

Roads, food security and land use conversion in Liberia



1. Introduction: Road construction and land use conversion

Agriculture is the primary livelihood source for more than 60 percent of Liberia's population and provides sustenance for many households who engage in farming of rubber, rice, oil palm, cocoa and sugarcane. However, low agricultural productivity results in Liberia importing more than 80 percent of its staple food, making the country vulnerable to global food price volatility. On top of the existing complex problems associated with agriculture productivity, road construction is creating problems of its own. By altering the regular flow of water and runoff, road construction is leading to land use conversion in some locations. As road construction is intensifying, this problem is becoming an emerging problem felt by farmers.



Figure 1. Land use change as a result of low volume roads construction

Areas of lowland rice fields on downstream side of roads are getting lower amount of flows after roads construction, and these flows are not sufficient to cultivate paddy rice. As a result, farmers that can afford staying for few years are forced to switch to palm tree plantations on valley bottoms (Figure 1&2). Other farmers, clear forests and cultivate upland rice. The negative impacts of road on livelihood are not limited to this. The unnecessary water level rise on upper side of roads create impoundments (Figure 3) that elevate the water to unmanageable levels, making rice cultivation and management difficult. Changes in soil texture, as a result of silt and sand accumulation, and the turbid nature of the upstream waters are said to affect productivity of rice.



Figure 2. Land use change as a result of high volume roads construction



Figure 3: Roads in Foya (a) Impoundment created as a result of low volume roads construction (b) roads with no significant impacts but not accessible during rainy seasons

2. Roads in Wetlands: good practices in Foya District, Liberia

There are good experiences in Liberia that can contribute towards the conservation of the wetlands. Culverts that are designed to serve as micro-dam with regulated flow through irrigation canals as seen in Figure 4 below are preserving the wetland for the dry season and avail water to the irrigated rice field downstream. However, this good practice is sometimes negatively affected by the development of a conveyance canal to allow larger flow to the downstream side. Constructing a bigger canal will drain the water in the reservoir and may end-up in loss of available water for the irrigation scheme downstream.



Figure 4 Land use change as a result of low volume roads construction

3. Conclusion

The road network in Liberia is underdeveloped and is among the least developed in West Africa. Liberia has a total area of 111,370 km² and a road system with a total length of 10,600 km. Of these, only 657 km are paved while 9,943 km are unpaved. Out of the 10,600 km roads in Liberia, less than a quarter are classified as all-weather roads. Liberia has a tropical climate (hot and humid all year round) and a rainy season from May to October. Places like Monrovia get on average 4624 mm of rainfall per year. On average there are 182 days per year with more than 0.1 mm (0.004 in) of rainfall. Along the coast, the rainfall exceeds 3,000 millimeters per year. Added to the high amount and the nature of rainfall, the dominantly flat and undulating topography and the bed rock conditions imposes more future challenges. Unless road water management is considered in designing future road development and management activities, sustainability of roads and livelihood of poor farmers will be largely affected.