Assessment of Regional Sustainable Development in Indonesia

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Abstract

Since the end of centralistic governance under Soeharto's administration in 1999, Indonesia has adopted a decentralized governance system to deliver national and regional development. The legal basis for this system has been revised three times over the last fifteen years. The current Law No. 23/2014 on regional autonomy has focused on sharing governmental duties between national and local governments (provincial/regencies). In this law emphasize providing basic services to people and pay less attention to the sustainable development framework. However, as Indonesia has adopted Sustainable Development Goals (SDGs), it is crucial to bring these agendas into regional development in Indonesia. This paper attempts to address this issue by analyzing the degree of sustainable development components (i.e., economic, social, and environmental issues) at the provincial level using the FLAG approach based on three scenarios of development. The results show that regional development at the provincial level remains far away from achieving sustainable development. Lessons learned are drawn from this study for policy improvement in Indonesia.

Keywords: Sustainable development, decentralized system, regional autonomy, sustainability indicators.

1. Introduction

One of the challenges in regional development, especially in developing countries such as Indonesia, is how to measure the achievement of development as mandated by legislation. In the case of Indonesia, the measurement of regional development has been mandated by the law of regional government No. 23/2014. In this law, every province or region has been mandated to deliver programs and their respecting achievement indicators as a means of accountability. Nevertheless, with hundreds of indicators that have to be delivered, it is not easy for every region to perform the measurement of the achievement. Using a sustainable development measurement is one way to overcome the complexity of the measurement. Such a measurement is based on three pillars of sustainability: (a) the economical pillar, (b) the social pillar, and (c) the environmental pillar. This type of measurement has been used by Nijkamp and Vreeker (2000), and Jesinghaus (2006), and the sustainability evaluation has been conducted by Shmelev and Labajos (2009) and Poveda and Lipsett (2011). Similarly, Adhikari (2012) emphasized the importance of developing indicators of environmental sustainability in Nepal. In Indonesia's case, Fauzi and Oxtavianus (2014) and Erlinda (2016) have carried out measurements of sustainability. Fauzi and Oxtavianus (2014) used a composite index to assess the sustainable development of Indonesia based on regions, while Erlinda (2016) used the flag approach and the Imprecise Decision Model to evaluate sustainable development in Jambi Province.

Sustainable development is not merely about indicators per se, but also about how sustainable development is achieved in the context of government. As mandated in Law No. 23/2014, pursuing sustainable development is the responsibility of both national and regional governments. Bello and Dola (2014), for example, emphasized the important role of the local government in achieving sustainable development goals.

This finding is in line with Bardhan (2002) who stated that decentralization, where the local government has more authority with regard to delivering development goals, is fundamentally about making governance at the local level more responsive to the needs of the population. This implies that achieving sustainable goals that benefit the local population is inherently a local government duty. Similarly, Kemp, Saaed, and Gibson (2005) emphasized the central role of sustainable development and governance.

Even though few studies regarding sustainable development in Indonesia have been conducted, gaps still exist with respect to the data being used and the treatment of variations among regions in Indonesia. Indonesia is an archipelagic country where wide differences between economical, geographical, social, and ecological systems exist. Such variations and differences affect the achievement of both regional and national sustainable development. This study attempts to fill the gaps in the literature by incorporating regional differences when evaluating sustainable development and it is expected to contribute to the urgency of assessing the performance of regional development in a sustainable manner. It differs from other studies of sustainable development in Indonesia by using indicators of development as mandated in regional government law and development indicators that are not explicitly measured in the law.

2. Overview of Regional Development in Indonesia

Indonesia is one of the largest archipelagic countries in the world with a total area of 1.913 million km^2. It consists of 34 provinces, 415 regencies, and 93 cities (MoHA, 2015). The number of provinces has increased from 26 provinces under Soeharto's administration since the reform era began in 1998. Through Act No. 22/1999, the reform era brought a new decentralized governance system (as opposed to the previous centralized system) with regard to regional development. During the past 17 years since the introduction of the decentralized system, the implementation of regional development could not escape the dynamic forces of economics, society, and politics. This can be seen in multiple revisions of the regional autonomy law. The law has been revised three times from Law No. 22/1999 to Law No. 32/2004, and finally to the final revised Law No. 23/2014 on regional government. Nevertheless, these multiple revisions in the law have not significantly encouraged the regional sustainable development paradigm at the regional level. As indicated by Central Agency of Statistics (2011), even though Indonesia's GDP grew at around 5.73% per year during the period 2006-2010, the amount of degraded land also increased at 1.38% per year. Hence, the environmental dimension of sustainability has not yet been a regional development indicator.

Interestingly, the regional development framework within the new regional governance has changed significantly from earlier laws. The new law emphasizes the delegation of authorities between the central and regional governments (provinces and regencies/cities). As stated in chapter ten of Law No. 23/2014, regional development is defined as the implementation of government duties that have been delegated to regions as an integral part of national development. Within this framework, the government's duties can be classified into three types: (a) absolute duties, (b) concurrent duties, and (c) general duties. Absolute duties are exclusively under the control or authority of the central government. Both the regional and the central government have authority over concurrent duties, which consist of three components with regard to basic services: (a) mandatory components that are linked to basic services, (b) mandatory components that are not linked to basic services, and (c) optional components.

If we look closely at the definition of regional development according to Law No. 23/2014, it is clear that regional development is simply the delegation of duties especially mandatory duties, which fall mostly into economic and social aspects of development. Nothing in the new definition of regional development specifically addresses the environmental dimension of regional development. In a country that has participated in and signed the new global development agenda on Sustainable Development Goals (SDGs), it is worrying that that the environmental dimension has been left behind in the regional development framework. It is the urgency of this study to assess this issue in the regional development context.

The study aims to assess three scenarios of national and global development policies as means to support provincial or regional sustainable development. These policies consist of: (a) the five year development plan as stated in the Medium Term National Development plan of 2010-2014 known as the Business as Usual (BAU) scenario; (b) the current national program as stated in Nawa Cita (nine goals) and the ASEAN Economic Community (in Indonesia language is known as MEA). This scenario is known as the Nawa Cita-MEA scenario; and (c) the development policy based on Sustainable Development Goals or SDGs.

The first scenario is based on Presidential Regulation No. 5/2010 on the Medium Term National Development Plan. According to this regulation, there are five development agendas:

1. Economic development and welfare
2. Improvement of governance
3. Support democratic pillars
4. Law enforcement and corruption eradication
5. Inclusive growth and justice.

These five development agendas were implemented through 11 development priorities:

1. Bureaucratic reform and governance
2. Education
3. Health
4. Poverty eradication
5. Food security
6. Infrastructure
7. Investment and business climate
8. Energy
9. Environment and disaster management
10. Disadvantaged regions and remote and post conflict areas
11. Cultures, creativity, and technological innovation.

The second scenario is based on existing development agendas as stated in Presidential Regulation No. 2/2015 on the Midterm National Development Plan 2015-2019. The development goals in this regulation aim to strengthen national development in all aspects with an emphasis on achieving economic competitiveness based on human resources and natural resources advantages as well as science and technology. The Nawa Cita (Presidential Regulation No. 2/2015) has nine priorities on its development agenda:

1. Returning the state to its task of protecting all citizens and providing a safe environment
2. Developing clean, effective, trusted, and democratic governance
3. Developing Indonesia's rural areas
4. Reforming law enforcement agencies
5. Improving quality of life
6. Increasing productivity and competitiveness
7. Promoting economic independence by developing domestic strategic sectors
8. Overhauling the character of the nation
9. Strengthening the spirit of unity in diversity and social reform.

As the current government took power in 2014, Indonesia entered a new period of regional economic integration in 2015. The ASEAN Economic Community (AEC) took place in 2015 and emphasized economic and social development. Therefore, it is important to integrate the Nawa Cita with the AEC. That is why the second scenario is known as the Nawa Cita-MEA. The third scenario is based on the development agendas of SDGs with 17 goals and 169 targets of sustainable development. The SDGs emphasize three ultimate goals for the next 15 years until 2030: (a) erasing poverty, (b) achieving gender equity, and (c) overcoming climate change in all nations. These goals and targets will stimulate actions based on the five principles of the UN's 2030 Agenda for Sustainable Development: People, Planet, Prosperity, Peace, and Partnership (United Nations, 2015).

3. Methods

This study assesses the sustainability of regional development based on regional variations in Indonesia. In order to assess the state of sustainability of 34 provinces, these provinces were grouped into four regions based on island characteristics and socio-economic and demographic profiles of the regions. The four regions are: I. Region of Sumatera; II. Region of Java-Bali; III. Region of Kalimantan (Borneo)-Sulawesi (Celebes); and IV. Region of Nusa Tenggara-Maluku-Papua. Ten economical, social, environmental, and institutional indicators were used for analysis. For computational reasons, the institutional indicators were merged into social indicators as they represent the same notion of economic development. These indicators were then divided into three development scenarios: (a) Business as usual (BAU), (b) Nawa Cita-MEA (NC-MEA), and (c) Sustainable Development Goals (SDGs).

Assessment of the state of sustainability for these regions was carried out by means of the flag method (Nijkamp & Vreeker, 2000; Erlinda, 2016). The flag method is based on a bandwidth of values divided into intervals that are considered sustainable in different grades. These values are known as Critical Threshold Values or CTVs. The bandwidth of CTVs is depicted in Figure 1.

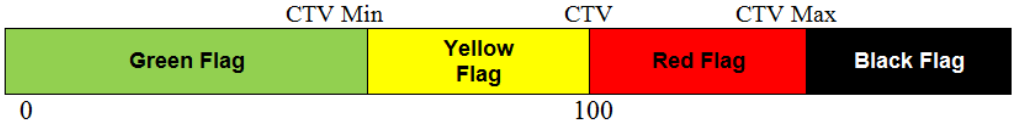

Figure 1: Critical threshold values of the flag model. Reprinted from "Methods: Sustainability Assessment of Development Scenarios: Methodology and Application to Thailand" by P. Nijkamp and R. Vreeker, 2000, *Ecological Economics, 33,* 7-27.

The green flag indicates no concern for intervention, the yellow one indicates precaution, and the red one indicates the need for a reverse trend, while the black flag indicates the need for termination. As stated by Nijkamp (1999), the Flag method is based on multi criteria analysis by optimizing linear programming such as the following

$$Max\, w = (x_1,\ x_2, x_3 \ldots x_n)$$

s.t

$$\begin{pmatrix} a_{11} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{m1} & \cdots & a_{mn} \end{pmatrix} \begin{pmatrix} x_1 \\ \vdots \\ x_n \end{pmatrix} = \begin{pmatrix} \partial_i \\ \vdots \\ \partial_n \end{pmatrix}$$

Where x_i is the indicators, $a_{11} \cdots a_{mn}$ are the coefficient of the decision matrix, and $\partial_1 \cdots \partial_n$ are the CTVs. The analysis of flag was carried out by Samisoft® software developed by Nijkamp and Vreeker (2000). Data and indicators used for the study are presented in the appendices.

4. Result and Discussions

Table 1 presents the results of the flag analysis based on regional clusters. As can be seen from Table 1 and Figure 1, the BAU scenario for all regions shows more yellow flags and black flags in all regions. For this scenario, only Regions II, III, and IV have green flags, one for each region. If we look at scenario 2 (i.e. NC-MEA), we see that the frequencies of green flags increase as well as the red and black flags. Under this scenario, Region I has more yellow and black flags compared to other regions. It also shows that green flags will appear more and yellow flags will be less, while the number of red flags is relatively the same as in scenario BAU. It can be inferred that the NC-MEA scenario will benefit Regions II and IV in terms of sustainability, as they have more green flags.

Table 1: Flag Analysis of Business as Usual (BAU)
Nawa Cita-MEA and Sustainable Development Goals (SGDs) Policies on Regions I-IV

Flag	BAU REG. I	BAU REG. II	BAU REG. III	BAU REG. IV
Green	0	1	1	1
Yellow	8	7	7	7
Red	0	0	0	0
Black	2	2	2	2

Flag	NC-MEA REG. I	NC-MEA REG. II	NC-MEA REG. III	NC-MEA REG. IV
Green	1	3	1	3
Yellow	6	2	4	1
Red	0	3	3	4
Black	3	2	2	2

Flag	SDGs REG. I	SDGs REG. II	SDGs REG. III	SDGs REG. IV
Green	1	3	3	3
Yellow	6	5	5	4
Red	0	0	0	1
Black	3	2	2	2

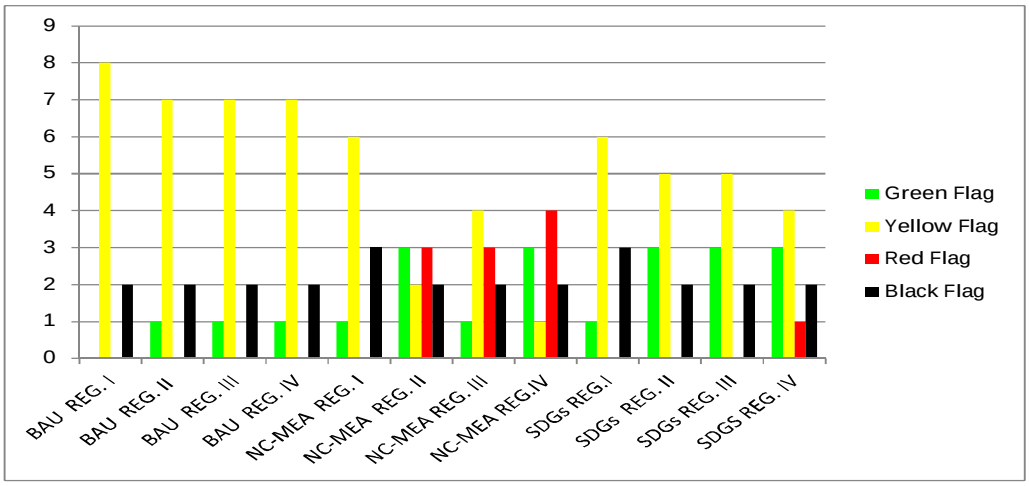

Figure 1: Flags distribution across regions.

Scenario SDGs, in the meantime, increases the frequency of green flags. For example, it has 10 green flags compared with eight under NC-MEA and three under BAU. This scenario also increases the frequency of red flags while the number of black ones remains relatively unchanged compared to NC-MEA. Under the scenario, green flags will occur more in Regions II, III, and IV while only one green flag occurs in Region I. It can be inferred that the SDGs scenario will benefit Regions II, III, and IV more than Region I. Table 2 presents the cross tabulation for Region Sumatera (Region I). If we compare Scenario BAU with NC-MEA, we see that NC-MEA is better than BAU by comparing the number of green and yellow flags. Scenario NC-MEA has more green flags than Scenario BAU (2:0) and less yellow flags (5:7). Similarly, Scenario NC-MEA has fewer black flags compared to Scenario BAU (2:3).

Table 2: ***Cross Tabulation of Flags for Region Sumatera (Region I)***

		Nawa Cita-MEA				
		G	Y	R	B	Total
BAU	G	0	0	0	0	0
	Y	2	4	1	0	7
	R	0	0	0	0	0
	B	0	1	0	2	3
	Total	2	5	1	2	10
		Sustainable Development Goals				
		G	Y	R	B	Total
BAU	G	0	0	0	0	0
	Y	1	6	0	1	8
	R	0	0	0	0	0
	B	0	0	0	2	2
	Total	1	6	0	3	10
		Sustainable Development Goals				
		G	Y	R	B	Total
NC-MEA	G	1	0	0	0	1
	Y	0	0	0	0	0
	R	0	6	0	0	6
	B	0	0	0	3	3
	Total	1	6	0	3	10

Comparing Scenarios BAU and SDGs, Table 2 shows a similar pattern in that Scenario SDGs is better compared to Scenario BAU. Scenario SDGs has one green flag compared to none under Scenario BAU (1:0) and less yellow flags (6:8). Nevertheless, for the Sumatera region, the number of black flags will increase under Scenario SDGs compared to under the BAU scenario. If we compare Scenario SDGs with Scenario NC-MEA, we see that, for the Sumatera region (Region I), Scenario NC-MEA has less yellow flags compared with Scenario SDGs (0:6), but NC-MEA has more red flags than SDGs (6:0). Therefore, judging from the cross tabulation for Region Sumatera, both NC-MEA and SDGs would have the same level of sustainability.

The cross tabulation for Region II (Java-Bali) is presented in Table 3. Comparing Scenario BAU with Scenario NC-MEA, we see that Scenario NC-MEA is better than BAU with more green flags (3:1) and less yellow flags (2:7), even though this scenario raised red flags. If we compare Scenario BAU with Scenario SDGs, we also see that the SDGs scenario is better than BAU as it has more green flags (3:1) and less yellow Flags (5:7). Both scenarios have no red Flags and two black flags. In the meantime, a comparison between Scenario NC-MEA and Scenario SDGs shows that both have the same number of green flags. Nevertheless, even though Scenario SDGs has more yellow flags compared to NC-MEA, it has no red flags. Therefore, it can be inferred that the SDGs scenario is better for Region II compared to Scenario NC-MEA.

Table 3: ***Cross Tabulation for Region Java-Bali (Region II)***

		Nawa Cita-MEA				
		G	Y	R	B	Total
BAU	G	1	0	0	0	1
	Y	2	2	3	0	7
	R	0	0	0	0	0
	B	0	0	0	2	2
	Total	3	2	3	2	10
		Sustainable Development Goals				
		G	Y	R	B	Total
BAU	G	1	0	0	0	1
	Y	2	5	0	0	7
	R	0	0	0	0	0
	B	0	0	0	2	2
	Total	3	5	0	2	10
		Sustainable Development Goals				
		G	Y	R	B	Total
NC-MEA	G	3	0	0	0	3
	Y	0	2	0	0	2
	R	0	3	0	0	3
	B	0	0	0	2	2
	Total	3	5	0	2	10

The cross tabulation for Region III (Borneo-Sulawesi) is presented in Table 4. As can be seen from Table 4, in Scenarios BAU and NC-MEA, both have one green flag, but Scenario NC-MEA has less yellow flags (4:7). Nevertheless, the relatively small number of yellow flags is compensated by red flags (3:0). If we compare Scenario BAU with Scenario SDGs, we can see that Scenario SDGs is relatively better with three green flags (3:1) and less yellow flags (5:7). The numbers of red and black flags for both scenarios are the same. Therefore, it can be concluded that, compared with BAU, Scenario SDGs is more preferable for Region III.

Table 4: ***Cross Tabulation for Region Borneo-Sulawesi (Region III)***

		Nawa Cita-MEA				
		G	Y	R	B	Total
BAU	G	1	0	0	0	1
	Y	0	4	3	0	7
	R	0	0	0	0	0
	B	0	0	0	2	2
	Total	1	4	3	2	10
		Sustainable Development Goals				
		G	Y	R	B	Total
BAU	G	1	0	0	0	1
	Y	2	5	0	0	7
	R	0	0	0	0	0
	B	0	0	0	2	2
	Total	3	5	0	2	10
		Sustainable Development Goals				
		G	Y	R	B	Total
NC-MEA	G	1	0	0	0	1
	Y	2	2	0	0	4
	R	0	3	0	0	3
	B	0	0	0	2	2
	Total	3	5	0	2	10

The cross tabulation between Scenario NC-MEA and Scenario SDGs for Region III shows that Scenario SDGs is more preferable, as it has three green flags and no red flags even though it also has a few more yellow flags (5:4). Therefore, it is safe to say that Scenario SDGs is better compared to Scenario NC-MEA. Table 5 presents the cross tabulation for Region IV. It shows that, between Scenario BAU and Scenario NC-MEA, both have one green flag but Scenario NC-MEA has less yellow flags (4:7). Similarly, if we compare Scenario BAU with Scenario SDGs, we see that Scenario SDGs is relatively preferable to Scenario BAU with more green flags (3:1) and less yellow flags.

Table 5: Cross Tabulation for Region Nusa Tenggara-Maluku-Papua (Region IV)

		Nawa Cita-MEA				
		G	Y	R	B	Total
BAU	G	1	0	0	0	1
	Y	2	1	4	0	7
	R	0	0	0	0	0
	B	0	0	0	2	2
	Total	3	1	4	2	10

		Sustainable Development Goals				
		G	Y	R	B	Total
BAU	G	1	0	0	0	1
	Y	2	4	1	0	7
	R	0	0	0	0	0
	B	0	0	0	2	2
	Total	3	4	1	2	10

		Sustainable Development Goals				
		G	Y	R	B	Total
NC-MEA	G	3	0	0	0	3
	Y	1	0	0	0	1
	R	0	3	1	0	4
	B	0	0	0	2	2
	Total	4	3	1	2	10

The cross tabulation between Scenario NC-MEA and Scenario SDGs shows a similar pattern in that Scenario SDGs is relatively better than Scenario NC-MEA with more green flags (3:1) and less red flags (0:3) even though it has a few more yellow flags (5:4). Thus, it can be inferred that, overall, the SDGs scenario is preferable to any other scenario.

5. Policy Implications

Even though the decentralized government system in Indonesia has brought some benefits in terms of regional power to develop their own regions, delivering the development mandates has been constrained by the law of regional autonomy. As the law has focused more on sharing the duties between the central and local governments, the provincial governments have more concern achieving the duties stated in the law. As the duties mandated in the law did not explicitly emphasize sustainable development agendas, these agendas have become a lower priority in the regional development framework. This study shows that, using the Flag approach based on three development scenarios, all provinces clustered into four regions tend to have a lower score of sustainability if the BAU and existing development agenda of Nawa Cita-MEA were adopted. Nevertheless, if the SDGs agenda were adopted, the score of sustainability, judging from the appearance of green flags, will improve. This implies that adopting sustainable targets are paramount for regions in order to achieve regional sustainable development. In order to adopt sustainable targets, the provincial governments could issue regional bylaws, known as PERDA in Indonesia, which adopt more sustainable principles for their regions. For example, regulations on sustainable natural resources uses, which are now under provincial power based on Law No. 23/2014, could be the entry point toward sustainable development.

This could be followed by adopting green budgeting to finance economic activities that are more environmental friendly. The power to set out the regional policy through PERDA is strongly supported by Law No. 23/2014 (chapter 17 verse 1).

It is worth noting that bylaws (PERDA) regarding the development planning in the region should be encouraged to be adopted for sustainable principles. It is acknowledged that, based on the regulation, the provincial government should set out their own midterm regional development plan. This regional midterm plan would then be translated into annual planning and budgeting. This document is the basic platform for regional development. Therefore, it is important that the regional plan conforms to sustainable development agendas not only in the planning document, but also in the annual programs and budgeting. In addition to legal framework and financing, the provincial government, in cooperation with the central government, should start to work toward developing indicators of sustainable development as mandated by Law No. 23/2014.

The law has mandated many indicators that have to be delivered by central and local governments based on the concurrent governance mechanism, yet these indicators are still superficial, as they do not represent sustainable development agendas at all. Therefore, it is important to provide measurable indicators that represent not only the mandatory duties of the provincial government but also the interests of nature, the people, and global agendas as stated in the seventeen SDGs. The results of the study also call for improvement in the governance framework between the central and local government. Since based on the regulation, one of the central government powers, especially that of the Ministry of Home Affairs, is guidance and surveillance of the delegation, it is important that this mandate be improved by incorporating a sustainable component into guidance and surveillance principles.

Finally, it should be acknowledged that regional disparities are still a main concern in Indonesia. The gaps concerning economic and social as well environmental aspects of development among regions in Indonesia are still wide. Therefore, policies that adopt such differences should be encouraged. The central government, for example, could use different mechanisms to assess the regional performance-based sustainable criteria. It is well known that eastern regions such as Papua, which are rich in natural resources and large forested areas, are less developed based on economic indicators such regional domestic products. Yet, if sustainable development indicators were used such as forested areas, less pollution, resource efficiency, and local wisdom, such regions might have a higher development performance score than those in the central regions such Java and Sumatera.

6. Concluding Remarks

The assessment of sustainability in the context of regional development in Indonesia is both urgent and timely. As stipulated in regional government Law No. 23/2014, regional development must accomplish various aspects of development involving hundreds of indicators. The challenge to accomplish such indicators remains not only in terms of how to measure the achievement, but also in terms of how the achievement of development goals could be interpreted in a meaningful way. This study attempted to bridge and addresses those challenges by assessing sustainable development based on regional variations and differences. This study found that business as usual (BAU) development scenarios tend to be unsustainable for almost all regions. On the other hand, development scenarios based on Nawa Cita-MEA tended to give mixed results among regions in Indonesia. The SDGs development scenario, nevertheless, consistently gives better sustainable development in regions in the country. This study provides lesson learned that could be used by policy makers in assessing how sustainable development can be carried out in a simple way given the complexity of its indicators.

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Appendix A. Critical Threshold Values for Flag Analysis Region Sumatera (Region I)

Indicator	Type	CTV Min	CTV	CTV Max	Unit
Economical					
1. GDP per capita	G	19722.39	34917.9	76753.11	Million Rupiahs
2. Williamson index	B	0.19	0.48	0.76	Index
3. People living under poverty line	B	11.18	3.39	20.98	Percentage
Social					
. Pure participation number of high school students	G	35.18	38.69	70.52	Percentage
2. Life expectancy	G	69	67.46	70.76	Index
3. Social capital index	G	60.39	38.46	61.64	Index
4. Open unemployment rate	B	5.81	2.37	10.12	Percentage
Environmental					
1. Existing CO_2 ratio to population	B	1.21	0.71	2.08	Percentage
2. Environmental quality index	G	65.29	51.9	96.89	Index
3. Percentages of critical land to total area	B	0.00195	0.00034	0.00424	Percentage

Notes. G = good indictors, B = bad indicators.

Appendix B. Critical Threshold Values for FLAG Analysis Region Java-Bali (Region II)

Indicator	Type	CTV Min	CTV	CTV Max	Unit
Economical					
1. GDP per capita	G	38878.823	18652.97	136407.58	Million Rupiahs
2. Williamson index	B	0.67	0.32	1.13	Index
3. People living under poverty line	B	9.58	3.48	16.83	Percentage
Social					
. Pure participation number of high school students	G	54.55	38.84	70.83	Percentage
2. Life expectancy	G	71.61	68.5	74.5	Index
3. Social capital index	G	58.77	54.02	61.1	Index
4. Open unemployment rate	B	6.64	1.83	13.68	Percentage
Environmental					
1. Existing CO_2 ratio to population	B	1.28	0.58	1.93	Percentage
2. Environmental quality index	G	52.98	35.66	99.65	Index
3. Percentages of critical land to total area	B	0.00098	0.0034	0.00256	Percentage

***Notes*. G = good indictors, B = bad indicators.**

Appendix C. Critical Threshold Values for Flag Analysis Region Kalimantan-Sulawesi (Region III)

Indicator	Type	CTV Min	CTV	CTV Max	Unit
Economical					
1. GDP per capita	G	33102.459	14755.47	132813.96	Million Rupiahs
2. Williamson index	B	0.43	0.15	1.00	Index
3. People living under poverty line	B	9.84	3.39	23.19	Percentage
Social					
1. Pure participation number of high school students	G	49.9	34.03	67.41	Percentage
2. Life expectancy	G	68.56	62.50	73.62	Index
3. Social capital index	G	56.56	55.49	59.85	Index
4. Open unemployment rate	B	5.02	2.08	10.10	Percentage
Environmental					
1. Existing CO_2 ratio to population	B	1.44	0.96	1.95	Percentage
2. Environmental quality index	G	70.05	50.38	97.93	Index
3. Percentages of critical land to total area	B	0.00185	0.00025	0.00335	Percentage

***Notes*. G = good indictors, B = bad indicators.**

Appendix D. Critical Threshold Values for Flag Analysis Region Nusa Tenggara-Maluku-Papua (Region IV)

Indicator	Type	CTV Min	CTV	CTV Max	Unit
Economical					
1. GDP per capita	G	24585.759	9316.79	59156.84	Million Rupiahs
2. Williamson index	B	1.03	0.25	3.55	Index
3. People living under poverty line	B	19.48	3.95	36.8	Percentage
Social					
. Pure participation number of high school students	G	49.57	29.16	64.11	Percentage
2. Life expectancy	G	65.22	63.82	67.33	Index
3. Social capital index	G	58.13	57.02	59.55	Index
4. Open unemployment rate	B	5.42	2.69	10.51	Percentage
Environmental					
1. Existing CO_2 ratio to population	B	1.14	0.61	1.60	Percentage
2. Environmental quality index	G	74.2	50.72	90.15	Index
3. Percentages of critical land to total area	B	0.00114	0.00018	0.00214	Percentage

***Notes*. G = good indictors, B = bad indicators.**