

Low Cost Housing and Construction- Eco friendly



“It is not so much ‘how to build’ as ‘how to choose techniques and materials appropriate to a given situation.’ ” —letter from a volunteer in Papua New Guinea

There are housing problems everywhere, in industrialized as well as developing countries. In Jakarta, Manila, Mexico City, and Calcutta millions of squatters camp indefinitely in structures made of cardboard, sheet plastic and flattened cans, on strips of land beside canals and railways, sometimes even in the shadows of high-rise “low-cost” housing. In the urban United States, the great majority of homeowners could not afford to purchase the homes they live in today if they had to do so at today’s prices. In these and countless other urbanizing areas, the cost of a place to live is rapidly outstripping the ability of ordinary people to pay. Inflation of land values triggered by the growth of gigantic urban centers is one factor. The cost of energy intensive manufactured building materials, which inevitably rises faster than the other costs of living, is another.

In developing countries, the amount of attention and resources that public works administrations and development assistance agencies devote to housing is probably second only to that devoted to water supply. And the history of housing projects, like that of water supply projects, is largely a history of disappointments worldwide. In *Housing by People* (this section), John Turner notes that,

” ... it is common for public agencies to build houses or flats to standards which the majority cannot afford, nor can the country possibly subsidize them on a large scale. On top of this, it is not unusual for governments to prohibit private building of the type of housing the vast majority can afford and are satisfied with.”

Turner argues that governments should not provide houses built to arbitrary specifications, but should instead make building codes more flexible and provide opportunities for secure access to land. An appropriate housing strategy would rely

on a community's initiative, thrift, and ability to organize and turn local resources to advantage to meet the basic human need of shelter. Many of the entries in this section provide illustrations and documentation of the power and validity of this approach.

Egyptian architect Hassan Fathy (*Architecture for the Poor*) helped to inspire a re-examination of traditional architecture and materials. Fathy and others emphasize the ingenuity contained in indigenous building systems, which have tended to evolve to fit local conditions. "Far from being backward or illogical as is often supposed, many traditions do in fact have an underlying rationale or system" which has developed in response to local climatic conditions and availability of materials, states Iran's Development Workshop.

Appropriate technologies for housing should begin with and extend these indigenous systems. Self-help, owner built housing, says John Turner, "is very much a process, intimately related to the user's needs and finances, and very much in the user's control. The idea of housing being the production and distribution of a number of units by the government or a private institution to a passive, recipient population is one of the misleading models set up by Western countries." The Development Workshop adds: "Control, participation and culture emerge more easily in an operation that uses local resources, is labor-intensive, is small-scale, and has continuity with local traditions."

Most of the entries in this chapter cover construction materials and techniques for building houses, other buildings, and bridges. The emphasis is on simple methods, whose principal advantages are twofold: they are inexpensive and they can be used by people to build their own homes. Wood-framed and stone structures are relatively low-cost in many areas. Earth is the most important building material, providing housing for the majority of the world's population.

The thermal properties of earth also make it well-matched to passive solar design requirements in many climates. Several books in this section discuss construction of houses made with monolithic earth walls, soil-cement bricks, and adobe bricks. There are two sets of plans for the construction of hand-operated presses that can be used to make soil-cement blocks. Improved techniques for small-scale brick making are the topic of several books. Two more entries cover the principles of design of underground buildings; one of these presents an owner-builder approach.

Bamboo has a long history as a flexible, safe, low-cost building material, and is plentiful today in many parts of the tropics and subtropics. Three entries cover some recent innovations and results of research in structural uses for bamboo, as well as reinforcing applications in plaster, cement, and stucco roofs and walls. Ferrocement—a strong, thin sheet of cement reinforced with mesh—is a more recent technology with potential applications wherever durable waterproof walls, roofs, or hulls are required. It is widely used in water tank and boat construction.