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Analysis of the Implications of Implementing Sustainable Economic Innovation in 3 (three) Cement Companies Listed on the Indonesia Stock Exchange (IDX) for the Period 2022-2024

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Abstract

The implementation of sustainable economic innovation is an action that supports sustainable development, which not only prioritizes profit but also considers the social and environmental impacts resulting from the company's production and operational processes. By implementing sustainable economic innovation, it's hoped that it will lead to increased income with minimal environmental damage and social impact. Currently, the implementation of this innovation is being carried out across all business lines, including cement companies. Cement companies in Indonesia have a negative impact on the environment and society, therefore, sustainable economics must be considered when conducting business. The research results showed an increase in revenue for the 3 (three) companies that implemented sustainable economics: PT Semen Indonesia (Persero) Tbk, PT Indocement Tunggal Prakasa, Tbk, and PT Cemindo Gemilang, Tbk. These three companies were selected based on the criteria of being cement companies listed on the IDX with comprehensive sustainability reports and actively implementing sustainable innovations in their operations. Besides the impact of increased revenue, it also has an impact on the reduction of waste generated. One of the methods was to convert the waste produced into fuel and alternative raw materials and extend the product lifecycle. The data collection method used literature study based on the company's annual reports, sustainability reports, and publications related to sustainable economic innovation. The high initial investment and excess production capacity are challenges faced by the company in implementing sustainable economic innovation.

Keywords:
Sustainable Economic Innovation, Cement Companies

1. Introduction

Sustainable economy is currently a major trend in the global economy. This trend is driven by the increasing issues of climate change and environmental challenges. The government and companies are now focusing on green financing to support environmental conservation projects.

Sustainable economic innovation is closely related to two pillars of the Sustainable Development Goals (SDGs): 8 and 9. SDG 8 focuses on inclusive and sustainable economic growth and decent work, while SDG 9 focuses on promoting resilient infrastructure development, inclusive and sustainable industrialization, and innovation.

Sustainable economics within institutions is implemented by using as few resources as possible, creating products that are useful for as long as possible, and returning production and consumption waste back into the value chain. This is done to reduce the triple planetary crises consisting of climate change, pollution and environmental damage, and the loss of biodiversity.

By running a sustainable economy, humans can meet their needs now and in the future. The pillars of sustainable economy are: economy, social, and environment. Or what we know as ESG (Environment, Social, and Governance). In pursuing a sustainable economy, companies must innovate to open up new economic opportunities, increase global investment attractiveness, and enhance resilience to global market fluctuations and climate change. The implementation of sustainable economic innovation is an action that supports sustainable development, focusing not only on profit but also on the social and environmental impacts resulting from the company's production and operational processes. By implementing sustainable economic innovation, it is hoped that it will lead to increased income with minimal environmental damage and social impact. The cement industry is one of the sectors that contributes to carbon emissions and global environmental impact. Every production process in the cement industry, from raw material supply to production, has the potential to negatively impact the environment.

There are 3 (three) categories caused by the cement industry. The first category is raw material supply. Cement raw materials sourced from limestone mountains or Karst areas can be completely eroded by such mining. This condition will damage the Karst area ecosystem, which can also lead to changes in water flow, the loss of springs, and even the river's water. The vibrations and loud explosions from the limestone blasting process are another problem faced by communities near the limestone mining area, in addition to the drought caused by the loss of springs. As a result, the walls of nearby residents' homes cracked. The second category is a result of the raw material production process. The cement manufacturing process also causes dust and toxic gas emissions. The dust can stick to the leaves on the trees and is difficult to remove even when exposed to rainwater. The reduction of Nitrogen Oxides (Nox) and Sulfur Oxides (Sox) has also not been achieved, even with the use of advanced filtration techniques (Sri Sulasmi, et al., 2022). The cement industry contributes 3 billion tons of greenhouse gasses, or about 9% of global CO2 emissions (Keller and Klute, 2016). The final category is the result of the mobilization of cement raw material transport trucks, which can cause noise around the site and also flying dust, leading to air pollution in the surrounding area.

With the growing awareness of the importance of a sustainable economy, cement companies in Indonesia are beginning to practice sustainable economic innovation as an effort to reduce ecological impact while maintaining business competitiveness. Sustainable economic innovation includes developing new technologies, increasing production efficiency, and integrating environmentally friendly practices into the company's management scope.

This research aims to identify the sustainability strategies implemented by the three cement companies. Additionally, it aims to analyze the implications of implementing sustainable economic innovations on the operational performance of the three companies, assess the impact of sustainable innovation on the cement companies' reputation, identify the challenges faced by the companies in implementing these innovations, analyze the implications of implementing sustainable innovation on compliance with applicable environmental regulations, and understand the challenges faced in implementing sustainable economic innovations.

2. Method

This research uses a qualitative method with a case study approach to analyze the implications of implementing sustainable economic innovation in three cement companies listed on the IDX. Using a case study approach can provide a deeper understanding of the specific and real-world context of companies in implementing this innovation. The data source uses a literature study derived from the annual reports, sustainability reports, and publications related to sustainable economic innovation of each company.

Table 1. Details of the Companies that are the Research Object

Companies Name	Stock Code	Recording Date
PT Semen Indonesia (Persero) Tbk	SMGR	8 Juli 1991
PT Indocement Tunggal Prakasa, Tbk,	INTP	5 Desember 1989
PT Cemindo Gemilang, Tbk	CMNT	8 Sep 2021

Source: https://www.idx.co.id/

Scoring methods were also used in this study. The scoring was used to rank the companies, with the following details:
Score 3 = Company with the highest ranking
Score 2 = Company with the second-highest ranking
Score 1 = Company with the lowest ranking

Before scoring, calculations of current revenue and profit increases were also performed.
Formula for getting a pay raise:

$$\text{Revenue Increasing} = \frac{\text{Current Year Revenue} - \text{Previous Year Revenue}}{\text{Previous Year Revenue}} \text{ x } 100\%$$

Formula for obtaining an increase in current profit:

$$\text{Profit Increasing} = \frac{\text{Current Year Profit Value} - \text{Previous Year Profit Value}}{\text{Previous Year Profit Value}} \text{ x } 100\%$$

3. Results and Discussion

3.1 Results

a. Sustainability strategies implemented by three cement companies listed on the IDX

- PT Semen Indonesia (Persero) Tbk (SMGR) Sustainable innovation is one of the sustainability pillars in the sustainability roadmap as SMGR's sustainability strategy. SMGR's sustainable economic innovations in 2024 are focused on four main areas: Red Ocean, Blue Ocean, Operational Excellence, and Sustainability.
  1. Red Ocean SMGR chose a micro market approach strategy to maintain its market dominance. Another strategy is to strengthen its network and maintain relationships with its export partner countries, namely Bangladesh, Australia, Taiwan, and the Philippines.
  2. Blue Ocean Developing more environmentally friendly products such as green cement and its various derivatives, such as the Precision Interlock Brick (BIP) innovation, is a strategy implemented in the Blue Ocean. Green cement has up to 38% lower carbon emissions compared to conventional cement. Another strategy is to advocate to stakeholders for the creation of a market for green cement and its derivatives.
  3. Operational Excellence In this strategy, SMGR achieves efficiency in non-renewable resources thru the digitalization of production processes and the implementation of Industry 4.0-based technology.
  4. Sustainability Increasing environmentally friendly raw materials, increasing Alternative Fuels (AF), increasing new renewable electricity production, surface water conservation programs, and post-mining reclamation programs are the strategies used for this Sustainability strategy. This strategy has led to an improvement in environmental performance, particularly in the intensity of greenhouse gas emissions in scopes 1 and 2, which have decreased by 19% and 16% respectively.
- PT Indocement Tunggal Prakasa, Tbk Broadly speaking, the sustainability strategies implemented by INTP to support the Sustainable Development Goals (SDGs) include:
  1. Building a Net Zero Future
  2. Building a Safe and Inclusive Future

3. Building a Circular and Resilient Future
4. Building a Nature Positive Future

- PT Cemindo Gemilang, Tbk The implementation of sustainability strategies in 2024 in the cement and clinker segment is done by:
  1. Boost performance by implementing a market expansion-focused strategy to reach untapped markets.
  2. Strengthen strategic initiatives by adding infrastructure for both storage and transportation. This is expected to increase product supply and improve distribution efficiency.
  3. Produce the best products by developing product innovations that meet market needs, with development focused on value-based products.

b. Implications of implementing sustainable economic innovation on the operational performance of the three companies

Table 2 Comparison of Revenue

Company Code	Revenue (in million Rupiah)		
	2024	**2023**	**2022**
SMGR	36.186.127	38.651.360	36.378.597
INTP	18.548.734	17.949.756	16.328.278
CMNT	8.857.280	9.612.847	9.687.149

Source: Annual Report of each company

Table 3 Comparison of Current Year Profit (Source: Annual Report of each company)

Company Code	Current Year Profit (in million Rupiah)		
	2024	**2023**	**2022**
SMGR	771.674	2.295.601	2.499.083
INTP	2.007.947	1.950.266	1.842.434
CMNT	416.182	1.025.652	1.059.736

Source: Annual Report of each company

From the two tables above, SMGR's revenue data increased in 2023, but its profit decreased until 2024. INTP's revenue increased year after year, and its net profit also increased from 2022 to 2024. CMNT's revenue decreased in 2023 until 2024, and its net profit also decreased.

c. Implications of Implementing Sustainable Economic Innovation on Company Reputation Company reputation can also be influenced by the sustainable innovations undertaken by the company, for example, the stock price and ESG (Environmental, Social, Governance) score obtained by the company. This is because positive ESG performance tends to increase stock prices, build stakeholder and public trust, and attract investors. Companies with high ESG values and low ESG risk are considered sustainable investments, encouraging investors to invest in them. The stock price table was obtained from the Neo HOTS Mobile Application (PT Mirae Asset Sekuritas) for stocks at the end of December each year, from 2022 to 2024.
The stock prices in Table 4 show that INTP has the highest stock price compared to other companies.

Table 4 Comparison of Stock Prices (Closing as of December 31st of Each Year)

Company Code	Stock Prices		
	2024	**2023**	**2022**
SMGR	3.290	6.400	6.575
INTP	7.400	9.400	9.900
CMNT	880	1.070	905

Source: Neo HOTS Mobile Application (PT Mirae Asset Sekuritas)

From Table 5, the ESG rating table, it is found that SMGR has a better ESG rating than INTP, while CMNT does not yet have an ESG score. The above ESG scores were obtained from the Indonesia Stock Exchange website regarding ESG scores in collaboration with Morningstar Sustainalytics. These ESG values refer to the three factors: Environmental, Social, and Governance. These three factors are central to measuring the sustainability and ethical impact of investment decisions. By conducting ESG assessments, the public can evaluate the implementation of ESG practices in companies.

Table 5 ESG Rating

Code	Environmental Risk Value	Social Risk Value	Governance Risk Value	ESG Rating
SMGR	12,96	4,86	7,52	25,33
INTP	13,81	5,56	7,9	27,27
CMNT	-	-	-	-

Source: https://www.idx.co.id/id/perusahaan-tercatat/nilai-esg

Here is the explanation of ESG values:

Table 6 Explanation of ESG Values

Risk Score	Category	Description
0-10	Negligible	Considered to have negligible ESG risk
10-20	Low	Considered to have low ESG risk
20-30	Medium	Considered to have medium ESG risk
30-40	High	Considered to have high ESG risk
>40	Severe	Considered to have severe ESG risk

d. Implications of Implementing Sustainable Economic Innovation on Compliance with Applicable Environmental Regulations

In the Permen LH No. 7 Tahun 2025 concerning the Company Performance Ranking Assessment Program in Environmental Management (PROPER), this means a guidance program for business and/or activity managers in the field of environmental protection and management. The 2022-2023 PROPER ranking is based on Keputusan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia No. SK.1353/MENLHK/SETJEN/KUM.1/12/2023 concerning the results of the company performance ranking assessment in environmental management for the year 2022-2023. The 2023-2024 Proper ranking is based on Keputusan Menteri Lingkungan Hidup/ Kepala Badan Pengendalian Lingkungan Hidup Republik Indonesia No. 129 Tahun 2025 concerning the results of the company performance ranking assessment in environmental management for the year 2023-2024. From the table above, it can be seen that there was an improvement in the PROPER ranking for INTP and SMGR.

The three INTP plants, which initially had a green rating in 2022-2023, improved to 1 gold rating and 2 green ratings. Meanwhile, SMGR, which initially had 1 PROPER rating in 2022-2023, had 3 gold ratings in 2023-2024.

Table 7 PROPER Awards for the 2022-2023 Period

Code	Location	2022-2023	2023-2024
CMNT	PT Cemindo Gemilang – Ciwandan, Cilegon	Peringkat Biru	Peringkat Biru
	PT Cemindo Gemilang - Bengkulu	Peringkat Biru	Peringkat Biru
	PT Cemindo Gemilang - Medan	Peringkat Biru	Peringkat Biru
	PT Cemindo Gemilang – Bayah, Lebak	Peringkat Ditangguhkan	Peringkat Biru
	PT Cemindo Gemilang – Grinding Plant Gresik, Gresik	Peringkat Ditangguhkan	Peringkat Biru
INTP	Pabrik Palimanan	Peringkat Hijau	Peringkat Emas
	Pabrik Citeureup	Peringkat Hijau	Peringkat Hijau
	Pabrik Tarjun	Peringkat Hijau	Peringkat Hijau
SMGR	PT Semen Indonesia (Persero) Tbk - Pabrik Tuban	Peringkat Emas	Peringkat Emas
	PT Solusi Bangun Andalas	Peringkat Hijau	Peringkat Emas
	PT Solusi Bangun Indonesia – Cilacap Plant	Peringkat Hijau	Peringkat Emas
	PT Semen Padang, Kota Padang	Peringkat Emas	Peringkat Hijau
	PT Semen Tonasa, Kab. Pangkajene Kepulauan	Peringkat Hijau	Peringkat Hijau
	PT Semen Gresik, Kab. Rembang	Peringkat Hijau	Peringkat Hijau
	Pabrik Tuban (PT Solusi Bangun Indonesia)	Peringkat Hijau	Peringkat Hijau
	Pabrik PT Semen Baturaja, Ogan Komering Ulu	Peringkat Hijau	Peringkat Hijau

Source: ***https://proper.menlhk.go.id/proper/***

3.2 Discussion

The three cement companies mentioned above have implemented sustainable economic innovations, as reflected in their business and sustainability strategies, including resource efficiency for non-renewable resources and their replacement with alternative energy sources, environmentally friendly product development, production process digitalization, shortened distribution chains for resource conservation, continuous employee training, improved employee, contractor, and third-party OHS conditions, and waste recycling.

Based on the analyzed data, there are three main points that became the focus of discussion: cost efficiency through energy substitution, the correlation of ESG performance with investor confidence, and the challenges of adapting green technology.

a. Cost efficiency through energy substitution
   All three companies are aggressively increasing their Thermal Substitution Rate (TSR) by using alternative fuels such as Refuse Derived Fuel (RDF) and biomass waste. Companies with more advanced RDF facility integration have recorded more stable operating profit margins. This confirms that sustainable economic innovation is not a cost burden, but rather a crucial efficiency tool for maintaining profitability amid rising primary energy costs.
b. Correlation of ESG performance to investor confidence
   Based on secondary data analysis, cement issuers that consistently report sustainability achievements in accordance with Sustainability Reporting (SR) standards tend to have better stock price resilience during market volatility. The implementation of Green Cement (environmentally friendly cement with a low clinker factor) has become attractive to ESG-oriented institutional investors. This indicates that the Indonesian capital market is beginning to value sustainability as an indicator of long-term business health.
c. Challenges

Overcapacity production, intense competition, high market demand for Ordinary Portland Cement (OPC) with high carbon emissions used for infrastructure projects, and the high investment costs required to develop environmentally friendly technology are challenges in implementing SMGR's sustainable economic innovations. SMGR's strategy is to apply Red Ocean, Blue Ocean, Operational Excellence, and Sustainability to overcome these obstacles or challenges.

Over supply in 2024 and declining public purchasing power for cement demand, especially in the bagged cement market, are challenges faced by INTP. Tropical cyclones that hit Indonesia due to global climate change have caused a decrease in cement demand, therefore INTP faces the challenge of being able to increase efficiency and expand production innovations, improve the ratio of alternative fuel usage, digitalize, and optimize existing assets to be efficient and effective in terms of production and distribution costs.

The challenge faced by CMNT is the decline in demand in the cement industry, which has resulted in a 1.6% decrease compared to the previous year.

4. Conclusion and Suggestions

The three cement companies mentioned above have implemented sustainable economic innovations, as reflected in their business and sustainability strategies, including resource efficiency for non-renewable resources and their replacement with alternative energy sources, environmentally friendly product development, production process digitalization, shortened distribution chains for resource conservation, continuous employe training, improved employe, contractor, and third-party OHS conditions, and waste recycling.

To determine the ranking for sustainable economic innovation assessment, scoring was conducted with the following results.

Table 8 Scoring Results of the Implications of Implementing Sustainable Economic Innovation

Item	SMGR	INTP	CMNT
Revenue Increasing	2	3	1
Current Year Profit Increasing	1	3	2
Stock Prices	2	3	1
ESG Rating	3	2	1
PROPER	3	2	1
Total Skor	**11**	**13**	**6**

Source: Author's analysis

The implications for the implementation of sustainable economic innovation can be seen from the annual increase in revenue and profit, the ESG score obtained from rating companies, the stock value, and the PROPER rating received from the Ministry of Environment and Forestry.

The analysis results show that INTP has the best score with a total of 13. This can be seen from the ESG score obtained, which is followed by an increase in revenue and current year profit each year, as well as the stock price. This reflects that INTP is already implementing sustainability values in its business. The suggestion to cement companies that have or have not yet implemented sustainable economic innovation is to see the business opportunities that arise from implementing sustainable economic innovation, not just for business profit, but also considering environmental, social, or community aspects, and corporate governance.

This research is limited by the data obtained and did not involve internal interviews with the Company, so the data presented is limited to independent literature studies. This research is expected to provide insights into the implications of sustainable economic innovation thru a case study.

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