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The Role of Occupational Health and Safety (OHS) Curriculum in Supporting the Implementation of Green Accounting at Politeknik Negeri Medan: A Literature Review

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Abstract

This study examines the role of the Occupational Safety and Health (K3) curriculum as a strategic instrument for supporting the implementation of Green Accounting at Politeknik Negeri Medan, guided by Stakeholder Theory, Legitimacy Theory, and the Triple Bottom Line concept. The study adopts a descriptive qualitative approach using a narrative literature review, processed through the qualitative data analysis flow of Miles and Huberman, and cross-checked against institutional documents of Politeknik Negeri Medan; namely the Organizational Structure of the Occupational Safety, Health, and Environment (K3L) Unit and the 2026–2027 Roadmap for Occupational Safety and Health Management System (SMK3) Certification - as supporting secondary data. The analysis shows that the HIRARC framework used in K3 practice shares a similar sequence of stages with the underlying logic of Green Accounting and may therefore serve as a proposed procedural analogy; that the institutional structure of the K3L Unit lists cross-unit positions and external parties as Stakeholder Theory would anticipate; and that the drive towards SMK3 certification is consistent with the pursuit of institutional legitimacy as described by Legitimacy Theory. Mapped through the Triple Bottom Line, the People and Planet dimensions are explicitly present in the K3L structure, whereas the Profit dimension the financial implications of environmental impact remains unbridged. The study recommends embedding an environmental cost and impact recording component into the Hazardous Waste Management Standard Operating Procedure currently being drafted, as a concrete and time-bound operational step towards strengthening Green Accounting at Politeknik Negeri Medan. This recommendation constitutes a conceptual proposal that still requires testing. The findings are confined to a single polytechnic and are not generalised to vocational education at large.

Keywords: *green accountingm occupational safety and health curriculum; stakeholder theory; legitimacy theory; triple bottom line; vocational education*

1. Introduction

Over recent decades, sustainability has evolved into a global agenda that is no longer optional but an urgent requirement across all sectors, including higher education. Leal Filho, Shiel, and Paço (2016) argue that higher education institutions bear a social responsibility to build sustainability competencies among students, so that universities function not only as sites of knowledge transfer but also as institutions that shape environmental values, attitudes, and awareness. In practice, however, the integration of sustainability issues often remains partial and has yet to become a central element of curriculum design. One approach that has developed in response to this challenge is the concept of Green Accounting. Green Accounting does not focus solely on financial aspects; it also incorporates environmental costs and impacts into an organization's recording and reporting processes. According to Gray (2010), environmental accounting is an important instrument for internalising environmental externalities into an organization's economic system, a process that converts previously unrecorded environmental impacts into measurable entities for which financial accountability can be demonstrated.

Globally, this phenomenon is evident in the proliferation of sustainability reporting frameworks such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB) in the corporate sector, alongside initiatives such as AASHE STARS and the UI GreenMetric World University Ranking in higher education. Participation in these initiatives, however, generally stops at descriptive sustainability reporting and has yet to achieve full integration of environmental accounting principles into campus financial systems. The problem is more pronounced in the Indonesian context: Green Accounting has largely been applied to industry and corporate settings,

even though higher education institutions also generate environmental impacts through operational activities such as energy use, laboratory waste management, and practical coursework. Suhartini, Widoretno, Azmiyanti, and Effendi (2022) found that Green Accounting implementation in higher education remains limited to environmental awareness, while measurement and reporting have yet to function optimally. Sartika and Iznillah (2022) obtained a similar pattern at Politeknik Negeri Bengkalis: the environmental awareness index reached 73.67 per cent and involvement 71.43 per cent, whereas environmental reporting was the lowest at 69.56 per cent. This pattern is consistent with the findings of Pramitari, Sudiadnyani, and Abdi (2019) at Politeknik Negeri Bali. The principal obstacle, therefore, lies not in awareness but in the absence of a mechanism that converts awareness into figures. The problem becomes more specific at the vocational education (polytechnic) level. Unlike academic universities, polytechnics make intensive use of laboratories and workshops because their curricula are practice-based, and they therefore have the potential to generate significant quantities of hazardous waste (laboratory chemicals, used oil, electronic waste). Thürer, Tomašević, Stevenson, Qu, and Huisingh (2018) show that engineering and vocational education needs to undergo a transformation towards sustainability in order to remain relevant to the future demands of the labour market. Research on Green Accounting in the Indonesian vocational education context nevertheless remains scarce, with most prior studies focusing on academic universities or on industry. One subject with strong relevance to sustainability issues in vocational education is Occupational Safety and Health (K3). The K3 curriculum addresses not only worker safety but also environmental risk control, hazardous waste management, energy efficiency, and the application of environmentally sound work procedures. K3 may therefore serve as a strategic medium for integrating Green Accounting principles into the learning process. Stough, Ceulemans, Lambrechts, and Cappuyns (2018) show that a sustainability-based (green) curriculum can raise student awareness of the environmental impacts of industrial activity.

Although various studies have addressed the relationship between sustainability, curriculum, and higher education, a significant gap remains when those studies are examined specifically against the context of the present research. Table 1 maps the position of seven prior studies together with their gaps relative to this study.

Table 1 Mapping of the Research Gap in Prior Studies

No	Author (Year)	Research Focus	Principal Findings	Gap Relative to This Study
1	Thürer, Tomašević, Stevenson, Qu, & Huisingh (2018)	Systematic review of the literature on integrating sustainability into engineering curricula	Integration of sustainability into engineering curricula remains varied and not yet well established	Does not address environmental accounting or cost recording mechanisms
2	Leal Filho, Shiel, & Paço (2016)	Operationalising integrative sustainability approaches in higher education through project-oriented learning	Integrative approaches require operational mechanisms, not merely policy	Does not target the K3 curriculum or the Green Accounting context
3	Stough, Ceulemans, Lambrechts, & Cappuyns (2018)	Assessment of sustainability in higher education curricula and its validity issues	Instruments for assessing curriculum sustainability face validity problems	Focuses on assessment instruments rather than on cost recording mechanisms
4	Suhartini, Widoretno, Azmiyanti, & Effendi (2022)	Green Accounting implementation based on University Social	Environmental awareness and involvement are established; reporting and	Does not examine the role of a particular subject or curriculum as a bridge to implementation

No	Author (Year)	Research Focus	Principal Findings	Gap Relative to This Study
		Responsibility and Good University Governance	auditing are not yet optimal	
5	Sartika & Iznillah (2022)	Understanding of and concern for USR-based Green Accounting at Politeknik Negeri Bengkalis	Environmental reporting scored lowest among the four aspects measured	Measures understanding but does not design a recording instrument
6	Pramitari, Sudiadnyani, & Abdi (2019)	USR-based Green Accounting at Politeknik Negeri Bali	Green Accounting adoption in polytechnics remains limited	Does not link adoption to the occupational safety and health management system under development
7	Rachmadian, Sumarmi, & Masruroh (2025)	Green campus programmes and the cultivation of sustainability awareness among the academic community	Green campus programmes foster sustainability awareness	Does not specify the K3 curriculum as a strategic instrument for Green Accounting

Source: *compiled by the authors (2026) from Thürer et al. (2018), Leal Filho et al. (2016), Stough et al. (2018), Suhartini et al. (2022), Sartika & Iznillah (2022), Pramitari et al. (2019), and Rachmadian et al. (2025).*

These seven studies consistently reveal three principal gaps: (1) the integration of sustainability into higher education curricula remains partial and general in nature, in line with the finding of Thürer et al. (2018) that sustainability integration in engineering curricula is not yet well established; (2) research on Green Accounting in higher education emphasizes awareness rather than concrete implementation mechanisms; and (3) within the limits of the search conducted, no study was found that explicitly treats the K3 curriculum as a strategic instrument for supporting Green Accounting, particularly in vocational education institutions (polytechnics). Furthermore, none of the seven studies employs an explicit organizational theory framework to explain why educational institutions should adopt Green Accounting and whose interests are at stake a void that the present study addresses through Stakeholder Theory, Legitimacy Theory, and the Triple Bottom Line.

2. Objectives

In response to these gaps, this study aims to:

(1) analyze the conceptual correspondence between the K3 curriculum and management system and the principles of Green Accounting;

(2) identify the extent to which the institutional structure and the occupational safety and health management system at Politeknik Negeri Medan reflect the principles of Stakeholder Theory, Legitimacy Theory, and the Triple Bottom Line; and

(3) formulate operational recommendations for integrating Green Accounting through the K3 curriculum and management system at Politeknik Negeri Medan.

3. Materials and Methods

3.1 Materials

Green Accounting: Green Accounting is an extension of conventional accounting that incorporates environmental costs, benefits, and impacts into an organization's recording and reporting system. Gray (2010) explains

that the principal function of environmental accounting is to internalize externalities that is, to convert environmental impacts that have hitherto lain outside the accounting system (unrecorded and not financially accounted for) into measurable entities that enter organizational decision-making. This definition is an important point of departure for the present study: Green Accounting is not merely environmental concern but a technical and administrative mechanism that converts such concern into auditable and accountable data.

***Stakeholder Theory*:** Stakeholder Theory (Freeman, 1984) holds that an organization's continuity is determined not only by the interests of its owners or managers but also by the interests of all parties affected by, or affecting, its activities including employees, customers, regulators, and surrounding communities. In the context of non-profit organizations such as higher education institutions, the theory is relevant in explaining why the management of environmental impact cannot be treated as a purely internal matter: it concerns students, lecturers, laboratory technicians, and the communities around the campus who may be affected by operational waste.

The organizational structure of the K3L Unit at Politeknik Negeri Medan displays a relatively complete representation of multiple stakeholders: the Director as the responsible officer, a Steering Committee drawn from across departments, representatives of each building and department, technical coordinating units, and external supporting teams such as the security unit and the occupational safety and health consultant (PT Graha Katiga Indonesia). The structure lists the positions of internal and external parties within K3 governance. An organizational chart shows who is listed, not the extent to which each party's interests are represented in decision-making; the latter cannot be inferred from the document. Nevertheless, one important stakeholder group those with an interest in the transparency of environmental costs and impacts (for instance budget regulators, or communities affected by waste), does not appear to have a dedicated reporting channel within that structure. This suggests that extending Green Accounting through K3 may simultaneously serve the interests of a stakeholder group that has not so far been explicitly accommodated.

***Legitimacy Theory*:** Legitimacy Theory holds that organizations seek to align their activities with prevailing social norms, values, and expectations in order to obtain and maintain legitimacy, or the social licence to operate. Organizations perceived as failing to comply with social norms including occupational safety and environmental norms risk reputational and regulatory pressure (Suchman, 1995).

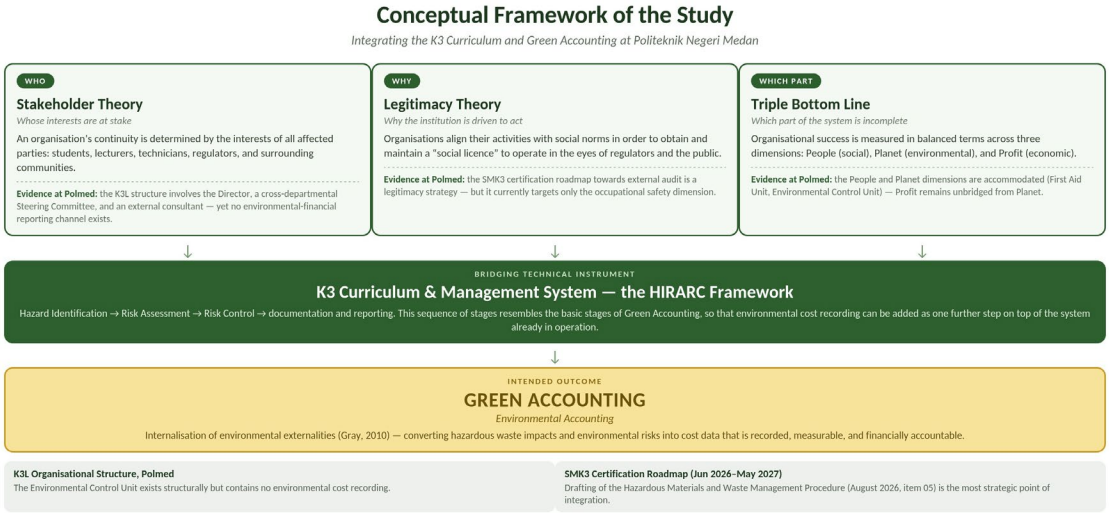
The commitment of Politeknik Negeri Medan to implementing a structured roadmap for Occupational Safety and Health Management System (SMK3) certification over the period June 2026–May 2027, complete with internal audit stages and preparation for external audit, is consistent with the pattern described by Legitimacy Theory as a strategy for pursuing institutional legitimacy: compliance with Law No. 1 of 1970, Law No. 13 of 2003, and Government Regulation No. 50 of 2012 is a means by which the institution demonstrates to regulators, students, and the public that the campus is managed safely and responsibly. From the standpoint of Legitimacy Theory, however, the legitimacy pursued through SMK3 certification is currently confined to the occupational safety dimension and does not yet extend to financial accountability for environmental impact. As global social pressure on environmental issues intensifies, educational institutions including vocational institutions with a significant practical footprint may face new legitimacy questions in the future if they rely solely on occupational safety certification without accompanying environmental accountability. Integrating Green Accounting into the SMK3 system currently under development may be regarded as a proactive step towards broadening the institution's basis of legitimacy, from a “safe campus” to a “safe and environmentally accountable campus”.

***Triple Bottom Line*:** The Triple Bottom Line concept (Elkington, 1997) holds that organizational success is measured not only by economic performance (profit) but also, in balanced terms, by social performance (people) and environmental performance (planet). The framework is widely used to map the extent to which a management system is comprehensively oriented towards sustainability or remains weighted towards a single dimension.

When the Triple Bottom Line framework is applied to the K3L structure at Politeknik Negeri Medan, an instructive pattern emerges: the People dimension (First Aid and Medical Unit, general occupational safety expert training, first aiders, fire wardens) and the Planet dimension (Environmental Control Unit, Hazardous Waste Management SOP) are structurally accommodated, whereas the Profit dimension in the sense of cost recording and

the financial implications of the Planet dimension, remains unbridged. This is the concrete gap that Green Accounting can fill through the K3 curriculum: not by creating a new dimension, but by connecting two existing dimensions (People and Planet) to the third, still-empty dimension (Profit), through a recording mechanism that can be built on top of the HIRARC framework already in operation.

***Conceptual Framework*:** The K3 curriculum and management system, through the HIRARC framework already in operation, is positioned as the technical instrument that bridges the three theoretical requirements (Stakeholder Theory, Legitimacy Theory, and the Triple Bottom Line) into concrete operational steps at Politeknik Negeri Medan, as illustrated in Figure 1.



Source: *Freeman (1984), Suchman (1995), Elkington (1997), and Gray (2010).*

Figure 1 Conceptual Framework Integrating Stakeholder Theory, Legitimacy Theory, the Triple Bottom Line, the K3 Curriculum, and Green Accounting

3.2. Research Method

Research Approach: This study adopts a descriptive qualitative approach combining a narrative literature review with institutional document analysis at a single institution. The approach was chosen because the aim of the research is to describe, analyze, and synthesise concepts drawn from a range of literature on Green Accounting and the K3 curriculum, and then to draw conceptual connections between the two in the vocational education context, guided by Stakeholder Theory, Legitimacy Theory, and the Triple Bottom Line. Snyder (2019) notes that a literature review is an appropriate method when researchers seek to map, evaluate, and synthesise existing knowledge on a topic, particularly in fields that still exhibit conceptual gaps across disciplines.

The literature review component follows the Narrative Literature Review model, on the grounds that the research objective is exploratory and conceptual in nature. This study does not claim to be a systematic literature review and does not apply the PRISMA protocol; the criteria set out in Section 3.2 serve as guidance for source selection rather than as a staged screening protocol with reported counts. The literature search was conducted in a structured manner through the following stages: (1) identification of search keywords (Green Accounting, K3 curriculum, sustainability higher education, vocational education sustainability, green campus, stakeholder theory, legitimacy theory, triple bottom line); (2) searching of academic databases and internal documents of Politeknik Negeri Medan; (3) screening against inclusion and exclusion criteria and data extraction; and (4) synthesis and theory-based thematic analysis.

Inclusion and Exclusion Criteria: The inclusion criteria were: publications from 2010 to 2026 (with priority given to 2016 onwards, except for foundational theoretical references such as Elkington 1997 and Freeman 1984);

topics covering Green Accounting, sustainability curricula, occupational safety and health in vocational education, green campus, or related organizational theory; source types comprising indexed journal articles, books, or official policy documents; written in Indonesian or English; and available in full text. The exclusion criteria covered sources not relevant to the topic and non-academic sources lacking scholarly referencing.

Data Sources and Types: The data used in this study are secondary, comprising: (1) scholarly journal articles on Green Accounting, sustainability curricula, and organizational theory (Stakeholder Theory, Legitimacy Theory, Triple Bottom Line); (2) related policy documents (Law No. 1 of 1970, Law No. 13 of 2003, Government Regulation No. 50 of 2012, and Minister of Manpower Regulation No. 26 of 2014); and (3) institutional documents of Politeknik Negeri Medan, namely the Organizational Structure of the Occupational Safety, Health, and Environment (K3L) Unit and the Roadmap for SMK3 Certification covering June 2026–May 2027. These institutional documents are used as supporting secondary data to compare conceptual findings from the literature and theory with what is set out in the institution's own documents, without altering the character of the study as a literature study; the comparison is therefore treated as cross-checking. Details of the two documents are presented in Table 2.

Table 2. Institutional Documents Analyzed

Code	Document title	Type and form	Issuing unit	Content coverage
D1	Organizational Structure of the K3L Unit within the Politeknik Negeri Medan Campus	Institutional presentation material	K3L Unit, Politeknik Negeri Medan	Responsible officer, Steering Committee, implementing elements, five coordinating units, building and departmental representatives, supporting teams, consultant, legal basis, and duties of each line
D2	Roadmap for SMK3 Certification at Politeknik Negeri Medan (SMK3 Implementation Milestones)	Institutional presentation material	K3L Unit, Politeknik Negeri Medan	Approximately 90 activity items for June 2026–May 2027, each numbered and accompanied by its week of implementation

Source: institutional documents of Politeknik Negeri Medan (2026)

Data Analysis Technique: Data analysis follows the qualitative data analysis flow of Miles and Huberman (1994) not content analysis in the quantitative sense, comprising the following stages: (1) data reduction, selecting and summarizing the salient points from each literature source and from the Politeknik Negeri Medan documents relevant to Green Accounting indicators, components of the K3 curriculum and management system, and the propositions of the three theories employed; (2) data display, presenting the reduced material in thematic synthesis tables and theory mapping tables; and (3) conclusion drawing and verification, establishing logical connections across themes and theories in order to answer the research questions. Source comparison was carried out by cross-checking findings from the academic literature against the institutional documents of Politeknik Negeri Medan on the same themes.

4. Results And Discussion

4.1 Structural Correspondence between the K3 Curriculum and Green Accounting Principles

K3 subject matter such as hazardous waste management, resource use efficiency, and environmentally sound work procedures is conceptually aligned with the environmental cost measurement component that lies at the heart of Green Accounting. The HIRARC framework (Hazard Identification, Risk Assessment, and Risk Control), which is the standard approach in K3 practice, shares a similar sequence of stages with Green Accounting, as mapped in Table

3. This similarity is procedural rather than methodological: HIRARC assesses the likelihood and severity of injury on a qualitative scale, whereas Green Accounting measures resource consumption in monetary units.

Table 3. Working Map for Extending the HIRARC Stages into Environmental Cost Recording

HIRARC stage	Content of the stage for the illustrative item: used oil from machine maintenance practicals	Corresponding Green Accounting stage	Recording fields added
1. Hazard Identification	Identification of the hazard of used oil spillage on the workshop floor during practical oil changes; used oil is classified as hazardous waste under the schedules of the applicable regulation	Identification of environmental aspects and impacts	Waste type, hazardous waste code, hazard characteristics, generating unit, generating subject
2. Risk Assessment	Assessment of the likelihood and severity of slipping and of localised contamination; the resulting risk category is recorded in the HIRADC document	Measurement and quantification of impact	Weight or volume per transfer, frequency of generation, related HIRADC line code
3. Risk Control	Labelled closed containers, spill containment trays, provision of personal protective equipment, hazardous materials handling training, and transfer to a licensed carrier	Allocation of control costs to environmental cost categories	Cost category (prevention, detection, internal failure, external failure), cost value, source document number, realised or estimated status
4. Documentation and reporting	HIRADC records, hazardous waste logbook, hazardous waste balance, and transfer manifest to third parties	Environmental cost recording and reporting	Recapitulation of values by category and calculation of derived indicators per period

Source: compiled by the authors (2026).

4.2 Findings from Cross-Checking the Institutional Documents of Politeknik Negeri Medan

Analysis of the Organizational Structure of the K3L Unit at Politeknik Negeri Medan reveals a relatively mature institutional structure, with the Director as the responsible officer, a Steering Committee drawn from across departments, and six coordinating units, including the Environmental Control Unit, whose duties cover waste and sanitation management, resource conservation, and pollution control (Table 4).

Table 4 K3L Units at Politeknik Negeri Medan and Their Relevance to Green Accounting

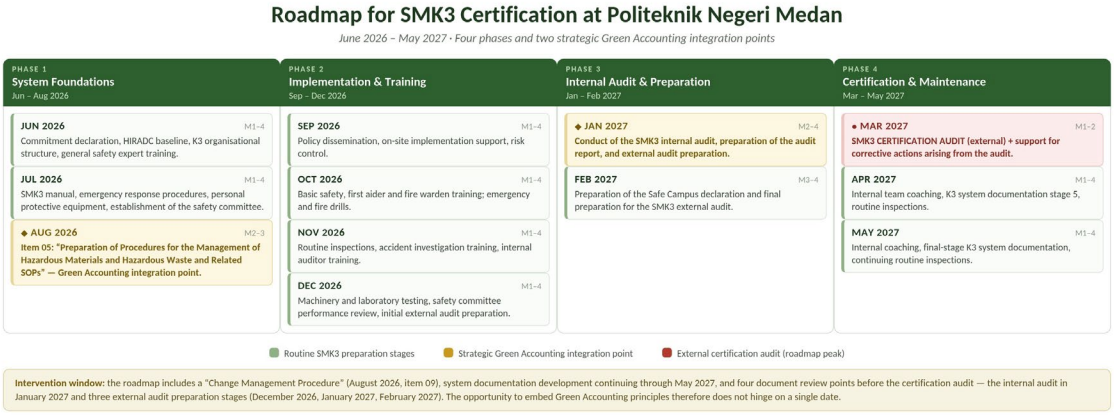
K3L Unit	Core duties	Relevance to Green Accounting
K3L Facilities and Infrastructure Control Unit	Procurement and maintenance of laboratory facilities and infrastructure	Basis for recording assets and environment-related maintenance costs
Environmental Control Unit	Waste and sanitation management, resource conservation	Directly parallel to core Green Accounting indicators

Fire Response Unit	Prevention, simulation, and emergency response to fire	Risk control that prevents unforeseen environmental losses
First Aid and Medical Unit	Occupational health services	Supports the People dimension of the Triple Bottom Line

Source: compiled by the authors (2026) from the Organizational Structure of the K3L Unit, Politeknik Negeri Medan.

The existence of the Environmental Control Unit demonstrates that, institutionally, Politeknik Negeri Medan already possesses a structural channel for managing environmental impact. The document, however, sets out only the structure and the technical-operational duties; it does not yet contain any mechanism for recording environmental costs or impacts in financial terms the very core of Green Accounting. This finding confirms the results of Suhartini et al. (2022) and Sartika and Iznillah (2022) that awareness and institutional structures are already in place while measurement and reporting are not, and it likewise confirms the gap in the Profit dimension identified in the Triple Bottom Line mapping.

Analysis of the Roadmap for SMK3 Certification at Politeknik Negeri Medan (June 2026 - May 2027) identified an explicit agenda item in the third week of August 2026, namely "Preparation of Procedures for the Management of Hazardous Materials and Hazardous Waste and Related SOPs". This finding constitutes concrete documentary evidence that Politeknik Negeri Medan is in the process of developing a hazardous waste management SOP, which represents the most promising point of integration for embedding Green Accounting principles. The roadmap also schedules the SMK3 Internal Audit (January 2027), preparation for the SMK3 External Audit (February 2027), and the SMK3 External Certification Audit in March 2027.

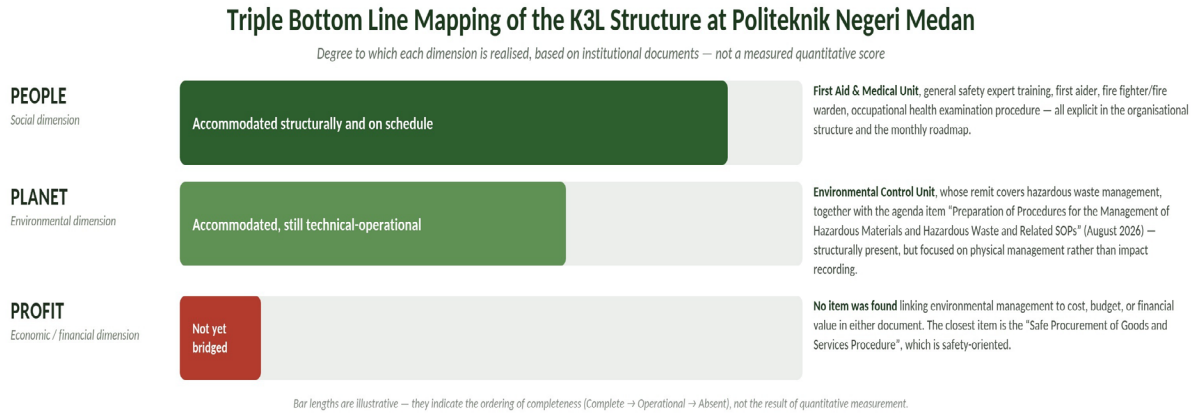


Source: Roadmap for SMK3 Certification at Politeknik Negeri Medan covering 06/2026-05/2027

Figure 2. Roadmap for SMK3 Certification at Politeknik Negeri Medan

4.3 Triple Bottom Line Mapping

Mapping the K3L structure against the Triple Bottom Line framework (Figure 3) shows that the People dimension is explicitly present through the First Aid and Medical Unit and a range of scheduled training activities, and that the Planet dimension is structurally present through the Environmental Control Unit and the Hazardous Waste SOP, albeit in technical-operational terms. The Profit dimension, by contrast, remains unbridged from Planet: the K3L Facilities and Infrastructure Control Unit addresses only asset procurement and maintenance, and no mechanism for recording the financial implications of environmental impact was found in either of the documents analyzed.



Source: The Organizational Structure of the K3L Unit and the Roadmap for SMK3 Certification

Figure 3 Triple Bottom Line Mapping of the K3L Structure at Politeknik Negeri Medan

4.4 Cross-Checking Findings

The following presents a synthesis of the cross-checking between findings from the literature, the theoretical lenses, and the institutional documents:

Table 5. Cross-Checking between the Literature, Theory, and Institutional Documents of Politeknik Negeri Medan

Theme	Literature findings	Theoretical lens	Findings from Polmed documents
Awareness versus implementation	High awareness, low measurement and reporting (Suhartini et al., 2022; Sartika & Iznillah, 2022)	Triple Bottom Line, Profit not yet connected to Planet	The Environmental Control Unit exists but without cost recording indicators
K3 as a bridge to Green Accounting	K3 has the potential to serve as a medium of integration (conceptual)	Green Accounting (Gray, 2010) internalisation of externalities	Hazardous Waste Management SOP under preparation (August 2026)
Multi-party institutional support	Curricular and institutional support required (Rachmadian et al., 2025; Pramitari et al., 2019)	Stakeholder Theory multi-stakeholder involvement	Complete cross-departmental K3L structure, including an external consultant
Certification and compliance drive	Structural challenges to sustainability integration (Thürer et al., 2018)	Legitimacy Theory pursuit of social and regulatory legitimacy	Roadmap towards SMK3 certification and external audit

4.5 Discussion

The essence of environmental accounting is the internalisation of externalities; converting unrecorded environmental impacts into measurable entities for which financial accountability can be demonstrated (Gray, 2010). The presence of the Environmental Control Unit within the K3L structure at Politeknik Negeri Medan may be understood as a stage of environmental management rather than as Green Accounting itself, since the physical management of waste differs from the systematic recording of its management costs.

Viewed through Stakeholder Theory, the K3L structure which involves the Director, a cross-departmental Steering Committee, representatives of each building, and an external consultant shows that the institution has formally set out a mechanism for multi-party involvement. The interests of stakeholders oriented towards environmental and financial accountability, such as budget regulators or the communities surrounding the campus, do not yet have an explicit reporting channel within that structure. This opens an opportunity to broaden the role of the Environmental Control Unit so that it reports not only in technical-operational terms to the Steering Committee but also provides environmental cost data accessible to a wider range of stakeholders. The SMK3 certification roadmap, scheduled through to the external certification audit in March 2027, may be interpreted through Legitimacy Theory as an institutional strategy for obtaining legitimacy as a safe and regulation-compliant campus. Because SMK3 certification under Government Regulation No. 50 of 2012 does not explicitly require Green Accounting indicators, however, the legitimacy obtained risks remaining confined to the occupational safety dimension. Without deliberate intervention, the system that will be certified risks remaining conventional in orientation repeating the pattern identified by Thürer et al. (2018), that sustainability integration is not yet well established, this time within an institutional management system under development rather than merely within a curriculum. Conversely, if Politeknik Negeri Medan proactively embeds Green Accounting indicators into the SOP currently being drafted, the institution can broaden its basis of legitimacy from a "safe campus" to a "safe and environmentally accountable campus" a legitimacy position more attuned to contemporary social expectations.

With respect to the Triple Bottom Line, the findings in Table 4, Table 5, and Figure 3 show that the K3L structure at Politeknik Negeri Medan is relatively balanced across the People and Planet dimensions, whereas the Profit dimension in the sense of cost recording and the financial implications of the Planet dimension remains unbridged. This is the concrete gap that Green Accounting can fill through the K3 curriculum: not by creating a new dimension, but by connecting two existing dimensions (People and Planet) to the third, still-empty dimension (Profit), through a recording mechanism that can be built on top of the HIRARC framework already in operation (Table 3). The choice of K3 as the bridge for integration rather than a separate accounting or environmental subject; rests on this shared logical structure: the HIRARC framework is already the standard language of K3 practice at Politeknik Negeri Medan, so that integrating Green Accounting does not require a new conceptual framework but rather an extension that can conceptually be built upon the system already in operation: from "level of risk" to "financial value", from "safety compliance" to "environmental accountability", and from a "People-Planet" structure to a complete "People-Planet-Profit" structure. Compared with the seven prior studies reviewed (Leal Filho et al., 2016; Thürer et al., 2018; Stough et al., 2018; Pramitari et al., 2019; Sartika & Iznillah, 2022; Suhartini et al., 2022; Rachmadian et al., 2025), which as far as reviewed stop at general conceptual recommendations without an explicit organizational theory foundation, this study through the combination of Stakeholder Theory, Legitimacy Theory, and the Triple Bottom Line together with cross-checking against institutional documents is able to translate such recommendations into a theory-based conceptual proposal.

5. Conclusions and Recommendations

Green Accounting in higher education, including vocational education, generally remains at the stage of environmental awareness and has yet to reach the stage of systematic measurement and reporting of environmental costs. This finding from the literature is consistent with what is recorded in the two institutional documents of Politeknik Negeri Medan that were analyzed. The institutional structure of the K3L Unit at Politeknik Negeri Medan lists cross-unit positions and external parties as Stakeholder Theory would anticipate, but it does not yet provide dedicated reporting for stakeholders oriented towards environmental and financial accountability. The scheduling of SMK3 certification is consistent with the pursuit of legitimacy as described by Legitimacy Theory a theoretical interpretation that cannot be verified from the documents yet the legitimacy currently pursued is confined to the occupational safety dimension and risks not extending to environmental accountability in the absence of deliberate intervention. Within the Triple Bottom Line framework, the K3L structure at Politeknik Negeri Medan covers the People and Planet dimensions but does not yet bridge them to the Profit dimension through environmental cost recording a gap that Green Accounting can fill through the K3 curriculum.

The study has some the recommendations for stakeholders.

For Politeknik Negeri Medan: to use the window afforded by the drafting of the Hazardous Materials and Hazardous Waste Management SOP to embed a quantitative recording component (waste volume, estimated management costs), together with a draft clause and form; to broaden the duties of the Environmental Control Unit to include periodic environmental cost reporting to a wider range of stakeholders (in line with Stakeholder Theory); to integrate environmental and financial indicators into the SMK3 Internal Audit ahead of the external audit as part of a strategy for broadening institutional legitimacy (in line with Legitimacy Theory); and to revise the K3 course syllabus so that it includes a module on recording environmental costs and impacts, bridging the Planet and Profit dimensions within the Triple Bottom Line framework.

For the development of K3 curricula in vocational education more broadly: K3 curricula are encouraged not to stop at the standard HIRARC framework but to incorporate the conversion of risk levels into estimated financial values, as part of environmental accounting literacy for vocational graduates.

For future research: a qualitative case study approach is recommended in order to examine directly the feasibility of embedding Green Accounting indicators in the SOP currently being drafted; quantitative research to estimate the actual value of environmental costs arising from practical activities; empirical testing of the propositions of Stakeholder Theory and Legitimacy Theory through interviews with relevant stakeholders; and multi-case studies across polytechnics to strengthen the transferability of the findings.

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