International Journal of Engineering & Technology, 7 (2.34) (2018) 52-55

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET

Research paper

Coverage Analysis of Indonesia Sustainability Assessment Tools: Similarity in Dimension and Assessment Results

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Abstract

The number of sustainability assessment tools in Indonesia is growing rapidly, concerns are raised on whether the assessment results of different tools present similar and valid conclusion about the sustainability performance in manufacturing industry. In this paper, we analyze dimensions of sustainability assessment tools and compare the structures of sustainability tools in Indonesia. Using a coverage analysis to demonstrate the similarity and differences between two sustainability assessments in Indonesia (PROPER and Industri Hijau) we then compare the results of both and analyze it. This study shows that two sustainability assessment tools in Indonesia which are PROPER and Industri Hijau have high variations in their structures, indicators, criteria, and sub-themes despite their similar dimension and purpose. Consequently, these sustainability assessment tools show differences in assessment results and conclusions on the sustainability performance of firms. Future research may propose a new integrated sustainability assessment tool so there will be only one sustainability assessment tool in Indonesia.

Keywords: *Sustainability, PROPER, Industri Hijau, Coverage Analysis*

1. Introduction

Sustainability is one of the critical issues faced by manufacturing industries nowadays [1]. Sustainability has been identified as one of the key factors of future competitiveness and business survival [28]. More than ever, firms are now being challenged to consider the entire life cycle implication of their production activities [23]. Manufacturing industry faces a challenge in operating sustainably because of natural resources degradation, energy, customer demand, and also its contribution to climate change. Manufacturing industry consumes natural resources and produces toxic wastes from their product. These issues forced a number of stakeholders, investor and consumer to increase their interest in the environmental impact and assessed on how much sound governance that the manufacturing company has for environmental compliance. A growing number of companies are using sustainability as their strategy and operation to increase growth and global competitiveness. Government and communities are emphasizing corporate social responsibility in companies [2][3][29][30]. Sustainable manufacturing also enhances employees', communities' and products' safety. It is important to make a good environment with appropriate conditions because it may increase the benefit for the companies [4]. With these condition, there is a critical need for sustainable manufacturing operations development. In the manufacturing industry, sustainability increases operational efficiency by reducing costs and waste. Therefore it is also economically sound for both the industry and consumer. It now seems that the move towards low cost, highly responsive and flexible product ranges is now essential in order for a company to capture new markets and to become economically sustainable [27]. Sustainability operations is concerned about natural resources, safety, and communities. One of the benefits from developing sustainability in their companies are protecting and strengthening their reputation, building public trust, increasing market share and customer loyalty [24]. In this case, the global research community has to develop new methods and metrics for sustainable manufacturing [5]. Thus, a measurement infrastructure is critical in enabling sustainable manufacturing [2].

Sustainability assessment is increasingly seen as an important tool towards better sustainability operation [6]. Society has increasingly become more sensitive on sustainability development issues. They think twice on the product material before buying. Therefore, companies worldwide have started to adopt sustainability assessment in response to stakeholder's demands and as an effort to legitimize their business strategies [7]. Stakeholders need to know business activities in details and demand more reliable information to evaluate firms [8]. Sustainability assessment is usually conducted for supporting decision making and policy development in industries. Indeed, assessing sustainability is increasingly becoming common practice in product, policy, and institutional assessment [20]. Sustainability assessment indicator are generally structured according to hierarchical levels, which are differentiated into environmental, social, and economic, as known as triple bottom line [9]. Sustainability assessment structures are suggested in four level; the first one is dimension, then themes, in some cases made more detailed in subthemes, and indicator [21] or be suggested in frameworks, standard, rating and indices [22].

Sustainability assessment tools and indicators vary widely due to differences, priority, value judgment, scales, system boundary, and also target group. This diversity are concern if the result of different tools are similar and valid conclusion about the sustainability performance [10]. Further researches about comparative studies between sustainability assessment have been done [6][9][10][11][12]. But little attention has been paid to comparing

the sustainability assessment tools in the same country, for this case, Indonesia.

A growing number of different sustainability assessment tools have been developed in order to support conscious environmental decision making [26]. Indonesia has been known for having two sustainability assessments in reviewing the firms. The first one is PROPER from the Ministry of Environment and the second one is Industri Hijau from the Ministry of Industry. Both of them are the annual program that are made to motivating industry to implement sustainability issues.

The aim of this study is to analyze the scope and the implementation of sustainability assessment tools in Indonesia and to compare the assessment result. We compared and analyze the dimension and structure that have been used. A coverage analysis was used to compare the scope of the tools and the similarity between PROPER and Industri Hijau. Then, a comparison of assessment procedures and sustainability assessment result will be made.

2. Theoretical background

Sustainability was first introduced in Brutland Report as:

"Sustainability development is a development that meets the needs of the present without compromising the ability of the future generations to meet their own needs"[13]. Since then, the concept of sustainability development has been used as an important role in policy making [14]. Sustainability of firms has become an important research area since firms are the productive resources of the economy. Firms play a crucial role in facilitating sustainable development. Without support from firms, sustainable development could not be achieved [15].

Sustainability should be measured [16]. That is why there should be a sustainability assessment so a sustainability performance could be evaluated. Sustainability assessment are often considered as an important tool toward more sustainable production [6]. Sustainability assessment tools and the indicators vary widely due to differences, in priority, value judgment, scales, system boundary, and also target group [11]. Whether nationally, internationally, locally or company level agreed, sustainability indicator should have all three dimensions of sustainability, which are environmental, social and economic as a part of frameworks [17].

The first sustainability assessment in Indonesia is Program for Pollution Control Evaluation and Rating (PROPER) from Ministry of Environment. Fundamentally, it is a system for emissions reporting, evaluation, and control of emissions reports and ratings. PROPER also offers assistance and advice to firms. Each industry is graded, and ratings are based on several parameters in the reports. The PROPER team started by evaluating 187 large and medium-sized polluting plants in 1995 [18]. The process of collecting, evaluating, and rating data is automated in a formalized computer program, by a staff of fewer than a dozen well-trained people runs the whole scheme. The rating and evaluation procedure is also transparent, so firms know exactly what they have to do to improve their grades.

To society who have little or no prior knowledge about technical and pollution issues, there are color codes that can be used as labels for firms, chosen to be simple, clear, and understandable. Firms that simply comply with environmental regulations are Blue. Firms that are proactive and significantly exceed the environmental standards can be awarded a Green, and the Gold status awarded to firms whose above legally required standards for environmental protection and also participate in community development (Corporate Social Responsibility) and biodiversity. Firms that fail to meet minimum standards are Red or, in cases of significant environmental damage and no effort at abatement, Black.

Table: 1 Color labels used in PROPER

Rating	Technical Requirement
Gold	Highest Status. Waste-minimization and pollution. Participate in community development (Corporate Social Responsibility) and biodiversity
Green	Above legally required standards for environmental protection Good maintenance and environmental work
Blue	At legally required standards for environmental protection
Red	Below legally required standards for environmental protection
Black	Serious environmental damage

Table: 2 Change in firm's rating due to proper disclosure in Indonesia

Rating	2013	2014	2015
Gold	12	9	12
Green	113	121	108
Blue	1099	1224	1406
Red	551	516	529
Black	17	21	21

Several possible mechanisms appear to be essential to the success of the PROPER, the most relevant are the following [4]:

• Media and reputation: Firm managers feel a strong sense of civic responsibility. Indonesia has a strong culture of shame, so managers generally try to avoid bad publicity.

• Consumer reaction: All other things equal, a firm's reputation may influence consumers' purchasing decisions. Consumers increasingly become more sensitive about sustainable development.

• Worker reaction: Employees, must take pride in their workplace to be motivated to do a good job.

• Investor reaction: Investors may make investment decisions based on ethical, environmental, or other sensitivities. Even if they do not, they may believe that regulators or communities will react to environmental problems and thus may worry about the hidden liability risks of noncompliant firms.

• Community reaction: Local, regional, and national communities may react to pollution. Public disclosure is the instrument that makes this kind of reaction most likely, most of them are from environmentalists.

The second sustainability assessment in Indonesia is Industri Hijau from Ministry of Industry. Industri Hijau is annual program made to motivating industry to implement sustainability issues and to create a green industry that is environmentally friendly, uses natural resources efficiently, and user friendly. The development of Industri Hijau is one of the efforts to support the Indonesian government's commitment to reduce greenhouse gas emissions, as stated by the President at a meeting in Copenhagen in 2009, that Indonesia is determined to reduce greenhouse gas emissions by 26% by 2020 and targeted at year 2019. The scope of the assessment is divided into three groups; large industries, medium industries and small industries. Unfortunately, the result obtained from Industri Hijau are more difficult to get than the result from PROPER.

Other than PROPER, Industri Hijau has its own assessment. Rather than color, Industri Hijau using level to show society about the rating result.

Table: 3 Level labels used in Indutri Hijau

Rating	Interval Rating Result
Level 1	90.1-100
Level 2	80.1-90
Level 3	70.1-80
Level 4	60.1-70
Level 5	50.1-60

Coverage analysis concept is evaluated whether the content of the subthemes of one sustainability assessment is also addressed in other. Coverage analysis focused on the subthemes level so this approach enables us to make a comparison between sustainability

assessments. The coverage of each subtheme can be used to analyze the coverage in relation to the sustainability dimensions [6]. Besides that, coverage analysis can be used for comparing the scope, issues, or structure of the sustainability assessment tools so we can decide which one is more detailed. A coverage analysis has been used in recent paper to evaluate the coverage of sustainability themes in sustainability assessment tools [9], comparing sustainability assessment tools at farm levels [6] and sustainability assessment tools at food system [19].

3. Methodology

Sustainability assessment used in this study is taken from sustainability assessment tools in Indonesia which are PROPER from Ministry of Environment and Industri Hijau from Ministry of Industry. Both sustainability assessment tools have similar purpose, characteristic and scope (i.e. environmental and social dimension). The first step was to compare the dimension between the two of them. Then we compared the structure between PROPER and Industri Hijau. Based on the result of the comparison, one can be considered as more detailed than the other. We used a coverage analysis to identify similarities and differences between the scopes of sustainability assessment. Table IV shows the dimension comparison between PROPER and Industri Hijau. In addition, we compared the result from PROPER and Industri Hijau in 2016. We chose 3 experts from manufacturing industry which are fertilizer companies to explain about the result of each data obtained from PROPER and Industri Hijau and analyzed it.

4. Result and discussion

The coverage analysis method can make an in-depth analysis in the content of sustainability assessment tools. It also demonstrates the differences in what is assessed in each sustainability assessment tools. As shown in TABLE IV, there is a comparison between dimension from PROPER and Industri Hijau.

Table: 4 Dimension comparison

Issues	PROPER	Industri HIjau
Environmental	Environmental management system, Resource utilization (energy, waste, air pollution, water efficiency)	Production Process (material, energy, water, technology), Waste Treatment
Social	Community development and biodiversity	Certification, Corporate Social Responsibility, Award, Employee's health

Table: 5 Structure comparison

PROPER	Industri Hijau
Dimension	Dimension
Criteria	Criteria
Sub-criteria	Indicator
Indicator	-
Sub-Indicator	-

From dimension issues comparison, there are more similarities between PROPER and Industri Hijau. Each of them assesses environmental and social dimension but there are no economic dimension discussed clearly as one of the dimension itself. Industri Hijau concerned about material more than PROPER did based on the dimension issues comparison. However, both of them assess waste treatment, efficiency, environmental management system and energy. Despite these similarities, the content of the social dimension differs, making the comparison challenging [19]. The results of the comparison indicated that the coverage of environmental subthemes is relatively high compared to the social dimensions. This does not mean that the sustainability assessment tools included in this study, which are PROPER and Industri Hijau prioritize environmental subthemes over the other. The higher coverage on environmental dimension could be caused by the higher level of attention in literature and manufacturing level assessment tools for environmental indicators compared to social and economic indicators.

For structure comparison, there are differences between two of them. PROPER is more detailed than Industri Hijau. The greater the number of observations, the smaller the risk. If there are more judgment left like a detailed assessment, then transparency would diminish and the risk of corruption (or of being suspected of corruption) would decrease. None of the sustainability assessment analysis covers economic issues.

However, there would be future research proposing a new integrated sustainability assessment including economic dimension.

Analysis of the case study issues coverage by the frameworks subthemes (environmental dimensions) is shown in the TABLE VI below:

Table: 6 Analysis of the case study issues covered by the framework subthemes in environmental scopes

Case Study Issues	PROPER	Industri Hijau
GHG Emission	Minimizing air pollution	Minimizing Carbon dioxide
Energy Efficiency	Energy audit	Energy efficiency, material efficiency
Waste Treatment	3R hazardous and non-hazardous waste, water treatment	Solid waste, operational management waste and emission
Technology	Innovation	Process technology, material

Table: 7 Assessment result comparison from year 2016

Firms	Proper	Industri Hijau
Pupuk Kujang	Green	Level 5
Petrochemical Gresik	Blue	Level 5
Pupuk Kalimantan Timur	Green	Level 5

The different result for sustainability assessment can be seen from the table above. There are a differences between the label ratings from PROPER and Industri Hijau. Three of them got the highest result from Industri Hijau, but only two of them got green labels from PROPER. It is indicated if the assessment of PROPER is way more difficult and complicated than Industri Hijau. The problem addressed is that sustainability criteria used on Industri Hijau may be chosen because they are common, e.g., reduction of CO2 or emissions by x%. This is not enough to provide a complete assessment of sustainability even if a set of common criteria would allow for a more complete assessment than a single criterion alone [25]. This may also be due to the fact that the implementation of PROPER assessment is mandatory whereas the implementation of Industri Hijau assessment is voluntary.

Both of PROPER and Industri Hijau have a punishment if the companies do not pass the assessment. For example, if the companies got Red rating, or worst Black rating, the company which got those rating can be suspended, or the owner of the companies can be convicted. Companies that do not pass a PROPER assessment, cannot borrow money to the bank to expand their business. But, the worst thing in Indonesia, if the companies do not pass PROPER or Industri Hijau, or both of them, they will lose their image and also their consumer.

5. Conclusion

The aim of this study was to analyze the dimension of sustainability assessment tools in Indonesia and to compare the assessment results. According to TABLE IV, it can be concluded that PROPER and Industri Hijau had a similar dimension which were environmental and social dimensions, but none of them had a clear dimension related to economic issues. Both sustainability assessment tools have criteria about energy, waste treatment, air pollution and water. However, based on the results, Industri Hijau fulfilled more criteria in social dimension than PROPER did. Industri

Hijau concerned about not only society but also workers's health which is now becoming sensitive topic.Furthermore, having PROPER as sustainability assessment would attract more firms to increase interest on biodiversity, especially to those that want to achieve gold rating. . This study shows that two sustainability assessment tools in Indonesia which are PROPER and Industri Hijau have high variation in the structure, indicators, criteria, and sub-themes despite their similar dimension and purpose.

In conclusion, these sustainability assessment tools show differences in assessment results and conclusions on the sustainability performance of firms. It is indicated that the assessment of PROPER is more difficult and complicated than the assessment of Industri Hijau. The results from these assessments can make an ambiguity for the society since each of the assessments may result in different output, it might create confusion. It is hoped that future research can propose a new integrated sustainability assessment tool so that there will only be one sustainability assessment tool in Indonesia.

Acknowledgements

The authors acknowledge the support of Universitas Indonesia through Hibah PITTA 2017. The authors would like to thank the experts that generously participated in sharing their data, experiences and views.

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