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How Private Deep Well Excavation Influence to Environmental Sensitivity in Badulla, Sri Lanka: Special Reference to Uva-Paranagama Divisional Secretariat

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Abstract

Sri Lanka is considered as a water-rich country because of its vegetation and associated springs in the mountainous area. Uva-paragama Divisional Secretariat (DS) is located east to central highlands, and about 95% of livelihoods depend on agriculture due to its unique physical landscape. In recent decades, most of them used to drill private deep wells due to inadequate rainfall during the south-west monsoon from July to September to avoid the water shortage for their cultivations. The purpose of this study is to identify, how private deep well excavation influence to the environment in Uva-Paranagama DS in Badulla District, Sri Lanka which is totally based on the qualitative data. Non-structured interviews with Grama Niladaries; the people who have cultivated lands and wells around the deep wells, and observations were used as the primary data collection methods. We gathered secondary data from Water Resource Board, institutional data bases, and scholarly articles. Most large scales farmers have these private deep wells that are nearly 300 feet in depth and pump water by a turbine that pulls about 50 m of ground water completely through the deep well. Based on our findings, the water level in wells, streams, and springs near deep wells are gradually decreasing especially in July-September. Also, we can find out that the soil moisture and fertility are decreasing in lower valleys near deep wells and farmers have to irrigate fields more than last year. Endemic fauna species like Sri Lankan keelback (*Fowlea asperrimus)* and species like Otter *(Lutra lutra)* are becoming extinct with drying up of waterways in the area. The flora species along the water sources which need more water, show a low growth rate and the population of other flora and invasive species like *Lantana camara* have increased near water sources. We assume that the private deep well construction can cause long-term impacts to the environment with climate change. If environmental changes continue to occur through private deep well construction it can be a server damage to environmental resilience in a particular area. Thus, this can be concluded that the construction of private deep wells are largely influencing to environmental sensitivity and water shortage in Uva-Paranagama DS.

Keywords: Deep well, Soil moisture, Ecosystems, Environmental resilience, Environmental sensitivity