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Measuring Sustainabilty Development Index in Indonesia

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Abstract:- With the end of the Millennium Development Goals (MDGs) in 2015, thoughts have arisen to re-thinking for internationally agreed development goals. Furthermore, developing Sustainable Development Goals (SDGs) until 2030 are economic development goals that meet the sustainability dimension. In this paper, sustainable development in Indonesia is described as a balance in the indicators of the fields of economic development, social development, and environmental development. The achievement of sustainable development indicators results in sustainability development index (SDI) obtained from the composite index of the Gross Domestic Product Index (GDPI), the Human Development Index (HDI) and the Environment Quality Index (EQI) in Indonesia. The data taken is the period 2009-2018. The result is that Indonesia has managed to obtain an SDI value of 2.97 percent during this period. This means that Indonesia must continue to fight for the success of sustainable development until 2030.

Keyword:- *Gross Domestic Product Index, Human Development Index, and Quality Environmental Index*.

I. INTRODUCTION

Sustainable development is a goal of shared commitment at both the national and regional level. Achieving sustainable development is not just a trade off between economic and environmental goals (Fauzi, 2004). Because economic development based on natural resources that do not pay attention to aspects of environmental sustainability will induce development problems in the future.

The complexity of development issues and problems is a challenge in achieving sustainable development. The issue of high economic growth with all its contradictions, injustice and social inequality as well as the problem of environmental damage causes costs to be paid from development risks (Erlinda, 2016).

Although Indonesia experienced an increase in economic growth of between 4-5 percent in terms of the economy, from a social standpoint the Indonesian human development index (HDI) was in the range of 60-70, in the moderate category compared to other ASEAN countries such as Malaysia and Singapore which were included high. But this is not the case when viewed from an environmental aspect.

From the results of Indonesia's environmental status in 2014 stated that floods in Indonesia in 2002 had occurred 52 floods in a year, while in 2013 there were more than 1700 floods in a year (KLH, 2014). Therefore national development that does not consider sustainability will incur social and environmental costs ranging from 0.2 percent to 7 percent of gross national income (Fauzi, 2014). Thus that sustainable development by considering social and environmental aspects, in addition to economic aspects is not something of complexity.

Especially if the dimensions of the political aspect are used in achieving indicators of sustainable development. Sustainable development places development as a political context in which the state has political power in implementing sustainable development (Watcher, 2005). The state has the authority to achieve sustainable development of the concept of the state in politics.

The complexity of achieving sustainable development will also be faced by policy makers at both the regional and central levels. Because sustainable development involves multi-dimensional aspects of the economic, social, environmental and even political aspects of each different size or indicator. So that it requires the unification of criteria, definitions and measurements for the successful implementation of sustainable development (Poveda, 2011). Following up on this matter over the past three decades, many efforts have been made to realize sustainable development. However, the multi-dimensional nature of sustainability requires simultaneous consideration of various aspects representing sustainability measures or indicators (Cinelli, 2014). This means that the measurement of indicators of sustainable development is still in the form of gray where the performance is still being considered.

Looking at the arguments above, this paper accommodates the dimensions of sustainable development in the three pillars of the sustainability dimension, namely the economic, social and environmental dimensions. So that sustainable development is able to become a benchmark of the success of development in Indonesia in a complex way.

II. OVERVIEW OF SUSTAINABILITY DEVELOPMENT

Attention for sustainable development has been introduced since the century when Thomas Robert Malthus in 1798 proposed a hypothesis between population growth and limited land. Conceptually, Malthus's theory is a forerunner to the growth of trade off between development that relies on economic aspects with the carrying capacity of resources and the environment, a concept that has actually been rooted since the time of Greek thought, namely Aristotle's thought with Nichomecian Ethics written

in 350 BC. In Nichomecian Ethics, for example the placement of ethics in the context of "virtue" is an important foundation in understanding human behavior and its relation to nature and the environment (Malthus, 1798).

Later this concept later surfaced with the publication of the book "The Limit to Growth" in 1972 by Meadow, which sparked more serious attention about the existence of "limits of growth". In this book the theory of growth emerges that accommodates the limitations of natural resources and their impact on the environment (Meadow, 1972).

Two years later, Stiglitz precisely in 1974 issued the concept of economic growth by optimizing the extraction of natural resources. This is based on the occurrence of asymmetric information theory issued in the Washington Consensus. This theory further explains liberalization and globalization. In support of liberalization and globalization encourage greed over choices to boost the economy which must think about optimizing natural resource extraction. In addition, not all parties have the same information in the development process. There are those who benefit and there are those who are disadvantaged in carrying out the wheels of development. When the difference in information is needed the role of government in balancing the course of increasing economic growth (Stiglitz, 1974).

Further encouraging Solow in 1974 also added the Stiglitz theory by proposing the theory of growth in his book Intergenerational Equity & Exhaustible Resource. In the Solow theory, there is an emphasis on savings, population and technology that affect output and economic growth. Furthermore, Solow also explained that there must be justice and equality in the use of inputs and resources that will be enjoyed by each generation (Solow, 1974).

The four theories above that began the development of the concept of sustainable development in the world. A decade later this concept came back to the publication of the book Our Common Future, which was issued by the World Commission on Resources Development in 1987. This book is so famous for introducing sustainable development. In this book it is stated that sustainable development is development that meets the needs of the present generation without compromising the needs of future generations (WCED, 1987).

In 1992, the Rio Declaration on Environment and Development broadened the definition by recognizing three dimensions of sustainable development, namely environmental protection, economic growth, and social development. For sustainable development to achieve results, these dimensions must be balanced. Setting this dimension becomes a challenge with decision makers whose decisions must be considered without ignoring the expectations or rights of other groups (UNEP, 1992).

At the sustainable development summit in Johensburg, South Africa in 2002, it was agreed on sustainable development. At this summit there has been discussion of an increase in access to drinking water, access to energy services, energy efficiency, the use of renewable energy, and reduction of biodiversity loss.

Finally in 2005 at the UN World Summit it was stated that in achieving sustainable development includes environmental development, economic development, and social development. This then underlies the issuance of the concept of Millennium Development Goals (MDGs) with 8 targets that must be achieved in the national development of a country. The eight targets include poverty, basic education, gender & women, child & under-five mortality rates, maternal health, HIV-AIDS & other infectious diseases, environmental sustainability, and global partnerships. All of these targets must be met by 2015. And for Indonesia, almost all MDGs targets have been met.

After the concept of MDGs has been fulfilled until 2015 and has now ended, the United Nations then targets the concept of Sustainable Development Goals (SDGs). This concept must be fulfilled until 2030. In the SDGs there are 17 development goals that must be met with 169 development program targets covering environmental, economic and social dimensions. But the political dimension has not been discussed in a complex way.

III. SUSTAINABILITY OF ECONOMIC DIMENSION

In accordance with Meadow's Theory (1972) in his book, “The Limit to Growth”, above that there was a failure when increasing economic growth due to limited natural resources. It is very ironic indeed if traced to the situation in the country of Indonesia that regions that have the greatest natural resources and natural resources have economic growth which tends to be lower than regions that do not have natural resources.

This is reflected in the Bureau of Statistical Indonesia (2016) that the Province of East Kalimantan as the largest coal producer in Indonesia, economic growth decreased 2.50% of the total Gross Regional Domestic Product in Indonesia (-2.50%), Riau Province with oil mining experienced growth of -0.23%, Kalimantan Province North as a coal and oil-producing region experienced growth of -0.05%, Aceh Province with natural gas yield only grew 1.40%, Bangka Belintung Province as the largest tin producer in Indonesia could only grow around 1.96%, West Papua Province with the Freeport gold mine could only grow at 1.96%, and Riau Islands Province as a bauxite producer in Indonesia can only grow up to 2.18%. It is ironic, an area rich in natural resources does not make the people in the area prosper.

In the Rio Declaration (1992) as described above it is better known as the Rio Summit which gave rise to the idea of a green economy. These ideas and ideas for sustainable development place low carbon economic development in climate change. Low emission development strategies or often also known as Low Emission Development Strategies (LEDS), have even been adopted at the 15th COP

(Conferences of Parties) in Copenhagen, Denmark in 2009. In the Copenhagen Accord document, LEDS was adopted as an inseparable part (indispensable) of sustainable development. On the other hand green economy theory also produces the concept of inclusive growth.

Inclusive growth is a more implementing translation of the concept of sustainable development, where inclusive growth must be broader in nature (broad base sector), this growth must also be pro-poor and sustainable. The concept of sustainable development in addition to containing needs and limitations also includes goals (goals) and values (values) (Kates, 2005).

Furthermore Kates (2005) says that although the concept of sustainable development is often ambiguous, the most serious is defining and measuring indicators of sustainable development itself. Currently there are various approaches used globally to measure sustainable development including the Wellbeing Index, the Environmental Sustainability Index and the Ecological Footprint.

On the other hand there are also measures associated with macroeconomic indicators such as Genuine Progress Indicators, Genuine Savings, and various other macro indicators. Measurement of this indicator is also often associated with the medium-term and long-term development goals. For example, the Millennium Development Goals (MDGs) launched by the UN are related to a 15-year period and replacing the MDGs that ended in 2015 with a concept called Sustainable Development Goals (SDGs), which is the development agenda until 2030.

There is a lot of diversity in measuring sustainable development, because each approach might be more suitable to be used for a particular purpose so that there is no appropriate approach for all aspects (Amekudzi, 2015). However, every effective measurement approach to sustainable development should meet the following rules: (1) meet a clear definition of sustainability with measurable objectives, (2) interdisciplinary (economic, social, environmental, etc.), (3)) ability to discuss long-term aspects or intergenerational concerns, (4) ability to manage uncertainty, (5) ability to discuss local-global interactions, (6) ability to accommodate stakeholder participation, and (7) ability to adopt, both process-based or outcome-based or static and dynamic aspects of sustainable development. Ideally, all of the above rules can be fulfilled, but space and time constraints are difficult to enable the fulfillment of all the above rules, so that fulfilling some of the seven rules above is sufficient to measure sustainable development.

From this description, it appears that the concept of sustainable development which initially tended to be abstract, was later elaborated in several more operational concepts. Inclusive growth and low carbon growth is the operational description of sustainable development itself. Sustainable development which occupies the highest hierarchy in the concept of quality development is then further narrowed down to the concept of inclusive growth that emphasizes the importance of participatory processes and the involvement of marginalized parties in the development process. While low-carbon growth is a more operational hierarchy with an emphasis on the importance of development inputs and outputs that do not damage the environment.

IV. SUSTAINABILITY OF SOCIAL DIMENSION

Sustainability in the social dimension concerns population growth. In the last hundred years, population growth has been increasing rapidly especially in developing countries. It is estimated that the world population will increase to 7.8 billion people in 2025, of which 6.7 billion people live in developing countries. This increase in population is partly due to several factors, such as low levels of education, inadequate social security in the country concerned, culture and religion / beliefs, urbanization, and discrimination against women (UNDP, BPS, Bappeda, 2002).

The above factors lead to an uncontrolled population growth rate, poverty, and lack of water which of course leads to the problem of malnutrition in humans. Between 1998-2000, according to FAO estimates, there were 840 million people suffering from chronic malnutrition, 800 million of them living in developing countries (FAO / WHO, 2002). Six million children under 5 years die from malnutrition every year. The health of people living in developing countries is also exacerbated by wars and water pollution. At present more than half a billion people live without access to clean water and 2.5 billion live without proper sanitation infrastructure. The result is illness and death of around 5 million people each year (UNDP, BPS, Bappeda, 2002).

The gap between poor and rich countries has also grown in recent years (UNDP, 2002). Data in 1999, in poor countries, 2.8 billion people only get 2 US Dollars to live every day, another 1.2 billion even have to live only with 1 US Dollar. This gap does not only occur between rich and poor / developing countries, even this income gap also occurs within one country itself.

Distrust between the community and companies that have permission to exploit natural resources has hampered social sustainability in sustainable development. Communities insist on their rights, and both the government and companies are not yet fully able or ready to react, despite the relevance of the demands. Companies often face the most widespread demands in areas where state institutions are weak. Some companies are even forced to take on new responsibilities to preserve local social acceptance of exploitation. Community participation and community rights have also been recognized better, this has claimed to have changed the relationship between the community and the company. For a better understanding of community needs by using NGOs as conciliators for disputes. The distribution of benefits from exploitation of natural resources must be completed through a

collaborative process and is considered as an agreement between the government and the mining company. Along the red line, planning must be proportional to the capacity to implement the recommended actions, which must be decided by considering the characteristics of a particular region, society, government, and services (Von Ciriacy, 1952).

V. SUSTAINABILITY OF ENVIRONMENTAL DIMENSION

Over the past 50 years it has been proven that global warming that we now feel is mainly due to human activities. Emissions from greenhouse gases such as CO2 and N2O from human activities are the cause. The concentration of CO2 gas in the atmosphere has risen 30% over the past 150 years. The increase in the amount of CO2 emissions was mainly due to the burning of energy sources from fossil materials (including petroleum). In addition, changes in the use of other natural resources also contribute to an increase in the amount of CO2 in the atmosphere: 15% by deforestation and burning of forests and land for conversion (for example from protected forests to production forests) (WRI, 2000).

Other ecological problems are soil degradation or loss of soil fertility. This can be caused by erosion due to water and wind, soil salting and acidification, etc. Other causes of loss of soil fertility are the loss of topsoil and micro-organisms, food substances in the soil, and the ability of the soil to decompose waste. Dry (dry) soils are a result of the degradation of land resources as has happened in some barren regions in Indonesia, such as in Java in the Gunung Kidul area, Yogyakarta. Worldwide, 15% of land is degraded. Besides being caused by erosion by water and wind, this soil degradation is also caused by the use of chemicals (pesticides). The threat to the preservation of ecosystems and biodiversity by human hands is also another ecological problem. Every year 6000 species of extinct animals consisting of 13% poultry, 25% mammals, and 34% fish. The loss or extinction of biological diversity not only means that invaluable natural resources that can be used for medicines and places of recreation are lost, but also threatens the sustainability of the ecosystem as a whole, threatens the ability of nature as a provider of resources for production (economic functions) and in carrying out its regulatory functions (UNDP, BPS & Bappeda, 2002).

Water consumption from year to year also continues to increase in line with population growth, industry and businesses in the agricultural sector. Of the total water consumption worldwide, around 70% is used to meet the needs of the agricultural sector. Water and soil pollution further worsens the availability of clean water for human survival. Water and soil pollution is mainly caused by the use of fertilizers and pesticides for agriculture and plantations (WRI, 2000).

Various problems that arise in the economic and social dimensions, basically can not be separated from the activities carried out by humans in meeting their needs through the economic system in producing goods and services. Nature provides / supplies the economic system with natural resources in the form of basic raw materials and energy, both renewable (from forestry, plantation, agriculture, fishery) and non-renewable (coal, petroleum) which become economic engines. The economic system then transforms these inputs into outputs to meet human needs (wood into paper, petroleum becomes fuel). In addition, nature also provides services in enabling the economic system to carry out its activities. This support can be in the form of climate regulation, operation of the water cycle, regulation of the composition of gases in the atmosphere, nutrition cycle, etc. Without these various supports (basic life support) it is impossible for human survival to be maintained, let alone to be able to run an economic system (Cartier, 2011).

Do not stop there, nature also gives humans the value of satisfaction / happiness that can be enjoyed directly (amenity values). Humans will get pleasure or satisfaction by seeing firsthand or enjoying the charm of natural beauty (flora and fauna), by hiking, climbing mountains / rock climbing, by fishing, and so on. These are all the values of satisfaction offered by nature. But on the contrary, what are the benefits provided by the economic system to nature? The economy uses nature as a waste bin, which starts from the exploitation of natural resources (material and energy) to be used as raw materials, production processes, to consumption activities, all of which produce solid, liquid and gas solid waste (Colagiuri, 2012).

The sustainability of the economic system is very dependent on the ecological system. But what is happening now is a system that is not mutualism. This situation inevitably requires humans to be able to change / improve their production patterns and consumption in the direction that encourages the establishment of a harmonious relationship between humans and nature, as well as between humans with each other. Modern humans must be able to develop and utilize technical and technological advances so that the management and utilization of natural resources can be in accordance with the concept of sustainable development that emphasizes justice, not only inter-generational but also intra-generational (Cahyandito, 2002).

In essence, sustainable development is a process of change in which all activities such as resource exploitation, investment direction, technological development orientation, and institutional changes are in a state of harmony and increase the potential of the present and the future to meet human needs and aspirations . So the economic and social development goals must be pursued with sustainability. The concept of sustainability is a simple, yet complex concept so that the notion of sustainability is very multidimensional and multi-interpretation (Fauzi 2009). According to Heal in Fauzi (2004), the concept of sustainability, at least contains two dimensions, namely first, the time dimension because sustainability must involve what happens in the future.

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Second, is the dimension of interaction between economic systems and natural resource systems and the environment. Pezzey (1992) sees sustainability in a different light, that is, from a static and dynamic understanding. Static sustainability is defined as the utilization of renewable natural resources at a constant technological rate, while dynamic continuity is defined as the use of non-renewable resources at an ever-changing level of technology.

Because of the multi-dimensional, and multi-interpretation, there are two things that are implicitly a concern, namely first, concerning the importance of paying attention to natural resource and environmental constraints on development and consumption patterns. Second, concerns attention to the well-being (well being) of future generations. Thus, the principle of sustainable development is produced by paying attention to 3 axioms, namely: (a) treating the present and the future that places a positive value in the long run, (b) realizing that environmental assets contribute to economic well being, and (c) identify constraints due to implications that arise on environmental assets. Thoughts about the dimensions of development also continue to develop. But the most prominent thought used by many parties is sustainable development that carries three dimensions, economic, social and environmental. Although carrying the same dimensions, the views of the interrelationships between the three dimensions are also quite varied.

VI. METHODOLOGY

The method used in this study is a quantitative method, but within the scope of descriptive analysis. Assessment of sustainable development is carried out using a composite index.

A composite index is a collection of indicators or sub-indicators that do not have units of measurement. Each composite index can be considered as a model, and its preparation must follow a series of specific steps so that the resulting composite index becomes useful and generally accepted. The steps in preparing the composite index follow the preparation of the composite index in OECD (2008) and Kondily (2010). These steps include:

- Preparation of a theoretical framework, in order to provide a solid basis for the selection and combination of single indicators into meaningful composite indicators.
- Data selection. The indicators used must be chosen based on their level of reliability, related to their availability, spatial coverage, relevant to the phenomenon being measured and their relationship to each other.
- Imputation of lost data
- Normalizing data. Indicators must be normalized in order to provide comparable measures.
- Determination of weight. Weights greatly affect the output of the composite indicator. Therefore, indicators must be weighed according to the theoretical framework that underlies or based on empirical analysis, but can also be done by taking into account expert opinions and / or public opinion.
- Aggregation: aggregation of indicators can be linear, geometric or can be based on multi-criteria analysis. In both linear and geometric aggregation, weights express trade-offs between indicators, while multi-criteria analysis seeks a compromise between two or more of the stated goals. In this research, the aggregation is done linearly.
- Presentation and dissemination of results.

Based on the development progress in Indonesia in the previous discussion, then the question will arise how the level of sustainability of the development carried out. These questions will be difficult to answer because sustainable development has broad dimensions (this paper covers three dimensions, economic, social and environmental). Moreover, development achievements in the three dimensions are not aligned, sometimes even contradictory. One solution to be able to assess all dimensions together is to compile a composite index that combines the overall dimensions of sustainable development.

In assessing development achievements in Indonesia, there are several key indicators that are used as a measure. The achievement of economic development is often identified with the achievement of the value of Gross Domestic Product (GDP) and its derivative indicators such as economic growth and income per capita. Macro economic and social development achievements are measured by HDI which is a combination of health, education and purchasing power indicators.

Combining the three development indicators into one composite index will produce a more comprehensive indicator of sustainable development, both from an economic, social and environmental perspective. The selection of the three indicators as compilers of the composite index is also based on the view that all three are able to meet the criteria of good indicators. Both in terms of the level of reliability, availability, spatial coverage, and relevance to the phenomenon being measured. The first two indicators, GDP and HDI, are internationally recognized indicators. While EQI, although it still cannot be said to be a perfect indicator, it is the best indicator of the best available environmental indicators. So the preparation of the sustainable development index is described as follows:

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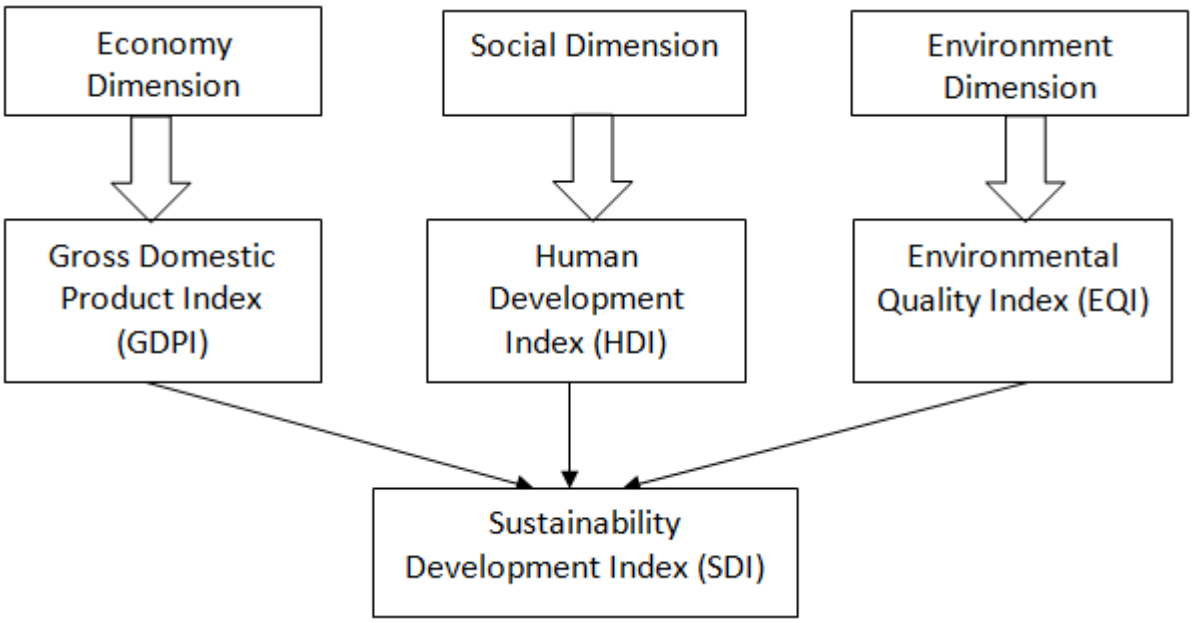

Fig 1:- The Arrangement of Sustainability Development Index

Based on the constituent elements of the SDI above namely GDPI, HDI and EQI which represent the dimensions of development (economic, social, and environmental), the SDI calculation is formulated as follows:

$$SDI_I = \frac{GDPI_I + HDI_I}{EQI_I}$$

Where SDIt is the sustainability development index in year i, GDPI is the gross domestic product index in year i, HDI is the human development index in year i, and EQI is the environmental quality index in year i. The results obtained are the percentage of success in achieving sustainable development.

VII. RESULT FINDING

Many things have been achieved in Indonesia in the mid-term development period in terms of economic, social and environmental aspects. In 2011, with the implementation of the MDGs, the world's population reached 7 billion and projected to reach 9 billion in 2050. Population changes affect the birth rate of around 2.52 children per woman giving birth, and it is expected in 2045-2050 to be 2.17 children every women who give birth. This decline in the number of births will increase women's empowerment, access to health and education. Life expectancy is around 67.9 years and increases to 75.6 years in 2045-2050. With this decline in population, realizing sustainable development (United Nations, 2011).

In Indonesia, the population is projected to increase by only 0.66 - 0.74 percent during the 2015-2045 period. In other words, the population will decrease from 319 million in the next 27 years. However, the decline in fertility will increase the number of elderly population. This means that life expectancy is getting longer, reaching 75 years of age.

Correspondingly, with the success of the MDGs, Indonesia's economic growth has increased by 5 percent in 2017 in terms of the economy. On the other hand, the growth rate of developed countries has slowed compared to developing countries. Developed countries such as the United States, the European Union and Japan experienced a decline in economic growth of 2 percent.

Even though economic growth in Indonesia slowed down in 2017 by 5 percent, Indonesia's per capita income increased from Rp 28.778,2 thousand in 2010 to Rp 54.978 thousand in 2018. In addition, unemployment also declined from 7.14 percent in the year 2010 became 5.33 percent in 2017. At the same time the number of poor people also decreased from 13.33 percent in 2010 to 11.13 percent in 2015.

The achievement of development in the social sector has been achieved including the literacy rate has increased significantly since 2010. The literacy rate in 2017 nationally has reached 99.67 percent. In addition, the dimension of happiness in life in 2017 has reached 71.07 percent. And the proportion of the population who became victims of crime was very small at 0.06 percent in 2016.

The Indonesian human development index (HDI) is 68.9 percent, which is in the medium category. Compared to other ASEAN countries such as Singapore and Brunei Darussalam which are already high, namely 92.5 and 86.5.

This is in contrast to the environmental status in Indonesia in 2014 which stated that floods in Indonesia in 2002 had 52 floods in a year, while in 2013 there were more than 1700 floods in a year (KLHK, 2014). Therefore national development that does not consider sustainability will incur social and environmental costs ranging from 0.2 percent to 7 percent of gross national income (Fauzi, 2014). Thus that sustainable development by considering social

and environmental aspects, in addition to economic aspects is not something of complexity.

This is in contrast to the environmental status in Indonesia in 2014 which stated that floods in Indonesia in 2002 had 52 floods in a year, while in 2013 there were more than 1700 floods in a year (KLHK, 2014). Therefore national development that does not consider sustainability will incur social and environmental costs ranging from 0.2 percent to 7 percent of gross national income (Fauzi, 2014). Thus that sustainable development by considering social and environmental aspects, in addition to economic aspects is not something of complexity. This can be seen in the following Table 1 which compares the economic dimensions with the environmental dimensions.

Islands	Rate of Growth GDRP Percapita			Critically Area (Ha)		
	2011	2013	2017	2011	2013	2017
Sumatera	4.26	3.41	2.69	1.050.341	960.754	689.669
Java	4.80	4.63	4,37	231.655	208.795	289.800
Kalimantan	3.33	2.56	3.11	1.336.695	1.782.426	1.544832
Sulawesi	7.05	5.90	5.26	433.398	461.812	514.167
Bali & Southeast Nusa	1.29	4.26	2.28	1.163.821	3.938.866	394.809
Maluku & Papua	0.88	4.63	3.49	1.359.535	734.368	891.837
Indonesia	4.63	4.3	4.59	30.196.802	27.294.842	24.303.294

Table 1:- Rate of Growth GRDP Percapita & Critically Area by Islands in Indonesia
Sources: Bureau of Statististical Indonesia

A high GRDP has caused pressure on the earth's ecosystems, which has resulted in a progress trap, which means that goals in the welfare of society must be paid at the expense of high social and environmental costs. This trap will deny the results achieved from such progress so that some scientists even propose efforts to slow down growth (degrowth) by suppressing excessive consumption of natural resources and the environment. This is based on that nature provides / supplies the economic system with natural resources in the form of basic raw materials and energy, both renewable (from forestry, plantation, agriculture, fishery) and non-renewable (coal, petroleum) which are shared economic engine. The economic system then transforms these inputs into outputs to meet human needs (wood into paper, petroleum into fuel) (Fauzi, 2014).

In addition, nature also provides services in enabling the economic system to carry out its activities in the form of support. This support can be in the form of climate regulation, operation of the water cycle, regulation of the composition of gases in the atmosphere, nutrition cycle, and so on. Without these various supports (basic life support) it is impossible for human survival to be maintained, let alone to be able to run an economic system (Cartier, 2011).

Two development indicators in the previous description; economic growth and critical land growth is a single indicator. The interpretation obtained from the value of each indicator certainly only represents the measurability of the indicator concerned, not enough to be able to represent each dimension of development as a whole. To be able to measure achievements in a more complex manner, of course, a composite indicator in the form of a composite is needed. Comparison between economic and social development with environmental development can be done using the two composite indexes that are available. First, and most popular, is the Human Development Index (HDI), and second is the Environmental Quality Index (EQI).

HDI is a composite index of a number of indicators to measure the main dimensions of achieving basic population status capabilities: long and healthy life, knowledge and skills, as well as accessibility to the resources needed to achieve a decent standard of living. So HDI is a measure commonly used to measure the level of economic and social development achievements. While EQI is a composite index that measures development achievements in the environmental field.

EQI is a relatively new composite index whose calculations began for 2009 in Indonesia. This index is produced from the collaboration between the Ministry of Environment and the Dannish International Development Agency (DANIDA). EQI adopted the index concept developed by the Central Statistics Agency (BPS) and Virginia Commonwealth University (VCU). The EQI concept, takes three indicators of environmental quality, namely river water quality, air quality, and forest cover. Until now the method used in calculating EQI has undergone two changes and is likely to undergo improvement. The first EQI method produces EQI values for 2009-2011, while the second method produces EQI 2012. With the aim to see its trends, the EQI used is EQI 2009-2011.

Based on the SDI formula above, the Indonesian SDI value for the period from 2009-2018 is shown in table 2. The SDI value reflects the percentage of success in achieving sustainable development.

Years	GDPI	HDI	EQI	SDI
2009	111.48	71.76	59.79	3.06
2010	107.80	72.27	61.07	2.95
2011	126.60	72.77	60.25	3.31
2012	138.59	73.29	64.21	3.30
2013	146.06	68.31	63.13	3.40
2014	109.41	68.90	63.42	2.81
2015	110.53	69.55	68.23	2.64
2016	112.87	70.18	64.73	2.78
2017	114.64	71.81	66.46	2.79
2018	116.59	71.87	69.45	2.71

Table 2:- Sustainability Development Index Indonesia 2009-2018
Source: Bureau of Statistical Indonesia

In general, there was a fluctuation in the value of sustainability development index in the 2009-2018 period. On an average during this period Indonesia has succeeded in achieving sustainable development of 2.97 percent. The declining value added from mining and quarrying is the main cause of the decline in economic achievements. This condition is further aggravated by the declining quality of the environment. This happened in 2014. This means that the positive impacts in the economic and social fields are smaller than the negative impacts caused by environmental degradation.

Comparisons between the GDP index, HDI and EQI indicate that development achievements are highly variable, especially in the economic and environmental fields, while achievements in the social field are more homogeneous. High achievements in the economic field are often paid for with environmental damage. Demanding serious attention from the government to find a middle ground from this problem. The formulation of policies on green development can be one alternative.

VIII. CONCLUSION

The progress of several development indicators shows that economic, social and environmental development in Indonesia has not been balanced. Development shows more improvement in terms of economic and social, but puts pressure on the environment. The use of SDI as a measure of sustainable development also shows that development achievements are not optimal. The results of the SDI calculation show that nationally sustainable development has only reached one third of the maximum value. Pressure from environmental aspects ultimately provides a correction of the progress achieved by the economic and social dimensions. In the end this research provides empirical evidence that the balance of development between dimensions (economic, social and environmental) is needed in sustainable development. Development that focuses on just one dimension will eventually be corrected by another dimension degradation.

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