C-23: River sand and lime : now and the future

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Construction Industry in Sri Lanka uses 4.3 million m^3 of river sand (Dias *et.al.*1997) and 17,000 tons of lime (CCD 1995). The use of both river sand and coral lime has resulted in many environmental problems. The demand for river sand and lime can be reduced by use of alternatives and construction materials and methods that will reduce the use of river sand and lime.

Objective : 1) To establish alternatives for river sand and lime 2) To present construction methods and materials that could reduce the demand for river sand and lime.

A literature survey was carried out to establish the problems related to river sand and coral mining and alternatives to river sand. This was followed by the assessment of the availability of sand alternatives by site visits, interviews with professionals and relevant institutions. Information was collected to perform a financial analysis of sand alternatives. Financial information was collected from past exercises for sand alternatives, international and local construction plant hire companies and other relevant local organizations.

A literature survey was also carried out to establish construction methods and materials that will reduce the use of river sand and lime. This was followed by field visits to establish the methods and material already in use, which reduces the use of sand and lime. Finally a series of laboratory tests were performed to establish the suitability of sand alternatives and methods and materials identified that reduce the use of sand and lime.

The current level of sand mining from rivers needs to be curtailed by at least 60% to bring it to sustainable levels. There are serious environmental problems resulting from sand mining. Sea erosion, riverbank collapse, lowering of water table and salt-water intrusion are a few major problems.

There are 4 major alternatives for river sand: sand from dunes, offshore sand mining, quarry dust and sand from upland soil washing are feasible and will be economical. Today many countries mine sand from offshore locations. This is feasible for the western province of Sri Lanka. Prices of alternative sand will be the same as river sand.

Optimum design and construction methods for concrete slabs, use of bricks or compressed earth blocks instead of cement: sand blocks, use of 1:2:6 (cement: fine sand: sand) can reduce the use of river sand and lime. The current ICTAD specifications make it compulsory to use lime for plastering and need to be changed in order to reduce the use of lime in construction.