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Environmental Accounting from an Islamic Quadruple Bottom Line Perspective For Environmental Sustainability

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ABSTRACT

This study explores the application of environmental accounting within the Islamic Quadruple Bottom Line (QBL) framework to promote environmental sustainability. Utilizing a qualitative case study approach at PT. Sinergi Gula Nusantara, a sugar factory in Indonesia, this research examines how the company identifies, recognizes, measures, presents, and discloses environmental costs. The analysis integrates the QBL dimensions—profit, people, planet, and purpose—with Islamic prophetic values *(nubuwwah)*, namely *shidddiq* (truthfulness), *amanah* (trustworthiness), *tabligh* (advocacy), and *fathonah* (wisdom). Findings revealead that the company implements various environmental cost management practices, from waste prevention to pollution control. When viewed through the Islamic QBL lens, these practices not only aim for economic efficiency (profit) but also demonstrate commitment to social welfare (people) and ecological preservation (planet). The internalization of *nubuwwah* values provides a spiritual and ethical foundation (purpose) for corporate environmental responsibility. This study contributes a novel framework for analyzing and implementing environmental accounting in a manner that harmonizes economic objectives with social, environmental, and spiritual goals, offering a culturally relevant model for corporations in Muslim-majority regions.

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INTRODUCTION

In industrial development, particularly in production, companies strive to maximize profits (Mutiara Sari & Supriati, 2024). Continuous production activities result in positive economic growth, however, these production activities, while fostering economic growth, can also generate negative externalities, such as environmental damage, if not properly managed from the outset (Zhang et al., 2024). This paradox between economic growth and environmental degradation highlights the need for sustainable production strategies that integrate both economic and ecological considerations (Nguyen et al., 2024).

Therefore, every company must develop strategies to mitigate the environmental damage it causes. Preventive efforts must be made by calculating the costs required as compensation for environmental damage caused by a production activity (Pham et al., 2024). If the damage is allowed to continue, the impact is in prolonged environmental damage and disrupt the lives of future generations (Hasan et al., 2024). Therefore, environmental accounting is needed as a tool to identify, assess, measure, and present waste management costs from the company's operational activities, as an effort to maintain environmental sustainability and quality in carrying out the company's social responsibility (Almaqtari et al., 2024). Social responsibility is a company's approach to contributing to the welfare of society and the environment beyond the purpose of making a profit (Appiah et al., 2020). The form and policy of this social responsibility vary according to the theme or mission of each company, such as environmental protection, educational scholarship programs, human rights, job security, donations, or providing public facilities that are useful for the surrounding community and company involvement with the community (Wetering et al., 2022).

The existence of corporate social responsibility is a reason for companies to no longer rely on the single bottom line, which only focuses on profit without considering environmental and social aspects, while the quadruple bottom line pays attention to economic, environmental, social, and long-term goals (Jacobs, 2019). The Quadruple Bottom Line (QBL) is a sustainable development framework that expands upon the Triple Bottom Line by adding a fourth aspect: purpose (Mohd Zawawi & Abd Wahab, 2019). The QBL creates a sense of progress that has a purpose (Tiller et al., 2022). Integrating goals into company operations can create a positive impact and encourage sustainable development. The fourth aspect of the QBL, purpose, is interpreted in various ways, with some authors using terms such as goals,

culture, governance, or spirituality. This depends on the operating sector (Masrukhin et al., 2023).

This study elaborates by interpreting the purpose in the QBL theory as a *nubuwwah* value that can be internalized in the social development of the company (Anwari & Dzikrulloh, 2024). The QBL is in line with Islamic values related to sustainability because the orientation of the company is not only worldly profit, but also *falah*, namely, worldly profit and hereafter profit (Abror et al., 2021). Internalization of *nubuwwah* values into the quadruple bottom line can help the Islamic bottom line to see the application of environmental accounting in the company (Anwari & Dzikrulloh, 2024). This study contributes to the theoretical enrichment of environmental accounting frameworks by incorporating prophetic Islamic values and practically provides an ethical reference for companies in predominantly Muslim regions Concerns about environmental damage from industrial production should not be viewed solely from an economic or regulatory perspective but must also incorporate developmental and religious dimensions (Junoh et al., 2019). Thus, this study has two objectives to explore the application of environmental accounting in companies and to analyze environmental accounting using the Quadruple Bottom Line integrated with Islamic values.

This study presents the Islamic quadruple bottom line offering by internalizing the *nubuwwah* values in the purpose aspects (Nazri et al., 2022). The quadruple bottom line is an analysis to measure the success of environmental accounting using four aspects, namely profit, people, planet, and purpose (Tiller et al., 2022). The first aspect of the QBL is profit, which covers the company's financial performance. This creates sustainable economic value, achieves profitability, can streamline costs, and provides benefits to shareholders (Aliba, 2017). The Quadruple Bottom Line emphasizes that profits must be achieved in an ethical and responsible manner towards society and the environment (Pizzirani et al., 2018).

The second aspec*t*, namely the people (social) aspect in the quadruple bottom line is the value and quality of life created by the company for its employees, customers, and communities. This relates to the social impact and welfare of the community resulting from the company's operations. Companies that implement the quadruple bottom line recognize the importance of creating good relationships between all stakeholders and strive to improve their quality of life (Gerged et al., 2024). The third aspect, planet, is the positive impact that the company has on the environment. Planet focuses on the environmental impact caused by

the company's operational activities, which require the company to be responsible for managing natural resources, such as reducing greenhouse gas emissions, efficient waste management, natural resource conservation, and ecosystem protection. Companies that pay attention to the planet dimension will try to minimize the negative risks that arise to the environment (Gerged et al., 2024).

The fourth aspect is purpose, which is the goodness that companies do in the world with the work they do. Purpose is interpreted as the reason for the existence of a company that is in line with social, environmental, and economic goals (Gerged et al., 2024). By integrating goals into company operations, it can creates a meaningful impact and encourage sustainable development. Purpose has a spiritual side that can be developed, thus this study develops it by internalizing the *nubuwwah* values into the company's goals. The *nubuwwah* values are: firstly, *siddiq* means honest and always bases words, beliefs, and deeds on the values taught by Islam. Honesty does not mean true words, but actions must also be true and in line with what is said. For a business actor, it is mandatory to be honest in running their business. Honesty has a broad meaning, such as not lying, meaning being transparent, not cheating, not making up facts, not betraying, and not breaking promises (Himam, 2021). Second *amanah*, trustworthy, responsible, open, punctual, and provide quality. Its application is with the principle of accountability and responsibility. Third, *tabligh* which means delivery without reducing the slightest command given, inviting and giving examples to people to do or implement the provisions of Islamic teachings in everyday life. In business, communication needs to be done intensively. Fourth, *fathonah* means intelligent and innovative. The nature of *fathonah* produces the ability to work with a far-sighted view and can solve problems in a good way (Himam, 2021).

From the several values of the prophecy above, if described in the quadruple bottom line, then business actors or companies are required to have an attitude that does not contradict words and actions intentionally in running their business (Tiller et al., 2022). Companies are required to have the nature of being on time, punctual, acknowledging their weaknesses and shortcomings, always improving the quality of goods and services continuously, and must not cheat or lie. Companies must also have a trustworthy nature in providing services to consumers and the community. Companies that are careless and do not maintain ethics will not do business well and can even endanger their business operations.

Therefore, companies are required to have an awareness of ethics and morals when running a business (Aliba, 2017).

This research is significant because previous studies on environmental accounting have largely overlooked the integration of Islamic values. Such as research conducted by Pramana and Nilamsari (2021), they discussed the application of environmental cost accounting in companies. This research does not use QBL analysis and does not include Islamic values in its analysis (Pramana & Nilamsari, 2024). Similarly, research by Manik & Usman (2024) focused on entrepreneurship from an accounting information system perspective and does not delve into corporate environmental accounting. Similar research was also conducted by Sultan et al. (2024) with a discussion on environmental accounting as a company analysis. However, this research has not discussed the quadruple bottom line and Islamic values (Sahrir et al., 2024). Apart from these studies, there are several other studies that discuss environmental accounting, but none of them have included Islamic values in the analysis.

Hamidi and Worthington's research (2021) discussed financial institutions with the quadruple bottom line as a framework (Hamidi & Worthington, 2021). Then continued with Hamidi M, Worthington's research on Islamic analysis in banking through the development of triple bottom line analysis. This analysis has included the prophet as one of the values in the analysis (Hamidi & Worthington, 2023). However, in terms of discussion, there are some differences. This article focuses more on company analysis. Building on the gaps in previous research, this study establishes its relevance by proposing a framework to measure corporate sustainability through the internalization of Islamic values. This study contributes to the theoretical enrichment of environmental accounting frameworks by incorporating prophetic Islamic values and practically provides an ethical reference for companies in predominantly Muslim regions. This research not only expands the theoretical boundaries of environmental accounting by introducing Islamic spiritual dimensions, but also offers practical ethical guidance for firms operating in Muslim-majority regions.

METHOD, DATA, AND ANALYSIS

This study employs a qualitative case study approach to conduct an in-depth analysis of the company's strategies for waste management and environmental damage prevention

(Creswell, 2003; Garrido, 2017). The type of research used a case study (Garrido, 2017). This type specifically discusses cases that have occurred at PT. Sinergi Gula Nusantara (SGN). PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory Unit, which is one of the BUMN companies engaged in the white crystal sugar industry under the auspices of PTPN XII, is located in Glenmore District, Banyuwangi Regency, East Java. PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory is an industry engaged in the agro-industry that utilizes raw materials from sugar cane agriculture to be processed into value-added products, namely white crystal sugar. PT. Sinergi Gula Nusantara (SGN) is a factory whose main activity is producing crystal sugar from sugar cane management. From the main activities of this factory, of course, there is an impact on the results of sugar cane management to become a grain of crystal sugar. In the production process, waste is produced that can damage the environment and natural sustainability if not managed properly. The waste produced is liquid, solid, and gas waste.

Several years ago, a significant environmental incident occurred at the Glenmore sugar factory when production waste was discharged into a local river, resulting in severe ecosystem damage, including the death of thousands of fish. In addition to damaging the river ecosystem, waste also makes residents living around the river feel itchy due to waste pollution in the river. Residents who carry out activities through the river water cause rice to die because it is polluted. After being investigated, it was found that a number of material components exceeded the maximum limit. Interview data confirmed that the incident was caused by an overflow of industrial waste. Data were obtained by conducting in-depth interviews with the parties involved, namely the accounting sector, waste management sector, logistics sector, HR sector, and the general sector. Data were obtained through participatory observation, in-depth interviews with all sources, and studies on available documents. The data that had been obtained were analyzed interpretively using the Islamic Quadruple Bottom Line analysis by looking at 4 aspects of profit, people, planet, and purpose (Jacobs, 2019).

In purpose, *nubuwwah* was internalized as a value developed to measure the success of the applied environmental accounting. The analysis stages used Huberman's interactive model, consisting of data collection, data reduction, data presentation, and concluding (Miles & Huberman, 2014). The validity of the data was tested using source triangulation and technique triangulation (Lisabella, 2013). In addition, the researcher also extended the

observation period to ensure the accuracy of the data obtained (Harahap, 2021). The following describes the research framework in this article, namely:

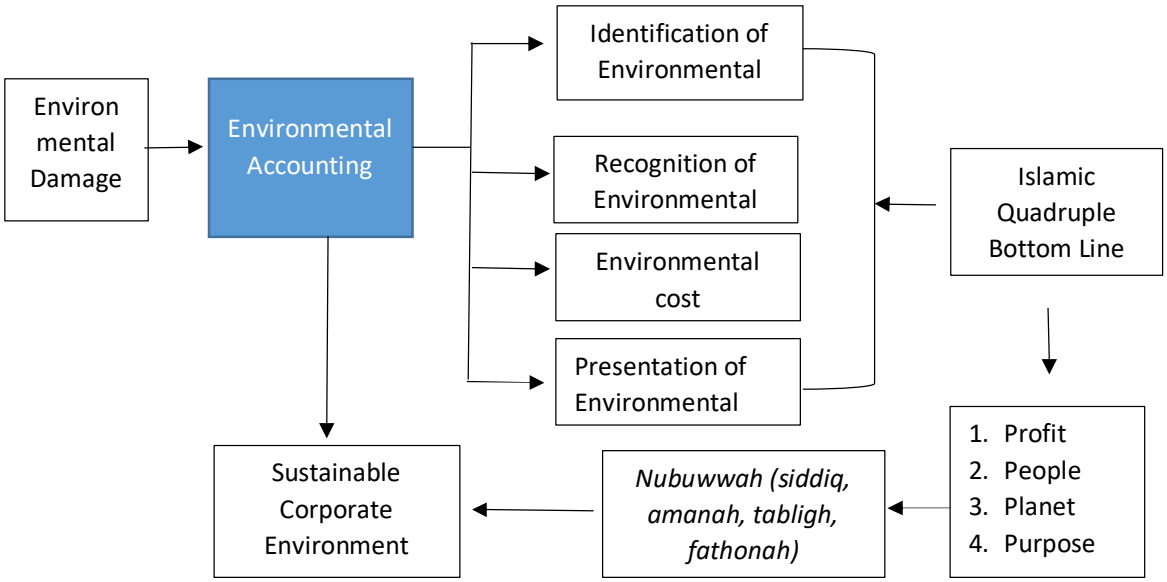

Figure 1. Research Framework

The figure 1 above explains that to realize a sustainable corporate environment, environmental accounting can be used as mandated by the regulations on social responsibility accounting in Indonesia, which have been regulated in the Financial Accounting Standards Statement (PSAK) numbers 32 and 33. This PSAK regulates the obligations of companies from the general mining sector and Forest Concession Rights (HPH) owners to report types of environmental costs in financial statements. The latest revised Financial Accounting Standards Statement (PSAK) states that general mining accounting regulates the accounting treatment of overburden removal activities and environmental management activities. The application of environmental accounting is to create a sustainable environment by reducing environmental damage with the Islamic quadruple bottom line analysis. This analysis uses four aspects that can be analytical tools to view environmental accounting, namely profit, people, planet, and purpose. This purpose contains *nubuwwah* values as a form of internalization of spiritualism.

RESULTS AND DISCUSSION

Implementation of environmental accounting in companies. In exploring data related to the application of environmental accounting in companies, this study divides it according to the reporting stages in environmental accounting.

Identification of corporate environmental costs

One of the environmental protections carried out by PT. SGN Glenmore Sugar Factory is by managing waste generated from PT. SGN Glenmore Sugar Factory's production activities require environmental accounting as a tool to support activities in all fields, especially in the field of waste management. PT. SGN Glenmore Sugar Factory has established procedures for identifying environmental costs.

Environmental Prevention Costs

PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory related to environmental prevention carried out by controlling equipment to control air waste and also conducting tests on the waste produced, this is to avoid environmental pollution. In every effort made to prevent environmental pollution, the company spends all kinds of costs for waste management so as not to pollute the environment. The costs incurred for waste management include for management and analysis costs for production water tests and water from cleaning all equipment and supplies used for sugar production, and air test analysis costs, which are used to test the smoke produced from the boiler activity process. All types of costs are recorded in the financial statements with each type of cost being distinguished from other costs. PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory related to costs for waste management have three types, namely liquid waste, air waste and B3 waste in these costs are handled properly and tests are carried out for liquid and air waste. This is to ensure that before the waste is released into the environment it is safe and cannot pollute the environment. This is reinforced by data processed by researchers related to the cost of testing carried out by the factory.

Table 1. Recap of Environmental Test Data of PT. Sinergi Gula Nusantara Glenmore Sugar Factory

No	Test Name	Vendor Name	SPP Month	Nominal SPP	Year
1.	Ambient air test	PT. Anugrah Perfect Analysis		Rp. 34,062,000	2023
2.	Boiler emission test	PT. Ganesha Environmental		Rp. 24,579,500	2023
3.	2-track geoelectric test	PT. Geo Santara	September	Rp. 8,720,000	2023
4.	Wastewater inlet analysis test	PT. Anugrah Perfect Analysis	September	Rp. 6,540,000	2023
5.	Soil physics test	PT. Anugrah Perfect Analysis	October	Rp. 10,355,000	2023
6.	Ambient air test	PT. Anugrah Perfect Analysis	October	Rp. 34,062,000	2023
7.	Boiler emission test	PT. Ganesha Environmental	November	Rp. 24,579,500	2023
8.	Work environment test	PT. Anugrah Perfect Analysis	March	Rp. 16,241,000	2024
9.	Work environment test	PT. Anugrah Perfect Analysis	June	Rp. 11,772,000	2024
10.	Boiler emission test	PT. Ganesha Environmental	July	Rp. 24,579,500	2024
11.	Ambient air test	Environmental Agency of Banyuwangi Regency		Rp. 15,795.00	2024
12	Boiler emission test	PT. Ganesha Environmental		Rp. 25,550,000	2024

Source: Processed by Researchers, 2025

Environmental Detection Cost

PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory is related to environmental detection costs by conducting tests on the waste it has, such as conducting tests on liquid waste to ensure that the water conditions are good for the environment before being released into the environment. It is also conducting air tests at various points to ensure that the air around the factory has good quality for the environment. Air tests are carried out by testing smoke from the bagasse burning process. Management and testing of liquid waste, B3, and air waste have been carried out by PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory, this is done to detect water conditions and air conditions before being released into the environment, which is completely safe for the environment. This is supported by evidence of documentation of environmental test results reports attached to the attachment.

External Failure Costs

PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory reported no external failure costs, attributing this to its multi-stage waste treatment process, which ensures that discharged waste is safe for the environment. External failure costs at PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory have not been there, because the factory has carried out waste management and testing every month, and there is already a field that is given responsibility to manage and control factory waste.

Internal Failure Costs

PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory in managing and testing waste is really done seriously, this is to avoid environmental pollution and also avoid costs arising from environmental repair activities due to pollution. Internal failure costs at PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory have managed waste and residual production materials that can become waste effectively. The factory in the waste management process has been supported by the purchase and maintenance of electrostatic precipitators to control and reduce smoke before it is released into the environment. The identification of environmental costs carried out by PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory has been following the Hansen and Mowen theory, which consists of environmental failure costs, environmental detection costs, external failure costs, and internal

failure costs. However, at PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory, there are no external failure costs because the factory has managed, tested, and utilized waste and remaining production materials properly. Expenditures for environmental costs have been specifically classified into accounts based on the type of cost, such as testing costs are classified into accounts or analysis cost accounts.

Recognition of corporate environmental costs

After the identification stage, the stage of recognizing the account or cost account is reached when receiving benefits from several values issued for environmental financing. In the allocation of environmental costs, costs are allocated at the beginning of the accounting period to be used during one accounting period. PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory recognizes that every cost incurred for waste management is recognized in the analysis cost account (air test, water test), chemical inventory consumption costs, and urea fertilizer and herbicide consumption costs. Transactions are recorded when there is a realization using the accrual basis method, where every transaction, either cash or credit, is recorded by the company in the financial statements. Recognition of environmental costs in PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory, where the waste management sector records the costs incurred for the environment, recorded in detail by name, while in the field of cost accounting in the financial report, recorded by type, such as costs for environmental testing consisting of air tests, water tests, and soil tests. All of these tests in the field of accounting are recorded in the financial report using one account or an analysis cost account.

Table 2. August Financial Report of PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory

Account Code	Account Name	Amount
51100058	Cost of consumption of fertilizer and herbicide supplies	Rp. 161,761,433
51100061	Chemical inventory consumption costs	Rp. 4,466,560,921
51100812	Analysis costs	Rp. 67,955,974
	Total cost	**Rp. 4,696,278,328**

Source: Processed by Researchers, 2025

Based on Table 2, it obtained related to the types of waste at PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory has liquid waste, air waste, and B3 waste. Every cost incurred for the waste in the financial report is recognized when a transaction occurs using the accrual basis method. The results of the data processed by the researcher show that the environmental costs account code is separated from other costs.

Measurement of Corporate Environmental Costs

Measurement of environmental costs at PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory uses basic cost calculations with monetary units. The finance department issues a budget according to the amount of expenditure for liquid waste costs and analysis costs. Measurement of environmental costs at PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory uses environmental cost calculations in monetary units, and each cost has been budgeted at the beginning of the period. So that the right amount can be obtained according to the company's real needs in each period. This is done to determine the allocation of financing according to the company's conditions. Based on the data obtained, the measurements were conducted by PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory uses monetary units with costs budgeted at the beginning of the period to obtain the right amount according to the company's real needs using the accrual basis method.

Presentation Corporate Environmental Costs

Presentation of environmental costs carried out by PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory is presented separately from operational costs and environmental costs. Costs are grouped by type, such as costs for this analysis covering all tests in the company, such as air tests, water tests, geoelectric tests, soil physics tests, work environment tests, so this analysis cost account is not only for waste tests. The cost of chemicals to manage water is included in the chemical inventory consumption cost account. Presentation of environmental costs in PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory, where the waste management sector records the costs incurred for the environment are recorded in detail, while in the field of accounting, costs in financial reports are recorded based on their type, such as costs for environmental testing, consisting of air tests, water tests, and soil tests. All of these tests in the accounting field are recorded in one account or an analysis cost

account. This is reinforced by documentary evidence of the financial report of PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory was processed by researchers.

Table 3. August Financial Report of PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory

Account Code	Account Name	Amount
51100058	Cost of consumption of fertilizer and herbicide supplies	Rp. 161,761,433
51100061	Chemical inventory consumption costs	Rp. 4,466,560,921
51100812	Analysis costs	Rp. 67,955,974
	Total cost	**Rp.4,696,278,328**

Source: Processed by Researchers, 2025

Based on Table 3, obtained related to the types of waste owned by PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory produces liquid waste, air waste, and B3 waste. All waste owned is managed and tested to protect the environment when the waste is distributed to the environment. These wastes have costs that are presented in the financial report, namely the balance sheet, separately from other costs. The data obtained by the researcher shows that data related to environmental costs the account code is separated from other costs.

Disclosure of corporate environmental costs

Disclosure of the report on the results of recording and presenting the environmental costs of PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory is not disclosed publicly, and the company makes a financial report once a month, which will later be reported to the center. Disclosure of financial reports related to environmental costs arising from waste management and testing is disclosed in the financial report, namely the balance sheet. The financial report of PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory is not disclosed publicly and is only used by internal parties, the Banyuwangi Environmental Service (DLH), the K3 party, and the audit party, because PT. Sinergi Gula Nusantara (SGN) Glenmore Sugar Factory is a company whose shares have not been purchased by the general public through stock trading on the Indonesia Stock Exchange (IDX). Based on data obtained at PT. Sinergi Gula Nusantara Glenmore Sugar Factory discloses environmental costs in the financial report,

namely the balance sheet. The factory's financial report is not disclosed publicly and is only used by internal parties, the Banyuwangi Environmental Service (DLH), the K3 party, and the audit party.

Discussion

Design of the Islamic Quadruple Bottom Line Model in the Implementation of Environmental Accounting in Companies

Before providing a design proposal related to the Islamic quadruple bottom line model, the results of the analysis of each stage of environmental accounting implementation are presented at each point (Hansen & Mowen, 2007). The results of the analysis are the basis for discussing the results of this study. The following are the results of the environmental cost identification analysis using the Islamic quadruple bottom line in the company.

Table 4. Islamic Quadruple Bottom Line Analysis on the Identification of Corporate Environmental Costs

Findings	Analysis using Islamic Quadruple Bottom Line
1. Environmental Prevention Costs a. Waste management b. Controlling emissions from boiler flues c. Conduct environmental testing once a month 2. Environmental Detection Cost Measuring the level of liquid and air waste pollution before being released into the environment by conducting tests carried out by third parties (laboratories) and the Environmental Service. 3. External Failure Costs External environmental failure costs are not found because they have not occurred. 4. Internal Failure Costs	1. Profit Carrying out cost efficiency and increasing productivity by utilizing waste production materials by recycling them into something that has value. Bagasse is used as electricity that can save on electricity costs during the milling period, and the sap sediment in the sugar cooking process is sold and used as fertilizer that can increase income. 2. People a. Implementing safety protocols and monitoring employee compliance. b. Giving rewards to employees c. Providing Death Insurance, Work Accident Insurance, and Old Age Security d. Providing free medical treatment to the community

Findings	Analysis using Islamic Quadruple Bottom Line
a. Maintenance of the electrostatic precipitator heavy equipment b. Using a precipitator *electrostatic* to control and manage smoke before it is released into the environment c. Recycling of waste materials, namely sugarcane pulp, is used to generate electricity, and the sediment in the sap is used as fertilizer. d. B3 waste to TPS is processed by a third party.	e. provide donations and assistance to the community and orphans 3. Planet Maintain environmental sustainability by managing and testing waste before it is distributed to the environment. 4. Purpose a. *Siddiq* (Honest), honest in protecting the environment by managing waste b. Trustworthy, responsible for the waste owned, also responsible for the safety and welfare of employees and the community c. *Tabligh* makes reports related to environmental costs as information on costs that have been incurred, which can be used by those who need it. d. *Fathonah* (Wisdom), smart and innovative in making policies by utilizing leftover production materials and smart in increasing employee productivity by providing rewards every month.

Source: Processed by Researchers, 2025

Table 4 presents an analysis of the company's environmental costs using the Islamic quadruple bottom line approach, which integrates four main dimensions: profit, people, planet, and purpose (goals based on Islamic values). This analysis demonstrates the company's holistic approach, focusing not only on financial gain but also on employee and community welfare, environmental sustainability, and adherence to Islamic values. This Islamic quadruple bottom line approach provides a holistic model for measuring a company's sustainability performance, particularly in industrial sectors that have the potential to generate waste.

Table 5. Islamic Quadruple Bottom Line Analysis on the Recognition of Corporate Environmental Costs

Findings	Analysis using Islamic Quadruple Bottom Line
Environmental costs incurred to manage waste are recognized when a transaction has occurred or by using the accrual basis mode and are included in the financial statements, namely the balance sheet, in a special account that is not combined with other cost accounts.	1. Profit The use of the accrual basis method in recognizing transactions affects the content of financial statements by clearly describing assets, liabilities, and receivables. However, it does not affect the company's profits. 2. People The separation of costs and recognition of costs using the accrual basis has an impact on users of financial reports, because the separation of costs and recognition of costs when transactions occur will make it easier for readers to find out information related to the type of costs. 3. Planet Recognition of costs using the accrual basis method and separation of environmental costs from other costs does not affect the environment, because the recognition and separation of these costs will not interfere with the waste management and waste testing process, especially since each waste management sector makes a report on the costs that have been incurred for waste management. 4. Purpose a. *Siddiq* Recognition on an accrual basis and separation of environmental costs from other costs means that the factory has complied with the provisions of PSAK paragraph 82 by separating environmental cost accounts or accounts. b. Trust Responsibility in preserving the environment, to protect the environment as a trust from Allah, and to acknowledge all kinds of costs environment that has been issued to maintain the environment by the applicable provisions. c. *Tabligh*

Findings	Analysis using Islamic Quadruple Bottom Line
	Recognition of costs using the accrual basis is disclosed and recognized in the financial statements, namely the balance sheet, separated from similar accounts. d. *Fathonah* In selecting the recognition of the separation of factory costs in recording using the System Application and Product in the data process (SAP) system, it can make it easier to identify errors.

Source: processed by researchers, 2025

Measuring Corporate Environmental Costs: Islamic Quadruple Bottom Line Perspective

Measuring corporate environmental costs (CEC) is a crucial process for assessing the extent to which a company allocates resources to environmental sustainability. From an Islamic perspective, this measurement not only considers economic aspects but also takes into account social responsibility, environmental sustainability, and spiritual goals following Sharia principles. The company's environmental costs are measured based on environmental accounting, then analyzed using the Islamic Quadruple Bottom Line, which is a measurement to determine the method used and the analysis of this measurement, which is tabulated as follows:

Table 6. Islamic Quadruple Bottom Line Analysis on Measuring Company Environmental Costs

Findings	Islamic Quadruple Bottom Line Analysis
Measurements related to environmental costs are measured using monetary units, with costs budgeted at the beginning of the period to obtain the right amount according to the company's real	1. Profit Measurement using monetary units does not affect factory profits. 2. People Measurement using monetary units with the accrual basis method has an impact on users of financial reports, because it can make it easier for

Findings	Islamic Quadruple Bottom Line Analysis
needs, using the accrual basis method.	readers to find out information related to the type of costs and the exact value or figures. a. *Siddiq* Carrying out waste management and testing to protect the environment means being honest in carrying out responsibilities. Recording environmental engineering using the measurement of monetary units with accrual basis recording by the provisions of PSAK 99. b. Trust Responsibility in maintaining environmental sustainability is a mandate from Allah, and measuring the environmental costs incurred by applicable provisions. c. *Tabligh* All environmental cost information is recorded in the financial report to be used for financial reporting purposes. d. *Fathonah* Smart in recording using the System Application and Product in the data process (SAP) system, which can make it easier to find errors or data manipulation.

Source: Processed By Researchers, 2025

Presentation of Corporate Environmental Costs Islamic Quadruple Bottom Line Perspective

After measuring the environmental impact costs incurred, the measurements are then presented based on existing financial reports. Presentation of Corporate Environmental Costs in the Islamic Quadruple Bottom Line Perspective highlights the importance of corporate transparency in disclosing environmental costs as a broader form of accountability not only to shareholders, but also to society, the environment, and ultimately to Allah SWT. Environmental costs include all expenditures related to pollution prevention, waste management, investment in eco-friendly technologies, restoration of damaged ecosystems, and compensation for affected communities. These costs are typically presented in sustainability reports to demonstrate the company's commitment to social and environmental responsibility.

Within the framework of the Islamic Quadruple Bottom Line (IQBL**)**, corporate performance is measured not only by the three dimensions of the traditional *Triple Bottom Line* profit (economic), people (social), and planet (environment) but also by an additional dimension spirituality (faith and piety)**.** From the Islamic perspective, business activities are seen as a trust (*amanah*) and a form of worship, which means that environmental expenditures should be guided by spiritual values and the awareness of human responsibility as stewards (*khalifah*) on earth. Therefore, presenting environmental costs within the IQBL framework reflects that corporations are not only pursuing economic gain, ensuring social welfare, and protecting the environment, but also aligning their business practices with Islamic principles in order to seek the pleasure of Allah SWT. The following is a tabulation of the presentation of the company's environmental costs that have been incurred, including:

Table 7. Islamic Quadruple Bottom Line analysis in the presentation of the company's environmental costs

Findings	Islamic Quadruple Bottom Line Analysis
Environmental costs incurred for waste management are presented specifically based on the type of cost and separated from other costs.	1. Profit Presenting environmental costs separately from other costs does not affect factory profits, but has an impact when budgeting, because separating costs makes it easier to determine a budget that is in accordance with the costs that will be realized. 2. People The presentation of environmental costs separately from other costs in the balance sheet has an impact on users of financial reports, because separate costs will make it easier for readers to find out information related to the types of costs involved. 3. Planet Presentation of environmental costs separately from other costs in the balance sheet report does not affect the environment, because the separation of these costs will not

Findings	Islamic Quadruple Bottom Line Analysis
	interfere with the waste management and waste testing process, especially since each waste management sector makes a report on the costs that have been incurred for waste management. 4. *Purpose* a. *Siddiq* Presentation of environmental costs separately from other costs means that the factory has complied with the provisions of PSAK 2015 No. 1 paragraph 15 by separating environmental cost accounts or accounts. b. Trust Responsibility in preserving the environment, to protect the environment as a trust from Allah, and to provide for all kinds of costs environment that has been issued to maintain the environment by the applicable provisions. c. *Tabligh* Each environmental cost is presented in the balance sheet using a similar account. d. *Fathonah* The presentation option with cost separation in recording environmental costs uses the System Application and Product in data process (SAP) system, which can make it easier to identify errors or data manipulation.

Source: Processed by Researchers, 2025

Corporate Environmental Cost Disclosure Islamic Quadruple Bottom Line Perspective

The final stage in environmental accounting is the disclosure of environmental costs. The findings that are the results of the research are analyzed as follows:

Table 8. Islamic Quadruple Bottom Line analysis on corporate environmental cost disclosure

Findings	Islamic Quadruple Bottom Line Analysis
Disclosing environmental costs in financial reports, namely balance sheet reports that are presented specifically in environmental cost accounts, disclosed in analysis cost accounts, inventory consumption costs, and urea fertilizer and herbicide inventory consumption costs.	1. Profit The inclusion of environmental costs in the balance sheet has no impact on the factory's profits. 2. People Disclosure of environmental costs in the balance sheet has an impact on users of financial reports because the information in the financial reports can be used in making company management decisions, as well as for audits. 3. Planet Disclosure of environmental costs in the balance sheet report does not affect environmental conditions, because disclosure of environmental costs in the financial report will not interfere with the waste management and waste testing process, especially since each waste management sector makes a report on the costs that have been incurred. 4. Purpose a. *Siddiq* Disclosure of environmental costs in financial reports without covering up the costs incurred means that the factory has been honest in disclosing these costs. b. Trust Responsibility in maintaining environmental sustainability is a mandate from Allah, and disclosing all kinds of environmental costs that have been incurred by applicable provisions. c. *Tabligh*

	Each environmental cost is presented in the balance sheet using similar accounts.
	d. *Fathonah* The choice of disclosing environmental costs in the balance sheet report by separating environmental costs from other costs using the system *System Application and Product in data processing* (SAP), which can make it easier to identify errors or data manipulation.

Source: Processed by Researchers, 2025

Based on Table 8 above, the Islamic quadruple bottom line can produce an Islamic quadruple bottom line model design that can be used for the benefit of business sustainability. (Hansen et al., 2009; National et al., 2019).

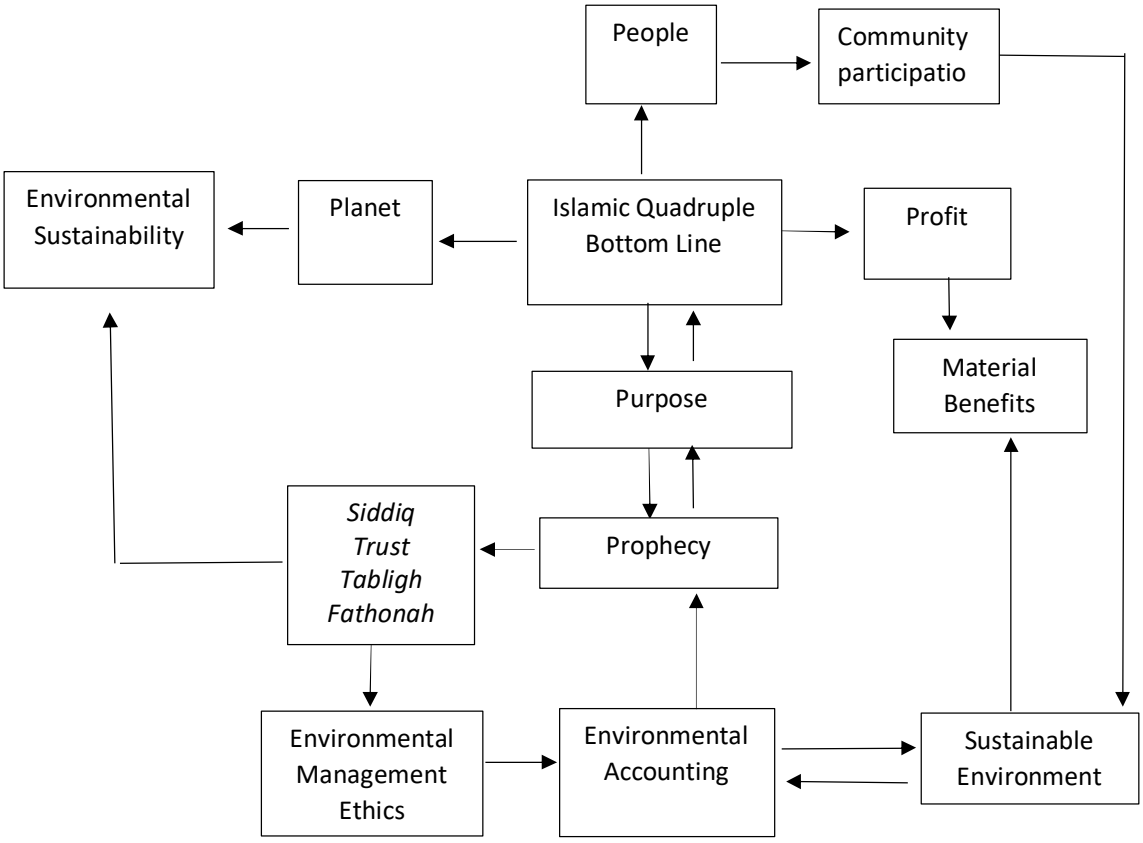

Figure 2. Islamic Quadruple Bottom Line model design

CONCLUSION AND SUGGESTIONS

This study concludes that the effective application of corporate environmental accounting involves five key stages: identification, recognition, measurement, presentation, and disclosure of environmental costs. The five stages are analyzed using the Islamic Quadruple Bottom Line by looking at the aspects of profit, people, planet, and purpose. Purpose is then developed into nubuwwah with the principles of *siddiq, amanah, tabligh,* and *fathonah*. These values, if applied, will create a sustainable environment.

The practical contributions of this research provide a model for businesses to integrate ethical and spiritual values into their environmental management systems, potentially enhancing stakeholder relations and worker protection. Theoretically, this research contributes to the development of an Islamic Quadruple Bottom Line theory by systematically elaborating the integration of Islamic values within the QBL framework. This research contributes to the theoretical enrichment of environmental accounting by integrating Islamic nubuwwah values into the QBL framework. It offers a novel ethical dimension to sustainability discourse and provides a culturally relevant model for companies operating in Muslim-majority regions. Practically, it serves as a reference for businesses seeking to harmonize economic goals with spiritual and environmental responsibilities.

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