Sasiwimon Sumniengwan 2013: An Economic Feasibility Study of the Solid Waste Incineration Project in Phra Nakhon Si Ayutthaya Province. Master of Science (Resource Management), Major Field: Resource Management, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Somskaow Bejranonda, Ph.D. 124 pages.

The aim of this thesis was to study waste management in Phra Nakhon Si Ayutthaya province, the economic feasibility of a waste disposal project based on solid waste incineration, using a stoker fired incinerator system. The primary data from interviewing stakeholders and secondary data was used. The results were analyzed using a cost-benefit trade-off analysis. The following project evaluation criteria were used: Net Present Value (NPV), Benefit Cost Ratio (BCR), and Internal Rate of Return (IRR).

The results show that Phra Nakhon Si Ayutthaya municipality has encountered solid waste management issues, in terms of both the quantity of solid waste, and methods of disposal. The amount of solid waste has increased, but there are not enough landfill sites where the extrat waste can be stored. As a result, a situation has arisen in which excess waste affects the environment in many ways, including heavy metal contamination of underground water. Hence the solid waste incineration project described above, is suggested as a way of solving this problem. Incineration is a method of waste disposal that is widely used nowadays. The incinerator could deal with large quantities of solid waste and would only occupy a small area. The stoker-fired incinerator is capable of burning solid waste with various compositions and calorific values. However, due to the high cost of the investment, it is necessary to study the economic feasibility of the stoker-fired incinerator. The economic feasibility study was based on capacity of incinerator of 250 tons per day. A period of 20 years was studied - from 2011-2030. The results indicated that the project is not a worthwhile investment at a discount rate of 6.15% with NPV of -2,938.16 million baht, BCR of 0.51, IRR of the project cannot be calculated.

This research could be useful for making a decision regarding the project. Due to some assumption in term of incinerator capacity, costs and revenues, if Phra Nakhon Si Ayutthaya municipality is interested in using the stoker-fired incinerator to solve the solid waste management, it should consider other factor such as volume and type of waste, construction and operation cost, to make decisions effectively. Besides, the project sensitivity analysis and damage cost from landfill disposal should be concerned.

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