

## IMPACT ASSESSMENT OF DEVELOPMENT IN DERANIYAGALA DS DIVISION

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**ABSTRACT:** Development is the perceived progress of human being without undue stress on environment. In development and environment there are two avenues: one, a Technical Approach towards Management and sustainable utilization of the environment, and another Stressing the links between Environment, Economy and Society. By the changes, the first perspective still appears dominant. Links between Poverty and Environmental Degradation are sometimes neglected, and Environmental problems are not considered. Sri Lankan people directly dependent on natural resources for their basic needs and employment. The alteration of the environment making lots of changes in their lifestyles. Deraniyagala is the study area for the assessment of impacts on developing progress. The study area is situated in between the central highlands and western southern plains. Objectives of the research is to identify the influence of development and to identify the environment and human impacts. Primary data have been collected within the study area through questionnaire survey and field observations. Secondary data have been collected from the Divisional Secretariat of Deraniyagala and published and unpublished materials. For the integration of mapping and land use changes have been obtained through the Google Earth images and topographic maps. Further this study assesses the positive and negative impacts through development. In essence, development means growth and change. This study tries to assess the pros and cons of Development in Deraniyagala area.

**Keywords:** Sustainable Development, Environmental Degradation, Population Growth, Impact Assessment

### 1. INTRODUCTION

Development is a process that enables people to better their well-being. Long-term development can only be achieved through sustainable management of various assets: financial, material, human, social and natural. Natural assets including water, soils, plants, and animals underpin people's livelihoods.

Madduma Bandara's (1997) Research "In essence, Development means transformation. It means growth it means change" (as cited in Corea, 1996). In a broad philosophical sense, development should ultimately lead to change for the better in the overall quality of life on the earth. Development activities are vary according to the country's economy as well as the impacts. We can identify some development activities such as road development, Building, urbanization, settlement, industrialization, building blocks, rural and urban development, etc. As in most other developing economies, in Sri Lankan Socio-Economic system too. There are internal compulsion for expansion generated by the past processes of development. (Gunatilleke, 1991).

"It is true that up to a point bigger also looks better, but beyond that bigger starts becoming worst" (Sathi, 2005). Around the world there has been remarked that during the past few decade's development activities have become points of conflicts and disturbed natural

conditions. Intensive misuse of land in view of its economic gains has assaulted its environment and altered its any process, form and materials.

The development activities accelerating so many issues to the environment and human beings. Any development process is bound to have its impact on the environment. Environment is a subject of immediate relevance and of immense practical importance to the international community as a whole. The practical results of the last development decades have been such that at present a more effective approach towards development problems in the developing countries is being sought. The impacts could be categorized into two ways. They are environmental impacts and Human impacts. When we consider on the Environment impact, there are so many to review. Biological losses, environmental degradation, air pollution, water pollution, Ecosystem degradation, Watershed degradation and Hazards such as Land Slide, Flood etc. In addition, there are so many social impacts such as Diseases (Air borne, Food borne, Water borne), Loss of production, Reduction of Water yields, Sickness, Irritation, Etc.

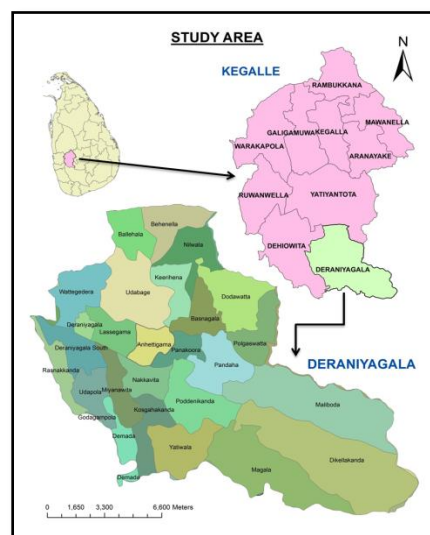
Deraniyagala Divisional Secretariat Division located in Kegalle District. The Study Area has both Sub Urban and Rural regions. In these both areas significantly identifiable Development activities conducted by Government and Non-governments. Urban area committed with Urbanization activities and Rural areas Engaged with Road Development, Plantation and Settlement. Because of these activities Environment, Human health conditions and Economy are showing changes. Development activities reduce Agricultural productivity and increase Environment degradation at the same time that brings some benefits to a particular area. GIS implementation help to identify the areas, which are under construction of Road Development, Vegetation covered and the Dynamic change of Settlement places.

## **2. STUDY AREA**

The study area Deraniyagala is located in the Kegalle District. The study area surrounded by; Ruwanwella D.S Division in the North, Dehiowita D.S Division in the West, NuwaraEliya District in the East, and Rathnapura District in the South. The total Land area of Kegalle District is 1,693 Km<sup>2</sup>. Inland water bodies are eight Km<sup>2</sup>. It has 14 Divisional Secretariats. Total District Population is 837,179. Total population of the Study Area is 45,869. In this total amount, Male population is 22,216 and Female population is 23,653 (Source: census 2012). In this Research Area Sinhalese, Tamils and Muslims people are living peacefully.

Deraniyagala D.S Division's Annual Average Rainfall is 2050 – 3000 mm and Average Temperature is 26.9 – 27.8 degree Celsius. The people of the study area involve in Economic activities such as Cultivation, Business, Plantation, Self-employments and working in the other Service Sectors. The study area is vulnerable for Land Slide, Soil Erosion and Seasonal Flood. The Figure 1.1 shows the Location of the Study Area. Even though the people from Deraniyagala getting benefits from the Economic Development, the Environment of the study area is suffering from the hazards of excessive Soil removal, Vegetation clearance, Sedimentation and Climate fluctuation. Thus, it becomes an important task to regulate expansion area for Sustainable Development and Environmental Protection in the study area.

**Figure: 1** Deraniyagala D.S Division



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### 3. OBJECTIVES OF THE STUDY

The research has a main objective and a sub objectives.

#### **Main Objective:**

- To identify the influence of Development in Deraniyagala DS Division.

#### **Sub Objective**

- To identify the Environment and Human Impacts of Development process in Deraniyagala DS Division.

#### **4.RESEARCH METHODOLOGY AND ANALYSIS**

The study is based on both Primary and Secondary data. They are focused on Qualitative and Quantitative data Analysis.

##### **PRIMARY DATA COLLECTION**

Primary data has been obtained through Questionnaire Survey and Observations. There are 26 GramaNiladhari Divisions in Deraniyagala. In addition, I have decided to provide 130 questionnaires to the identified households by the percentage of five per each 26 GramaNiladhari Divisions, which are near to the DevelopmentProcess to obtain information about Social Impacts of Development.The Clustered Sampling Method has been used in Questionnaire Survey of Primary Data Collection.

##### **SECONDARY DATA COLLECTION**

- Deraniyagala D.S Office
- Survey Department in Colombo
- Published and Unpublished sources
- Paper Articles
- Books
- Researches
- Essays
- Printed Maps and Internet sources.
- Especially some information gathered from Topographic Sheets, Google Earth Pro and Arc GIS software.

##### **Data Analysis**

Data processing and information gathering for the research done through following software.

1. Arc GIS 10.1
2. Google Earth Pro
3. Excel 2013

Arc GIS used for the generation of Maps. Google Earth used to extract the relevant Maps for further research works and the data analyzing and graphs associated by Excel.

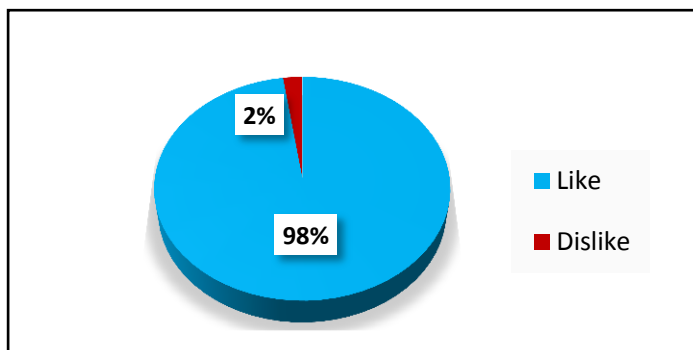
## 5. RESULTS AND DISCUSSION

The primary data for this research collected via Questionnaire Survey and field observations. The questionnaire survey, includes some relevant questions to identify the real situation of the people of Deraniyagala. The questions are such as preference of the development, types of development, occurrence of deforestation, impacts due to Development that they have faced Economic benefits via Development, etc. The outcomes were much capable to assess the Social Impact of Development

According to the questionnaire survey only 2 Percentage of the people dislike the process of development. The majority 98 Percentage of the population likes the development. And most of the people are reporting the occurrence of deforestation due to development. According to the questionnaire survey's output, the negative and positive impacts are in equal level. By glancing at development, it is an advantageous. But there are lots of hidden bad impacts lay down under every developments. The Primary data reveals that only 70% of population getting economic benefit through the development.

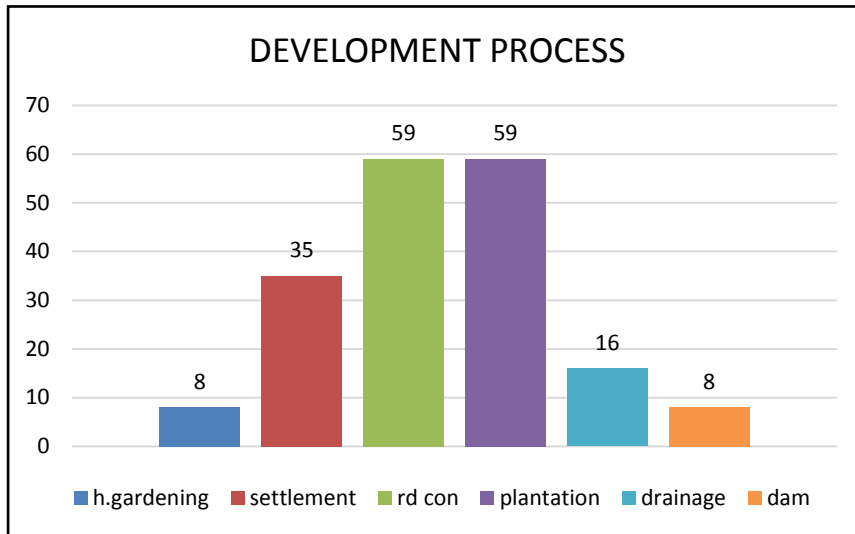
However other people who doesn't get any benefits also prefer the development activities. According to the questionnaire survey people reveal that their day to day routines are becoming easier due to the development process.

**Chart: 1 People's Preference of Development**



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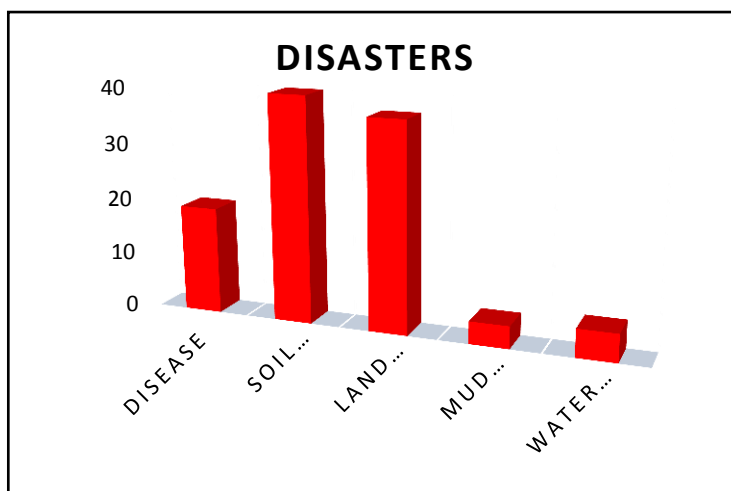
**Chart: 2 Development Activities in Deraniyagala D.S. Division**



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The road construction, expansion of plantation and settlement are the main development process which lead the change of socio economic activities of the study area. There are somewhat slope lands in Deraniyagala, the road construction and expansion collapse the stability of the land and soil texture. It causes land slide. Both urban and rural parts of the study area being affected. Most of the rural places are under the plantation expansion. Due to Rubber and Tea plantation, forest clearance occurring more often.

**Chart: 3 Disasters in Deraniyagala**

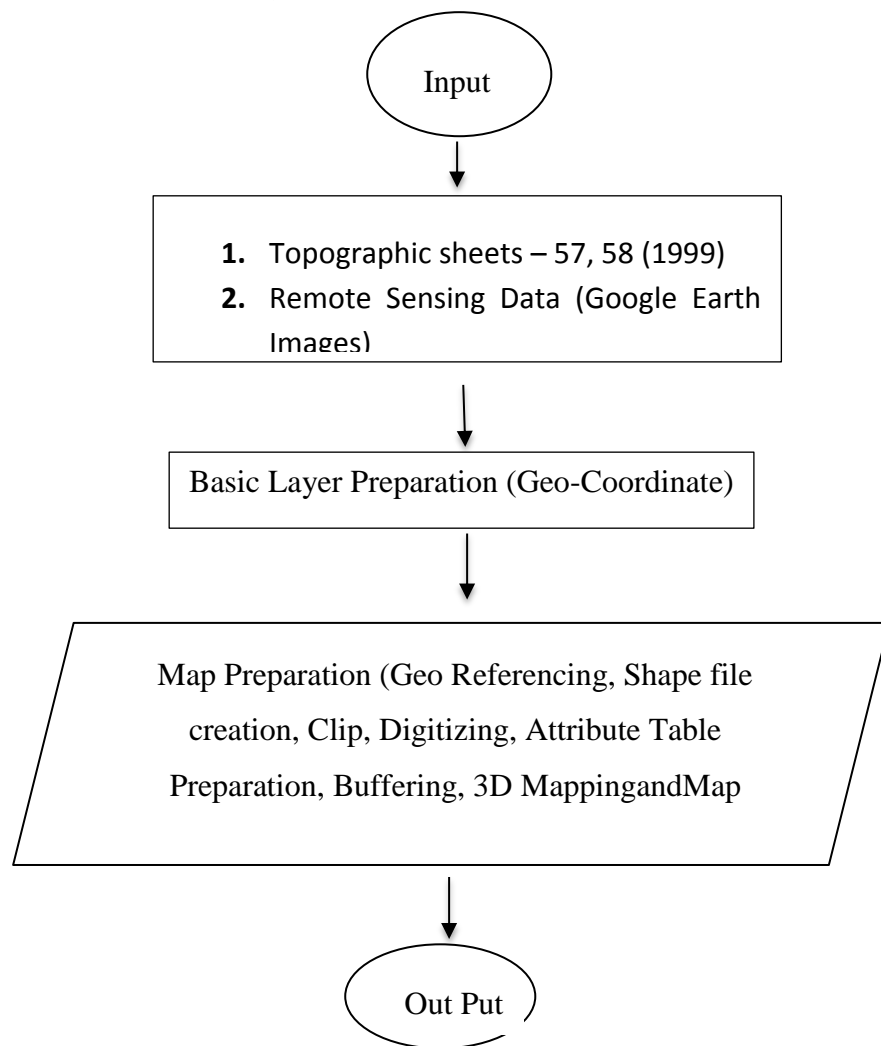


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According to the people's observation, landslide and mud flow are the major hazards in the study area. The study area people willing to live in a healthy environment. They confirm that there are some health issues have been remarked due to the Development. Moreover, the people who live near to the Road construction were highly affected with health issues. Further 22% of people agreed that they have faced health issues due to the development.

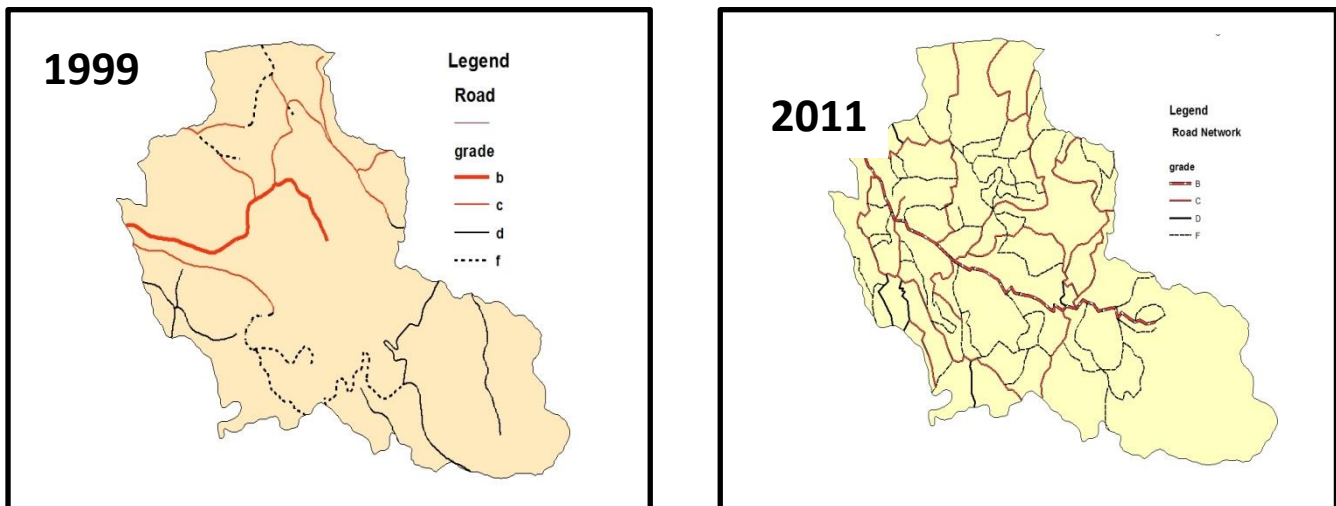
Most of the people in the study area has an idea about the development process and its impacts on their day today life and environment. According to the people's view and Deraniyagla D.S office's data, the Development started to rise up in 2011.

**Chart: 4 Flow Chart for Secondary Data Analysis**



The development process got its peak in between 2011 to 2012. And there are some significant development activities conducted such as Road construction, plantation expansion, home gardening, drainage, dam construction, and Settlement in Deraniyagala D.S Division.

**Figure: 3 Road facilities of Deraniyagala in 1999 and 2011**



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The urbanization is widely undertaken in Deraniyagala D.S Division. The road construction and expansion playing a vital role in the urbanization and area's development. Due to the expansion of the road people's economic, transportation and day to day needs also got easier. So people really prefer the changes and easiness of their day to day life. However the people whose residence is near to the road side suffering from the constructions. They face the problems such as loss of land and house, health problems and sudden change in their life. The following images illustrate the changes of the road facilities of Deraniyagala.

The above Image distinguishes the differences and clearly illustrate the rapid road Development of Deraniyagala from 1999 to 2011. B grade road is expanded and C grade roads are newly developed. As well as the F grade roads indicate the foot path. Mainly B and C grade roads are considerable, cause of its impacts. The places which are near around 100

meters of road construction, facing troublesome very often. The following image indicate the near areas which are being affected.

According to the Questionnaire survey and D.S Office report, the places which are highly getting impact through road Development are Deraniyagala town area, Lassegama, Basnagala, Poddenikandha, Maliboda, Anhettigama, Basnagala, Noori and Wattegedhara. Other parts of Deraniyagala also getting impacts but these indicated areas getting more negative impacts through the road development. They are facing some Health issues too.

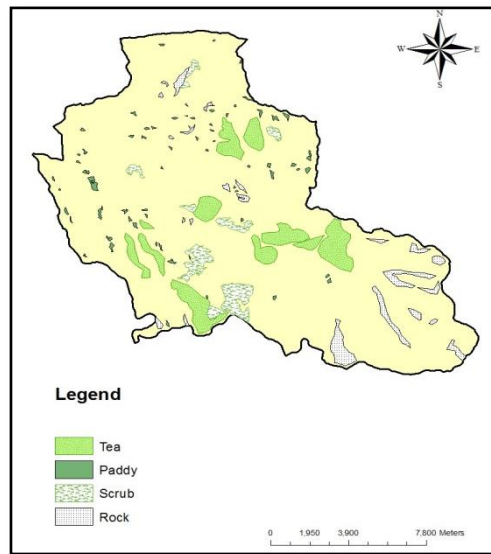
### **Rubber and Tea Plantation Expansion**

Kegalle District is one of the famous areas for Rubber production. There are some areas for the small Tea plantation also. Red Brown Laptazolssoil are deep and well drained. It is a light acidic soil. The soil is suited for the cultivation of Tea, Rubber, Cocoa, Coffee and Fruits. The soil distributed in Kandy and Kegalle Districts. In Deraniyagala Rubber and Tea crops are planted widely. Due to the Development process almost every places in Deraniyagala covered with the Rubber and Tea. But especially some places identified with the high production of Rubber and crop growing. UdabageGramaniladhari Division highly expanded with the Rubber plantation.

The Estate in Deraniyagala which are fully evolve in Rubber plantation are: Udahenkandha Estate, Digella Estate, Lissanagama Estate, Maligatenna Estate, Glentress Estate, Avington Estate, Maha-oya Estate, Welihindha Estate, Kehelwala Estate, Udapola Estate, Liniyagala Group, Udabage Estate, Sapumalkandha Estate, Kehelwala Estate, Panawatta Estate, Bopekandha, Panawatta, Eila Estate, Anhetigama, Panakura, Yaggala etc.

Rubber and Tea are the major economic crop in the study area. Paddy is lesser than the other two. Nilwala, Nakkawita and Polgaswatta are the places doing the Paddy cultivation as their main economic gaining activity. Indeed the climate and land formation is not much suitable for the paddy cultivation.

**Figure: 4 Economic crops in Deraniyagala D. S. Division**

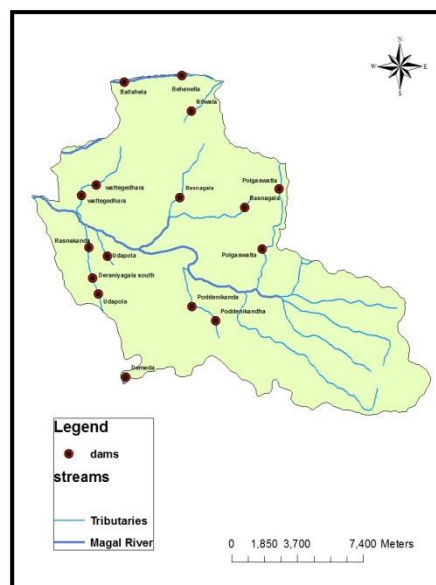


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### **Drainage and Dam Construction**

Deraniyagala Division is rich in water resources. The Magal River and its tributaries providing much water to the study area. Between February and March, there is a shortage for water in some areas. So, recently some small dam construction and diversion of river flow occurring. Even though the dry places getting benefit through the dam and water diversion, another part of the area become as dry zone with lack of water. It is a major problem of dam construction and river diversion.

**Figure: 5 Rivers and Dams in Deraniyagala D.S Division**



### **Forest Clearance**

Mostly deforestation occur due to the plantation, cultivation, settlement, road construction and other infrastructure activities. As well as the people of the study area, living a rural life style. They clear forest for their day to day needs. Such as firewood, home gardening and Chena cultivation. According to the Divisional Secretariat Division's reports that the deforestation highly occur due to Rubber and Tea plantation expansion. The places where people dense is very low seems to be dense in vegetation covered.

People in the study area are really curious about the Development and support it too. Half of the people don't aware of the negative impacts and considering only the positive impacts. According the slope of the land and its natural condition, the Development projects without sustainable planning bring more losses to the soil, natural environment, geomorphological features and people's well-being. There are two kind of disasters identified in the study area with the exact places. Landslide highly occur in places such as Basnagala, Yatiwala, Demeda, Nakkawita, Behenella, Deraniyagala South, Udapola, Udabage and Lassegama. As well as the flood disaster occur in Lassegama, Kosgahakandha, Behenella, Basnagala, Dodawatta.

Hence the government can conduct the Development activities with the proper planning and decision making, since the people getting benefits through the Development.

## **6. CONCLUSION**

The Development has started to rise up from 2010 in Deraniyagala. It seems to be quite few years pass. But the consequences are influencing much higher. We can identify some positive and negative consequences in the study area by assessing impacts of development. Through the secondary and primary sources, it was declare that the environment degradation is slightly happening in the study area. And the human well-being and infrastructure facilities are increased due to the development.

- Considering the positive impacts there are a lot to indicate. The economy of people is rose due to the development process. It provides job opportunities and easiness to their day to day life. Deraniyagala people are showing much interest on the development. The road expansion and construction providing good transportation

without any dangerous. Expansion of Tea and Rubber plantation giving employment to the rural people and uplifting their economy level and social status. Due to the dam construction and drainages the people who are in the dry places can access to adequate water facilities.

- The Deforestation is high in the places where people density is high. So it's fairly identifiable that the people clearing the forest for their settlement, gardening, Timber extraction and small paddy cultivation. And the encroachment of people to the natural environment also causing troublesome and threatening. Some places in Deraniyagala are bit high slope. So, construction of buildings and removal of vegetation cover in those regions causing land slide and soil erosion. The vegetation clearance for different purposes can be identified through the Google Earth images.
- GIS is an important tool for helping people map out plans for successfully achieving management strategies that are sustainable both at local and global levels. GIS used in assessment, prioritization, mitigation, planning, science and training. And it uses for assessing impacts and managing resources on a local or regional scale. By using GIS Mapping there can be identified the affected areas and the vulnerable places near to the development process in the study area. And also in what distance the dams were built and how the water is flowing direction affected with the construction of dams.
- The negative impacts of development process also can be identifiable in the study area. According to the research there are some major negative impacts to the natural environment, land and human well-being. Loss of people's native places, loss of land, environmental degradation, deforestation, illness and dry land formation also occurring due to the development process.
- However the development of Deraniyagala D.S Division has been improved a lot within this short period of time. As well as the human Development also seems to be higher due to the infrastructure Development and facilities. People being very interested on the Development process rather than thinking about the negative consequence. But the people who are fond of nature complaining about the bad impacts to the local authorities.
- There are some maps and charts built up for the analysis of data regarding the impacts of development. Those figure out the affected areas, vulnerable places and considerable zones to make some mitigation measures earlier. Hence both negative and positive impacts of Development caused by the unawareness of the people in Deraniyagala.

## 7. Recommendation

1. Lack of knowledge on the Environment and Human Impact Assessment of the people is the major problem in the study area, so making them to be aware of the Impact Assessment would be help to reduce the negative consequences.
2. The road construction made more difficulties to the nearest people of the construction. People suffer from illness so the local authority should consider on this matter and make sure to resettle the people temporarily.
3. Government should provide suitable job opportunities for the youngsters according to their qualification rather than forcing them for the farming, cultivation and plantation sectors.
4. Without any consideration of land slope the settlement and building construction going on and cause to land slide so it's better to consider about the steep slope land areas.
5. Before making a bund or dam the planners should consider about the downside region land and people who are going to suffer from lack of water for their day to day needs.
6. The encroachment of people in to the forest and wetland should be protected with limited provision.
7. Doing some management strategies with GIS from the local level to nationwide.
8. Implementing low enforcement by relevant authorities to protect the environment from the improper Development process.
9. The Socio economic survey indicates that most of the people like the development and they appreciate it so, the relevant sectors should consider about the sustainable Development for a better outcome of the future generation.
10. By strengthening the law enforcement activities the encroachment can be controlled. Also stop legalizing the unauthorized encroachment for private constructions.
11. It is better to recruit qualified technical experts and environment specialist to be consult during the Development process to mitigate the unwanted damages to the environment.
12. The sustainable use of existing infrastructure and resources create a shelter for the environment and social Development. As well as the local authority in the study area

such as D.S Division, Municipal Council and Pradheshashabah ought to focus on the Sustainable Development and alternative solutions for environmental damages.

Poor planning is the main cause for the losses. So, a better planning with technical expertise and environmental specialist is the best solution for the identified issues in the study area. However the people in Deraniyagala prefer the Development process and the government should be alert not to waste the environment when rising the economy of poor people.

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