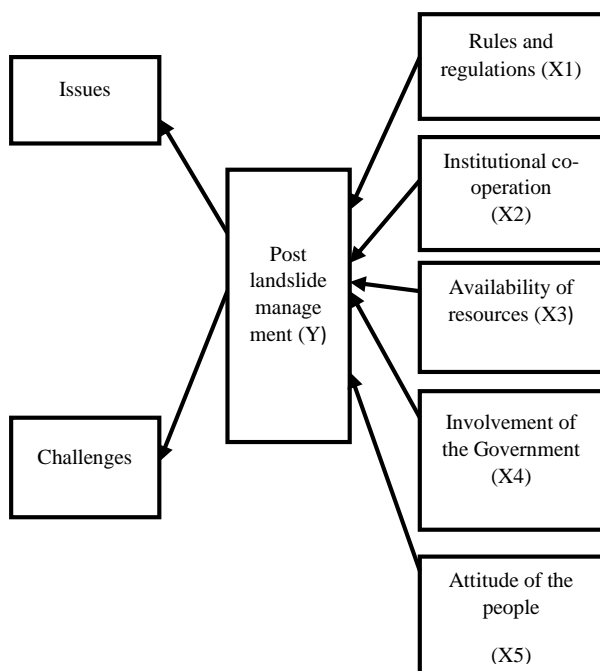


be assumed to affect in positive and negative mean on post landslide management. Those factors here are established as independent variables (X_i - X_n) as shown in the Figure 5.1;

Figure 4.1: Dependent variable and assumed independent variables



4.2. Hypotheses

Null and alternative hypothesis are created for this study shown as follows;

H_0 – “There is no impact of selected variables such as rules and regulations, institutional co-operation, availability of resources, involvement of the government and attitude of the people on issues and challenges of urban flood hazard management”

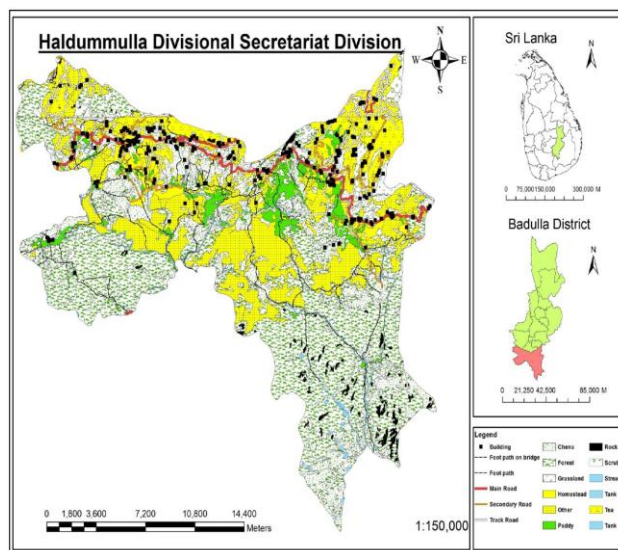
H_1 – “There is an impact of selected variables such as rules and regulations, institutional co-operation, availability of resources, involvement of the

government and attitude of the people on issues and challenges of urban flood hazard management”

4.3. Sampling

Haldummulla DSD located, from North to Haputale DSD, from South to Monaragala and Rathnapura districts, from East to Monaragala district and from west to Nuwara ELLIYA district in Uva province in Sri Lanka. The extent of the Haldummulla DSD is 430.5 Km² and it includes 39 Grama Niladhari divisions. Majority of the area located in 305-1400m elevation (1000-3000 feet), minor parts of the area located in 150-305m elevation (500-1000 feet) in Haldummulla DSD (Resource Profile; 2015).

Figure 4.2. Haldummulla Divisional Secretariat Division



The total population of this study represents the all affected people from Meeriyabedda landslide in 2014. They have categorized as resettled, returnees and living with friends and relatives. Sample population of this study was selected from these three categories. It was suggested that; select 50% from the total population of living under three categories by using

the snow ball sampling. The sample size as shown in table 4.1.

Table 4.1. Sample Population

Resettled Population	Returnees	Live with relatives	Total Population
76 Families	12 Families	04 Families	92 Families
Resettled Population	Returnees	Live with relatives	Total Population
76/2 = 37 Families	12/2 = 6 Families	4/2 = 2 Families	45 Families

4.4. Data collection

The primary and secondary data collected by using the following methods:

Primary sources – Questionnaire, Observations, Formal and informal discussions.

Secondary sources – books, journals, institutional reports, web sources.

4.5. Analysis of data

Data analysis of the study may concern qualitative techniques as this research belongs to the quantitative research. Therefore, descriptive methods used for the data analysis by using;

- Graphs
- Pictures
- Tables

In addition to that, as this research mainly concerns the qualitative data, it used the qualitative data analysis techniques also such as content analysis. Accordingly, this research mainly based on the descriptive analysis.

5. Results and discussion

5.1. Nature of post landslide management

For the clear identification on nature of post landslide management, it divided into three categories as mentioned below.

- Emergency Response and Relief
- Short term: Recovery and Rehabilitation
- Long term reconstruction and development

Among those three phases, emergency response and relief as well as short term recovery and rehabilitation processes were succeeded than the long term reconstruction and development.

Table 5.1. Success of the Emergency Response

	Most Successful	Successful	Unsuccessful
Rescue	✓		
Evacuation	✓		
Camping process		✓	
Donation Distribution			✓

Emergency response and relief includes several activities such as rescue, evacuation, camping process and donation distribution. Among them, immediate rescue process implemented during just after the disaster and people have been evacuated with the guidance of DMC in Badulla district. As well as they requested public support from the people, who are capable to support for the tri-forces. The rescue process and evacuation were most succeeded in this case with the involvement of government agencies and

tri forces. After the evacuation affected community were moved to several temporary camps such as Poonagala Tamil School, Poonagala Sinhala School, Gapkade camp. The government were provided basic needs of the affected community like foods, cloths, sanitary facilities and other things which they want. But according to the affected community’s opinion, unequal distribution of donations was major issue that occurred in the emergency response phase as some of people were highly supported while others having less attention even for their basic needs.

Table 5.2. Success of the Short term Recovery and Rehabilitation

	Most Successful	Successful	Unsuccessful
Camping Process		✓	
Donation Distribution		✓	
Restoration of Basic Service, Infrastructure			✓
Restoration of Livelihoods			✓

Short term recovery and rehabilitation includes the restoration of basic services, infrastructure and livelihood. In here, camping process considered under the short term recovery also as IDPs were lived nearly two years in welfare centers after the disaster. Donations were equally distributed among the people in here than the emergency response as people said. But restoration of basic services such as communication and electricity as well as restoration of infrastructure facilities like roads, water supply were

delay to reconstruct because of inadequate attention of the government. Therefore, returnees also had to stay considerable time in welfare centers. Not only that, the government support for restoration livelihoods of IDPs also very less as the people mentioned.

Table 5.3. Success of Long term Reconstruction and Development

	Most Successful	Successful	Unsuccessful
Land selection for Resettlement			✓
Resettlement			✓
Accessibility to Livelihoods			✓
Post Resettlement Assistance			✓

All the activities regarding to the long term reconstruction and resettlement process related to the Meeriyabedda landslide were failed as shown by the above table. It took long time period for the land selection and other pre resettlement activities also. Therefore the resettlement procedure also delay and many failures occurred like poor accessibility to livelihoods and lack of socio cultural values. After the resettlement, it is essential to have post resettlement assistance from the government to recover as soon as possible. But there was no any assistance after the resettlement. Therefore easily it can be recognized as shown by the above tables, most of the issues of post landslide management were occurred in long term reconstruction and development procedure.

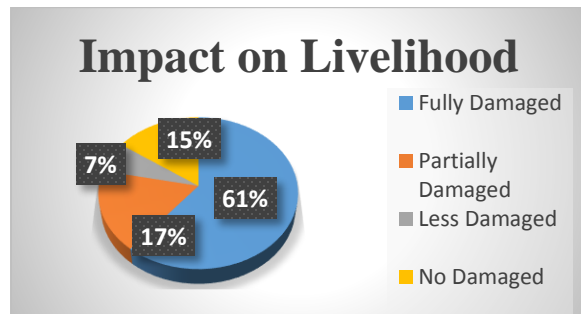
5.2. Impact on Landslide Induced Internal Displacement

The impact of landslide induced displacement can be categorized as follows.

- Social impact
- Economic impact
- Cultural impact

Social impact have been identified based on the impact on family, social relationship, education and health. Deaths, furiously injured and physical disable situations could be identified as the social impact on family. Accordingly 14 deaths were reported while furiously injured and physical disable people reported as 08 altogether. When concerning the economic impact, their livelihoods have been fully, partially and less damaged as shown by below chart.

Figure 5.1. Impact on Livelihood



Accordingly 28 families or the 61% have completely loss their livelihoods while partially and less damage reported 17% and 7% respectively. It have been discovered that, economic impact was higher than the socio and cultural impact in case of Meeriyabedda.

5.3. Issues and challenges of post landslide disaster management

The total process of resettlement and rehabilitation is examined under this theme. The discussion on this matter will be forwarded as follows.

- Issues of emergency response and relief phase
- Issues of short term recovery and rehabilitation process
- Issues of long term reconstruction and development process
- Issues regarding to these three phases as well the causes for the issues also identified for the minimum clarification. Accordingly,

Table 5.4. Issues and causes of Emergency Response and Relief

Issues	Causes
Unequal distribution of donations	Lack of strong institutional arrangements, Lack of responsibility provision
Inability to attending schools to school children	Failures in providing educational facilities at the initial stages
Socio cultural issues	Lack of socio cultural studies of the community Attitudes of the people
Delay of construction of the damaged roads and other infrastructure facilities	Lack of institutional support, Lack of responsibility provision

Source: Field Survey, 2016

Accordingly it can be identified that, most of the issues reported such as unequal distribution of donations, socio cultural issues, delay of construction of infrastructure facilities have occurred due to the lack of strong institutional arrangements. These issues were reported from both phases such as emergency response and short term recovery and rehabilitation phases as shown by the table 5.4 and 5.5.

Table 5.5. Issues and causes of Short term Recovery and Rehabilitation Phase

Issues	Causes
Unequal distribution of donations	Lack of strong institutional arrangements, Less of satisfaction of people
Conflicts between host and affected community	Lack of social consideration, Negative attitudes of the people to commitment
Socio cultural issues	Lack of socio cultural studies, Attitudes of the people
Lack of infrastructure facilities	Lack of consideration of basic needs of the people

Source: Field Survey, 2016

Addition to that, prominent issues and causes were identified under the phase of long term reconstruction and development also.

- Long delay in resettlement implementation
- Land selection, Houses designing and construction issues
- Unexpected disasters Eg: Wild Elephant threat
- Newly constructed houses have been abandoned for not having any means of livelihood opportunities at or near to the resettlement
- Newly constructed houses have been abandoned due to poor accessibility to existing public and social infrastructure

The major issue was the long delay in resettlement implementation as the result of poor institutional arrangements, lack of community participation and informal involvement of the government. The new resettled area has been also just identified disaster prone area and it proves the mechanism failures. These

are also occurred lack of interdisciplinary teams for specific functions. Among the three phases discussed above, the later one has several issues recorded. The study revealed that most of the issues emerged due to the lack of major institutional arrangements.

5. Conclusion and recommendation

Despite Haldummulla DSD is declared as a landslide prone area by the authorities, people have neglected the warning due to different reasons. Most significant factor is most of them did not have option to leave their place of origin. The awareness of the post landslide management is very less among the vulnerable community.

Most of issues as well as challenges were identified under the phase of long term reconstruction and development. The lack of strong institutional arrangements has caused to arise this situation. In addition, it can be concluded people’s attitudes also make considerable influence to increase the complexity of the issues and challenges of post landslide management. By going through the findings it can be recommended that,

- Establish a proper mechanism to enhance the institutional coordination and commitment.
- Update the laws of environmental protection and to implement them at any circumstances.
- Promote regular land use and limit the cultivations at steep slopes
- Modern methods for protecting the lands from soil erosion
- Maintain a proper hydrological system

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