

**STUDY OF MIGRATION AS A FORM OF  
ADAPTATION STRATEGY TO NATURAL HAZARDS.  
CASE STUDY: FLOOD INDUCED MIGRATION IN  
RATHNAPURA AREA**

Witharana Thushani

(108974 C)

Degree of Master of Science in Town and Country Planning

Department of Town and Country Planning

University of Moratuwa

Sri Lanka

August 2016

**STUDY OF MIGRATION AS A FORM OF  
ADAPTATION STRATEGY TO NATURAL HAZARDS.  
CASE STUDY: FLOOD INDUCED MIGRATION IN  
RATHNAPURA AREA**

Witharana Thushani

(108974 C)

Dissertation Submitted in partial fulfillment of the requirements for the  
Degree Master of Science in Town and Country Planning

Department of Town and Country Planning

University of Moratuwa

Sri Lanka

August 2016

## **DECLARATION**

I declare that this Research Project Report represents my own work, except where due acknowledgement has been made and that it has not been previously included in a thesis, dissertation or report, submitted to the University of Moratuwa or to any other institution for a degree, diploma or other qualification. I also wish to declare that the total number of words in the body of this report (excluding the Appendices & the Bibliography) is 11477.

Signed :  
Name of Student : W. Thushani  
Registration No. : 108974 C  
Date :

Date:.....

## CERTIFICATION

I herewith certify that W. Thushani index number 108974 C in the Master degree of Town and Country Planning Programme has prepared this research project under my supervision.

Dr. R. Rathnayaka

Head of the Department

Principle Supervisor

Department of Town and Country Planning

University of Moratuwa

Date: .....

Dr. R. Rathnayaka

Head of the Department

Department of Town and Country Planning

University of Moratuwa

Date: .....

## **Acknowledgements**

I am deeply indebted to Dr. Rangajeewa Rathnayaka, my principal supervisor and the Head of the Department of Town and Country Planning of the University of Moratuwa, for his valuable guidance, helpful suggestions and constructive criticisms to finalize this dissertation successfully.

I am also thankful to Architect/Planner Dr. Jagath Munasinghe, Senior Lecturer of the Department of Town & Country Planning of the University of Moratuwa, for the comments and instructions given to me throughout the course of study.

My sincere thanks are also due to Planner K. D. Fernando, Senior Lecturer of Department of Town & Country Planning of the University of Moratuwa and Mrs. Malani Herath, Senior Lecturer of Department of Town & Country Planning of the University of Moratuwa.

I would also like to thank Mr. Chameera de Silva (Lecturer), Mr. Amila Jayasingha (Lecturer), and all the other academic and nonacademic staff of Department of Town and Country Planning for their valuable help extended to me in various ways.

I would like to record my sincere thanks to Mrs. Prathibani Bandusena (Lecturer) and my colleague Mrs. Nilani Edirisinghe in for their help and encouragement.

I would also like to thank all who responded to my in-depth interview and questionnaire, whose information was vital in realizing the research objective.

Finally I wish to thank my parents, in-laws, my sisters and my husband Lanka, my son Ravija and Daughter Helani for their encouragements and for being beside me throughout the project.

## **Abstract**

This research studies migration as a household adaptation strategy to flood in Rathnapura. Environment extremes act as one contributor among many to population movement. There are number of migration theories those explains the factors which contribute to human migration. Existing research on human migration in response to natural hazards tends to be limited. So it is important to study how environment factor act as critical factor in the decision to migrate. It is undisputed that there is indeed a relationship between migration and environment hazards. The topic of migration as adaptation strategy is of growing importance but still in the initial stage. So this research emphasize why some people decide to migrate while others do not. What are the factors affect to people to think to migrate and what are the adaptation strategies employed by people in order to reduce the vulnerability. This research was designed in order to give answers to those questions and to study the migration as one form of adaptation strategy. Data and information was collected through questionnaire and interview. The data was analyzed through chi-square test, one way ANOVA and descriptive statistical method by using SPSS. Results shows that there is statistically significant relationship between occupation, severity of flood and no. of years living in hazardous area with think of migrating. Migration cost, livelihood linked with environment, native place, social ties mainly affect to people to stay in risky area. The factors like recovery cost, scarcity of food, disease and security motivate people to migrate. This study shows that people are more vulnerable for flood like to migrate in order to reduce the vulnerability by reducing exposure to flood.

Key Words: Natural hazard, Vulnerability, Adaptation, migration,

## TABLE OF CONTENTS

	Page
Declaration	i
Certification	ii
Acknowledgements	iii
Abstract	iv
Table of Contents	v
List of Figures	vii
List of Tables	vii
List of appendices	viii
List of Abbreviations	ix
<b>Chapter</b>	
<b>01 Introduction</b>	<b>01</b>
1.1 Background of the study	01
1.2 Research Problem	03
1.3 General Objectives	04
1.4 Research Questions	04
1.5 Scope and Limitations	05
<b>02 Literature Review</b>	<b>07</b>
2.1 Introduction	07
2.2 Defining Hazard and Disaster	07
2.3 Defining Adaptation	08
2.4 Resilience	09
2.5 Adaptive Capacity	09
2.6 Vulnerability	10
2.7 Migration	12
2.7.1 Theories of migration	12
2.7.2 Economies Theories of Migration	12
2.7.3 New Economies of Labour Migration Approach	13
2.7.4 Migration System theory and New Interdisciplinary Approach	13
2.8 Migration Theory and Environmental Change	14
2.9 Migration as an adaptation to Natural Hazard	14
2.10 Conclusion	16

<b>03</b>	<b>Research Design</b>	18
3.1	Introduction	18
3.2	Key Questions	18
3.3	Conceptual Frame Work	18
3.4	Study Area – Rathnapura Municipal Council (RMC)	19
3.5	Selection of Case Study Area	21
3.6	Data Collection and Data Analysis	24
3.7	Conclusion	25
<b>04</b>	<b>Results and Analysis</b>	26
4.1	Introduction	26
4.2	Analysis and Results	26
4.2.1	Flooding in Rathnapura	26
4.2.2	Sample	27
4.2.3	Factors Affect to Think of Migration during Flood	28
4.2.4	The Difficulties faced by People during Flood Time	35
4.2.5	Adaptation Strategies	40
4.2.6	Reasons affect to Think of Migration	41
4.2.7	Reasons for Living in Risky Area	42
4.2.8	People Behaviour to adapt to the Flood in Future	44
4.3	Conclusion	46
<b>05</b>	<b>Conclusion</b>	48
5.1	Conclusion	48
5.2	Major Findings	49
	<b>References</b>	52
	<b>Appendices</b>	57



## LIST OF FIGURES

1.1	Flow of study	06
3.1	Conceptual Framework on relationship between hazards, Vulnerable Community, and the Community Adaptation to hazards	19
3.2	Average Monthly Rainfall (1980 – 2010)	20
3.3	Average Annual Rainfall Distribution (1980 – 2010)	21
3.4	Total Number of Affected people in Rathnapura MC Area (1999 – 2011)	22
3.5	Number of population affected by flood in Rathnapura MC Area (1999 – 2010)	22
3.6	Flood Composite Risk of Rathnapura MC	23
3.7	Location of the Study Area	24
4.1	Frequencies of type of occupation affect to migration	33
4.2	Frequencies of Number of years living in that area affect to migration	34
4.3	Frequency distribution of factors affect to migration	43

## LIST OF TABLES

Table 1.1	Level of natural disasters occurred in Sri Lanka between 1957 and 2005	02
Table 2.1	summary of migration theory	16
Table 3.1	Selected GN Division for case study	25
Table 3.2	Sample population	25
Table 4.1	Age Group and Marital status	27
Table 4.2	Sex and Marital status	27
Table 4.3	Relationship between age and think of migrating	28
Table 4.4	Relationship between sex and think of migrating	29
Table 4.5	Relationship between Level of Education and think of migrating	29
Table 4.6	Relationship between Income level and think of migrating	30

Table 4.7	Relationship between Occupation and think of migrating	31
Table 4.8	Relationship between Numbers of years living and think of migrating	31
Table 4.9	Relationship between Severity and think of migrating	32
Table 4.10	Frequencies of type of occupation affect to migration	33
Table 4.11	Frequencies of Number of years living that is affect to migration	34
Table 4.12	Frequencies of Severity of flood affect to probability of migration	35
Table 4.13	Frequently distribution of difficulties faced by people	36
Table 4.14	ANOVA	37
Table 4.15	Frequently distribution of difficulties faced by people based on occupation	39
Table 4.16	Adaptation behaviors employed by people	40
Table 4.17	Reasons affect to think of migrating	42
Table 4.18	ANOVA	43
Table 4.19	People behavior to adapt to the flood in future	45

## **LIST OF APPENDICES**

Appendix 1	Questionnaire	57
Appendix 2	Rainfall and Demographic Data in Rathnapura MC Area	61
Appendix 3	SPSS Data Analysis sheet	63

## **LIST OF ABBREVIATIONS**

<b>Abbreviation</b>	<b>Description</b>
RMC	Rathnapura Municipal Council
UDA	Urban Development Authority