Analysis of Violations of the Indonesian Engineers Code of Ethics (PII) and Systemic Failures in the Hambalang P3son Project Case Study

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Abstract.
This study aims to examine in depth the implementation and violations of the engineering code of ethics in the Hambalang National Education, Training, and Sports School (P3SON) Project. The Hambalang Project, which experienced structural failure due to neglect of geotechnical engineering principles and political collusion, is used as a case study of systemic failure. The analysis focuses on violations of the Sapta Dharma of the Indonesian Engineers Association (PII) and the evaluation of professional responsibility based on ethical theories (Deontology, Teleology, and Virtue Ethics). The analysis results indicate that ethical violations, especially conflicts of interest and systemic corruption, are the main causes that trigger technical violations (ignoring the risks of expansive clay soil). The identified fundamental violations are Sapta Dharma Point 1 (Prioritizing Public Safety), Point 2 (Working According to Competence), and Point 4 (Avoiding Conflicts of Interest). Recommendations proposed include systemic solutions such as the separation of critical contracts and mandatory independent design validation (peer review) to strengthen the culture of engineering ethics.

Keywords*: Engineering Professional Ethics, PII Code of Ethics, Sapta Dharma, Systemic Failure, Hambalang Project and Geotechnics.*

I. INTRODUCTION

Engineers play a central role in infrastructure development, and therefore the profession is governed by a strict code of ethics for the sake of public safety and welfare. The urgency of this study stems from Indonesia's largest construction and corruption scandal, the Hambalang P3SON Project. This case is a perfect example of a double whammy: financial failure due to corruption, and a catastrophic technical failure resulting from a disregard for geotechnical and civil engineering principles. Hambalang demonstrates the consequences when professional ethics are set aside for personal gain and political collusion.

II. THEORITICAL REVIEW

Indonesian Engineers Code of Ethics (PII)

The Indonesian Engineers Code of Ethics is a moral guide formulated by the Indonesian Engineers Association (PII) which consists of Catur Karsa (Four Basic Principles) and Sapta Dharma (Seven Attitude Guidelines).. This basic principle aims to ensure that every professional action prioritizes safety, public welfare, and integrity.

The main focus of the ethical analysis in this study is on the details of the implementation of Sapta Dharma, especially:

- Sapta Dharma Point 1: Affirms that engineers must always prioritize the safety, health and welfare of the community.This principle is known as the principle of paramountcy, which places responsibility to the public above personal, client, or corporate interests.
- Sapta Dharma Point 2: Requires engineers to always work according to their competence. Misconduct occurs when engineers take on tasks beyond the bounds of honest expertise or, in more serious cases, when competent engineers choose to disregard their expertise for the sake of compliance or profit.
- Sapta Dharma Point 4: Requires engineers to avoid conflicts of interest in their job responsibilities.Conflicts of interest are often the main trigger for systemic corruption in construction projects, where engineers fail to maintain objectivity and professional integrity (Hartono, 2021).

Contemporary Engineering Ethics Perspectives

Studies on modern engineering ethics emphasize the need to shift focus from compliance ethics to integrity ethics (Perkasa & Susilo, 2021). Compliance ethics focuses solely on complying with minimal rules, while integrity ethics demands proactive moral judgment in ambiguous situations. Major failures often

involve distributed responsibility, where moral responsibility rests not with a single individual but across the entire decision-making chain, from policymakers to field engineers (Johnson, 2022).

Professional Courage*(Professional Courage) and Whistleblowing*

The ethics of integrity demands professional courage from engineers to reject or report decisions that endanger the public or violate the code of ethics, even at the risk of losing their jobs or licenses (Amiruddin, 2022). In the Indonesian context, which is rife with collusion pressures, this courage is crucial. Studies show that effective whistleblower protection is key to breaking the chain of collusion and strengthening governance, particularly in large-scale public projects (Hasan & Widodo, 2023).

Geotechnics and Ethical Decisions

Geotechnical engineering is a field particularly vulnerable to ethical conflicts because its decisions directly impact structural stability and public safety. Ethical decisions in geotechnics center on accuracy and care in analyzing ground conditions.

Field Investigation Integrity*(Site Investigation Integrity)*

Field investigation reports, such as soil drilling data and laboratory tests, form the fundamental basis for foundation design. The integrity of this data is crucial. Construction failures, such as the Hambalang case, are often caused by a disconnect between geotechnical reports and structural design, where cost, political, or schedule pressures drive engineers to adopt overly optimistic design assumptions and ignore ground condition warnings (Wang, 2020). Manipulating geotechnical data, simplifying reports, or even ignoring proven hazardous ground conditions (such as the expansive clay soil in Hambalang) constitutes a serious breach of professional diligence (Sulistyo & Wibowo, 2023). This demonstrates that geotechnical engineers have an ethical responsibility to decisively report and reject projects built on foundations known to be fragile.

Ethical Theory

Application of Ethical Theory in Project Failure

To evaluate the moral responsibility of the engineers involved, three theoretical frameworks were used:

- Deontology (Duty-Based Ethics): In the Hambalang case, this theory judges morality based on the engineers' failure to fulfill their universal obligations, such as the obligation not to manipulate data or the obligation to ensure public safety.Their actions (manipulating data and building on hazardous land) were inherently wrong because they violated the basic rules of the profession.
- Teleology (Consequence-Based Ethics/Utilitarianism): This theory judges actions based on their final results.The perpetrators' actions were intended to enrich a handful of individuals, but the consequences were massive state financial losses (Rp 706 billion) and the loss of public facilities. From a utilitarian perspective, this is an ethical crime because it resulted in the greatest harm/suffering for the Indonesian people.
- *Virtue Ethics*(Virtue Ethics): This theory focuses on the moral character of the actorThe Hambalang failure is seen as an indication of a character flaw in the professionals involved. The engineers involved failed to demonstrate virtues such as integrity, honesty, and professional courage, instead demonstrating greed and negligence.

III. HAMBALANG PROJECT CASE DESCRIPTION

The Hambalang Project commenced in 2010. The project site sits on a highly unstable geological formation, identified as an expansive clay zone, which is susceptible to massive vertical and horizontal movements.

A Brief Chronology of Failure

A team of geotechnical experts issued early warnings and recommended special foundations due to the high risk of landslides. However, these warnings were ignored, the geotechnical investigation report was allegedly manipulated, and the foundation design was inadequate. The tender process was marred by corruption and collusion between officials, consultants, and contractors. In December 2011, massive landslides following heavy rains caused the main structure to sink and collapse, marking the project's complete demise.

Impact of the Case

The impact of the case was massive: state financial losses reached Rp 706 billion; vital national sports facilities were lost; and most damagingly, it tarnished the reputation of the Indonesian engineering profession, demonstrating that technical competence can be trumped by collusion and corruption.

IV. ANALYSIS AND DISCUSSION

Identification of Violations of the PII's Sapta Dharma

The Hambalang failure was a violation of the three core points of the PII's Sapta Dharma:

- Sapta Dharma Point 1: "Indonesian engineers always prioritize the safety, health and welfare of the community."This fundamental violation occurred because engineers failed to prioritize safety by building on unstable land, endangering potential users and wasting public funds.
- Sapta Dharma Point 2: "Indonesian engineers always work according to their competence.". This violation occurs because the engineer is involved in a project outside the limits of his honest expertise, or deliberately ignores his competence in order to comply with orders or is involved in a corrupt conspiracy.
- Sapta Dharma Point 4: "Indonesian engineers always avoid conflicts of interest in carrying out their duties."This violation was at the heart of the failure; personal financial interests overrode professional responsibility. The supposedly independent supervisory consultant allegedly colluded with the contractor.

Systemic Violations and Corruption-Technical Relations

The Hambalang case reflects organizational wrongdoing where the overwhelming pressure of systemic corruption forced engineering professionals to ignore safety and competence standards..

"This corruption creates tremendous pressure on engineering professionals to disregard safety and competency standards."

The result was Ethical Violations (collusion, bribery, budget markup) which led to Technical Violations (geotechnical data manipulation and selection of inadequate foundation design)Geotechnical engineering is a critical point because the manipulation of initial data becomes the original sin that underlies all failures. A study by Yuan et al. (2023) highlighted that poor project governance and conflicts of interest are the main predictors of technical failure in large infrastructure projects (Supplementary).

Evaluation of Professional and Moral Responsibility

- Deontology: The engineers violated their duty. Their actions were inherently wrong because they violated the fundamental obligations of the profession, regardless of the outcome.
- Teleology: The perpetrator's actions aim to enrich a few individuals, but the consequences are a total loss for the general public. From a Utilitarian perspective, this action is ethically evil because it maximizes harm/suffering for the public.
- *Virtue Ethics*: The engineers failed to demonstrate the virtues of the profession; they demonstrated greed, dishonesty, and negligence, instead of professional integrity and courage..

Alternative Solutions Based on Ethical Principles

An ethical professional engineer should take the following actions of refusal and intervention::

1. Design/Geotechnical Engineers: Must refuse to issue "reasonable" recommendations and refuse to design based on inadequate or manipulated data. They must disclose the risks in writing.
2. Implementing Engineer (Contractor): Must issue a Stop Work Order and request a total redesign review when the ground conditions in the field are found to be significantly worse than the report..
3. Supervising Engineers (MK): Required to refuse approval of work progress or materials that do not meet specifications. They are the last line of defense for public quality.
4. *Whistleblowing*: Under strong pressure of corruption, the last ethical action is to report to the authorities (BPK, KPK) or professional association (PII) regarding the danger being created..

V. RECOMMENDATION

Systemic Solution Recommendations

To strengthen the ethical position of engineers and prevent a repeat of "Hambalang Volume 2", structural solutions are needed:

1. SOP: Separation of Critical Contracts (Severing Conflict of Interest):
   - Policy: The Construction Management Consultant (Supervisor) and Geotechnical Investigator Consultant contracts must be completely separated from the Construction Implementation Contract for high-risk projects (e.g., above IDR 500 billion or high geotechnical risk).
   - Objective: To break the chain of conflict of interest where supervisors are "held hostage" by the contractors they supervise.
2. SOP: Independent Design Validation (Independent Peer Review) Mandatory:
   - Policy: Designs for high-risk projects must undergo peer review by a team of independent experts (from PII, HAKI, HATTI, or academics) before tender.
   - Purpose: To provide a second layer of technical verification that is objective and unaffected by project pressures.
3. Ethical Culture Enhancement: Technical Whistleblower Protection:
   - Policy: The PII and the government must create robust legal protection mechanisms for engineers who report potential public safety hazards or corrupt engineering practices. Engineers should be able to report without fear of losing their jobs or licenses.

VI. CONCLUSION

The Hambalang project is a tragic case study of the utter failure of the engineering profession. This case demonstrates that technical competence is meaningless if integrity and commitment to public safety are compromised. Ethical violations (collusion) were the primary cause of technical violations (ignoring geotechnical risks). An engineer's professional responsibility demands the courage to say "NO" when a project is forced to proceed on shaky ground, both literally (clay soil) and figuratively (corruption).

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