

**STRATEGIES FOR THE MINIMIZATION OF FAILURES
IN SUSTAINABLE PROJECT MANAGEMENT
PRACTICES OF GOVERNMENT GREEN BUILDING
CONSTRUCTION PROJECTS**

C.I.A.J. Yapa

(189644X)

Degree of Master of Science in Project Management

Department of Building Economics

University of Moratuwa

Sri Lanka

February 2024

**STRATEGIES FOR THE MINIMIZATION OF FAILURES
IN SUSTAINABLE PROJECT MANAGEMENT
PRACTICES OF GOVERNMENT GREEN BUILDING
CONSTRUCTION PROJECTS**

C.I.A.J. Yapa

(189644X)

Dissertation submitted in partial fulfilment of the requirements for the Degree
of Master of Science in Project Management in Department of Building Economics

Department of Building Economics

University of Moratuwa

Sri Lanka

February 2024

DECLARATION

I declare that this is my own work and this dissertation does not incorporate without acknowledgment any material previously submitted for a Degree or Diploma in any other University or Institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgment is made in the text.

Also, I hereby grant to the University of Moratuwa the non-exclusive right to reproduce and distribute my dissertation, in whole or in part in print, electronic or other medium. I retain the right to use this content in whole or part in future works (such as articles and books).

.....

C. I. A. J. Yapa

.....

Date

I hereby acknowledge that C. I. A. J. Yapa has followed the dissertation process for the Masters of Science in Project Management set by the Department of Building Economics under my supervision.

.....

Ms. Piumi Dissanayake

Dissertation Supervisor

.....

Date

ABSTRACT

Green Buildings (GB) assist achieving the sustainability of buildings and to measure whether the construction reduces the overall environmental impact on human well-being as well as the biosphere. The Sustainable Project Management Practices (SPMP) directly facilitate to fulfilment of the requirements of a Green Building Rating System (GBRS). Yet, current literature showcase failures in SPMP, and it negatively affects the outcome of the GB Project. Due to the implementation of GB concept for Government GB has been occurred in Sri Lanka since 2017, it is necessary to investigate challenges, opportunities, and potential areas for improvement Government GB. Therefore, assessing failures in SPMP, and proposing strategies to minimize them in Government GB would contribute to the policy implementation and compliance, capacity building and training programs, financial and economic implications, innovation and technology integration and long-term impact assessment. This study is therefore aimed on proposing strategies to minimise failures in SPMP. Secondary sources have been primarily reviewed to collect data about the concept of GB and SPMP. Qualitative approach was used in this study to achieve the aim of the study, and two (02) cases, which were rejected in the first attempt at the preliminary GB approval under the Blue–Green Rating System, were selected. Both case studies are multi-storied buildings; a government quarters building and an office building. The data was collected from 18 respondents who were involved in the construction of the aforementioned projects using semi-structured interviews. Additionally, document review was performed for the data triangulation relevant to the case studies. The collected data was analysed using content analysis method to systematically identify the sequence of research findings. The research findings showcase the level of SPMP that were used or neglected, the failures occur in SPMP, and the way they affected the project outcome. Key failures include absence of organizational culture management, lack of technical applications, resistance to allocate costs for certification process, absence of proper monitoring and feedback process, and motivation only to maintain “Green” image. Altogether, 43 strategies were proposed as the end result of the study for the minimization of failures in SPMP in Government GB Projects. The proposed few strategies includes notifying sustainability goals in organization level, defining each member’s responsibilities, formulation communication plan at the initiation stage, understanding the rating mechanism and other to minimize failures of absence of business ethics, lack of communication network likewise.

Keywords: *Sustainability, Green Buildings, Sustainable Project Management Practices, Project Life Cycle, Blue – Green Rating System*

DEDICATION

This dissertation is dedicated to;

the countless number of people who have supported me throughout my education.

Dear family, neighbors, cousins, friends, teachers and specially the random adults who I have met during this journey;

Each of your encouragement, support, generosity and wishes brought me to where I'm standing today. I know you did it without expecting anything in return, and I express my gratitude for those efforts through this piece of work.

And,

To my late mother; Sunethra Wijesekara Ekanayake,

I forgot you for a little while, but hope this achievement will fulfill the dream you envisioned for me.

ACKNOWLEDGEMENT

This dissertation would not have been fruitful without the immense dedication and encouragement of several parties. I would like to owe my thanks to the following personnel and groups for contributing their cherished time and solid effort to complete the study successfully.

First, I offer sincere thanks to my esteemed supervisor Senior Lecturer Ms. Piumi Dissanayake for her invaluable supervision, support, and tutelage throughout the research. A special thanks to Prof. (Mrs.) Yasangika Sandanayake, Dr. (Ms.) Thanuja Ramachandra, Prof. (Mrs.) Udayangani Kulatunga, Dr. (Ms.) Sachie Gunatilake and other lecturers in the Department for their treasured guidance which was really influential in shaping my knowledge during the Research Methodology lecture series. I would like to express gratitude to, Ch. QS (Mr.) Indunil Senevirathne, Director, M.Sc in Project Management, and academic coordinators Ms. Lakshmi, Ms. Sewwandi, and Mr. Anura for being supportive throughout the Course. My gratitude extends to all the academic and non-academic staff in the Department of Building Economics and dedicated librarians for their unwavering assistance throughout the process.

Especially, this endeavor would not have been possible without all the professionals who generously provided knowledge and expertise for the case study. My profound thanks go to them whose names may not all be enumerated.

My appreciation also goes out to my Employer Emeritus Prof. (Mr.) Samitha Manawadu, Dr. (Mr.) D. P. Chandrasekara, Dr. (Mrs.) Randika Pieris, and Prof. (Mr.) Gamini Weerasinghe for motivating me to further studies.

I offer my thanks to my friends Lecturer (Mr.) Shameen Dharmasera and Dr. (Mr.) Sandun Dassanayake for their valuable guidance. At the same time, I would express my heartfelt gratitude towards my cousins Dr (Mr.) Kishan Abeygunawardena and Dr. (Mr.) Manoj Thibbotuwawa for sacrificing their precious time on commenting. It would be unfair not to acknowledge my colleagues; Ms. Sanduni Munaweera, Mr. Dinesh Induruwage, Ms.

Nimali Pathmaperuma, Ms. Sangeetha De Silva, Ms. Amani Dias, Mr. Sandaruwan Ranaweera, Ms. Gayathri Kawshalya, Mr. Clarence Dissanayake, Ms. Poornima Dassanayake, Mr, Indika Abayantha, and others for their emotional support and interaction.

Most importantly, I wish to thank my loving father Mr. D.A.J. Yapa and Sister Ms. Dheeshana Yapa, whose love and guidance are with me in whatever I pursue. Last but not least, I must mention my late mother's unending inspiration for my life.

CONTENTS

DECLARATION.....	ii
ABSTRACT.....	iii
DEDICATION	iv
ACKNOWLEDGEMENT	v
LIST OF FIGURES	x
LIST OF TABLES	xi
ABBREVIATIONS.....	xii
01. INTRODUCTION	1
1.1 Background.....	1
1.2 Problem Statement.....	3
1.3 Aim.....	4
1.4 Objectives	4
1.5 Research Methodology	4
1.6 Scope and Limitations.....	5
1.7 Chapter Breakdown	6
02. LITERATURE REVIEW	7
2.1 Introduction.....	7
2.2 Understanding the Concept of Green Buildings	7
2.2.1 Green Building Rating Systems in Global Context.....	8
2.2.2 Green Building Rating Systems in Sri Lanka	9
2.2.3 Green Building Assessment Procedure in Sri Lankan Government Buildings	10
2.3 Projects and Project Management.....	12
2.3.1 Characteristics of a Project	12
2.3.2 Introduction to the Project Management.....	13
2.3.3 Project’s Life Cycle (PLC)	15
2.4 Sustainable Project Management Practices for Green Buildings	15
2.5 Failures in Sustainable Project Management Practices of Green Building Construction.....	21
2.6 Possible Solutions to Minimise Failures in Sustainable Project Management Practices in Green Buildings.....	24

2.6.1 Improving Sustainable Project Management Practices throughout the Project Life Cycle.....	24
2.6.2 Empowering Knowledge among the Project Team and Effective Project Planning	25
2.6.3 Adopting the Green Technologies into the Project Management	27
2.6.4 Involvement of the Government in Awareness, Policy, and Regulations	28
2.6.5 Management of Labors	29
2.6.6 Maintaining Clear Communication Channels.....	30
2.6.7 Documentation for the Certification Process.....	30
2.7 Theoretical Framework.....	31
2.8 Summary	32
03. RESEARCH METHODOLOGY.....	33
3.1 Introduction.....	33
3.2 Research Process.....	33
3.2.1 Stage I - Research Problem Identification	35
3.2.2 Stage II- Research Design.....	36
3.2.3 Stage III - Data Collection	40
3.2.4 Stage IV - Data Analysis and Recommendation.....	44
3.3 Summary	45
04. DATA ANALYSIS AND FINDINGS	47
4.1 Introduction.....	47
4.2 Background of the Case Study Respondents	47
4.2.1 Attained Scores in the Green Building Assessment of the Case Studies	47
4.2.2 Respondents' Basic Knowledge about Green Building Concepts and Project Management.....	48
4.3 Sustainable Project Management Practices Used in the Case Studies.....	49
4.4 Failures in Sustainable Project Management Practices in the Case Studies	57
4.5 Suggestions to Minimize the Above Failures	67
4.6 Discussion	74
4.7 Summary	83
05. CONCLUSIONS AND RECOMMENDATIONS.....	84

5.1 Introduction.....	84
5.2 Conclusions.....	84
5.2.1 Objective 01 – Review the Concept of Sustainable Project Management Practices	85
5.2.2 Objective 02 – Reviewing the Failures in Sustainable Project Management Practices and Possible Solutions to Minimize Them	85
5.2.3 Objective 03 – Analyze Failures in Sustainable Project Management Practices in Government Green Building Projects.....	86
5.2.4 Objective 04 – Propose Strategies to Minimize Failures in Sustainable Project Management Practices in Government Green Building Construction Projects in Sri Lanka.....	87
5.3 Recommendations.....	87
5.4 Limitations of the Study.....	88
5.5 Further Research	89
5.6 Final Note.....	89
References.....	90
Appendices.....	103
Appendix 01 – Score Card of Blue-Green Sri Lanka	103
Appendix 02 - Mark sheet of the Case A	104
Appendix 03 - Mark sheet of the Case B.....	104
Appendix 04 – Semi – Structured Interview Draft	105
Annexure 05 – Respondents Answer in Semi-Structured Interviews.....	110

LIST OF FIGURES

Figure 2.1: Theoretical Framework of the Research.....	32
Figure 3.1: Conceptual Diagram of Research Design.....	34
Figure 3.2: Case study Boundary.....	38
Figure 3.3: Methods of Data Collection.....	40

LIST OF TABLES

Table 1.1: Summary of the Chapter Breakdown.....	06
Table 2.1: Approval Process of Development of Green Buildings in Sri Lanka.....	12
Table 2.2: Main Areas of Project Management Body of Knowledge	14
Table 2.3: Sustainable Project Management Practices in Green Building Construction ...	18
Table 2.4: Failures in SPMP factors in Green Building Construction.....	23
Table 3.1: Description of Selected Green Building Projects as Case Studies	39
Table 3.2: Profiles of the Participants of the Selected Case Studies.....	41
Table 3.3: Interview Guideline.....	43
Table 3.4: Case Study Tactics.....	45
Table 4.1: Case Study Analysis.....	48
Table 4.2: SPMP used in the Case Studies.....	55
Table 4.3: Failures in SPMP of Case Studies.....	64
Table 4.4: Suggestions to Minimize Failures in SPMP.....	72
Table 4.5: Findings of the Study.....	79
Table 4.6: Propose Strategies to Minimize failures in SPMP of GB Project.....	81

ABBREVIATIONS

COC – Certificate of Conformity

GB – Green Buildings

GBRS - Green Building Rating Systems

PLC – Project Life Cycle

PM – Project Management

SPMP – Sustainable Project Management Practices

SL – Sri Lanka

UDA – Urban Development Authority