Housing the Low-income Population in Namibia

Increasing affordability by adopting appropriate building standards and materials

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Introduction
Namibia, Africa’s last colony, became independent on 21 March 1990 after 105 years of foreign rule. Namibia inherited a very biased pattern of human settlement development as a result of homeland (communal) policies followed by the colonial Government. Settlement planning and housing were used as tools of apartheid to marginalize the majority. The disparities in the human settlement sector made it incumbent upon the newly independent Government to redress the situation and meet the aspiration of the people. Thus, housing and human settlement has been identified as one of the main development priorities of the Government along with health, education and agriculture.

Since independence, urban areas have registered unprecedented growth. Partly, this reflected the freedom of movement enshrined in the constitution after years of mobility restrictions on people.

Although rural-urban migration is associated with the urban growth (development), what is experienced in Namibia is due to push factors from rural areas. The continuous droughts, socio-economic conditions in rural areas, and retrenchment of farm labourers are all contributory factors to rural urban migration in all major cities and towns throughout the country.

Problem Definition
Houses, in general have become unaffordable to the majority of the Namibian low-income population. One of the main reasons is that modern industrial building materials transported from neighbouring countries raise building costs because the suppliers redistribute the materials to remote areas and raise the costs.

There is lack of appropriate technology to utilise locally available building materials.

Local authorities building standards are largely inappropriate to the need of the popular sector’s self-building activities.

Motivation for the Choice of Study
In Namibia, as in other developing countries there is a striking need within the low-income population for housing.
The author is responsible for the provision of technical assistance, in the Directorate of Housing within the MRLGH, to the low-income population largely the beneficiaries of the programme in urban-rural areas. The majority of the Namibians, especially the low-income groups accounting for over 60% households, are provided with shelter in what is referred to as the people’s process of housing. In order to fulfil the target set by the National Development Plan 1, to provide 70% of households with adequate shelter by the year 2010 a solution has to be found. Consequently, I have been motivated to analyse studies that would suggest alternatives in housing provision. The studies will be conducted by making use of literature from the MRLGH, construction sector in Namibia, lectures from Housing and Development course, from interviews with the Build Together Programme beneficiaries and from the author’s observations.

Background

Geography

Namibia is situated on the south-western coast of Africa and has a population of 1.8 million (census 2001) and a total surface area of 824,269 km². It is one of the world’s most sparsely populated countries with the average of two habitants per square kilometre. It is bordered by Botswana and Zimbabwe in the east, South Africa in the south and Angola and Zambia in the north. The capital, Windhoek, is located in the centre of the country with an official population of around 212,223 in 1998.

Settlement Pattern

Namibia reflects a very skewed pattern of human settlement development. 56% of the population in the northern region (former
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Homelands) is concentrated on the land area of 28.6% of the country. While other region, for example, in the east have a population density of 0.25 km² per person.

The high concentration of population in the north is owing to good rains falling in the region. Furthermore, the skewed settlement pattern was due to restriction of movement imposed on the people by the previous colonial government. The majority of the people were restricted to small settlement areas designated according to ethnic tribes as communal land. The remainder of the land was converted into big commercial farms. The apartheid pass law prevented people from moving into urban areas to search for employment.

The majority of the people in rural areas had to manage with very poor social and physical infrastructure, while the commercial areas on the other hand were well serviced. Hence, the communal areas are at present characterised by large spontaneous (informal) settlement areas of traditional housing.

The policy of separate development was widely enforced by the colonial government on all levels namely; national, municipal, town and village level.

All towns and formal villages are characterised by their two settlements; a well-serviced modern part for the minority and a matchbox type houses for the majority.

Single quarter accommodation is another legacy of the apartheid system. These are living premises comprising either a room or set of rooms with shared ablution blocks and kitchen facilities. Such accommodations formed an integral part of the migrant labour system introduced into Namibia by the previous administration. Only men were recruited from rural areas to work in factories and services industries in the towns on contract labour basis. The legislation did not allow these workers to bring their families along. Employers and local authorities built long lines of rooms similar to barracks. After independence, due to the freedom of mobility enshrined in the constitution, men invited their families to live with them. As a result the single quarters became severely overcrowded causing major social and health problems. These overcrowded and unhealthy conditions have been experienced in all single quarters throughout the country.

House Types
According to the 1991 census, nine types of housing units were identified. Among these nine types of housing units, two types are predominant. These are kraal/hut and detached house. A kraal/hut is a housing unit consisting of a hut or a group of huts built with poles with or without thatch (grass) or mud plastered or unplastered with cow dung. Kraal/hut is rural housing standard while detached houses are prevailing in urban areas. Fifty percent of all housing units are kraal/huts, which accommodate 58% of the household population, and detached houses cover 33% of all housing units and accommodate 30% of the total household population. It is estimated that 150 solid trees are required to build one traditional house. At an average of 2.8 traditional houses per homestead, this establishment of an estimated 4200 new traditional homesteads each year. The continued consumption of such large quantities of trees will exacerbate the serious deforestation occurring in the northern areas of the country.
Also, the continued used of thatch (grass) for roofing will increase deforestation particularly in the northern regions. It is, therefore imperative to find alternative ways of constructing traditional homesteads.

Large kraal with a household size of seven members, have approximately 5.9 rooms. Almost 40% of kraal houses have household with seven members or more.

On the other hand, detached houses have an average of 3.2 rooms per household. For the household size of seven or more members the average number of rooms per household is 3.4.

<table>
<thead>
<tr>
<th>Area</th>
<th>Persons per household</th>
<th>Rooms per household</th>
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<tr>
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<td>4.7</td>
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<tr>
<td>Rural</td>
<td>5.4</td>
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<td>TOTAL</td>
<td>5.2</td>
<td>3.6</td>
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<tr>
<td>Kraal hut</td>
<td>5.9</td>
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<tr>
<td>Detached houses</td>
<td>4.7</td>
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In the densely populated areas of the country, traditional housing is becoming unsustainable, because basic building materials such as thatch and wood-based materials are diminishing.

**Strategies**

**National Housing Policy**

In November 1990 the then Minister of Regional and Local Government and Housing appointed a Housing Policy Advisory Committee to draft the National Housing Policy. The Housing Policy identifies the need to develop a National Shelter Strategy and to implement a National Housing Programme. The M.R.L.G.H assisted by the UNDP and UNCHS has developed an implementation strategy for the National Housing Programme. The Policy advocates community participation at all levels of the housing process i.e. planning design and implementation. The national Housing Policy further guarantees the right to a house especially for the formerly disadvantages group of the society.

The central goal of the National Housing Policy is:

*To make resources available and to direct their use into the production of infrastructure and facilities so that every Namibian will be given a fair opportunity to acquire land with access to portable water, energy and waste disposal system, and to have access to acceptable shelter in a suitable location at a cost and standard which is affordable to the individual on the one hand and to the country on the other hand.*

**National Shelter Strategy**

The National shelter strategy is conceptualised as a “bottom up” process of strategy generating from the individual families, communities, villages, local authorities, and regional councils to the national level. The strategy is an enabling approach which supports the initiatives of the public, private and the informal sector.
National Housing Programme
The National Housing Programme, called Build Together was designed as “People’s Process of Housing”. It seeks to provide opportunity and freedom for household to build their own houses according to their needs, priorities and most importantly their resources. The government’s role is to support this process by establishing a framework for people to take decisions, and by providing technical assistance most importantly credit on soft loan. The programme lends money to target groups that are considered high risk by private sector lending institution. Loans are made available for the construction of new houses, upgrading and extensions of existing purchased municipal houses, serviced plots etc. A special loan programme for self-help community based organisation is also offered under the programme.

The National Housing Programme was implemented by the Ministry from as early as 1992. Since the government believe in empowering the people especially those at low level – a policy of decentralisation was implemented. Housing provision was among the functions identified for decentralisation under delegation to regional and local councils. The National Housing Programme through the Build-Together Programme is promoting the concept of homeownership.

Building Standards and Building Materials

Standards
The building codes and regulations are equally inefficient and they tend to exclude the construction capabilities of the majority of the population in terms of their living habits and the materials that they can afford for shelter construction. The standard and codes currently being applied in Namibia are not designed to the Namibian conditions.

Standardisation of materials and material specification, which often inhibits technological development, should be reconsidered.

Performance specification should be applied which gives the incentives to develop new materials. Building and construction standards should be revised so that they become performance based rather than prescribed. A Habitat Research and Development Centre has been identified to deal with issues such as promotion of local materials, testing and formulate construction standards, to mention but a few.

Building Materials
Materials as basic as Portland cement, steel and construction timber are not locally available. These three major items are the biggest cost increasing factors because they are being imported.

Cement is a basic material for most construction activities and constitutes over 50% of the total material costs of the building. Another way of reducing cement is the production and use of materials, which are capable of being produced from local resources, and which posses cementitious properties such as lime, pozzolana, fly-ash and gypsum to be used with or without Portland cement to produce mortars, plasters and building blocks.

Namibia has huge deposits of raw materials, such as clay, limestone, artificial and natural pozzolana, gypsum, building stone
Clay deposits have been identified in various areas throughout Namibia. These deposits can be used to produce clay bricks.

Over-consumption and natural factors have led to a drastic depletion of tree resources in the northern part of the country. There is a law now that prohibits the cutting of trees, which are used in traditional housing. Earth bricks can be used where people are not allowed to use timber poles. The earth bricks are stronger, long lasting and even cheaper than cement bricks.

Many people in some parts of the country have already used earth bricks for some of their houses. Suitable building soil, from termite mounds (oshiwanda) has been used. The block/brick has not always performed satisfactorily, and there is little research in the material.

The use of earth as a building material has often been associated to a lack of wood. In countries with similar climatic conditions to Namibia where timber is extreme scarce they have developed roof technology that uses earth – a readily available local material. This technology responds to the shortage of timber and contributes to good climatic comfort, high quality and durability.

The Clay House Project in Namibia has demonstrated a show house with a soil roof from adobe bricks in vault form. This serves as a good example, especially in areas where there are deposits of clay rather than relying on expensive imported roofing. In Namibia the construction of dome is not a new thing because traditionally people in the central and southern areas have been constructing this type of roofs although another technology was applied.

Apart from lime being used as a cementing agent, it can be used in the stabilisation of soils and earth in the manufacturing of earth building blocks or rammed earth construction. In the north-western part of the country where abundant of limestone is found, a few beneficiaries have constructed houses from limestone bricks shaped in sizes of standard bricks.

The southern region of the country is covered with abundant of stones. There are many examples of houses built by dry stacking of natural stones. Skilful builders/beneficiaries from the Build Together Programme have used the advantage of this abundant resource to construct and decorate their maisonette.

Many innovative building methods and materials have been demonstrated in Namibia but only on a small scale, this include soil stabilization building technique in the Otavi area, manufacturing of sand cement tiles, etc.

There is a lack of appropriate technical know-how in the utilization of locally available environment-friendly building materials, including research into the development of more appropriate and affordable materials and building design. Any appropriate technology to be adapted should use locally available resources and should also be compatible with local cultural and economic conditions, i.e. human, material and cultural resources of the community.

The manufacturing of building materials through small-scale industries at different location throughout Namibia is also a feasible option. Small manufacturing enterprises (small scale industries) should be promoted and supported throughout the country.
Build Together

Site and Services (Goreangab extension), Windhoek

When the upgrading of single quarters started due to overcrowding and severe social and health problems after independence, occupants were given options; some applied for a loan to build a house on a serviced lot at Goreangab extensions, in Windhoek. The building process was managed by the beneficiaries themselves with the help of the families/friends or hired builder.

Since The Programme promotes the use of locally available materials, the beneficiaries had a choice of using a variety of building materials as long as they are permanent. The MRLGH through its Directorate of Housing provides technical assistance to obtain building plans approval.

Houses built on this site are basically core houses (one room plus enclosed bathroom) and conventional houses (two bedrooms) with the provision for future extensions and additions. Standard type plans — meeting the requirements of the local authorities have been drawn up. These are offered to the beneficiaries according to their loan amounts (affordability).

Figure 1. Two-bedroom house at Goreangab extension.

Figure 2. One bedroom house at Goreangab extension.

Standard type plans for beneficiaries range from 22 m² to 57 m². To avoid designing for future extensions, beneficiaries are offered completed drawn up plans in order to build incrementally. However, because of the large family sizes, beneficiaries are eager to build the complete plan immediately without considering the amount of loan allocated to them. In cases of minimum loans, the technical advisors
emphasize to beneficiaries to build only the core part of the house, which enclosed the bathroom and at least one room at the initial stage, simply to provide roof over their heads, thus protecting the families and belongings. The technical advisor’s advice to start building a core house is imperative to avoid running out of money and having to stop the building. The role which has been played by the housing officers, draftsmen and technical advisors of the Directorate of Housing help in achieving a good match between the available money and the affordable size of the affordable size of the house people can build.

Extensions are normally added to the basic core house. The new extension may be built at various stages and times as and when the need arises, for instances when the family grows in size. The extension will fit well with the economic means and needs of low-income people, thus allowing the householder to build according to his/her financial resources.

The cost for a low-income Build-Together house is considerably lower than the cost for dwellings of similar quality produced by contractors within the formal sector. The involvement of beneficiaries in the building process could save up to 40% of the total building cost.

The serviced plots have an average site area of 200 m². The frontage is 10 m in length and the depth 20 m. The building plans, with regard to building lines, have to be located on the plots in accordance with the municipal by-laws. The building line is 5 m in front, 3 m on the lateral sides and 3 m at the rear side of the lot. Within the 3 m at the rear of the lot, no construction is permitted where there is a municipal sewer installed- normally at 1 m from boundaries of the lot. Special permission is needed when you encroach the building lines.

The build up area of the site shall not exceed 50% of the total site area. We orientate the building on a lot to make provision for future extensions and additions.

Many of the beneficiaries, of which many are women, are involved in income generating activities (entrepreneurs and street vendors etc.) and manage the building process with the help of family or hired builder. Regarding the repayment rate, the women are paying very well. The improved housing conditions often mean better physical and psychological opportunity to raise one’s income. It is seen as an effective means of alleviating poverty.

**UPGRADING Build-Together**

All the municipal houses in the township had been provided by the public sector (the municipality acting as an agent for the state with a loan provided). In these townships where the majority of the urban population live, houses were built without ceilings, internal doors or wall finishing and had outside toilets without bath or shower. They are characterized as the “match box” type.

The provision of rental housing by the local authorities during colonial times did not encourage the spirit of homeownership. Shortly after independence, local authorities held a large stock of rental houses in the townships areas.

Previously, the apartheid laws did not permit the ownership of houses for the majority of the people. In the absence of any feeling of ownership, these houses had no regular maintenance and began to deteriorate. Since the new government is promoting homeownership, municipal rental houses have been gradually sold primarily to tenants.
The new home owners felt secure and many applied for a loan from the National Housing Programme (Build-Together) and zealously began to improve their houses which could be attached or detached, two, three or four roomed; the largest had a total floor area of 56 m².

In this example we can learn that people are willing to invest in their own houses when the freehold title has been acquired. And also by the upgrading/improvisation they have made to tailor their needs indicates that the design of houses did not reflect their needs and aspirations since they were not involved in the stages of the building process. In addition, the main reason why squatters for example suffer from poor housing is not an inability to build good houses but rather lack of security of land tenure and resources prevents them from investing in their houses and improving them.

Besides the new building plans for the sites and services projects, the Directorate of Housing designed building plans for extensions especially for these houses. These houses did not have indoor water connection, electricity or bathrooms. Bathrooms have been enclosed; finishes, services installed and additional rooms added owing to the large household sizes in some families.

Shelter has become accessible to many through the BT programme although there is still more to be done to reach the national housing goal.

Sites and Services in the Rural Areas
The Build Together Programme not only provides loans to people in urban areas, but it has penetrated the rural areas and informal settlements where financial institutions find it too risky to invest. It stimulates economic activity in the rural areas and also establishes permanent homes for families, thus reducing the temptation to migrate to urban areas. The Directorate of Housing has compiled a manual to assist beneficiaries with regard to the quantities of materials needed and also illustrations on how to set out the building on a lot and many other related issues in the self-help construction.

The programme has been promoting the use of locally available materials as long as they are permanent. Gravel for concrete work in the northern parts has to be transported from distances of about 190 to 250 km by the suppliers who in turn sell it to the beneficiaries at an exorbitant price. However, in these areas where coarse aggregate is extremely scarce, notably in northern regions, mortar was used with moderate success instead of concrete, even for structural purposes before. A further study needs to be conducted in order to reduce the use of gravels, which are not available in close proximity, in the concrete work for the low-income houses. The same problem has also been experienced in the north-eastern part of the country where suppliers have to collect the material from distances of 500 km. Sun dried bricks are extensively used in the rural areas owing to clay deposits. There are few brick/block manufacturers, of which many are women, in the rural areas especially in the north who supply the beneficiaries with the walling material. In other parts where there are no brick making projects and suppliers of other building materials, these have to be transported from far distances which contribute to the high cost of the materials. The cost of a house built by a beneficiary in rural areas is higher than the house cost of the same house constructed by another beneficiary in urban areas. The high cost is aggravated by
the transport cost. Small building material manufacturers should be encouraged throughout the country.

Analysis
The high cost of transportation and unavailability of affordable materials, lack of skills and knowledge in the use of local available building materials and limited involvement of small building entrepreneurs with little or no access to finance, drive building costs up and often make housing for low-income unaffordable. Informal builders are important players in the housing delivery process. They need to be provided with technical and managerial skills as well as access to finance and credit to solve the adequate of housing.

Certain building materials are also becoming scarce in many densely populated areas and the drought stricken part of the country. This requires efforts to provide alternatives, in the field of building materials and construction methods. Consequently, non-conventional, innovative ways to help these communities to house themselves are needed as one way to alleviate poverty among the disadvantaged sections of the society.

Unconventional building methods or alternatives have been encouraged as housing solutions, but there could be problems since there is still a lack of knowledge of unconventional building methods and more experienced must first be gained. The development of alternative low-cost building materials and components, alternative house type and designs, and training of artisans in improved construction techniques, small scale entrepreneurship in low-cost building materials production and house construction could be a solution to the adequate housing.

Design standard should be lowered that the end product is within the affordable level (to low-income groups without sacrificing basic, safety, and health standards).

Low-cost technologies should be introduced to meet the demand. Building materials best suited for the self-help and low-income building process are those that are cheap and are readily available in close proximity to the building site.

Actors
The launching of the National Housing Programme “Build-Together” is the most significant achievement of Namibia’s movement towards generating a process that provides space for all the actors in the housing field.

Beneficiary Families
The beneficiaries of the “Build Together” programme are the low-income earners who do not qualify for a loan either from a parastatal or the financial institutions due to the high risk involved. Through the BT programme the beneficiaries manage the building process. Beneficiaries make use of locally available permanent materials to construct their dwellings. The values of houses they have constructed have resulted in savings of twice than those on formal market. “Build Together” is gender sensitive, as about 60% of the beneficiaries are
women. About 85% of the BT-Programme construction is executed by self-help.

Shack Dwellers Federation of Namibia

A Network of Community Based Organisation
The Shack Dweller Association of Namibia is an organized self-help group with savings, which build each other’s house in turn. The MRLGH assists the group with finance to buy land, etc. This is the ultra-low income communities who do not have a steady income. (60-90% of these groups are women).

Non Governmental Organisation

Namibia Housing Action Group
The Namibia Housing Action Group is non-profit making. It provides technical assistance to community-based organisations in all parts of the country. It assists in the approval of building plans and training to CBO groups, of which many are woman, in bricklaying and manufacturing of brick/blocks. The NGO assists on a non-profit basis.

The Local Authorities
Since the local authorities are responsible for the development of their urban centres. They have taken the initiative to provide land for all their low-income families to affordable levels and are encouraging these families to improve their houses incrementally. It is too expensive for the majority to meet building standards and regulations, and the authority managed to lower the byelaws to an extent that does not risk the health and safety standard.

There is an urgent need for Local Authorities in Namibia to formulate a uniformed set of Building Regulations, which will be applicable to the whole of Namibia.

With regard to the low-cost housing an agreement certificate can be formulated as a basis for using appropriate building methods while ensuring that proven and accepted safety and health standards are maintained as far as the occupants of the building and the community within which such building are situated, are concerned.

Central Government
In 1996, The Government of Namibia became a signatory to the Istanbul Declaration on human settlement, and thereby committed itself to the implementation of the Habitat II Agenda and Global Plan of Action.

In the field of housing no comprehensive, coordinated research has been conducted to develop appropriate technology for Namibian conditions, and to promote new opportunities especially for small building entrepreneur in rural and urban areas. As from 2000 the government, in collaboration with stakeholders, will establish research institution to promote the use of local, indigenous, building materials and designs and also to set national standards for housing and affordability. The government actively promote the development and use of local materials for the manufacture of building components.
Regional Councils
The regional councils are responsible for their settlement areas. The Ministry assists in the development of infrastructure. The regional councils assist in the implementation of the Build Together Programme and also promote the use of local available materials in their respective settlement areas throughout the country.

National Housing Enterprise – Parastatal
NHE provides housing loans to different incomes categories, based on market related interest rates. All units constructed by NHE are sold on the basis of loan given to clients. NHE conduct programmes in training small builders with regard to managerial and technical skills in the building industry.

National Habitat Committee
The committee prepares Namibia’s Plan of Action. The Plan of Action adopted by the Government in 1996, was undertaken owing to the large number of Namibians living in poverty, under conditions of inadequate shelter and homelessness.

The committee prepared Namibia’s National Plan of Action, which was forwarded to the Habitat II secretariat, for incorporation into the Global Plan of Action. The committee consists of representatives from government ministries, NGOs, housing settlement organisation, local authorities, trade unions, churches and other partners.

Design
Local Authorities set lower standards on the houses of the Build-Together beneficiaries. These do not have to meet any specification regarding the internal thermal environment they create. Consequently, severe problem of summer overheating and extreme cold in winter are experienced with many of the designs.

To minimise some of these problems, consideration must be done with regard to the orientation of the dwelling on the plot regarding the sun. Because of the plot shapes, it is not always possible to orient the house to achieve the best climatic solution.

Houses should be designed to have good thermal performance in order to avoid the use of expensive mechanical devices since the low-income population has to rely on the thermal behaviour that is compatible with comfort, health and general well being.

Internal comfort can be achieved by using low thermal capacity materials. Walls act as direct sun shading devices. They get heated up during daytime and reradiate the heat at sunset. Materials with low thermal capacity should be specified in order to avoid extreme temperatures. In the case of the Build Together site and services and other low-income areas in Windhoek, the external wall is a sand/cement brick with the width of 110 mm and not the normally required 220 mm. However, the single 110 mm wall does not perform well with regard to thermal conditions. Therefore I suggest that the hollow block of 150 mm should be considered instead of the 110 mm brick for external wall.

Construction techniques can be devised to reduce the heat influx through the walls and roof: either 150 mm thick single skin hollow concrete block external wall bag or plaster on both sides or 110 mm
thick hollow brick bagged or plaster on both sides-void bricks with 15 to 20% of vacuum-void-are acceptable.

The roof, depending upon the materials used, can be responsible for unacceptably high heat gains if care is not taken in the design.

The roof, the building component that receives the most solar radiation, is covered by corrugated roof sheets without any insulation. This also contributes to the extreme internal temperature. There is no internal ceiling, due to the high cost of the other building materials. The corrugated iron roof sheets do not on their own provide the same climatic protection that can be achieved with traditional thatch or earth roofs. Another disadvantage of corrugated iron sheets without ceiling is that they make a lot of noise when it rains.

The roof structure is built from imported South African pine covered by galvanised iron. When this material is used alone it generally creates intolerable overheating in summer and unacceptably uncomfortable indoor conditions in winter. Applying a low solar absorptivity paint to the outer roof surface and using aluminium foil on the inside lowers emissivity. All these above mentioned techniques could create better thermal performance.

Many of the components parts contain cement. Since the cost of imported cement adds considerably to the total cost of the buildings, beneficiaries do not have enough money to incorporate finishes such as ceilings, etc. So they are subject to live in the building with basic components, without sufficient protection (ceiling boards or aluminium foil) from the intense solar radiation.

Many buildings according to my knowledge have never really satisfied their users. They proved very unsuitable, that is too small or otherwise inappropriate for their needs. When we design, we have to safeguard health and safety by providing sufficient airspace, ventilation, insulation, etc. and most importantly to involve the end users in the design process.

**Recommendations**

- Encourage the use of local, available building materials. Conventional building materials are too expensive to be affordable by the low-income people.
- Standardisation of materials and material specification, which often inhibits technological development, should be reconsidered.
- Encourage and promote small builders and small building material manufacturers.
- Performance specification should be applied which gives the incentives to develop new materials. Building and construction standards should be revised so that they become performance based rather than prescribed. A study should be done to formulate nationwide building, testing and construction standards for housing.
- If there is a shortage of wood and corrugated iron, one option is to build roofs where the material for covering—such as earth—provide the supporting structure at the same time, in the form of vaults and dome.
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ACRONYMS

BTP     Build Together
CBO     Community Based Organisation
MRLGH   Ministry of Regional and Local Government and Housing
NDP     National Development Plan
NGO     Non-governmental Organisation
NHE     National Housing Enterprise
NPC     National Planning Commission
UNDP    United Nations Development Programme
UNCHS   United Nations Centre for Human Settlement