

## Sustainable Supply Chain of Construction Products and Materials: A Case Study of Natural - Fiber Cement Wall Products

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### ABSTRACT

*Nowadays, poverty and deficiency of proper housing are main problems of Thailand, particularly in rural areas. A quick-fixed solution is to provide low-cost houses directly to the villagers. This study gives an alternative solution by promoting local knowledge and self-sustained concepts to the society. Local resources and agricultural wastes are used as raw materials for creating different alternative construction products and materials, such as natural-fiber cement board, natural-fiber reinforced panel, etc. Production lines are designed to suit different environments. Competitive benchmarking and Life Cycle Cost analysis are used to evaluate each product in terms of performances, cost and environment impacts. The results show high responsiveness of the villagers. Once this project is fully established, the village can be benefited in terms of both the social and economic aspects.*

**Key words:** Recycle agricultural waste, Product and process design, Local wisdom, Natural-Fiber cement board, Appropriate technology, Alternative construction, Products and materials

### INTRODUCTION

Housing is a vital factor for mankind and their quality of life. It is defined as a human-built dwelling which can provide shelter against precipitation, wind, heat, cold and intruding. Once it is occupied as a routine dwelling for human, a house is called a home. The higher the quality of homes, the better the chance of growing and surviving.

Nowadays, Thailand still confronts with the low standard of housing situation, particularly in the groups of low-income people. Historically, each society has its own local wisdom to create a peaceful community from local resources, such as wood and soil (Thiengburanathum et al., 2005).