

Estimation of CO₂ emissions from co-processing of steel slag in cement industries in Vietnam, Laos and Cambodia

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Abstract:

Production of steel, cast iron and cement is on the rise in South East Asia. Vietnam, Cambodia, Laos and Thailand are clear examples experiencing considerable growth. The use of wastes as substitutes for raw materials and fuels known as co-processing of waste is now common practise in cement production of the industrialised world. Blast furnace slag and fly ash is co-processed in cement kilns and many benefits can be obtained from such practise. In Vietnam, Laos and Cambodia however, co-processing such wastes is still a minor practice, but a great potential to obtain better cement quality, higher fuel efficiency, lesser mining activity to extract limestone, and reductions of CO₂ emissions may exist. Given that in these regions the location of steel producers and cement plants lie nearby in neighbouring countries, a regional co-processing scheme seems compelling, and one challenging aspect in such a scheme is the estimation of CO₂ emissions based on the transportation of waste between facilities. In this study a quantitative estimation of the CO₂ emissions from a regional co-processing scheme is presented. The approach is based on the optimisation of waste transportation in Vietnam, Laos and Cambodia given a specific target of co-processed waste. Exploration on production rates, emission factors as well as distances between facilities is examined.

Keywords

industrial symbiosis; co-processing; cement; steel; Asia; Vietnam