

**ANALYSIS ON RESETTLEMENT PROCESS:
LANDSLIDE DISASTER**

Pulhiriyalage Anuruddha Vijekumara

(118442E)



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Degree of Master of Science in Project Management

Department of Building Economics

University of Moratuwa

Sri Lanka

February 2016

**ANALYSIS ON RESETTLEMENT PROCESS:
LANDSLIDE DISASTER**

Pulhiriyalage Anuruddha Vijekumara

(118442E)



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

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

Department of Building Economics

University of Moratuwa

Sri Lanka

February 2016

DECLARATION

I declare that this is my own work and this dissertation does not incorporate without acknowledgement of 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 acknowledgement is made in the text.

Also, I hereby grant to 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 or books).

.....

P. A. Vijekumara

.....

Date:



University of Moratuwa, Sri Lanka.

Electronic Theses & Dissertations

www.lib.mrt.ac.lk

The above candidate has carried out research for the Masters Dissertation under my supervision.

.....

Dr. Gayani Karunasena

Dissertation Supervisor

.....

Date:

Abstract

The landslide is one of the major disaster event in Sri Lanka, which has increased its frequency and after it strikes leave people homeless than any other disaster event. However, setting of pre and post disaster activities like mitigation, preparedness, response, recovery and development have very important roles in reducing the future hazard risks in disaster prone areas. Resettlement has been a major policy in post-disaster reconstructions in developing countries. However, resettlement can result and has resulted in significant adverse impacts on the resettled population.

In this study, factors affecting to failure in landslide resettlements in Sri Lanka and related issues are addressed while proposing a suitable framework for landslide disaster resettlement for the future resilience in Sri Lanka. Data was gathered through structured interviews with implementing agencies and affected communities of selected four landslide resettlement cases of Sri Lanka.

The findings reveal that, there is no systematic procedure/approached is used in any of selected landslide resettlement programs. Limited studies on climate and history of natural hazards, participation by different institutions in sectors, need and capacity assessment, socio-economic and cultural studies, coordination among the stakeholders, prevent the settlement in affected and at-risk areas, rational decision making on resettlement alternatives and options, safety assessment, accessibility to existing public and social infrastructure and livelihood opportunities, community involvement in house designing and consideration of socio-cultural values of the affected community are the main factors affecting landslide resettlement programs in Sri Lanka.

Keywords: *Disasters, Landslide Disaster, Landslide Resettlement*



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

DEDICATION

I dedicate this piece of research

To

The public of Sri Lanka,

Who

Gave me the free education to stand up with my own feet.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

ACKNOWLEDGEMENT

I would like to express my sincere gratitude and thanks to Dr. (Mrs.) Gayani Karunasena; my supervisor, (Senior Lecturer of the Department of Building Economics, University of Moratuwa) for her guidance, constructive suggestions, and continuous encouragement throughout the process of this study.

I wish to take this opportunity to extend my sincere thanks to Dr. (Mrs.) Y. G. Sandanayake, Head of the Department of Building Economics of the university of Moratuwa, Ch. QS L. D. I. P. Seneviratne (Course Director), Ms. L. A. Siriwardena (Course Administrator) and all the staff members of the Department of Building Economics, for the encouragement provided during the study period of my Master of Science in Project Management.

A very special word of thanks goes to Mr. Kishan Sugathapala, Director of the Human Settlement Planning Division of the National Building Research Organization (NBRO), who very kindly contributed in making this endeavor a success.



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

I very much appreciate the assistance and encouragement given by the staff of the NBRO who offered their fullest cooperation to make this research a reality.

My exceptional heartiest tribute must go to the non-academic staff and my batch mates for their help, encouragement, and spiritual and emotional reinforcement given throughout my study period of the Master of Science in Project Management. Finally, I owe special gratitude to my parents, friends for their relentless support to achieve the desired target.

TABLE OF CONTENTS

| | |
|--------------------------------|----------|
| DECLARATION | i |
| ABSTRACT | ii |
| DEDICATION | iii |
| ACKNOWLEDGEMENT | iv |
| TABLE OF CONTENTS | v |
| LIST OF TABLES | viii |
| LIST OF FIGURES | ix |
| LIST OF ABBREVIATIONS | x |
| | |
| CHAPTER – 01 | 1 |
| INTRODUCTION..... | 1 |
| 1.0. Background | 1 |
| 1.1. Research Problem | 3 |
| 1.2. Aim of the Study | 4 |
| 1.3. Objectives | 4 |
| 1.4. Methodology | 4 |
| 1.5. Scope of the Study..... | 4 |
| 1.6. Chapter Breakdown..... | 5 |
| 1.7. Summary | 5 |
| | |
| CHAPTER – 02 | 6 |
| LITERATURE REVIEW..... | 6 |
| 2.1. Introduction | 6 |
| 2.2. Overview of Disaster..... | 6 |

| | |
|--------------------------------------------|-----------|
| 2.3. Landslide | 7 |
| 2.4. Landslide Disaster in Sri Lanka | 11 |
| 2.5. Landslide Disaster Management | 13 |
| 2.6. What is Resettlement? | 14 |
| 2.7. Post Disaster Resettlement | 15 |
| 2.8. Resettlement Process | 16 |
| 2.9. Summary | 29 |
| | |
| CHAPTER – 03 | 30 |
| RESEARCH METHODOLOGY | 30 |
| 3.1. Introduction | 30 |
| 3.2. Research Approach..... | 30 |
| 3.3. Case Study Design..... | 31 |
| 3.3.1. Design Parameters | 31 |
| 3.3.2. Data Collection | 33 |
| 3.3.3. Data Analysis | 35 |
| 3.4. Summary | 35 |
| | |
| CHAPTER – 04 | 36 |
| RESEARCH FINDINGS | 36 |
| 4.1. Introduction | 36 |
| 4.2. Background of Cases..... | 36 |
| 4.3. Case Analysis | 38 |
| 4.4. Cross Case Analysis | 41 |
| 4.4.1. Contextual Study..... | 42 |
| 4.4.2. Institutional Arrangement..... | 46 |

| | |
|-------------------------------------------------------|-----------|
| 4.4.3. Forming Work Team | 47 |
| 4.4.4. Assessment and Studies | 49 |
| 4.4.5. Establish Mechanisms | 51 |
| 4.4.6. Resettlement Alternatives and Options..... | 57 |
| 4.4.7. Land Component..... | 59 |
| 4.4.8. Physical Planning..... | 62 |
| 4.4.9. Housing and Infrastructure | 63 |
| 4.4.10. Post resettlement Stage Activities..... | 64 |
| 4.5. Landslide Resettlement Planning Framework..... | 69 |
| 4.6. Summary | 69 |
| CHAPTER – 05 | 75 |
| CONCLUSION..... | 75 |
| 5.1. Introduction | 75 |
| 5.2. Summary of Research Findings..... | 75 |
| 5.3. Conclusion about Overall Research Problem..... | 76 |
| 5.4. Contribution to the Industry and Knowledge | 77 |
| 5.5. Limitations of the Research..... | 77 |
| 5.6. Further Research..... | 77 |
| LIST OF REFERENCES | 79 |
| APPENDIX A: LANDSLIDE RESETTLEMENT CASES | 85 |
| APPENDIX B: INTERVIEW GUIDELINE | 89 |
| APPENDIX C: INTERVIEW GUIDELINE | 92 |
| APPENDIX D: INTERVIEW TRANSCRIPT | 94 |
| APPENDIX E: INTERVIEW TRANSCRIPT..... | 98 |

LIST OF TABLES

| | |
|----------------------------------------------------------------------------------------------------------------------------|----|
| Table 2.1. Landslides Categories | 9 |
| Table 2.2: Landslide Resettlement Cases - Lesson Learnt | 18 |
| Table 2.3: Factors Affecting for Success/Failure..... | 26 |
| Table 3.1: Selected Cases..... | 32 |
| Table 3.2: Interview Profile | 34 |
| Table 4.1. Details of Selected Cases | 37 |
| Table 4.2. Issues Identified | 45 |
| Table 4.3. Issues Identified | 47 |
| Table 4.4. Issues Identified | 48 |
| Table 4.5. Issues Identified | 50 |
| Table 4.6. Issues Identified | 56 |
| Table 4.7. Issues Identified | 58 |
| Table 4.8. Issues Identified | 61 |
| Table 4.9. Issues Identified | 63 |
| Table 4.10. Issues Identified | 64 |
| Table 4.11. Issues Identified | 65 |
| Table 4.12: Summary of Resettlement Process – Problems and Causes | 66 |
| Table 4.13. Identified New Attributes in Resettlement Framework | 71 |
| Table 4.14. Factors Directly Affected by the Failure of Most Landslide Resettlement Cases and Suggestions to Overcome..... | 71 |

LIST OF FIGURES

| | |
|------------------------------------------------------------------------------|----|
| Figure 2.1. Total Number of reported Hydrological Disasters (1900–2015)..... | 7 |
| Figure 2.2. Parts of a Landslide | 8 |
| Figure 2.3. Landslides Deaths in Sri Lanka | 13 |
| Figure 2.4: Conceptual Framework for Landslide Resettlement Planning | 28 |
| Figure 3.1: Case Study Design..... | 31 |
| Figure 4.1. : Updated Landslide Resettlement Planning Framework | 70 |



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

LIST OF ABBREVIATIONS

| Abbreviation | | Description |
|--------------|---|------------------------------------------------------------------|
| IFRC | - | International Federation of Red Cross and Red Crescent Societies |
| DM | - | Disaster Management |
| NBRO | - | National Building Research Organization |
| EM-DAT | - | Emergency Events Database |
| UNDP | - | United Nations Development Programme |
| DRR | - | Disaster Risk Reduction |
| EIA | - | Environmental Impact Assessment |
| CBO | - | Community Based Organization |
| NGO | - | Non-Government Origination |



University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk