agricultural/plantation /forestry/fishery/livestock sectors, poverty, and human development index (HDI) were give significant effect to environment quality because all value of CR  $\geq 1.96$  and probability  $< 0.05$  (2) The unemployment indicator was not give a significant effect to environment quality because from the effect test, the value of CR  $\geq 1.96$  and probability  $< 0.05$ .*

**Keywords:** Environmental quality, structural equation model, sectoral regional income, poverty, unemployment, human development index.

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## I. INTRODUCTION

Demands in the global era with a series of challenges faced, such as development priority issues that emphasize the integration of environmentally sound development. The existence of a conventional development strategy pattern becomes a series of challenges for policy makers related to the large-scale exploration of natural resources and the environment. This exploration may result in extraction that may exceed the environmental carrying capacity threshold. This in turn will lead to new problems in the environment itself, such as; Increased pollution, prolonged drought, decreased load on water content, and decreased food content are real impacts that need to be considered more deeply. Economic development carried out in many countries makes economic growth a target not as an indicator of development, so that the impact of the process of achieving these targets sometimes ignores the negative impacts caused during the process of achieving goals. The negative impact caused by economic growth is environmental damage, such as global warming [1]. Another factor caused by human activities related to the process of economic development is that it often damages the environment, so that it has a negative impact on humans who are the targets in the process of economic development. This happens because of limited natural resources. Economic globalization also affects the direction of economic development that is carried out, whether it is only more on resource exploitation or already in favor of economic sustainability [2].

So the environmental growth crisis must be balanced with human concern (behavior). The concept of a green economy has become very important, but in practice it has faced difficulties from the community and the government concerned. Due to changes in behavior and basic policies in economic development that move from the pattern of achieving conventional economic growth and understanding the importance of implementing a green economy as an effort to conserve resources and achieve sustainable development. Economic development requires support from human evolution, because of the limitations of natural resources while human needs are not limited by population growth that is not proportional to the growth of natural resources, [3]. This gives rise to efforts to protect natural resources and limit the ratio of use. Economic development indicators are not accompanied by information on environmental damage and natural resource depletion. So that the development model with an environmental approach that does not rely on the exploitation of natural resources is something that must be done. A basic model is needed that combines a balance between economic development and environmental conditions in the long term. The quality of the environment determines the achievement of the social optimum for the community [4], [5]. It is even found that the process of economic development sometimes results in environmental damage in the form of the loss of certain habitats and species, [6], [7]. So the measure of the success of a country's development should not only be seen from the national income but also the quality of the economic development process.

The green economy is an economic model based on ecological knowledge [8]. Awareness of the reduced carrying capacity of the environment makes the community's goal no longer to maximize utility, but shift to sustainable consumption. This was stated by Malthus two hundred years ago. Expansion of Solow's classical economic growth model to include environmental elements by [9]. using the assumption that every production process has a negative externality in the form of environmental damage. So that output must be sacrificed to improve environmental conditions and the higher the level of production, the higher the level of pollution that occurs. So that economic activity and determinants of economic development determine the level of environmental damage. Economic development is seen as a development process that occurs continuously and dynamically. Economic development is also seen as a transformation process that is characterized structurally. These changes occur as a result of economic activities and the existence of factors that influence changes in the role of the economic sector in efforts to form national income. Schumpeter, defines economic development as a spontaneous and discontinuous change in the circular flow channel which is a disturbance to the balance that always changes and replaces the previous state of equilibrium.

Economic development is the main support for the success of a country, but on the other hand development is also a big problem that must be faced, especially the impact of the process of development activities on the quality of the environment. Economic development and economic growth synergize with each other in achieving national development goals. However, if these two aspects do not pay attention to environmental sustainability, new problems will arise in the future [10]. The existence of technological advances that are not environmentally friendly can endanger their natural habitat. Production process activities are not environmentally friendly as a form of effort to increase output, besides being able to increase income, it will also generate quite large social costs [11], [12]. Economic development requires support from human evolution with the limited natural resources needed accompanied by population growth, so that it is expected to create a steady state between resources and the environment for the long term [13]. This gives rise to efforts to protect resources and limit usage ratios. For this reason, fundamental changes in the economy are needed to reduce inequality between rich and poor countries with a socio-political approach and government agencies. Currently, indicators of economic development are not accompanied by information on the value of natural resource depletion (depletion) and environmental damage and pollution (degradation). This causes the green economy approach to be interpreted as a model of economic development approach that no longer relies on economic development based on excessive exploitation of natural resources and the environment. The green economy is a knowledge-based economic development model on ecological and green economics which aims to address the interdependence between the economy and the ecosystem and the negative impacts of economic assets including climate change and global

warming. Related to these problems, it is necessary to have a basic model of stability in economic growth that is associated with environmental quality, so on this basis this research was conducted.

## II. METHODS

This study uses various perspectives that do not only look at the legal side, and using interdisciplinary legal research methods (socio-legal methodology); where the law (in this case the statutory text) is not only interpreted as a value-free object of study, but on the contrary is interpreted as an object that is rich in value (including non-legal values) [14]. Therefore, the non-legal values in this study are used as a tool to dissect the implementation in the field of fulfilling the right to a good and healthy environment in South Kalimantan Province.

This research was carried out in South Kalimantan Province, with the time of the study and the data used in this study were secondary data in the form of data on SRI (sectoral Regional Income) in the mining sector, SRI in the industrial sector, SRI in the agricultural/plantation/fisheries/livestock/forestry sector, poverty rates, unemployment, the Human Development Index. , Water Quality Index, Air Quality Index and Land Cover Quality Index for the period from 2006 to 2020 (14 Years). Secondary data were obtained from the Department of Environment, Department of Energy and Mineral Resources and BPS of South Kalimantan Province.

The implementation of this research is carried out according to the following stages:

- a. Secondary data collection from the Department of Environment, Energy and Mineral Resources and BPS South Kalimantan Province.
- b. Calculating the Environmental Quality Index (EQI) with the following formula:  

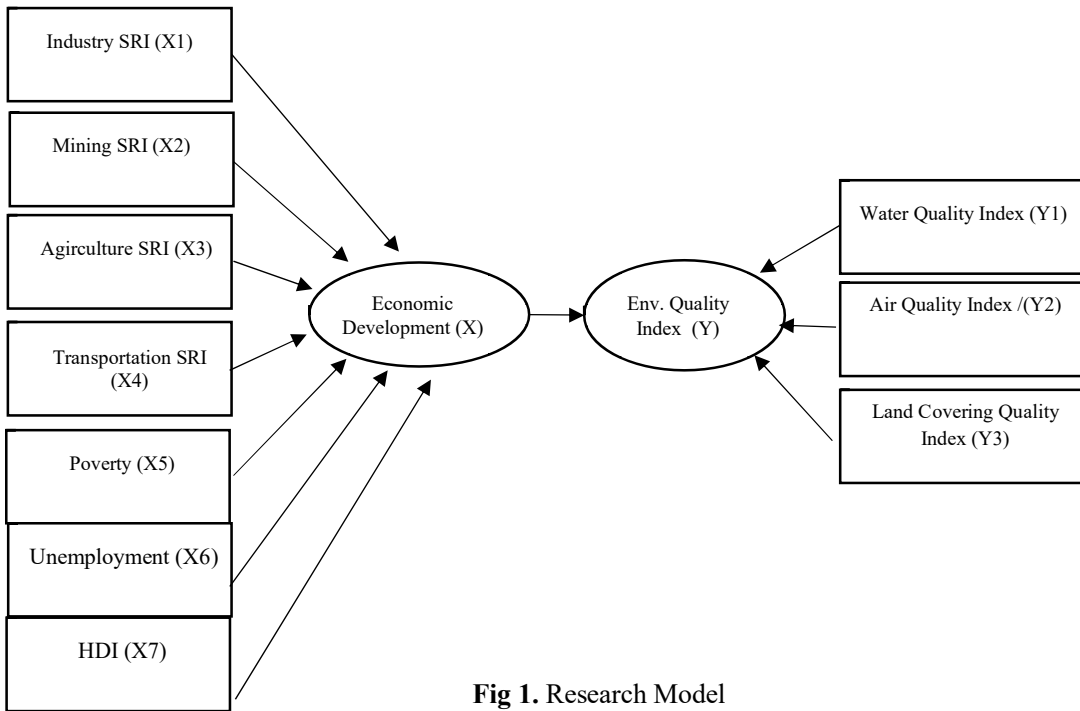
$$IKL = 30\% IKA + 30\% IKU + 40\% IKTL$$
- c. Data Analysis with Kuznet's Curve Hypothesis
- d. Determine the non-linear regression equation model for each indicator of economic development on environmental quality.
- e. Structural Equation Model Design and Data Interpretation
- f. Sobel test to see the effect of each indicator of economic development on environmental quality.

The variables and indicators that observed in our are presented in this following table:

**Table 1.** Research Variables and Indicator

VARIABLE	INDIKATOR
<i>Economic Development</i>	1) Industry SRI (X1) 2) Mining SRI (X2) 3) Agriculture SRI (X3) 4) Transportation SRI (X4) 5) Poverty (X4) 6) Unemployment (X5) 7) Human Development Index (HDI)/(X6)
Environmental Quality Index ( <i>Y</i> )	1) Water Quality Index (Y1) 2) Air Quality Index (Y2) 3) Land Covering Quality Index (Y3)

The models used in this study are as follows :



**Fig 1. Research Model**

The hypotheses built in carrying out this research are as follows:

1. H<sub>1</sub> Economic development growth has a significant impact on environmental quality
2. H<sub>6</sub> GDP Indicators, Unemployment and Human Development Index have a significant impact on environmental quality.

The methodology used in this study is Structural Equation Model to identify the relationship between economic development and environmental quality, the method used is structural equation model until a model is obtained that can explain the relationship and correlation between the 2 variables studied.

Stages in SEM modeling and structural equation analysis include seven stages as follows:

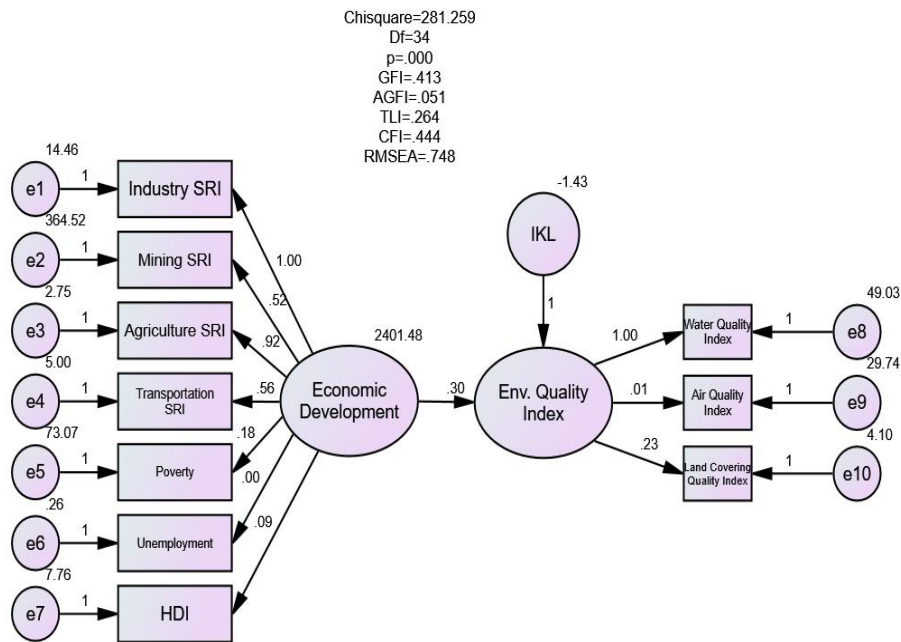
- 1) Development of theory-based model.
- 2) Development of path charts to show causality relationships.
- 3) Convert flowcharts into a series of structural equations and measurement model specifications.
- 4) Selection of input matrix and estimation techniques on the built model.
- 5) Assess identification problems.
- 6) Evaluation of the model.
- 7) Interpretation and Modification of models.

**III. RESULT AND DISCUSSION**

**A. Structural Equation Model**

The results of the analysis of the data used in this study resulted in the following Structural Equation Model.





**Fig 2.** Research Structural Equation Model

Based on the research model obtained, the comparison of research results based on the Goodness Of Fit (GOF) criteria required for model suitability analysis are as follows:

**Table 2.** Research Model Test

Goodness of Fit (GOF) Index	Cut Off Value	Result	Model Evaluation
Chi Square	Small	281.259	Big
Probability	≥ 0.05	0.000	Not Good
GFI	≥ 0.9	0.413	Not Good
AGFI	≥ 0.9	0.051	Not Good
TLI	≥ 0.95	0.264	Not Good
CFI	≥ 0.95	0.444	Not Good
CMIN/Df	≤ 2,00	8.272	Not Good
RMSEA	≤ 0.080	0.748	Not Good

Based on the table 1, it can be seen that almost all of the GOF criteria have not been met, namely Chisquare, Probability, GFI, AGFI, TLI, CFI and RMSEA scores so that the research model must be modified so that all Goodness Of Fit (GOF) criteria can be met.

**B. Pre-requisite Test Analysis**

**Normality**

The normality test was carried out using a critical ratio value of ± 2.58 at a significance level of 0.01%). The results of normality and linearity tests on research data are presented in the following table.

**Table 2.** Normality Test Result

Variable	min	max	skew	c.r.	kurtosis	c.r.
Industry SRI	105.21	246.36	0.54	0.825	-1.223	-0.934
Mining SRI	248.33	354.46	-0.334	-0.511	-1.017	-0.777
Agriculture SRI	121.54	259.53	0.448	0.684	-1.225	-0.935
Transportation SRI	41.61	125.03	0.63	0.963	-1.013	-0.774
Poverty	156.16	198.44	-0.884	-1.35	-0.336	-0.256
Unemployment	3.43	5.25	-0.183	-0.279	-0.971	-0.742
HDI	53.72	70.72	-0.828	-1.264	-0.667	-0.51
Water Quality Index	37.82	51.51	0.053	0.081	-0.884	-0.675

Air Quality Index	77.46	99.49	0.298	0.455	0.04	0.031
Land Covering Quality Index	28.54	75.8	0.775	1.184	-0.796	-0.608
Multivariate					12.245	1.479

Based on the results of the data normality test, it can be seen that all indicators have a cr value not exceeding 2.58 so that the research data normality requirements are met.

**Outliers**

Research data is said to have outliers if the value of p1 and p2 is less than 5% because it will be able to affect the normality of a data. Based on the putliers test, the data used in this study did not have outliers because all data had p1 and p2 values > 0.05.

**Table 4.** Outliers Test Result

Observation number	Mahalanobis d-squared	p1	p2
14	13.000	.224	.971
11	13.000	.224	.855
7	13.000	.224	.636
10	13.000	.224	.385
8	13.000	.224	.186
12	13.000	.224	.071
13	13.000	.224	.021
9	13.000	.224	.005
3	11.846	.295	.007
1	7.207	.706	.603
6	6.735	.750	.522
5	4.693	.911	.877
2	3.290	.974	.949
4	2.230	.994	.922

**Multicollinearity and singularity**

The existence of multicollinearity and singularity can be known through the determinant value of the covariance matrix which is really small or close to zero. For the research data analyzed, it is found that the determinant value of the covariance matrix is 63,847 which indicates that the determinant value of the covariance matrix is far from zero and it can be said that the research data used does not have multicollinearity and singularity so that it is feasible to use.

**Construct Validity and Reliability**

The test of the validity of the indicators used in this study is to determine whether or not an indicator is valid in describing the research variables. This test is done by calculating AVE and CR where if the AVE value is 0.5, then the construct is said to be valid and if the CR value is 0. 7 then it is said to be reliable. The results of the analysis of the validity and reliability of the constructs can be seen in the following table.

**Table 5.** Construct Validity and Reliability Test Results

	Standardized Loading	Measurement Error	CR	AVE
Industry SRI	0.994	0.988	<b>0.898</b>	<b>0.583</b>
Mining SRI	0.64	0.410		
Agriculture SRI	0.999	0.998		
Transportation SRI	0.993	0.876		
Poverty	0.521	0.271		
Unemployment	0.102	0.010		
HDI	0.728	0.530		
Water Quality Index	0.815	0.664	<b>0.823</b>	<b>0.766</b>
Air Quality Index	0.782	0.612		
Land Covering Quality	0.742	0.551		

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Based on the results of the regression weights above, it can be seen that all AVE values have a loading value of 0.5 and the CR value has a value > 0.7, so that all constructs used in this study have validity and reliability values as required.

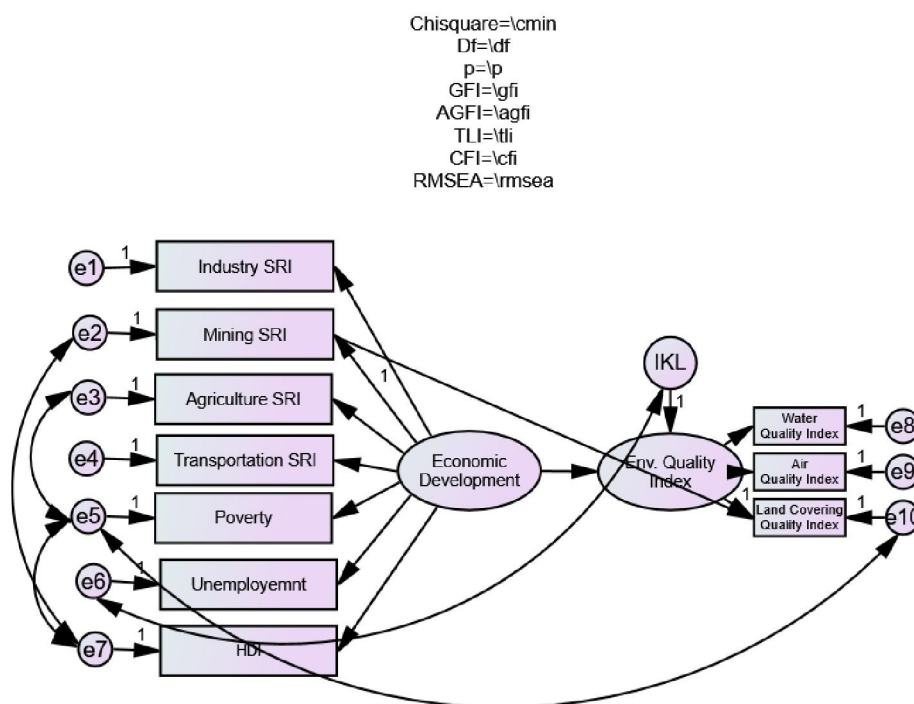
**C. Model Modification**

Modification of the model is carried out by (1) following the modification indices suggested by the AMOS software, namely by connecting several covariances to produce a model that meets the GOF criteria (2) Eliminating data containing outliers. Modification indices that are met are as follows :

**Table 6. Modification Indices**

	M.I.	Par Change
e6 <--> IKL	9.450	2.333
e5 <--> e7	10.308	21.241
e10 <--> e5	4.849	10.491
e2 <--> e7	8.250	42.454
e3 <--> e5	6.195	17.617

Based on the proposed modification indices, the modified model is as shown below:



**Fig 3. Results of Modified Research Model**

The suitability of the model in meeting the GOF criteria is presented in the table below:

**Table 7. Test Results of the Modified Research Model**

Goodness of Fit (GOF) Index	Cut Off Value	Result	Model Evaluation
Chi Square	Small	30.866	Small
Probability	≥ 0.05	0.323	Good
GFI	≥ 0.9	0.947	Good
AGFI	≥ 0.9	0.940	Good
TLI	≥ 0.95	0.986	Good
CFI	≥ 0.95	0.969	Good
CMIN/DF	≤ 2,00	1.064	Good
RMSEA	≤ 0.080	0.000	Good

Based on the table above, it can be seen that all of the GOF criteria have been met and the research model can be used to test the hypothesis.

#### 4.4. Hypothesis test

After the research model has met the GOF criteria, the next step is to test the hypothesis to test whether the proposed hypothesis is accepted or rejected. Hypothesis testing was done by observing the CR and Sig values of the variables studied based on the maximum likelihood estimates by looking at the regression weights table, which is said to have a significant effect if the CR value of the variable is 1.96 and the probability is  $< 0.05$ . The results of the test of the effect of internal variables on behavior are shown in the following table:

**Table 8.** Effect of Test Results

	Estimate	S.E.	C.R.	P	Conclusion
EQI ← Economic Development	0.298	0.073	4.066	.000	H1 Accepted
EQI ← Industry SRI	.095	.024	3.997	.000	H2 Accepted
EQI ← Mining SRI	.028	.014	2.013	.044	H3 Accepted
EQI ← Agriculture SRI	.105	.030	3.489	.000	H4 Accepted
EQI ← Transportation SRI	.163	.047	3.472	.000	H5 Accepted
EQI ← Poverty	.081	.041	1.975	.048	H6 Accepted
EQI ← Unemployment	.133	.280	.475	.635	H7 Rejected
EQI ← HDI	.243	.094	2.595	.009	H8 Accepted

\*) The hypothesis is accepted if the value of CR 1.96 and probability  $< 0.05$

Based on the table above, the economic development variable can be said to have a significant influence on the Environmental Quality Index (IKL) because the value of CR (4.066) 1.96 and probability (0.000)  $< 0.05$ , so H1 is accepted. The results of this study are in line with the results of research conducted by [15], [16], [17], [18], [19] and [20] which also found that economic development has been shown to have a positive effect on environmental quality. In the context of natural resource management, trade off issues arise in the policy area where there is a conflict of interest in the use of natural resources [16]. Because according to the economic concept, the main goal of development is to spur economic growth and increase people's income. Natural resources are needed as raw materials, as a means to increase national production. Because it only functions as a means, not a development goal, in the event of a conflict between development interests and environmental quality. Natural resources are exploited and utilized as much as possible for capital accumulation and for economic growth [20]. Sustainability of natural resources is a trade off from economic development [20]. That the exploitation and utilization of natural resources causes damage to ecosystems and environmental disasters, it is considered a consequence of problems that cannot be avoided [21]. Environmental damage is considered a cost that must be paid for the benefits of economic development obtained by the community [21], [22].

This trade off principle emphasizes the need to choose only one policy of economic or environmental development. The concept of the need for non-economic factors – especially social and environmental factors – in new development is considered important to note after the concept of sustainable development has become a global discourse [20]. As the antithesis of the concept of economic development (assessing development from economic growth alone) which raises various problems of social justice and environmental disasters, the concept of sustainable development rejects the trade off principle and offers the principle of synergy in complex and multidimensional development processes and patterns [21]. . In the pattern of sustainable development, the state must carry out economic, social and environmental development in a balanced, simultaneous, harmonious and sustainable manner in the long term [23], [24]. There is no trade off between economic development and environmental conservation or social justice [21], [24]. All of them are elements and factors that are important and needed in development. Although each of the economic, social and environmental elements has different functions and contributions, because they are both needed to achieve a common goal, there needs to be a synergy between the three elements so that a complementary and mutually supportive development process can occur. . Not competing to eliminate each other's functions and benefits of each element. Synergy is a form of process or interaction of several parties

to work together productively and build harmonious partnerships to produce an optimum development work that is beneficial to the public [23] [25]. Therefore, since the beginning of 2000, Indonesia has applied the principle of synergy by adopting the "Millennium Development Goals (MDGs)" as a principle of sustainable development which is part of the national development goals. Then the principles and patterns of development were upgraded to "Sustainable Development Goals (SDGs)" as a global development agenda to achieve the Sustainable Development Goals" in 2030 which has been included in Indonesia's National Medium-Term Development Plan (RPJMN) for the period 2015 - 2019 [23], [25] [26].

This study also determines the effect of each indicator of economic development on environmental quality with the following results:

a. The Industrial SRI has a significant effect on the Environmental Quality Index (IKL) because the value of CR (3.997) 1.96 and probability (0.000) < 0.05, so H2 is accepted. This is in line with the opinion of [16] which states that the declining quality of the environment is one of them caused by industrial activities). The existence of industrial activities intends to process and utilize natural resources, but in reality the use of these natural resources is excessive to produce excess material, this can reduce the carrying capacity of the environment and even negatively affect human survival [18].

b. Mining SRI has a significant effect on IKL because the value of CR (2.013) 1.96 and probability (0.000) < 0.05, so H3 is accepted. In general, the impact of mining on the environment is a decrease in land productivity, increased soil density, erosion and sedimentation, the occurrence of soil movements or landslides, disruption of flora and fauna, disruption of public health and impact on microclimate change [16], [24].

c. The Agriculture, Forestry, Fisheries and Plantations SRI has a significant effect on IKL because the CR value (3.489) 1.96 and probability (0.000) < 0.05, so H4 is accepted. The impact of agricultural activities on the environment varies widely from water pollution, climate change, to genetic pollution. Solutions to avoid this impact range from implementing sustainable agriculture to returning to subsistence farming systems [18].

d. The transportation SRI has a significant effect on IKL because the value of CR (3.472) 1.96 and probability (0.000) < 0.05, so H5 is accepted. The transportation sector is a major source of greenhouse gas emissions [24]. It is estimated that 30 percent of greenhouse gases on a national scale are directly linked to transportation and in some areas the proportion is even higher [24]. Other environmental impacts of transportation systems include traffic congestion and the expansion of car-oriented cities, which can deplete natural habitats and agricultural land. By reducing transportation emissions globally, it is estimated that there will be significant positive effects on Earth's air quality, acid rain, smog, and climate change [18].

e. The poverty rate has a significant effect on the IKL because the value of CR (1.975) 1.96 and probability (0.048) < 0.05, so H6 is accepted. The threat of negative impacts from climate change is one of the factors that complicates efforts to eradicate the poor [20]. Most of the poor countries are rural oriented and traditional agriculture, so it is very vulnerable to climate change. Without proper anticipation and mitigation, poverty could even increase [24].

f. The unemployment rate does not have a significant effect on IKL because the value of CR (0.475) < 1.96 and probability (0.635) > 0.05, so H7 is rejected. The relationship between unemployment and environmental quality is an indirect relationship but is mediated by the level of poverty, because the higher the unemployment rate will increase the poverty rate [16].

g. The Human Development Index (HDI) has a significant effect on IKL because the value of CR (2,595) 1.96 and probability (0.000) < 0.05, so H8 is accepted. The relatively high level of human development will affect the performance of economic growth through the capability of the population and the consequence is an increase in community productivity and creativity. With increased productivity and creativity, residents can absorb and manage resources that are important for economic growth and pay more attention to the environment [24].

#### IV. CONCLUSION

Based on the results of the study, the conclusions that can be conveyed are as follows:

1. The variable of economic development has a significant effect on the Environmental Quality Index (IKL) because the value of CR (4.066)  $> 1.96$  and probability  $(0.000) < 0.05$ , so H1 is accepted.
2. The Industry SRI sector has a significant influence on the Environmental Quality Index (IKL) because the value of CR (3.997)  $> 1.96$  and probability  $(0.000) < 0.05$ , so H2 is accepted.
3. The Mining SRI has a significant effect on IKL because the value of CR (2.013)  $> 1.96$  and probability  $(0.000) < 0.05$ , so H3 is accepted.
4. The Agriculture, Forestry, Fisheries and Plantation SRI has a significant effect on IKL because the value of CR (3.489)  $> 1.96$  and probability  $(0.000) < 0.05$ , so H4 is accepted.
5. The transportation SRI has a significant effect on IKL because the value of CR (3.472)  $> 1.96$  and probability  $(0.000) < 0.05$ , so H5 is accepted. The transportation sector is a major source of greenhouse gas emissions [18].
6. The poverty rate has a significant effect on IKL because the value of CR (1.975)  $> 1.96$  and probability  $(0.048) < 0.05$ , so H6 is accepted.
7. The unemployment rate does not have a significant effect on IKL because the value of CR (0.475)  $< 1.96$  and probability  $(0.635) > 0.05$ , so H7 is rejected.
8. The Human Development Index (HDI) has a significant effect on IKL because the value of CR (2,595)  $> 1.96$  and probability  $(0.000) < 0.05$ , so H8 is accepted.

#### V. SUGGESTION

For further research, the relationship between economic development and environmental quality can be analyzed further using panel data regression techniques using longer time span data and analyzing possible relationships between variables with common effects, fixed effects, and random effects models. Subsequent research can also be done by analyzing the frequency level of disasters in an area with changes in environmental quality and can be expanded by analyzing social aspects of the community such as the level of community involvement in protecting and monitoring the environment.

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