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Low cost housing means home-grown answers

by Harald Kristiansen

Only by making the best use of indigenous materials and local skills can any reality be given to the achievement of low cost housing in most developing countries. So argues the author, whose views were earlier put forward in a paper to a meeting of CIB working commission W63 after he had spent four years as director of the Tanzanian Building Research Institute. He now works at the Norwegian Building Research Institute, Oslo.

The term "low cost housing" can be meaningless unless it is considered in the context of the economy of the country to which it is being applied. In the USA (GNP \$5160)¹ Italy (GNP \$1860), Uruguay (GNP \$750), India (GNP \$110), and Mali (GNP \$70), the concept of low cost housing is related to completely different scales of values and there are accordingly very big differences in the solutions that must be found.

Secondly the term must be related to earnings. If we say that low cost housing is housing which a family can afford on an average income in a particular country, very much of what has been presented as low cost housing is nonsense. It is often said that the housing problem in developing countries can only be solved by industrial mass production. This is another gross misconception.

Tanzania (per capita GNP \$110) has a relatively equal distribution of resources, high taxes, free education, free health service. Most other countries have a less balanced distribution with higher incomes in fewer hands. Even then, on an average Tanzanian urban income one can only afford to buy the most basic materials for permanent housing, materials which cannot possibly be made by self-help.

By a rough guess I would say that the same goes for most of the 50 countries with less than GNP \$300 per head.

The forms of international help and co-operation appropriate to the needs of developing countries are matters of continual debate. But most people seem to agree that a high priority must be given to enabling such countries to make the best use of their indigenous skills and resources. This theme occurs explicitly or by implication in each of the three articles which now follow.

1. 1973 World Bank Atlas, Per Capita Gross National Product.

One must therefore conclude that:

1. The term "low cost housing" must be related to the economical framework within which the costs are low
2. Low cost housing must be afforded on an average income
3. For the developing countries self-help housing should be fostered.

Research in developing countries

There is no time, manpower or money that can be wasted in the developing countries. When a building research body is set up it has to hit the nail immediately: it has to present and implement solutions for improvements of the housing conditions for a majority of the population. This is the only ethical basis for research, for using scarce resources, and the research can only be successful if:

1. There are realistic political goals and a strong inclination to implement them;
2. The strategy of building research and the research programmes accord with the political goals;
3. The aims of research are geared to solutions which are within reach of the majority of the population, e.g. within the framework of the national economy and the economic level of the households.

If these conditions are not fulfilled the research will be "academic" and wasted.

There are several reasons why developing countries as a whole have not yet established housing and building research which is entirely adequate to the actual problems. Most of them stem from the fact that models for technical and design solutions are taken from the western world and are therefore usually irrelevant and inadequate. Western technologists tend to design prestige roads and prestige buildings with a prestige technology in these societies. Their educational and practical experience in an industrialised environment is a barrier to them unless they come to learn how to transform and use their knowledge and experience within another framework of economy, another technical environment and another pattern of living, another culture.

These obstacles would be of little importance if it were not for the fact that:

1. The developing countries will still, for some time, depend on imported technologists

2. The educational facilities are insufficient, so that developing countries have to send their students to industrialised countries where they often get irrelevant training in a different environment
3. The bulk of educational institutions in the developing countries have taken European models in teaching, technology and syllabus
4. The relevant technology has still to be established.

We know how to get to the moon. But there is still much to do to discover how best to use our earth for making bricks, blocks and tiles.

Commercially it does not pay to invest in research on "no-cost" housing technology. Therefore it needs to be backed by a strong political inclination to improve living conditions, and this points to the need for a clear-cut, ethical attitude to research.

Colonial traditions

In earlier times the construction industry in developing countries generally had to serve the needs of a colonial system in buildings for administration, residences for officers and commercial and industrial buildings which were profitable within this system. The construction industry was largely European. "Charity" projects, such as housing for "natives" had to be solved by the inhabitants themselves within their own economy (mainly subsistence economy), their own traditions and skills. Building products and components for the European construction industry were collected from Europe. The consultants and architects were often second string Europeans, educated in Europe and later returning to Europe, and they were specifying their constructions to European standards of technology. Several African tropical countries had regulations and standards for strength where even snowloads were calculated in the requirements!

Even today fewer than ten of the most industrialised countries can afford to base their construction industry on imported building products and components. Their finance does not permit this, and this is why in all countries the civil engineering and construction industry is mainly a domestic industry. Too much money is involved (some 50 per cent of all capital investment) and therefore a construction industry cannot develop if based on imports.

There is this immediate similarity in developing countries between the problems on the individual and national levels. People on the lowest income can only afford to buy building materials and products which they cannot possibly make by self-help, by

their own hands. The poorest countries can only afford to import the few building materials and products which they cannot possibly produce themselves. The first step of development is therefore to bring down the imports towards zero, even if this means introducing real intermediate technology until an adequate domestic industry and technology has been established. A domestic industry will not develop unless there is a strong demand for local products.

Building research in a developing country can only be afforded if it is working along these lines, playing an active role in establishing a domestic construction and building products industry, and creating an adequate technology.

What are the objectives?

So much for the technical side. As well as the need for developing a relevant technology, there is the need to know what to use this technology for. Houses, buildings, roads and other services are occupying our land. The environment which is created and shaped in this way is where we shall live and die. It is influencing our behaviour, way of life and culture. The planning and design of the environment must be adjusted to the culture and the aims of development. Culture is the synthesis of a series of factors, which are important for survival and development, like basic food production, climate, nature, religion, family pattern, social activities, traditions and the way we conduct them.

It is evident that the culture in Africa is different from the European. Therefore there are other requirements for a suitable environment. For housing particularly it is easy to see that European models will not suit. They are designed for another pattern of family, another climate, etc. A design must be developed which is adequate for the culture and the conditions for which it provides the physical environment.

In brief, therefore:

1. In order to serve the majority of the people a relevant technology must be established and communicated to the people;
2. In order to design and create a good physical environment the planners must pay respect to the local cultural patterns.

Research in Tanzania

Housing and building research in Tanzania has been concentrating along five main lines:

1. Raw materials for building purposes
2. Building products
3. Construction technology
4. Skills and capacity of the construction industry
5. Design.

Raw materials.

A survey is being made of the availability of raw materials for building purposes, eg stones, quarry, sand, soils, clay, vermiculite, pumice, fly ash, limestone, gypsum, asbestos, timber, etc. Information on their location will then be described and plotted into regional maps. The next step will be to survey all by-products and waste which may be used for building purposes. This information will serve as a basis for studies on:

1. Which materials to utilise for self-help construction;
2. Which materials to utilise for developing a domestic building products industry.

Building products

A survey is being made of the actual local manufacturing of building products and a building products catalogue will be produced. At the same time a review of all imported building products will be prepared. Together the building products catalogue, the review of imports and the review of local raw materials will be the basis for a strategy on how finally to establish a complete domestic building products industry.

Building products, eg blocks, bricks tiles, doors, windows etc. are being developed in the laboratory. An important point is that there is a need not only to develop theories and do the necessary testing; for each product consideration will be given to the introduction of a new shape or quality based on the experience and training of site supervisors for self-help schemes.

Construction technology

From the experience gained in the use of local materials and products, recommendations and practical training will be established for construction work. Eventually a technology will be built up, relevant and adequate to the local conditions.

Skill

Craftsmanship and skills vary from one part of the country to another. It is important to maintain these skills and spread them to other parts, so that with the introduction of new technology existing skills may be developed to suit the new requirements.

A construction industry has to be developed according to the established technology. Therefore a survey is now being carried out of all skilled manpower for construction work. This will be the basis for training and organisation of co-operative contracting companies.

Design

Social housing studies are being carried out which will establish knowledge of family patterns, household equipment, household activities, social family life, relations to surrounding environment etc. It is hoped thereby to provide basic information for the planning and design of housing which is relevant and suitable for Tanzanian culture and conditions.

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