

**MANAGEMENT OF ENVIRONMENTAL RISK  
FACTORS IN HIGHWAY CONSTRUCTION PROJECTS  
IN SRI LANKA WITH CONTRACTOR'S PERSPECTIVE**

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MSc / PG Diploma in Project Management

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Sri Lanka

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Dissertation submitted in partial fulfillment of the requirements for the degree  
Master of Science in Project Management

Department of Building Economics

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Sri Lanka

June 2022

## **DECLARATION**

I declare that this research is my own work to the best of my knowledge and it does not contain any materials of previously submitted dissertations prepared by researchers of other universities, institutes or higher education centers. Further, previously written and published materials are not included without providing relevant citation and references in text

Further I admire and acknowledge the immense contribution of my research supervisor Ch.QS Prof. (Mrs.) B.A.K.S. Perera towards the successful completion of the research. I confirm that I will never publish any articles or any other publication based on this research without mentioning the name of research supervisor as co-author of this research if I have not obtained any written consent to do so.

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K.I.L. Abhayantha

19.06.2022

Date

The above named undergraduate has carried out this research for the Dissertation under my supervision.

19.06.2022

Ch.QS Prof. (Mrs.) B.A.K.S. Perera

Date

## **ABSTRACT**

### **Management of environmental risk factors in highway construction projects in Sri Lanka with contractor's perspective**

Environmental risk factors are vital in highway projects and it has become a crucial issue in Sri Lanka. The contractor is the main contracting party who suffers due to those environmental risk factors. Thus, it is very important to investigate how to manage the environmental risk factors in highway construction projects in Sri Lanka with the contractor's perspective. Accordingly, this research aimed at investigating how to manage environmental risk factors in highway construction projects in Sri Lanka with contractor's perspective. The mixed approach was used for the study and initially a literature review was conducted in relation with highway construction projects in Sri Lanka. Then, a semi structured expert interviews were conducted to validate the findings to the Sri Lankan highway projects and analyzed with the use of manual content analysis. Finally, two rounds of questionnaire survey were conducted and analyzed collected data using statistical methods.

37 environmental risk factors were identified in highway construction projects in Sri Lanka with the contractor's perspective and out of them, 11 risk factors were identified as the most significant environmental risk factors. According to the analysis "Natural resources depletion in Sri Lanka like soil, sand, aggregate etc." has selected as the most significant risk factor by contractors. To manage above identified significant risk factors 24 most suitable risk response measures were selected. 13 out of them are common risk response measures and rest of the others were unique solutions for specific risk factors. At the same time environmental risk factors were mainly allocated to contractors in highway construction projects in Sri Lanka as per the perspective of the contractors. Finally, the recommendations were given to use of most suitable risk response measures in a meaningful way in highway construction projects to manage the environmental risk factors using the framework.

**Keywords:** *Highway construction projects, Environmental risk factors, Contractor, Risk allocation, Risk response measures*

## DEDICATION

*To my family members for giving me great support and great encouraged for me to do further studies.....*

*Special thanks should goes to my supervisor who has given immense support and guidance for the successful completion of my research.....*

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Thanking you.

***UOM Verified Signature***

K.I.L. Abhayantha

19 June 2022

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## **ABBREVIATIONS**

RDA	–	Road Development Authority
USD	–	United State Dollars (Money)
APM	–	Association for Project Management
PMBOK	–	Project Management Body of Knowledge
PLC	–	Project Life Cycle
EPD	–	Environmental Protection Department
PERT	–	Program Evaluation and Review Technology
PMI	–	Project Management Institute
RMP	–	Risk Management Plan
ADB	–	Asian Development Bank
EIA	–	Environmental Impact Assessment
ESD	–	Ecological Sustainable Development
EMP	–	Environmental Management Plan'
RTR	–	Risk Transfer
RAV	–	Risk Avoid
RAC	–	Risk Acceptance
RMI	–	Risk Mitigation
MWR	–	Mean Weighted Rate
SI	–	Significant Impact
GSMB	–	Geological Survey and Mining Bureau
NBRO	–	National Building Research Organization