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Analysis Of The Implementation Of Environmental Accounting In Disclosure Of Environmental Costs At PT KIKC

Chika Yudistiani[1], Lilis Lasmini[2], Dian Purwandari[3]

[1,2,3]Program Studi Akuntansi, Fakultas Ekonomi Dan Bisnis, Universitas Buana Perjuangan Karawang

E-Mail : ak22.chikayudistiani@mhs.ubpkarawang.ac.id, lilislasmini@ubpkarawang.ac.id, dian.purwandari@ubpkarawang.ac.id

Abstract

This study aims to analyze the implementation of environmental accounting in the process of disclosing environmental costs at PT Kawasan Industri Kujang Cikampek (PT KIKC). The study uses a descriptive qualitative approach with data collection techniques including interviews, observations, and document studies. The research findings indicate that PT KIKC has carried out the identification and management of various environmental cost components, including wastewater treatment costs, environmental quality monitoring, permitting, maintenance of environmental facilities, pollution prevention activities, and socialization to tenants. The cost recording mechanism is carried out regularly through the stages of budget submission, approval process, and payment realization, reinforced by a sensor-based waste monitoring system connected to the relevant environmental authorities. Nevertheless, in the presentation of financial statements, environmental costs have not been discussed separately and are still classified together with area maintenance costs. Overall, the implementation of environmental accounting at PT KIKC has contributed to increased transparency, accountability, regulatory compliance, and supports managerial decision-making oriented towards sustainability principles.

Keywords: environmental accounting, environmental costs, disclosure.

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INTRODUCTION

Rapid industrial development in the era of globalization has had a significant impact on the financial well-being of local communities. Furthermore, all of a company's production activities also carry the risk of negative ecological consequences. This includes contamination of land, air, and water sources, as well as the overexploitation of natural resources. This situation demands social and environmental responsibility from every business entity to ensure business continuity and environmental sustainability.(Riyanti, 2024)In an era of increasingly rapid industrial development, manufacturing companies and industrial estates are required to focus not only on financial expansion but also on balancing this with attention to environmental sustainability, which is integrated into the company's social commitments and sustainability. Industrial activities have the potential to generate environmental impacts such as waste, emissions, and the use of natural resources, which must be managed carefully.(Limpo et al., 2021).

Based on the 2023–2024 PROPER results from the Ministry of Environment and Forestry (KLHK2023), only around 6.94% or 312 companies received green and gold ratings, while more than 93% remained in the blue, red, or black categories, indicating that the implementation of environmental management in most companies is not optimal. Regulations regarding this have been mandated in Law No. 32 of 2009 concerning Environmental Protection and Management, which requires companies to conduct environmental impact studies and control potential pollution or ecological damage. In addition, Law No. 40 of 2007 concerning Limited Liability Companies also emphasizes the commitment of business entities to carry out and report on their environmental responsibility activities. This transparency obligation is further strengthened by POJK No. 29/POJK.04/2016, which requires issuers and public companies to include social and environmental accountability reports in their annual reports.(Finance & Stan, 2022).

Previous research has shown that the implementation of environmental accounting has a positive impact on the effectiveness of internal environmental management within companies. However, in reality, environmental accounting awareness and practices in Indonesia have not been optimally implemented. Many companies still report environmental costs systematically, resulting in suboptimal environmental performance. This creates a gap between theory and practice that requires further study to determine the extent to which environmental accounting implementation can improve corporate environmental performance.(Wijayanto et al.,

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2021)This phenomenon remains relevant as a research study because increased industrial activity leads to high volumes of waste, requiring companies to have effective and responsible waste management systems. One way to do this is by implementing green accounting as a form of environmental accounting. Proper implementation of environmental accounting allows companies to calculate and control waste management costs, prevent negative impacts on the environment, and serve as a basis for managerial decision-making in efforts to achieve cost efficiency and environmental preservation.(Accounting, 2022).

Therefore, this study was designed with the specific objective of evaluating the implementation of environmental accounting at PT Kawasan Industri Kujang Cikampek (PT KIKC) in supporting the management and reporting of costs related to the environment, as well as assessing the extent to which the application is in line with applicable regulations, such as Law Number 32 of 2009 concerning Environmental Protection and Management, Law Number 40 of 2007 concerning Limited Liability Companies, and OJK Regulation Number 29/POJK. 04/2016 concerning Annual Reports for Issuers or Public Companies, and to identify various challenges and possibilities faced by PT KIKC in implementing environmental accounting, especially in the process of identifying, measuring, and submitting environmental cost reports.

PT Kawasan Industri Kujang Cikampek (PT KIKC) carries out various activities that can impact the environment, including industrial waste management, natural resource utilization, and maintenance of environmental facilities in the area. This forces the company to not only manage the environment operationally but also to systematically record, measure, and report environmental costs through environmental accounting. This situation is important to analyze in the context of the general implementation of environmental management in Indonesia, where data from the Ministry of Environment and Forestry's 2023–2024 PROPER program reveals that only around 6.94% of companies achieved green and gold ratings, while most remain in the blue, red, and black categories, indicating that the integration of environmental aspects into company management and accounting is still weak. As the manager of an industrial estate with increasingly complex activities and increasing waste volumes, PT KIKC must meet the demands of regulatory compliance and ensure transparency in reporting in accordance with Law Number 32 of 2009, Law Number 40 of 2007, and Financial Services Authority Regulation Number 29/POJK. 04/2016. Therefore, the implementation of environmental accounting or green accounting is crucial for PT KIKC to control environmental costs, improve accountability, and provide support in the

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managerial decision-making process to achieve sustainable industrial area management.

LITERATURE REVIEW

Legitimacy Theory

Legitimacy Theory emphasizes the importance of business entities adapting all their activities to be in line with the values, norms, and expectations of society in order to gain social acceptance that maintains the continuity of their business and makes them trusted as responsible entities.(Amanda Oktariyani, 2024)Legitimacy theory emphasizes that companies must be sensitive and responsible to their social environment. A company's existence depends on community support, so public interest must be a priority in carrying out its operations. Therefore, companies operate based on a social contract that outlines rights, obligations, and adjustments to societal conditions. As the manager of an industrial estate whose activities have the potential to impact the environment, PT KIKC is required to demonstrate that its operations comply with prevailing social values, norms, and regulations. In this regard, disclosing environmental costs through an environmental accounting approach is a crucial tool for the company in gaining and maintaining its social legitimacy. This aligns with the situation previously described, where the low PROPER green and gold ratings indicate that the company's commitment to environmental management and reporting is still suboptimal. By applying legitimacy theory, this study can demonstrate that the implementation and disclosure of environmental accounting at PT KIKC is not merely a means of fulfilling regulatory obligations but also serves as a corporate strategy in responding to external pressure, increasing transparency, and building public trust in the company's environmental responsibilities. This social contract serves as a foundation for the company to achieve its objectives while fulfilling its responsibilities to society.(Bottom et al., 2020)In the context of environmental accounting, legitimacy theory is an important basis for understanding why companies need to record, measure, and report environmental costs transparently. Waste management, pollution control, maintenance of environmental facilities, and compliance with regulations are aspects that must be accounted for to the public. By disclosing environmental costs in financial statements or sustainability reports, companies demonstrate that they are conducting their business activities in line with the principles of sustainability and social responsibility.(Azwari & Muslim, 2022).

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Environmental Accounting

Environmental accounting has emerged as a crucial instrument in supporting the implementation of green accounting. Through environmental accounting, companies can identify, measure, and report costs associated with environmental management and maintenance.(Source & Prosperity, 2024). Through the application of environmental accounting, companies can assess the extent to which environmental costs affect financial performance and demonstrate a commitment to environmental conservation.(Accounting, 2022).

Environmental accounting is a system for recording, measuring, and reporting information related to company activities that impact the environment. Environmental accounting aims to identify, measure, and manage the costs and environmental impacts arising from company operations. The application of environmental accounting helps companies increase efficiency, reduce waste, and minimize environmental risks.(Sari, 2025).

Environmental accounting aims to support companies in better utilizing natural resources and reducing their negative impacts on the environment. The application of environmental accounting encompasses not only reporting costs related to energy and waste management but also prioritizing the management of environmental risks that could impact a company's reputation and future profitability.(Scientific & Dan, 2025).

Environmental Costs

In an effort to increase corporate accountability regarding social issues and environmental conservation, companies can assess their performance through ecosystem protection. Environmental accounting itself is a process that records, measures, and maps expenses triggered by an entity's operational activities that negatively impact the environment.(Trisakti et al., 2022).

Environmental costs are the total expenditure of resources made by a company to stop, reduce, repair, or address the adverse effects of its operations on the environment. These expenditures include waste management, pollution control, the application of environmentally friendly technologies, and remediation of environmental damage.(Lafina et al., 2022)**.**

According toSuryaningrum & Ratnawati (2024)Environmental costs are expenses incurred as a result of a company's production activities that result in a decline in environmental quality. The purpose of cost accounting is to find ways to reduce environmental costs, increase revenue, and improve environmental performance by

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considering current and future conditions, as well as potential management costs. Thus, a company explains environmental costs based on its intention to utilize information, such as cost allocation, budgeting, product design processes, and other managerial decisions.(Irwandi et al., 2021).

Environmental Cost Disclosure

Transparent disclosure of environmental costs not only demonstrates a company's commitment to sustainability, but can also improve reputation, operational efficiency, and stakeholder trust.(Performance, 2023)Disclosure of environmental costs is an important aspect of financial reporting because it reflects a company's transparency and accountability regarding the environmental impacts of its operations. This information is not only useful for company management in decision-making but also for stakeholders such as investors, the government, and the public in assessing the company's social responsibility.(Trisakti et al., 2022).

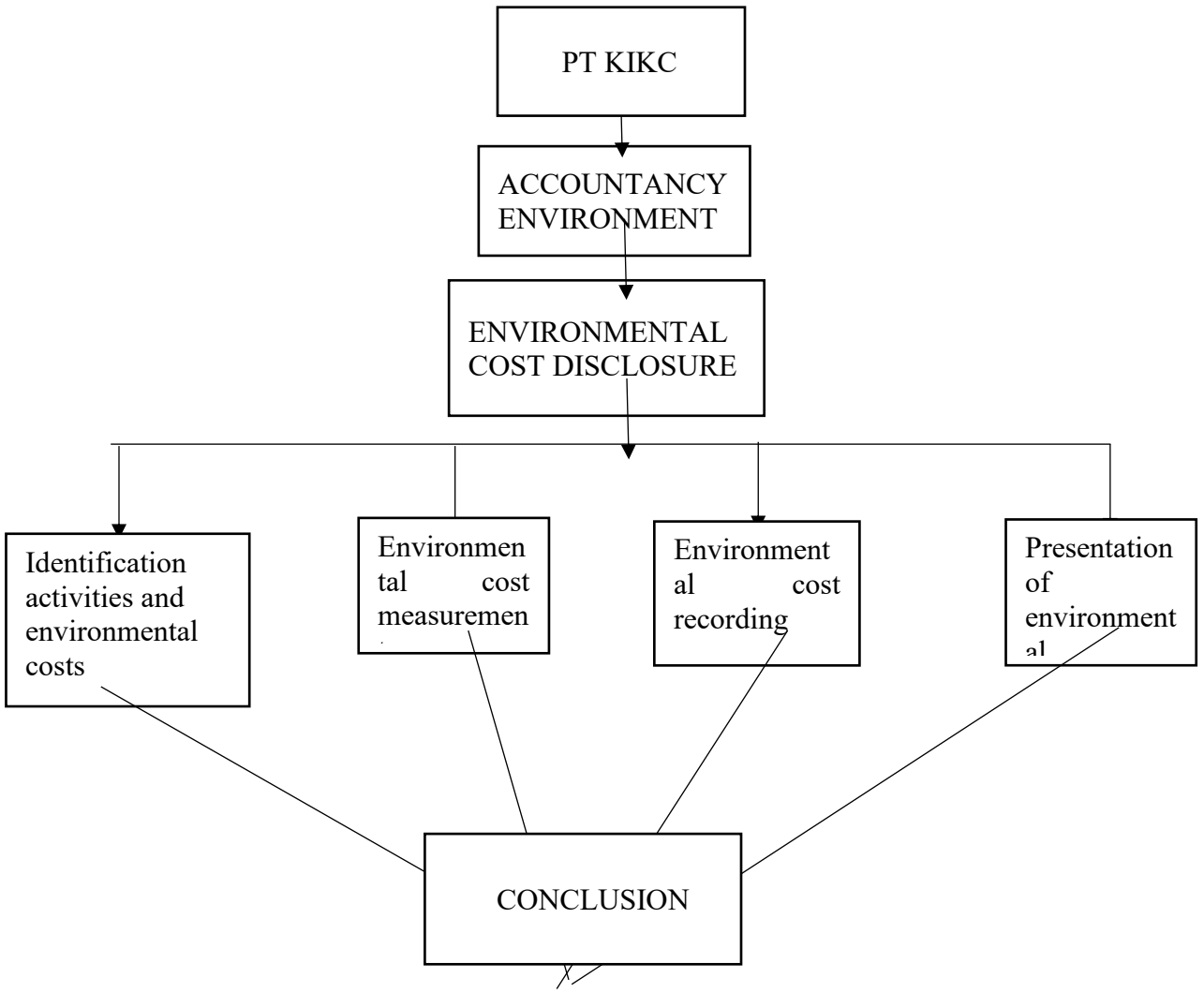
Environmental cost disclosure is the provision of information by an entity regarding all expenditures made to prevent, manage, and mitigate the environmental impacts of its operational activities. This information includes expenditures for pollution prevention, waste management, the application of sustainable technologies, environmental quality monitoring, and the costs of repairing or restoring affected ecosystems. The purpose of this disclosure is to demonstrate the extent to which a company carries out environmental responsibilities in its business activities.(Scientific & Islamic, 2023).

Disclosure of environmental costs is a way for companies to demonstrate social responsibility in managing the environmental impacts of their operations. This disclosure covers all environmental management activities, both past and present, and those planned for the future.(Eku, 2024).

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RESEARCH FRAMEWORK AND HYPOTHESIS



RESEARCH METHODS

This research employs a qualitative approach with a descriptive focus. The objective of this method is to conduct an in-depth analysis of the implementation of environmental accounting in disclosing environmentally related costs in companies. Data sources were obtained through interviews, direct observation, and document analysis, including financial statements and other supporting documents. The data analysis process involved collecting information, presenting results, and drawing

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conclusions to gain comprehensive insight into the alignment of environmental accounting implementation with existing regulations and standards.

Data source

The data sources for this research were obtained through interviews with key informants who have competence and direct involvement in the management and recording of environmental costs in the company, namely Mr. Indra Wulan as the financial manager and Mrs. Warni Lusana as the supervisor and utilities and development.

Data collection technique

The data collection technique used in this study is triangulation of data sources, which involves combining various data collection methods to obtain accurate information. This research approach utilizes two data categories: primary and secondary data. Primary data was obtained directly in the field through interviews and in-depth observations of environmental accounting practices. Meanwhile, secondary data was collected from supporting instruments such as websites, official documents, scientific publications, and books covering cost accounting topics and the consequences of industrial activities on ecological conditions.

Data Analysis Techniques

The data analysis process in this study was executed through several phases. The initial step began with data collection and collection utilizing interview techniques, field observations, and document searches. The second phase then involved data reduction and categorization to filter and sort non-essential data. The third step involved data visualization or presentation, which served to organize information and field findings for greater communication. Finally, the fourth phase focused on drawing conclusions; researchers constructed critical insights from the processed data and comprehensively analyzed the dynamics of waste management at PT Kawasan Industri Kujang Cikampek to produce valid research conclusions.

RESULTS AND DISCUSSION

Results

PT Kawasan Industri Kujang Cikampek is a company engaged in the field of area management. In addition to managing the area, PT Kawasan Industri Kujang Cikampek

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also runs various other service businesses such as industrial land leasing and development, provision of industrial utilities, construction and factory development services, engineering and inspection services, factory facility maintenance, industrial water and waste treatment, provision of labor and management of assets and area facilities. And there are several tenants managed by PT. Kawasan Industri Kujang Cikampek such as:

1. PT. Multi Nitrotama Kimia (MNK)	10. PT. Rarlon Metal Indonesia (RMI)
2. PT. Graha Bumi Hijau (GBH)	11. PT. Indo Bharat Rayon (IBR)
3. PT. Clariant Kujang Catalysts (CKC)	12. PT. Ifone Indonesia (II)
4. PT. Peroxide Indonesia Pratama (PIP)	13. PT. Sumi Win Mukti (SWM)
5. PT. Sintas Kurama Perdana (SKP)	14. PT. Tejing Moly Indonesia (TMI)
6. PT. Nichias Rockwool Indonesia (NRI)	15. PT. Euttem Global (EG)
7. PT. Katalis Sinergi Indonesia (KSI)	16. PT. Tirta Sarana (TS)
8. PT. Indo Acidatama (IA)	17. PT. Perlian Amal Perkasa (BAP)
9. PT. Megayaku Prime Packaging (MKP)	18. PT. Kujang Tirta Sarana (KTS)

The majority of tenants at PT. Kawasan Industri Kujang Cikampek operate in the chemical, catalyst, water and wastewater treatment, metal, textile, and utility sectors. PT. Kawasan Industri Kujang Cikampek also implements a SHE (Safety, Health, and Environment) policy to support a safe and environmentally friendly industrial area.

PT Kawasan Industri Kujang Cikampek has disclosed its environmental costs, which are disclosed through cost allocations based on submissions from relevant departments. This is to prevent environmental pollution. Costs arising from environmental management activities are recorded and managed through the company's accounting system, but have not been specifically separated in the financial statements, but are still combined with area maintenance costs. Although there is no specific recording of environmental costs, PT KIKC has attempted to implement environmental accounting and align it with the provisions of Law Number 32 of 2009 concerning Environmental Protection and Management, particularly in implementing environmental impact management and control obligations.

Based on historical transaction records at PT. Kawasan Industri Kujang Cikampek in 2025, environmental management costs at PT. Kawasan Industri Kujang Cikampek consist of several cost components, namely:

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No	Type of Fee	Total Cost	Information
1	Waste pool electricity costs	Rp. 66,568,243/year	The highest cost was Rp 6,106,588 in November and Rp 5,041,032 in September. This is influenced by the volume and characteristics of tenant waste.
2	Cost of IPAL facilities and infrastructure	Rp. 28,887,852/year	Used to support IPAL facilities and operations.
3	KIKC wastewater quality monitoring costs	Rp. 12,000,000/year	Cost of testing wastewater quality in the KIKC area.
4	Cost of monitoring tenant wastewater quality	Rp. 15,000,000/year	Cost of monitoring tenant wastewater quality.
5	Cost of quality monitoring in open channels (domestic wastewater)	Rp. 7,200,000/year	Monitoring of domestic wastewater in open channels.
6	Cost of monitoring surface water quality in Cikarang Gelam	Rp. 40,800,000/year	Monitoring of surface water quality around industrial areas.
7	Clean water quality monitoring costs	R. 9,600,000/year	To ensure the quality of clean water meets standards.
8	Ambient air quality monitoring costs	Rp. 33,600,000/year	Cost of measuring environmental air quality in industrial areas.
9	Noise monitoring costs	Rp. 5,400,000/year	Used for measuring environmental noise levels.
10	Transportation costs	Rp. 12,000,000/year	Operational costs for transportation of environmental/IPAL activities.

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11	Flow meter costs	Rp. 26,250,000/year	Cost of equipment for measuring wastewater discharge/volume.
12	Purchase of HCl acid	Rp. 68,160,000/year	Used in wastewater treatment/IPAL processes.

These costs are categorized as Third-Party Non-EPC (Engineering, Procurement, and Construction) Waste Management Services. This is because these costs are expenses related to routine operational activities of environmental management and monitoring, most of which involve third-party services, meaning the company uses external vendors to handle waste.

Costs related to environmental management, especially wastewater management, are still recorded in the same account as the operational costs for area management, which are recorded in the Non-EPC Service Expenses account, and have not been separated in detail.

Based on the environmental cost table of PT. Kujang Cikampek Industrial Estate in 2025, the largest cost comes from the electricity cost of the waste pond amounting to Rp. 66,568,243/year. Based on the results of the 2025 wastewater recap data, PT GBH is the tenant with the largest contribution of 158,588.3 m³ and an average of 13,215.69 m³ per month, this is the industrial wastewater category. So this shows that PT GBH is the main contributor of industrial wastewater in the area meanwhile. For the domestic waste category, the largest volume comes from PT CKC with a total of 98,138 m³ and an average of 8,178.17 m³ per month, the following are the details of wastewater from PT. Kujang Cikampek Industrial Estate tenants in 2025:

No	Bulan	AIR LIMBAH INDUSTRI						AIR LIMBAH DOMESTIK					
		PT GBH	PT PIP	PT SKP	PT IBR	PT CKC	PT KSI	PT NRI 2	PT NRI 1	PT PIP	PT CKC	ASTEMO	PT IBR
1	25-Jan	12.092,00	1.461	1200	4.174	10.577	56	121	344	217	136,4	222	-
2	25-Feb	12.857,00	986	1150	4.653	10.387	70	67,4	191	196	123,2	355	-
3	25-Mar	9.867,70	1.760	960	3.926	9.109	69	89,7	223	189	119	173	151,2
4	25-Apr	18.518,20	2.269	525	4.128	7.929	21	126,4	150	238	149	154	190
5	25-Mei	18.786,90	2.081	440	3.401	9.358	21	147	500	217	136	396	173
6	25-Jun	14.157,50	1.761	400	4.466	8.275	487	114,4	145	210	132	542	168
7	25-Jul	13.678,00	1.698	750	3.471	11.104	329	291,7	255	217	136	747	173
8	25-Agu	15.090,00	1.588	465	4.311	5.890	407	271,2	152	217	136,4	786	174
9	25-Sep	9.149,90	1.085	545	2.093	5.477	1.191	764	219	211	132	755	168
10	25-Okt	8.115,30	1.231	690	2.633	7.673	197	625	226	217	136,4	820	145
11	25-Nov	11.842,30	878	810	3.878	6.872	65	659,3	68	210	132	829	141
12	25-Des	14.433,50	1.468	770	3.157	5.487	45	694	308	217	136	821	145
TOTAL (m3)		158.588,30	18.266,00	8.705,00	44.291,00	98.138,00	2.958,00	3.971,10	2.781,00	2.556,00	1.604,40	6.600,00	1.628,20
MAX (m3)		18.786,90	2.269,00	1.200,00	4.653,00	11.104,00	1.191,00	764,00	500,00	238,00	149,00	829,00	190,00
MIN (m3)		8.115,30	878,00	400,00	2.093,00	5.477,00	21,00	67,40	68,00	189,00	119,00	154,00	141,00
RATA-RATA		13.215,69	1.522,17	725,42	3.690,92	8.178,17	246,50	330,93	231,75	213,00	133,70	550,00	162,82

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This situation increases electricity consumption because the main equipment of the wastewater treatment plant (WWTP), such as pumps, blowers, and aerators, must operate more intensively to process large amounts of waste. This is what causes high electricity costs in November at Rp. 6,106,588, December at Rp. 5,907,066, and in September at Rp. 5,041,032. It can be assumed that the volume or load of waste processed is relatively lower than the previous month. The data shows that the largest wastewater contribution comes from tenants with higher operational activities and production levels. However, this can change, as it is influenced by production activities, water usage, and the operations of each company.

Overall, PT. KIKC's environmental costs in 2025 amounted to Rp. 325,466,095/year. This amount reflects the company's significant expenditures in supporting operational environmental management and monitoring activities, particularly in wastewater treatment and regular environmental quality monitoring. This recorded data is utilized in the preparation of environmental performance documents and reporting to regulators (PROPER KLHK), thereby strengthening the implementation of good corporate governance. This also helps build public trust, as reflected in the absence of complaints related to the company's operational activities.

PT Kawasan Industri Kujang Cikampek (KIKC) has identified and managed various types of environmental costs arising from the operational activities of the industrial area, especially the costs of wastewater management, environmental monitoring, licensing, environmental maintenance, and pollution prevention activities.

Disclosure and recording of environmental costs plays an important role in increasing transparency, accountability, and public and stakeholder trust in the company's commitment to environmental management.

The environmental management process at KIKC is integrated between tenants and the area manager. KIKC manages wastewater as part of its area services and oversees the management of hazardous and toxic waste and emissions by tenants. This mechanism demonstrates a clear division of responsibilities to ensure environmental management is carried out in accordance with regulations and supports the sustainability of the industrial area. Although KIKC only handles wastewater management, the company remains active in monitoring the environmental obligations of tenants in accordance with regulations, which includes environmental monitoring activities through licensed third parties. This demonstrates KIKC's commitment to regulatory compliance and sustainable environmental management. The development of an integrated environmental accounting system is expected to improve cost

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management efficiency, prevent waste, and support more systematic investment planning, so that the management of the PT KIKC industrial area can run sustainably.

DISCUSSION

Identification of Environmental Costs of PT Kujang Cikampek Industrial Estate

PT. Kawasan Industri Kujang Cikampek has identified environmental costs. Environmental costs are identified based on activities directly related to environmental management and monitoring, specifically:

No	Jenis Biaya	Biaya per Tahun	Keterangan
1	Biaya listrik kolam limbah	Rp. 66.568.243	Operasional IPAL/pengolahan limbah
2	Biaya sarana dan prasarana IPAL	Rp. 28.887.852	Pemeliharaan fasilitas lingkungan
3	Biaya pemantauan kualitas air limbah KIKC	Rp. 12.000.000	Monitoring lingkungan
4	Biaya pemantauan kualitas air limbah tenant	Rp. 15.000.000	Pengawasan limbah tenant
5	Biaya pemantauan kualitas di saluran terbuka (air limbah domestik)	Rp. 7.200.000	Monitoring limbah domestik
6	Biaya pemantauan kualitas air permukaan Cikarang Gelam	Rp. 40.800.000	Pengawasan dampak lingkungan
7	Biaya pemantauan kualitas air bersih	Rp. 9.600.000	Pengendalian kualitas lingkungan
8	Biaya pemantauan kualitas udara ambien	Rp. 33.600.000	Monitoring pencemaran udara
9	Biaya pemantauan kebisingan	Rp. 5.400.000	Monitoring dampak kebisingan
10	Biaya transportasi	Rp. 12.000.000	Biaya pendukung operasional lingkungan
11	Biaya flow meter	Rp. 26.250.000	Alat pengukuran debit limbah
12	Pembelian asam HCl	Rp. 68.160.000	Bahan kimia pengolahan limbah IPAL

The research results show that the implementation of environmental accounting is in accordance with Hansen and Mowen's theory. Hansen and Mowen state that environmental costs are expenses incurred due to adverse environmental conditions or the potential for adverse environmental conditions. These expenses relate to efforts to prevent, detect, and repair environmental damage.(Ii & Library, 2023)PT Kawasan Industri Kujang Cikampek has classified costs into four categories in waste management (environmental prevention costs, environmental detection costs, internal failure costs, and external failure costs). These environmental costs are identified through cost proposals from relevant departments, which are then charged as part of the company's operational costs.

Recording of Environmental Costs of PT Kawasan Industri Kujang Cikampek

PT KIKC has implemented a structured environmental cost recording system, starting from the budget submission process by the relevant division, followed by approval by the procurement and budget division, to recording by the accounting division and payment execution by the finance division. This process ensures that every environmental cost is recorded and processed according to applicable procedures. However, PT. Kawasan Industri Kujang Cikampek does not yet have a specific record,

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still grouping costs in the Third Party Non-EPC Service Expenses for Waste Management account which includes:

No	Jenis Biaya	Biaya per Tahun	Keterangan
1	Biaya listrik kolam limbah	Rp. 66.568.243	Operasional IPAL/pengolahan limbah
2	Biaya sarana dan prasarana IPAL	Rp. 28.887.852	Pemeliharaan fasilitas lingkungan
3	Biaya pemantauan kualitas air limbah KIKC	Rp. 12.000.000	Monitoring lingkungan
4	Biaya pemantauan kualitas air limbah tenant	Rp. 15.000.000	Pengawasan limbah tenant
5	Biaya pemantauan kualitas di saluran terbuka (air limbah domestik)	Rp. 7.200.000	Monitoring limbah domestik
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8	Biaya pemantauan kualitas udara ambien	Rp. 33.600.000	Monitoring pencemaran udara
9	Biaya pemantauan kebisingan	Rp. 5.400.000	Monitoring dampak kebisingan
10	Biaya transportasi	Rp. 12.000.000	Biaya pendukung operasional lingkungan
11	Biaya flow meter	Rp. 26.250.000	Alat pengukuran debit limbah
12	Pembelian asam HCl	Rp. 68.160.000	Bahan kimia pengolahan limbah IPAL

Although there is no specific recording of environmental costs, PT KIKC has attempted to implement environmental accounting and align it with the provisions of Law Number 32 of 2009 concerning Environmental Protection and Management, particularly in the implementation of environmental impact management and control obligations. Disclosure and recording of these environmental costs play a crucial role in optimizing transparency, accountability, and public and stakeholder trust in the organization's responsibility in environmental management.

Essentially, waste management or environmental costs are closely related to operational costs. Environmental costs are costs incurred by a company to prevent damage to the ecosystem or costs incurred when environmental damage occurs due to waste from the production process.(Alqitipia & Andriani, 2025).

Environmental Cost Measurement of PT Kujang Cikampek Industrial Estate

PT. Kawasan Industri Kujang Cikampek recognizes environmental burdens, where the allocation of funds is integrated into the company's operational activities. Measurement of environmental costs at PT KIKC is based on actual expenditures arising from environmental management activities. Each expenditure is measured in monetary units (rupiah) according to the value stated in the budget submission document, contract, or proof of payment. Based on the value of expenditures incurred during the 2025 period of Rp. 325,466,095/year, which consists of:

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No	Jenis Biaya	Biaya per Tahun	Keterangan
1	Biaya listrik kolam limbah	Rp. 66.568.243	Operasional IPAL/pengolahan limbah
2	Biaya sarana dan prasarana IPAL	Rp. 28.887.852	Pemeliharaan fasilitas lingkungan
3	Biaya pemantauan kualitas air limbah KIKC	Rp. 12.000.000	Monitoring lingkungan
4	Biaya pemantauan kualitas air limbah tenant	Rp. 15.000.000	Pengawasan limbah tenant
5	Biaya pemantauan kualitas di saluran terbuka (air limbah domestik)	Rp. 7.200.000	Monitoring limbah domestik
6	Biaya pemantauan kualitas air permukaan Cikarang Gelam	Rp. 40.800.000	Pengawasan dampak lingkungan
7	Biaya pemantauan kualitas air bersih	Rp. 9.600.000	Pengendalian kualitas lingkungan
8	Biaya pemantauan kualitas udara ambien	Rp. 33.600.000	Monitoring pencemaran udara
9	Biaya pemantauan kebisingan	Rp. 5.400.000	Monitoring dampak kebisingan
10	Biaya transportasi	Rp. 12.000.000	Biaya pendukung operasional lingkungan
11	Biaya flow meter	Rp. 26.250.000	Alat pengukuran debit limbah
12	Pembelian asam HCl	Rp. 68.160.000	Bahan kimia pengolahan limbah IPAL

This value represents the accumulation of all identified wastewater management cost components. Measuring costs based on actual expenditure demonstrates that the company has implemented a cost measurement basis, namely recognizing costs based on the actual value incurred to support environmental management activities.

The consistency and reliability of environmental cost measurements at PT. KIKC are maintained through a waste management system equipped with monitoring sensors connected to the Ministry of Environment and Forestry and the Environment Agency. This system allows early detection of excess or violation of thresholds, so that companies can immediately take follow-up action and submit appropriate mitigation costs.

Presentation of Environmental Costs of PT Kawasan Industri Kujang Cikampek

In general, the presentation of environmental costs at PT Kawasan Industri Kujang Cikampek has been implemented through a systematic recording mechanism and is used in environmental performance reporting, thus contributing to increased transparency and strengthening the company's legitimacy. However, the presentation of environmental costs at PT Kawasan Industri Kujang Cikampek has not been done separately, still combined in the operational or maintenance cost account and classified as Third Party Non-EPC Service Expenses for Waste Management. When viewed from a more comprehensive environmental accounting perspective, the presentation still has the potential to be improved, especially through the separation and grouping of environmental costs separately in the financial statements and sustainability reports. This step will produce more structured, easy-to-understand information and have higher relevance for stakeholders, however, the recorded environmental cost data is utilized in the preparation of environmental performance documents and reporting to regulators, especially in the PROPER assessment by the Ministry of Environment and Forestry.

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CONCLUSION

The implementation of environmental accounting at PT Kawasan Industri Kujang Cikampek has been carried out in a structured manner through the stages of identification, recording, and management of various environmental costs arising from the operational activities of the industrial area. Specifically in the management and monitoring of industrial area wastewater, this is reflected in the company's ability to identify, record, and measure environmental costs with a total expenditure reaching Rp. Rp. 325,466,095 in 2025, the company groups these costs into several main categories, including wastewater treatment costs, environmental quality monitoring, licensing administration, environmental facility maintenance, and pollution prevention and control activities. The largest cost component comes from wastewater treatment plant operations, especially the electricity costs for the wastewater pond amounting to Rp. 66,568,243 which is directly influenced by the volume and characteristics of waste from tenants.

The environmental cost recording process is linked to the company's budgeting and financial systems, starting with budget submission and continuing through the verification process and continuing through payment. This mechanism reflects an internal control system that supports the principles of accountability and transparency in environmental cost management.

In terms of disclosure, PT KIKC has reflected its environmental responsibility by including these costs as part of the company's operational activities. However, all environmental costs are still recorded in a single account, namely the non-EPC third-party waste management service expense, indicating that these costs are routine operational costs and involve third-party services. Nevertheless, disclosure practices still have the potential to be improved to be more integrated and comprehensive, particularly through the presentation of reports that separate and detail environmental cost components more clearly.

In general, the implementation of environmental accounting at PT KIKC aligns with the principles of responsible environmental management and supports compliance with Law No. 32 of 2009 concerning Environmental Protection and Management. Stronger integration between financial and operational systems is expected to improve cost control effectiveness, resource efficiency, and the quality of managerial decision-making in environmental management.

Suggestions for further research have the potential to extend the limitations of this research, so that its scope is not limited to the aspects of identification,

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measurement, recording, and presentation of environmental costs, but also to the analysis of the effectiveness and efficiency of environmental costs that support the company's financial performance and environmental performance.

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