

## **C-04: An environmental bond for clay mining in Sri Lanka**

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As clay bricks and roof tiles used as basic building materials by the construction industry are in high demand, the excavation of clay for their production is mechanised at present. The result of mechanised excavation was large, deep pits along the Maha Oya. These pits got filled with water during the wet season and as the pumping of water for further excavation was expensive, the excavator attempted to remove as much clay as possible during one dry season. Hence, a drastic change occurred to the environment in a short period.

*Fig. 1* illustrates the divergence of viewpoints regarding the cost of environmental impact of clay mining. The villagers and owners of land adjoining clay pits in the affected areas felt that the cost was so large that the only solution was to ban clay mining. While clay landowners and excavators acknowledged that there was an impact on the environment, they argued that they were carrying out a necessary economic activity after paying the required fee.

Unfortunately, there was no clear policy regarding the excavation of clay as mining for building materials was not covered under the Minerals and Mines Act No.4 of 1973. Till recently, some local authorities required a refundable deposit to obtain a permit to excavate clay in their areas. This fee was refunded when the clay pit was refilled. The fee was so small that the excavators preferred to forfeit the deposit. Hence the main reason for unfilled pits.

The Mines and Minerals Act No.33 of 1992 identified clay mining for building materials as a resource that required a licence from the Geological Survey and Mines Bureau. One of the conditions in issuing the licence was to obtain a "Mine Restoration Bond".

This paper develops an analysis framework for quantifying the "environmental bond" for clay mining, which can then be the basis for arriving at a Mine Restoration Bond.

Conditions for excavating a land for clay, refilling after excavation, future land use and the environmental bond were developed from an economic

benefit cost analysis. Firstly, a land can be excavated for clay if the net benefits from excavation were greater than the environmental costs caused by clay mining.

Secondly, a land should be refilled after excavation if the net benefits after refilling were greater than the replacement cost.

This study clearly showed that land should be refilled after excavation. The future land use for clay excavation was only if the first condition was positive and greater than the second condition. If the land was given for excavation and the second condition is positive, then an environmental bond consisting of the replacement cost and environmental cost must be imposed on the excavators to motivate them to restore the land after excavation.

The paper concludes that the value for "Mine Restoration Bond" should be based on an environmental economic analysis because the main impact of clay mining was on the environment.

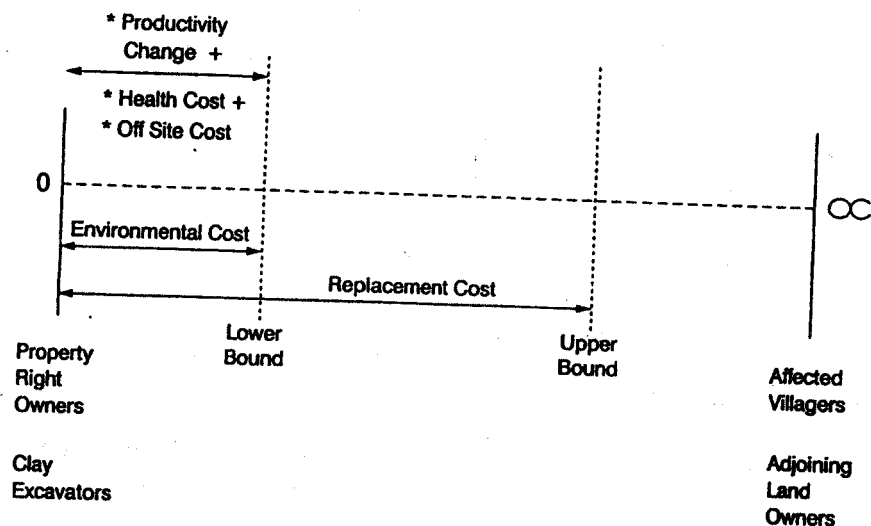


Fig. 1 Cost of Environmental Impact of Clay Mining