

Self-Contained Housing Delivery System (Thailand)

By MOST Clearing House

Background

Conceived at the Habitech Center of AIT the Self-Contained Housing Delivery System is an inexpensive, quickly and easily erected building system, the cost of which consistently undercuts conventional construction systems. Components have been added to create a complete modular interlocking building system especially suited for construction by unskilled labour which eliminates the need for construction equipment as the components are lightweight. The system has been disseminated in Asia since 1987 when research and development started up to 1995 when the building system was made available through private sector equipment suppliers.

The technology was demonstrated through housing projects (75) in Thailand, Vietnam, Cambodia, Malaysia, Indonesia, Philippines, Laos, Myanmar, Sri Lanka, Papua New Guinea, Nepal and Fiji, where small scale building material industries have been set-up creating employment, generating income and producing affordable housing for middle and low income groups.

As the building system spreads through Asia, the beneficial reduction in the consumption of timber products for construction will lead to a salutary effect upon the environment and help reduce the depletion of forest.

Habitech Center was awarded the Matsushita Award by the Japan Housing Association in 1994 "in recognition of excellent achievements in improving human settlements in Asian countries by promoting research and development related to technologies for low cost housing as well as providing educational programs and facilities to disseminate the results of their research efforts".

Narrative

The Self-Contained Housing Delivery System - SCHDSsystem -

Originally conceived as a method for providing fire and wind resistant shelters for use in natural or man made disasters (including squatters eviction and resettlements) the SCHDSsystem developed at Habitech Center, Asian Institute of Technology has grown to be an inexpensive, quickly and easily erected building system, the cost of which consistently undercuts conventional construction systems by 30 to 50 %.

Compatible building components have been successively added with the objective of creating a complete modular interlocking building system especially well suited for

construction by unskilled labour. Furthermore to eliminate the need for heavy construction equipment all the components have been designed to be lightweight, requiring no more than four persons to manually put each component in place, without the need for complex equipment, thus reducing the requirement for capital investment. The building system is an open one where any of the components may be substituted by a locally available one if cheaper.

So far, all housing and social infrastructure projects built using the system have used inexpensive moulds and machines, making the technology labour intensive and particularly well suited for small and medium scale projects.

The rapid rise in the cost of timber and the equally rapid depletion of forest reserves, with consequent aggravation to the environment, make imperative the use of alternative materials to replace the use of timber in the construction of housing, particularly for the lower income sectors which make wide use of it. Considerable progress in this direction has been achieved with the development of the SCHDS system which has successfully substituted composite construction for wood in floor systems, in the frame of doors and windows, in stringers and treads for staircases and in roof structures. As proof of these successful substitutions, the cost of housing built with the system is considerably below that of conventional houses. As the building system spreads through Asia, the beneficial reduction in the consumption of timber products for construction may lead to a salutary effect upon the environment.

It is estimated with the multiplier effect, that the transfer of technology to implement projects resulted in a total increase of the GDP of the Asian countries equivalent to approximately 5 million US\$ and that approximately 2000 employment opportunities have been directly created by the installation of SCHDS systems to produce the building materials and in the construction of houses.

The building system has been disseminated in Asia initially through building material producers and projects initially selected by Habitech on the basis of the impact they would have in demonstrating the technology. As many countries as possible were selected to disseminate the technology worldwide. AIT being an institute based in Thailand it is natural that Asia is the region where most of the projects have been implemented. Since the transfer, production and promotion capacity of Habitech is limited, linkages with different groups involved in the construction sector has been a key activity to further promote the use of the technology.

Within the scope of the projects being carried out in different countries, the question of whether the technology could be produced locally has always been explored with the objective of further reducing the cost of the equipment by eliminating costs associated with shipping, import taxes and customs clearance. The implementation of projects in different countries has permitted Habitech to establish relations with two types of potential partners: institutions and the private sector.

One of the marketing strategies employed has been to invite groups of NGOs involved in housing projects to participate in a series of seminars and workshops held in their countries. A host NGO would receive a typical production unit and would later act as a resource center for the technology. These seminars have been held so far in most SE Asian countries and the strategy has had success as more contacts have

been established with institutions and NGOs and the private sector.

Habitech is now involved in marketing the technology with the private sector in Asian countries through the formation of joint ventures projects with the local private sector involved in housing. New developments from the research carried out at Habitech is passed on to past and future recipient of the building system.

Impact

2000 jobs created in the construction sector

5 million US\$ added to the GDP of Asians countries

construction of 3500 affordable houses for middle and lower income groups per year

reduction of timber used in construction

Sustainability

Building materials in developing countries are the single largest input in construction activities followed by labour. In terms of shelter and basic infrastructure for the poor, building materials are frequently the main issue in the production of housing as labour can be provided through self-help and community participation approaches to house construction.

So far a large proportion of the building components used in the construction of shelter by lower income groups, which constitute the majority of the population in developing countries, have been produced in small scale units. Building components produced in a manner that relate to traditional processes can make a significant contribution to national economic development as evidence by higher employment and skill generation, as well as economic multiplier effects achieved through backward and forward linkages to other sector of the economy.

Thus small scale building material production would by definition have few employees, little capital investment and a limited volume of output and would likely show other characteristics such as production with locally available materials, produce for local markets at intermittent levels of production.

The generally low level of skills required by the SCHDSYSTEM as a small scale production unit, as well as the low cost of labour and material input and the low level of capital required to start production, means that producing building components is relatively easy and presents no insuperable barriers.

The answer to low cost housing lies in a housing strategy employing systematized construction systems as an integral part of the informal housing sector. These systems allow for the use of non skilled labour in the production and the construction of the houses as well as the use of raw material that can transformed locally.

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