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Social Construction of Landslide; Case of Aranayake - Political Ecological Glances in Sri Lanka

Jayathilaka D. M. S. C. D. M.[1], Nalani Hennayake[2]

Department of Geography, University of Peradeniya, Sri Lanka

Abstract: ***Landslides have been predominantly studied in Sri Lanka in the category of natural phenomena, highlighting geological, geomorphologic and meteorological attributes. Although improper land use practices are identified as a contributing factor for landslides, the larger political and ecological context that leads to such improper land use practices have not been, both empirically and theoretically, adequately dealt with. The objective of this study is to analyze the phenomenon of landslides as socially constructed. In order to understand landslides as socially constructed, this study focuses on the recent landslide of Elangipitiya from the political ecology approach which is presumed upon a relationship between politics and natural environment. In this study, we applied Paul Robins approach to political ecology which focuses on knowledge, power and practices as contributing elements towards environmental degradation, operating at macro to micro levels. This study reveals that land use practices in Elangipitiya have evolved from an undisturbed forest to a tea plantation and then to a colony settlement under land reforms of the modern state. Tea and rubber plantations have later been parceled out as well as encroached into resulting in more settlements in the 1960s and 1980s. With the settlements, a new road has been developed to the upper area where the current landslide has actually occurred. This is clear evidence as to how political decision making process can induce environmental changes and such politics teamed up with limited environmental knowledge and practices of the community itself have adversely affected the area. This study concludes that understanding landslides as socially constructed transcending its narrow designation as natural disasters, especially revealing the relationship between politics and environment would enlighten us, at least in reducing the impact, if not to avert such disasters.***

Keywords: landslides, social construction, political ecology, environmental issues and development activities

1. Introduction

With the unplanned development process, different environmental issues have arisen. To solve and reduce these issues, various strategies and methodologies have been used. Simultaneously more sustainable ways of solving, managing environmental issues and studies on those issues are also being carrying out. Political ecology is an approach which gives critical understanding of causes and effects of environmental issues and explains how those issues arise as a result of prevailing economic and political processes(Paul Robbins; 2004).By this fact itself, political ecology provides both theoretical and practical approaches and ways of solving environmental issues. Moreover, political ecology is an approach which provides the possibilities to understand the causes and effects of a disaster critically. By definition, disaster is a situation which the community cannot cope with their existing resources and capacity. Among all disaster situations which are common in Sri Lankan context landslides are a frequent disaster in disaster in the Sri Lankan hill country during the torrential rains. Since it caused huge damage to the community and the country, researches have carried out covering different aspects such as, meteorological (Mohottala & Chandrapala, 1994; Wickramasekara & Sinnatamby, 1994; Rajaratnam & Bhandari, 1994), geological (Cooray, 1994; Vitanage, 1994; Bandara and Kumarapeli, 1994) and morphological (Bhandari and Thayalan, 1994). Basically, landslides are defined as a natural phenomenon. In some instances, they have identified that human practice as a contributor which highlighted the improper land use pattern (Madduma Bandara, 1994). However, they have not emphasized on the process which derives the improper land use pattern. Improper land use pattern not simply occurred within a short period of time, construction of this improper land use is a process which is driven by the social structures. When we analyze a landslide (disaster) critically we can indicate that it does not just 'occur' it is 'produced'. The next fundamental questions that arise are: how it produces and by whom it is produced? The objective of this study is to analyze the landslides as socially constructed phenomenon with reference to the recent landslide happen in Elangipitiya, Aranayake in Sri Lanka. This construction of landslide is directly connected with the emergence of the improper land use patterns. Establishment of the settlements in a mountainous area had started with the structural level policies. Those newly settled people have utilized land in improper ways without proper knowledge. Since they were an economically unstable community their aim is profit earning rather than maintaining the ecological balance. Eventually, it causes landslide vulnerability, with the torrential rains whole area is destroyed with the community. This practice of improper land usage sets the foundation for the disaster.

Since we have a presumption that landslide is a natural phenomenon, we have neglected the social contribution by over-emphasizing the natural factors. It is difficult to control the natural attributes but 'society' is the agent who has intensified the phenomenon to happen. So, we cannot neglect the society as a neutral factor in landslides. To emphasize this phenomenon we have to have a critical approach. For that, I have used the political ecology approach which emphasizes on the relationship of the political economy of the society and the environmental issues (Blaikie and Brookfield citing Robbins, 2004). Through this perspective, I will emphasize the fact that

landslides are not simply a result of natural factors or the human practices, but it has been constructed by the society. Each and every component of the society; politicians, policy makers, government officers to the poor villagers, have contributed in a different level; from national, intermediate and ground level. Further, this approach describes how improper land use pattern has been practiced by the community with the support of the structural level processes.

When focusing on the Elangipitiya landslide, National Building Research Organization (NBRO), in their basic geological survey report of Elangipitiya, Aranayake disaster (2016 May), emphasizes the fact that improper land use pattern has contributed to that particular landslide. Establishment of the settlements in that area and improper ways of land consumption are a long way process. Traditionally mountainous lands are left out vacant, with the population expansion and scarcity of land recourse (landlessness), mountainous lands had to be redistributed to landless poor villagers. Then new colony settlements were established in mountainous areas. So, this settlement establishment program was not a volunteer decision of poor villagers, it is a decision of policy makers and politicians. Poor villagers utilized unsustainable cultivation methods and practices because their aim was earning profit from cultivation and improve their standard of living rather than the sustainability of land. As a result of neglecting the environmental challenges, Elangipitiya experienced a landslide disaster during torrential rains in May, 2016. Further analysis of this phenomenon helps to reveal the contribution of different structures of the society and eventually how Elangipitiya disaster had been constructed by the society.

2. Methodology

The methodology of this study is more analytical and it focuses on landslides disaster in a different point of view. Insight of the history of an area is supporting to elaborate the socio- economic process which had gone through. For that, literature on study area and field survey based on a structured questioner was carried out in 2016 with a sample of 55 affected families in Elagipitiyato elaborate the environmental changes due to the social pressure on the study area. Quantitative data was processed through Ms Excel and visualized through graphs. Textual data was processed and analyzed through transcribing and coding. Besides this information, to validate the information derived, I have used land use maps of 1943, 1973, 1989 and 2012 prepared by the Survey Department of Sri Lanka. Those maps wereconverted to digital format and overlaid to derive the land use changes of the area.

Study area-*Elangipitiya*

Aranayake lies in the western slope of the Central highlands which receives 2000- 4000 mm rainfall annually. Landslide affected area is known as Elagipitiya in the Aranayake Division. This area was a tea estate during the colonial period and it was named as Yellangawry Estate/ Elangipitiya group. After the independence, Elangipitiya area was converted toa village colony for the landless peasants of surrounding villages. This colony was established with the political support during the late 1960s.

Moreover, National Building Research Organization (NBRO) produced landslide hazard maps incorporating slope, drainage, geology, and soil and land use management of the area. Figure 1 shows the landslide hazard levels in Elangipitiya (2015). According to the figure, crown area of the 2016 landslide located in a high hazard area known as Elanipitiya, while tail part of the landslide was in the Debathgama Pallebage village. Figure 1 illustrates the location of Elangipitiya village and its hazard kevels as measured by the National Building Research Organization (NBRO).

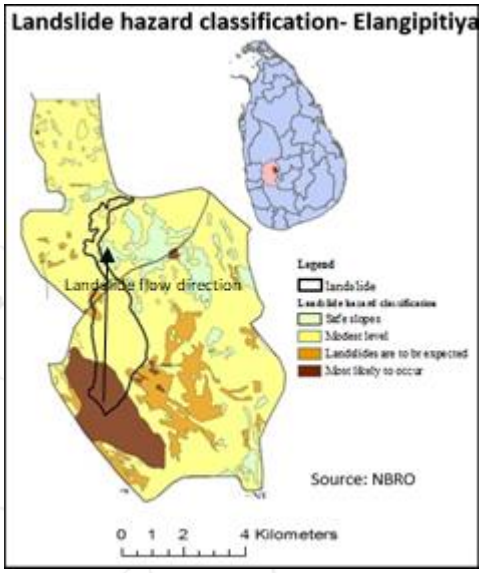

Figure 1: Landslide hazard classification of Aranayake (NBRO)

When consider about the topography of the area it rises from 200m up to 1000m altitude with the highest peak called *Ramasarakapolla* and the mountain called *Ramasara.* Upper part of the mountain has steep slope and gradually it become gentle slope. Figure 2 elaborates the slope categories of Elangipitiya.

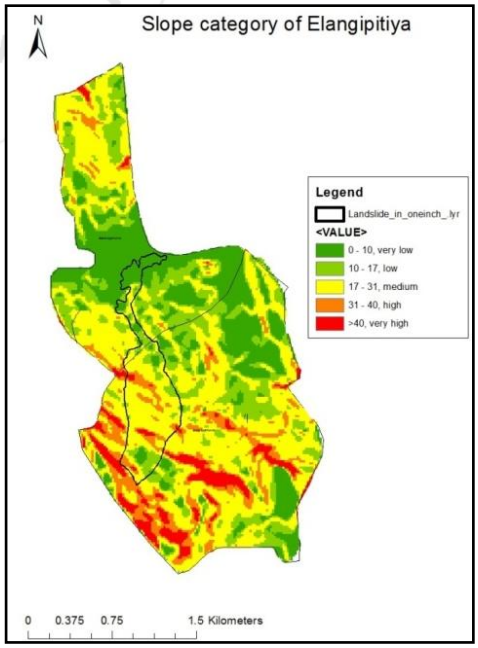

Figure 2: slope categories of Elangipitiya
Source: Topography maps, Department of survey

Central highlands of Sri Lanka are mainly consisted with the Highland Complex that origin goes back to Precambrian era (Cooray, 1994). Three types of rocks, garnet biotite gneiss, and granite gneiss and quartz schist can be found in Elangipitiya. Clay particles are formed by the weathering of Weathering of quartz formed clayey products and lubricated by rainfall. According to the NBRO observations, there were two prominent joints identified in the area that is a common feature of other landslide areas in Sri Lanka (Senanayake, 1993).

According to the meteorological department data Aranayake gets 1825.5mm annual average rainfall in contrast May of 2016 got 990mm of rainfall. Besides those natural environmental factors, population expansion of the study area illustrates in the following figure 3.

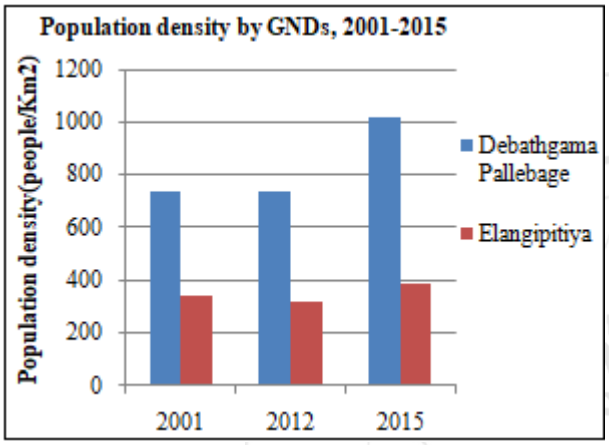

Figure 3: Population density expansion of Elangipitiya
Source: Divisional Sectarian office –Aranayake

Following figure shows the drone image of the affected area.

Affected area before landslide

Affected area after the landslide
Figure 4
Source: Mampitiyaarachchi et al. 2016

3. Results and Discussion

At the time of landslide occurred, Elangipitiya was a village settlement. Here I will analyze how Elangipitiya area has evolved as such over the time. Initially, Elangipitiya colony was established with the land distribution programs to landless people by the state. The emergence of landless community and state land distribution should be analyzed and their history goes back to British rule of the island. Crown Land Encroachment Ordinance 1840 caused to arrogate 90% of land under the crown (Report of land Commission- 1987). All forest, waste, unoccupied or uncultivated lands shall be presumed to be the property of crown to the contrary thereof be proved. The British government knew at that time that land meant power (Madduma Bandara, 1990). As a result of this ordinance, native villagers became landless and helpless. British leased those lands for planters for commercial plantations and interested in improve the infrastructure in the vicinity. Kegalle and Mawanalla areas were also covered with tea and rubber plantations as discussed in the above chapter. As a result of this, plantation economy and peasants who were landless, new labor community were emerged. Some of them were Indian labourers and some were natives.

Through the plantation economy, some of the native elites were able to integrate to the capitalist mode of production. Sri Lankan elites became an effective challenger for the state power in the 1920s (Moore, 1987). Eventually, they urged to solve the land scarcity of the peasants. As a result of this, the first land commission was established in 1925 and according its recommendations land development ordinance came into action in1935. It aimed to redistribute the state lands to landless peasants.

The emergence of the landless peasants and redistribution of state lands were caused by the political decisions by the state. Native elites became powerful class with the emergence of a new plantation economy, especially the low-country Sinhalese (Bandarage, 2005). The challenge of the upper social structure can be caused to create and recreate

the state policies and eventually, they influence the lower class of the society (powerless).

Through the land development ordinance, different land alienation programs introduced and village expansion is one of them (Gunadasa, 1982). This scheme is responsible for 40% of land alienation of the island (Report of land commission- 1987). Elangipitiya colony has emerged as a result of village expansion in the late 1960s. Those new settlements were known as "Colony". As mentioned earlier, land plots were distributed for the Sinhalese laborers by neglecting the Tamils. Even the Tamil laborer group was landless they were being neglected and they have sent to upcountry plantations. Political decision-making process concerns about the votes rather than the justice and equity. "Access to crown lands is very much politicized and the initiative lies with the voters" (Report of land commission-1987. pp 134).

Establishment of the Elangipitiya colony is in association with the member of the parliament- Ashoka Karunarathne- and settlers might have been selected under his supervision. State interested in redistribution of state lands rather than the ecological aptitude of the land. With parallel to the village expansion, as I mentioned above, encroachments were taken place around the colony. Eventually, encroachers got annual permits for those lands. The state did not consider about the ecological balance of the area or landslide susceptibility. Second interim report of the land commission- 1985 elaborates that it is a general issue faced by the Sri Lankan settlement schemes.

Structural political decisions led to emergence of different land and land-related policies in Sri Lankan context but, they were not suitable for the micro level in some instances. As Farmer (1957) explained that most of the colonization schemes in highlands did not follow a precise planning and land distributed in a geometrical pattern rather than the contour pattern and it has resulted soil erosion. Elangipitya colony lands were also distributed in an irregular pattern and that area was a tea estate previously which had a proper drainage pattern. When land was fragmented into small plots, drainage patterns were disturbed. Lack of understanding of the environment caused an imbalance in slope stability.

Within the landslide area, we can identify two phenomena. It was started in the colony and Debathgama Pallebage village where the debris flow occurred is located below the colony. The upper areas have been identified as a high risk for landslides but, until the landslide occur villagers were not aware of it. Information was not properly communicated to the vulnerable people and responsible authorities could not do anything after the disaster. State authorities have established a specific aim and they have the responsibility to act accordingly because they are maintained by the taxes.

Other than the state, Elangipitiya community also has a responsibility. Oblivion of disasters within a short period of time is an issue because Elangipitiya colony experienced a small-scale landslide in 1983 and several authors have cited (Second interim report of the land commission- 1985; Sithamparapillai, 1994) and no life damages were recorded but, villagers do not aware it. Not only had the villagers, NBRO also evaded it. In 2016 (December) Mampitiyaarachchi conducts a case study with the reference to the Elangipitiya landslide and he did not mention any previous landslides in this area. This might be a result of transformation of the name of the colony from 'Elangipitiya colony' to 'Siripura'.

On the other hand, some tea cultivators in the village were not followed a proper drainage pattern and soil erosion prevention methods. State authorities do not pay enough attention on this issue. A relevant extension officer is responsible for educating people and distributes the knowledge. He was unable to do so. In some occasions, extension officer could not address the issues because of the connection of other institutions. To reduce the soil erosion in that area boulder bunts are commonly used but, they caused infiltration and can be further reduced the shear strength. So, this soil erosion prevention strategy did not support the sustainability of the land. The agrarian service department and NBRO have to work in correspondence to establish sustainable soil erosion prevention strategies in the hill country. Structural level policies have to address it and extension officer alone cannot avoid its negative effects.

Village road development is required but they should cope with the environmental sustainability of the area, not the political party decisions. If political decisions could not be able to build up a sustainable management of land consumption, new buildings and roads will not ensure the wellbeing of a community. As mentioned above land use pattern is derived from the structural decisions and community practices together. In a way, it is a compensation of helpless villagers to the short-term policies of the state. On the other hand, it destroys state resources because the government has to pay off all the damages. If state was able to implement a sustainable land and land-related policies villages would be able to follow proper land use management. Without, a proper policy planning of the state community, it is hard to minimize the ecological imbalances and improve the slope stability by planting trees over the slopes. As landslides are constructed socially, in similar manner society have to reduce the damages or avoid landslide disasters in future through the integration of structural level and community level practices.

According to the survey results, government owned vacant scrub lands of the area encroached for tea plantations by the landless pesants. Surrounding forests and shrub areas were gradually converted into tea plots and home gardens. Changes of land uses in1943 and 2012 are elaborated in Figure 2. (Landslide affected area is indicated in the maps) Following Figure 3elaborates the land use changes of landslide affected area, from 1943 to 2012 based on the land use maps prepared by the author.

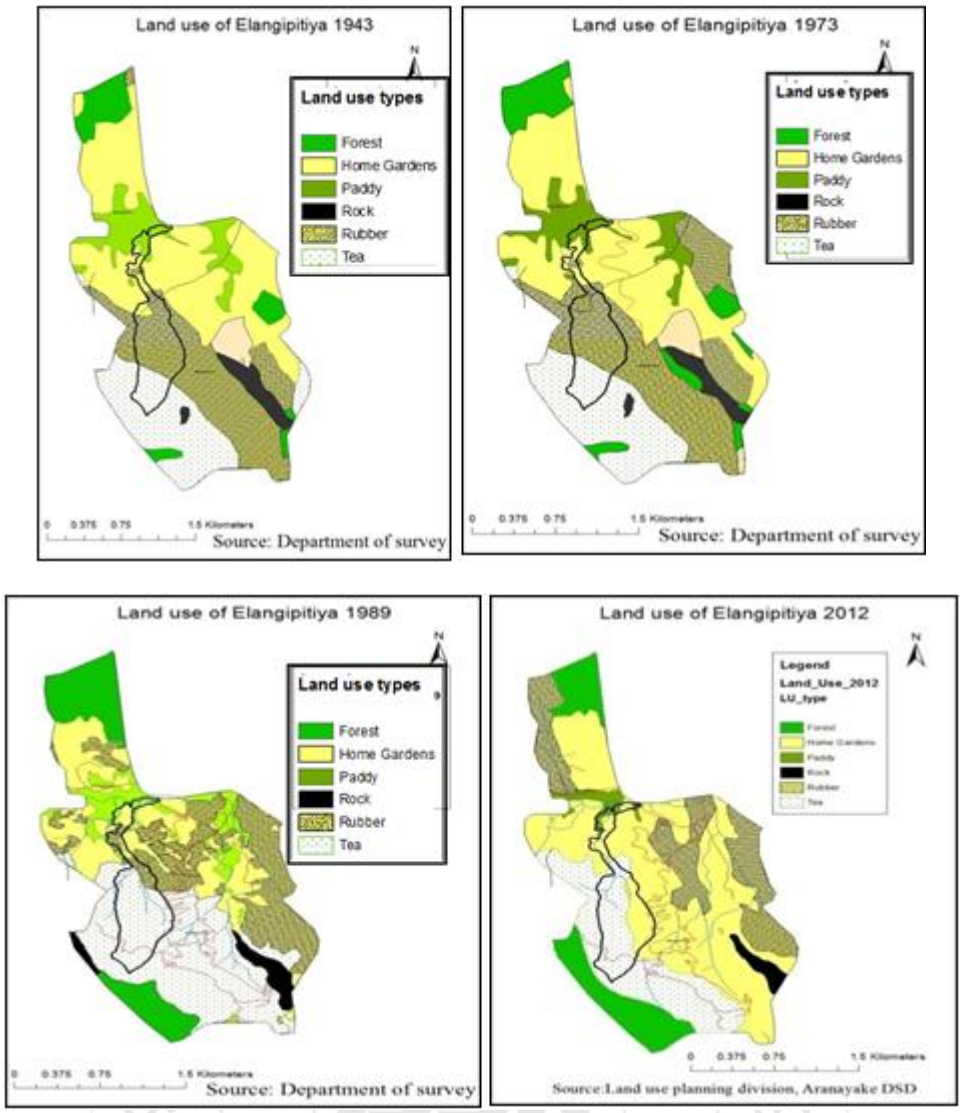

Figure 4: Land use changes of Elangipitiya, 1943- 2012
Sources: Department of survey and land use planning division Aranayake

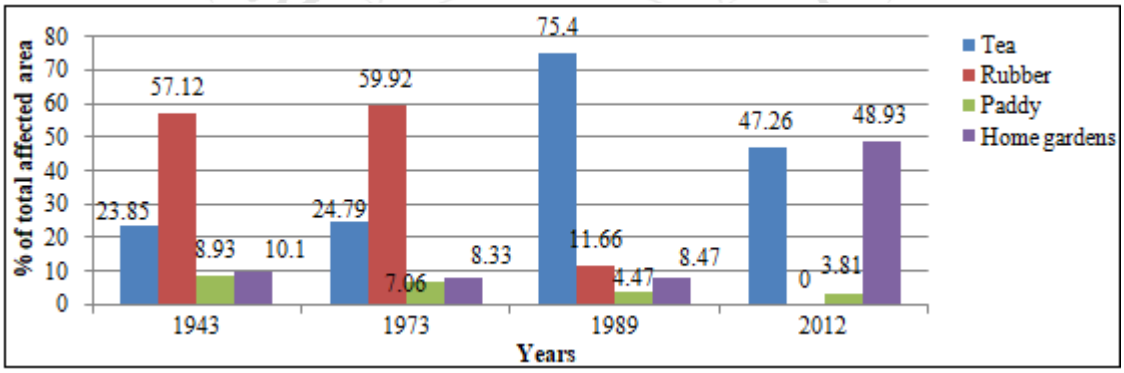

Figure 5: Land use changes of Elangipitiya 1943- 2012

Land use practices in affected area have changed drastically with the settlement expansion. From 1989- 2012, home gardens expanded by nearly 40%. According to the survey, miner export crops, such as pepper and cloves were planted in the small holding tea plots while some gardens had variation of crops. Due to the prosperity that villagers experienced through cultivation, Elangipitiya colony area was eventually known as *Siripura* which means flourishing and beautiful area. By 2016 Elagipitiya area consisted with well-built houses and paved roads to the houses. Those land use changes are a direct result of social and political decisions of the state and the community. Higher emphasize on the profit maximizing caused to neglect the sustainability of the environment and holistic land management eventually increasing the landslide vulnerability of Elangipitiya. Moreover it caused to expand the slope instability of the Elangipitiya and end up with a catastrophic disaster in 2016 which claimed nearly 200 lives.

Landslide hazard levels were identified according to the land conditions which existed when the field surveys were carried out. With the level of land management, hazard level can vary. The level of land management is directly linked with the social and political decisions made by the state and the community. In addition, land management practices directly linked with the local livelihoods and economy.

4. Conclusion

In this study, we applied Paul Robins approach to political ecology which focuses on knowledge, power and practices as contributing elements towards environmental degradation, operating at macro to micro levels. This study reveals that land use practices in Elangipitiya have evolved from an undisturbed forest to a tea plantation and then to a colony settlement under land reforms of the modern state. Tea and rubber plantations have later been parceled out as well as encroached into resulting in more settlements in the 1960s and 1980s. With the settlements, a new road has been developed to the upper area where the current landslide has actually occurred. This is clear evidence as to how political decision making process can induce environmental changes and such politics teamed up with limited environmental knowledge and practices of the community itself have adversely affected the area. This study concludes that understanding landslides as socially constructed transcending its narrow designation as natural disasters, especially revealing the relationship between politics and environment would enlighten us, at least in reducing the impact, if not to avert such disasters.

References

[1] Bandarage, A., (2005): *Colonialism in Sri Lanka: The political economy of the Kandyan highlands*. 1833-1886. A Stamford Lake Publication, Colombo 02.
[2] Cooray, P.G.(1994): Geological factors affecting landslides in Sri Lanka. Proceedings of the National Symposium on Landslides in Sri Lanka.1 (15-22).
[3] Department of census and statistics, Census Reports 1891, 1981, 2001, 2012.
[4] Ellman,A.O. Ratnaweera,D. de S. Silva, K.T. Wickramasinghe,G. (1976) Land settlements in Sri Lanka 1840- 1975: A review of the major writings on the subject. Agrarian research and training institution, Colombo 07
[5] Farmer,B.H.(1957) Pioneer peasant colonization in Ceylon. Land settlements in Sri Lanka 1840- 1975. Agrarian research and training institute. Colombo.
[6] MaddumaBandara,C.M. (1994): Adverse impact of landslides and improper land management practices. *Proceedings of the National Symposium on Landslides in Sri Lanka.*1 (199-206).
[7] Mampitiyaarachchi,C.T, Bandara,K.N. Bandara, R.M.S. Indrathilake,H.M.L. (2016). Hill slide debris flows in Sri Lanka: A case study at Aranayake. Proceedings of NBRO international symposium; Risk awareness and future challenges. NBRO. Colombo. pp113-117.
[8] Moore,Mick (1985), The state and peasant politics in Sri Lanka. Cambridge University Press, UK
[9] Peiris, G.H. (1996): *Development and change in Sri Lanka: Geographical perspectives*. International center for ethnic studies. Kandy.
[10] Report of the Land Commission- 1987 (1990). Department of government printing. Colombo.
[11] Robbins,Paul. (2011). *Critical introductions to geography: Political ecology*. West Sussex, UK. Blackwell Publications.