

Public monitoring of environmental management plan implementation in road construction projects: key performance indicators

EMP
performance
indicators
(road)

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Abstract

Purpose – This study aims to examine the performance indicators (PIs) for assessing environmental management plan (EMP) implementation in road construction projects. The specific objectives are to compare the key PIs between environment auditors and environment officers and among project stakeholders, develop components to categorize interrelated key PIs and evaluate the effectiveness of interrelated key PIs and components.

Design/methodology/approach – Thirty-nine PIs were identified through a systematic literature review and in-depth interviews with environmental professionals. Subsequently, a questionnaire survey was designed based on this list of PIs and distributed to industry professionals. Sixty-one responses were collected in Malaysia and analyzed using the mean score ranking, normalization, agreement analysis, overlap analysis, factor analysis and fuzzy synthetic evaluation.

Findings – The analyses identified 18 key PIs: soil erosion, dust appearance, spill of chemical substance, construction waste, clogged drainage, overflowed silt trap, oil/fuel spills, changes in the colour of bodies of water, excessive cut and fill, vegetation depletion, changes in the colour of the runoff water, landslide occurrence, slope failures, irregular flood, public safety, deforestation, open burning and increased of schedule waste. Also, the key PIs can be grouped and ranked into the following four components: geological, pollution, environmental changes and ecological. Finally, the overall importance of the key PIs is between important and very important.

Originality/value – This study is a pioneer in quantitatively examining the key PIs for EMP implementation in road construction projects. Researchers, industry practitioners and policymakers can use the findings to develop strategies and tools to allow public monitoring of EMP implementation.

Keywords Performance indicators, Environmental management plan (EMP), Road construction, Sustainable construction, Factor analysis, Fuzzy synthetic evaluation (FSE)

Paper type Research paper

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