with a percentage of 22.63, Moderate erosion areas extend over 434.01km^2 with a percentage of 32.43 and low erosion area extends over 454.97 km^2 with a percentage of 33.99. The results of map analysis were confirmed through field verifications. The soil erosion is high in the high slope regions and in the areas where soil conservation methods are inadequate or poor.

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Comparison of litter decomposition rate constant for Yagirala and Horton Plains natural forests of lowland wet zone and montane zone of Sri Lanka

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An estimation of rates of litter decomposition was carried out in two forest types; Yagirala Forest Reserve (FR) in the Low Country Wet Zone and Horton Plains natural forest (NF) in montane zone of Sri Lanka. Yagirala forest reserve was located between 6°21' to 6°26' north altitude and 80°6'to 80°11'east longitude in the lowland wet climatic zone in Sri Lanka. Horton Plains natural forest was located between 6° 47'- 6° 50' north latitude and 80° 46'- 80' 51' east longitude in mid country of Sri Lanka.

Three 300m line transects with three plots (100 m distance between 2 plots) were established in each forest. Litter decomposition rates were determined using the mixed species litter bags method. A total of 54 bags were placed in the both Forests (9 replicates for one plot). The experiment was conducted for a period of 8 months. The rates of decomposition of litter recorded during this were fitted to the exponential decay model proposed by Olson (1963).

$$x / x^0 = e^{-kt}$$

Where, x is the weight of litter remaining after time 't', x^0 is initial weight of litter and k is decomposition rate constant. Results revealed that the mean annual litter decomposition rate constant for moderately exploited Yagirala forest reserve was 2.19 year^{-1} while the value for Horton Plains natural forest was 1.35 year^{-1}.Litter accumulation rates for Yagirala Forest is 668.86 tons ha^{-1} year^{-1}, and this value for Horton Plains natural forest is equal to 226.54 ha^{-1} year^{-1}. According to the results, it was clear that Yagirala forest reserve situated in the low country wet zone recorded higher litter decomposition rates compared with Horton Plains natural forest situated in the Montane zone of the country.

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Development of a rapid environmental assessment methodology for roads sector rehabilitation projects

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The concern for the environment is ever growing and counter measures are also taken by many countries to minimize environmental impacts arising from developmental activities. One tool utilised to ensure that developments are sustainable is Environmental Impact Assessment (EIA) which has been a mandatory requirement in Sri Lanka since 1993. However, due to considerable time taken by the EIA process particularly for extensive projects such as road sector projects concerns have been raised as to the delays caused by the process which in certain instances might even cause loss of foreign funds. Although detailed assessments are required in some cases it is not always true. Road rehabilitation projects do not fall into the category of prescribed projects of the National Environmental Act unless sensitive areas are involved and resettlement of more than 100 families are involved. However, foreign funding agencies generally require an environmental assessment of even such projects prior to approving of funding which generally cause delays since environmental assessors tend to follow the same pattern of assessment for all projects regardless of the scope. Numerous methods have evolved over the years to conduct EIAs some of which address environmental impact

assessment of sectoral projects particularly water resource development projects which are rather convenient to use. However thus far such methods have not been developed for road sector projects.

The present study was conducted to develop a Rapid Environment Assessment (REA) technique for the Sri Lankan road rehabilitation projects where such a tool is yet to immerge. The REA was designed from the information collected from literature survey, questionnaire surveys of affected communities, field observations and subject experts' interviews. Three actual rehabilitation projects were studied for this purpose. Based on the information first the activities relevant to all the road rehabilitation projects were listed with the assistance received from the field engineers. Then those activities which have no significant impacts were taken out keeping only the activities causing impacts for consideration.The designed tool in this study is armed with both primary and secondary impacts which can arise from specific activities of road rehabilitation projects as well with proposed mitigatory measures which can minimize these impacts. The REA is not only comprehensive but also user friendly as activities and impacts are predetermined and linked to each other so that the users do not have to prepare their own checklists of activities or environmental aspects. It's handy and small. It's general in usage and could be used in any site of road rehabilitation projects. It's concise as only those activities with significant impacts are chosen and included.

From surveys it was also discovered that to avoid unnecessary oppositions and social commotion, which would hinder the rehabilitation projects compensation should be decided and granted at the planning stage itself. It is also highly recommended that a strong monitoring system is utilized. If any of the proposed mitigatory measures is not effective in neutralizing the impacts, a search for new measures is recommended and REA is to be updated accordingly. As REA is not available for road rehabilitation projects at present in Sri Lanka the tool designed in my study could be taken for future road rehabilitation projects to minimize the disadvantages of EIA. However, it should note that the REA is to be used only by experts in order to be effective and accurate.

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Elevation of earthworm biomass by organic cultivation practices: Long-term evidence from tea soils

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Agrochemicals used in conventional agriculture affect soil fauna and flora while organic management i.e. organic matter incorporation, mulching and avoid of synthetic chemicals etc. favor natural soil inhabitants. Amongst them, earthworms are the most effective bio-indicators which signify structural, microclimatic, nutritive properties and health of agricultural soils. Data were generated from soils of the on going 'TRI-ORCON' trial set up at St. Coombs estate of the Tea Research Institute of Sri Lanka, Talawakelle. Using standard size quadrates, the number and weight of earthworm eggs and earthworms from 0 – 15 and 15 – 30 cm soil depths were determined at 10 years after exposure to organic and conventional systems with tea waste, neem oil cake and compost applications and synthetic agro-chemicals respectively. The earthworm biomass was significantly ($p<0.05$) superior in organically maintained soils than that of the conventional. Earthworm activity was significantly diminished due to synthetic fertilizers and pesticide use; earthworm eggs in the 0-15 cm and 15-30 cm layers were 0 and 40×10^3 per ha while compost application exhibited 64.8×10^3 and 200×10^3 per ha respectively. Amongst organic amendments, neem oil cake due to its wormicidal effects and oily and cloggy nature lowered earthworm biomass in the 0 – 15 cm layer of which the effect was similar to conventional. The higher aggregate stability in the organically maintained soils with macro pores developed through earthworm burrows showed strong relationship with the earthworm activity. Therefore, our results confirm the immense potentials of organic management practices in developing biological and physical parameters through burrowing, loosening of soil, recycling of nutrients and organic matter in deeper soil depths by earthworms and their castings. Resultantly, organic agricultural systems act as analogue forest conditions with activated and conserved native soil biodiversity components assuring long-term sustenance in crop productivity.