

# Modernization of Houses in Informal Settlements through Housing Transformation in Tanzania

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**Abstract** - This paper addresses modernization of houses in informal settlements through housing transformation. It addresses on how people view modernization and how transformation is linked to modernization.

A case study and qualitative research strategies were used. Interviews and observations were also used as data collection tools. Face to face interviews were done and responses were recorded and transcribed in order to listen and record feelings and aspirations of people in relation to modernization of houses.

Empirical investigations have shown that residents have attempted to modernize their houses in terms of the use of "modern" building materials. The term modernization as perceived by many residents in the studied area means houses constructed with concrete blocks and corrugated iron sheets as compared to houses constructed with mud and poles. Therefore the houses are modern in the context of the studied area. Such houses when compared with say apartment blocks in Dar es Salaam in high income areas built with sophisticated materials like glass and steel, Hanna Nassif informal settlement houses could be considered modern. Other issues related to modernization include separation of functions and rooms for renting.

This paper has provided knowledge about modernization of houses in informal settlements taking into account people's views and aspirations. It assumes greater significance in view of demonstrating how dynamic qualities of houses in informal settlements could form a basis of modernized houses through transformation.

**Key Words:** Housing, Informal Settlements, Transformation, Modernization

## 1. INTRODUCTION

In developing countries, most individuals are responsible for construction of new housing, the bulk of which takes place in informal settlements. The growing scale of housing needs has been paralleled by changing attitude of Governments towards an increasing realisation of positive and potential contribution of informal housing sector. The increasing demand for housing has urged individual people to build houses for owner occupation and renting. The significant provision of housing by individuals becomes central to exceeding the limited Government efforts in the provision of shelter to its people.

For many years now dwellers and landlords have been engaged in transformation of their houses by alteration and extension activities aimed at adapting them to better suit their needs. Buildings are changing in different ways. One way is by intervention of residents to keep/maintain the building. An urge to make modification, change parts or elements of the building is also a different way in which buildings are being transformed. According to Western Cape and ACC (2013) it is difficult to control the quality of the house in individual driven process because of little support from the state. In housing development, after production process the house is occupied and this stage is seen as an end but in actual fact this stage is the beginning of several other processes. The house is not static, it is dynamic it goes through a process of transformation. Understanding transformation of houses provides insights into relationship between dwellers and their dwellings and the potential of residents to contribute actively in the transformation process. The effects of these activities have many potential benefits of the quality and size of the housing stock (Kellet at al, 1992). Increases understanding of the informal way in which people affect transformation of housing in which they make alterations, additions and extensions indicate that transformation is in fact an integral part of growth and consolidation of communities. This is a natural and inexpensive way in which most building adapt and remain functional (Hamdi, 1995). Usually human beings continuously develop the house environment to meet their essential needs imposed by variables that are different from one period of time to another due to transformation situation that affect the human environment economically, socially and culturally (Mukhija, 2014). It can be assumed that the determination of change is the desire of users/occupants to let them change, taking into account the physical characteristics of the building that allow degree of transformation.

The transformation taking place is definitely affecting life style of people; also change of life style affects the transformation. It is interesting to discuss modernization of houses in informal settlements where houses are of poor quality due to lack of development control. (Mushumbusi 2011). The discussion on modernization due to transformation has to be done carefully. The concepts have to be used in a particular context. For instance the process of transformation of houses taking place in informal settlements in Tanzania could be related to modernization considering the process of change, which is taking place. It could be however related to other factors.

Heynen (1999) describes modernity as “the process of social development, the many features of which are technological advances and industrialization, urbanization and population explosion, the rise of bureaucracy and increasing powerful national states, an enormous expansion of mass communication systems, democratization and an expanding capitalist world market”.

Tran Hoai Anh (1999) noted that the main distinction between modernity and modernization, when a distinction is made at all is that modernity refers to ‘conditions’ or ‘experience’ of modern societies while modernization gives emphasis to the ‘processes’ that lead to modern societies therefore much of the modernization concerns the third world countries.

According to Larsson (1990) origin and essence of modernity has been an area of interest to many scholars, in the world. Larsson further indicates that it is difficult to find situations in today’s developing countries corresponding to events in Europe or America. Larsson sees modernization as “generally closely related to economic growth induced by recent technology. Technological impact on the economy on one hand and processes dependent upon technology on the other hand has to be distinguished” (Larsson 1990:31). She further stated that “there is a sharp division between industrial societies and third world countries. From the industrial centres the process of modernization radiates outward into less modern societies”.

Larsson (1990) puts in clearly that modernity in developing countries is a powerful vision full of images which is promising and at the same time threatening. Poverty is affecting many people and economic benefits of modernization are limited. Larson (1990) further argues that housing transformation may be interpreted as an evolution from traditional to modern dwelling if looked upon superficially or as a linear transformation where traditional housing elements are gradually being replaced by modern ones. Such transformation is said to be put in line with modernization paradigm, which is one of the main currents in development theory within the social sciences. Larsson (1990) contends that transition from traditional to modern housing involves a number of aspects, which includes building materials and techniques and the use of space and the layout of dwelling.

The status of dwelling in Tanzania is related to both men’s and women’s domain. The number of women head of household is increasing rapidly worldwide, where it is estimated that one-fifth of all households are women headed households (Habitat, 1996). This indicates that the same situation applies in Dar es Salaam. When considering tradition way of living, Tanzania women could seldom head a house. A girl is considered under her parents before marriage. After getting married she remains in the care of the husband. If the husband dies she may continue in the care of her late husband’s relative (in some societies she can even get married to the late husband’s brother). If divorced, she has to go back to her parents or relatives. This indicates

that under the tradition setting there is no time a woman is supposed to be under her own leadership or head others. Over time, women’s social and economical positions have been transformed. This has resulted from changing attitudes towards marriage and increasing marital instability and therefore increasing number of household headed by women. This has given an opportunity for women to own houses. There are also some women who are not head of household but still own houses. We can say that modernization has given women opportunity to get access to land and own houses which is totally different from tradition way of living where it was not possible for women to own houses. Modernization in this context is related to that process which has enabled both men and women to change their attitudes on issues of land and house ownership.

Larsson (1990) looked into relationship between modernization of housing and poor qualities of utility in modern low cost dwelling in Botswana. She adopted a gender perspective in order to understand the above-mentioned relationship. To Larsson gender perspective has given important explanation to house transformation in Botswana. Traditionally women used to build houses but this responsibility has been taken away from women because men are the ones who are having cash for purchasing imported building materials.

## 2. METHODOLOGY

A case study research strategy and qualitative research were used, whereby Hanna Nassif informal settlement was selected as a case due to the reasons that it contains rich information on housing development. According to Mushumbusi (2011) in Hanna Nassif settlement there is a progressive improvement of houses and incremental activities taking place.

Face to face in-depth Interviews were carried out as main data collection tool, open ended questions were posed to the interviewees, answers were recorded and transcribed in order to understand people’s feelings, aspirations and how they view modernization in relation to transformation of their houses. Observations were also carried out in order to obtain information about spatial and aesthetic qualities of transformed houses and capture the reality of existing situation. Sketches and photographs were also used to capture and document existing situation of the houses in the studied settlement.

## 3.0 RESULTS

This part presents findings on how housing modernization is viewed by people living in informal settlements. The elements discussed in relation to modernization take into consideration house commercialization in terms of renting rooms, building materials, separation of functions, improvement of toilet facilities and increase in size of openings in the house.

### 3.1 Rooms for Renting

One of the motives obliging the residents to transform their houses is that of making room extensions for renting out. Room renting should be viewed as an urban phenomenon. In rural areas where people live in traditional houses they do not commonly rent out rooms to other people. One of the respondents had this to say:

*I have never seen anybody in my village renting out a room. Usually people occupy large parcels of land. Houses are built using locally available materials. So everyone can afford a house, but here in the city people rent out rooms. When I came to Dar es Salaam in 1980 I started living with my brother. After six months I had to find a room to rent near Kariakoo market where I sell fish with my brother. I managed to get a room here in Hanna Nassif. I like this place, it is located near Kariakoo. I do not have to board a bus. (Interview with Mr. Abdala, 28 years old, who is renting a room in Hanna Nassif, a fish seller at Kariakoo market).*

In rural areas when a young man wants to get married he is expected to build his own house by using traditionally available building materials with assistance from friends and relatives. Usually in rural areas there are no restrictions if one wants to construct a house. In urban areas funding is not easy to organize and also there is scarcity of land, even when one has some funds. The alternative is to rent rooms or a house.

It is assumed that by having rooms for tenants in a house it is a departure from tradition to modern ways of living. Renting rooms is a phenomenon that is linked to urbanization and formal restrictions on house building which in turn often create a demand for rooms to rent (Larsson, 1990).

### 3.2. Building Materials

In the Tanzanian context modernization became obvious during the colonial era. The colonial administrative structures especially during the German period built "modern buildings" which were mainly public buildings. As people interacted more and more with the outside world more lessons were learnt and new buildings between indigenous people and the outside world was facilitated through pictures, magazines and architects, whose training were secured in industrialised countries. At present, there are quite a good number of buildings in the country that can be considered modern.

One of the variables in the analysis of housing modernization within the context of housing transformation in Hanna Nassif informal settlement is the ongoing change in building materials. Residents transform houses from traditional to "modern" materials as strategy in modernizing their houses. This can easily be physically ascertained in the study area and as confirmed from interview with the resident of Hanna Nassif.

House owners and tenants were asked if transformation modernizes their house and what they think are the indicators of modern houses. "What is a modern house? One of the respondent living in Hanna Nassif, quickly replied:

*A modern house is the one which has facilities to be "modern" in the society meeting current needs. A house built with modern building material like concrete blocks, roofed with corrugated iron sheets or tiles, with cement, terrazzo or ceramic tiles floor finish. (Interview with Mr. O. Msangi, 45 years old, house owner).*

Another interviewee explained that modernization started in the 1920's and 1930's when corrugated iron sheets were introduced in the country. By this time, if a house was built of mud and pole but roofed with corrugated iron sheets, it was considered "modern" but if the house was roofed with thatch it was easily considered traditional. Later on lime was introduced so, if the house was painted with white lime, roofed with corrugated iron sheets it was considered even more modern.

This time the cash economy was weak; most people did not have cash. The few Tanzanians who were working in industries and agricultural estates earned salaries that enable them to buy corrugated iron sheets.

Building materials seems to be a major indicator of modern houses. In all 21 in-depth interviews, the respondents mentioned building materials commonly used in many parts of the country to include mud and poles of walls and thatch, especially grass and palm tree leaves, for roofing. Common "modern" building materials are concrete blocks, corrugated iron sheets, Mangalore clay tiles (This type of tile is largely imported from India. It is expensive but since it is made from burnt clay soil it has good thermal qualities) and concrete tiles for roofing. Most people feel that they have modern house if constructed from a combination of the so called modern building materials. One of the respondents observed that:

*I used to own a mud and pole structure inherited from my parents in the early 80's. I decided to demolish the structure and replaced it with a concrete block house, roofed with corrugated iron sheets. When I moved into this house I felt great, as I became an owner of a modern house. It is a status for me to own a modern house. I could clearly see that people in this community respect me more than when I used to own a mud and pole house. My new house is a better one. There is a lot of improvement in comparison with the old house. I no longer need to repair the walls, after the rainy season (Interview with Mr. Jumanne, a retired officer who used to work with the Tanzania Railways Corporation)*

To this respondent modernization means change of building materials. This development brings about a feeling of change in social status and respect from neighbors, whether in reality or imaginary. However the status aspect is in

contradiction to climatic comfort, taking into consideration the type of building materials used.

A modern house in this context meant a house built of concrete blocks, cement screed floor and roofed with corrugated iron sheets. To this house owner issues like functional and cultural needs are not important. This tendency depicts the image of improved houses based on building materials, irrespective of indoor comfort characteristic requirements. Also the household economic capabilities to afford such materials, so the potential of local building materials has been ignored or neglected at the expense of “modern” materials. These materials seem to be inappropriate to local climatic and economic conditions, in addition to the fact that they are not easily affordable by poor households. Concrete blocks and corrugated iron sheets are very moderate elements of housing modernization. Peoples’ perception of modernity might reflect colonial commercial influence.



Figure 1: An example of a house constructed with traditional Building materials in Hanna Nassif Informal Settlement



Figure 2: An example of a house constructed with “Modern” Building materials in Hanna Nassif Informal Settlement

People have negative attitude towards use of traditional building materials. Both concrete blocks and corrugated iron sheets are expensive compared to traditional materials like sun-dried bricks. However, people still go for expensive materials because these materials are considered as symbol of modernity.

Why are traditional materials not popular as compare to “modern material”? The present study shows that the preference is centered on the desire of household members to keep pace with “modernity”. Household members are desirous of transforming their mud and pole houses in order to build housed using concrete blocks even if they have very low-income. A woman respondent had this to say:

*I changed my initial house which was built of mud and poles to a concrete blocks unity on a step by step basis. I first purchased concrete blocks just adequate for only one room. I then saved money for paying artisan for six months, then the construction of the first room with concrete blocks started. My income is very low so I could afford to build all the rooms with concrete blocks at once.*  
**(Interview with Amina, 40 years old, a house owner who keeps poultry and cows and earns her income through selling eggs and milk)**

Hanna Nassif residents give priority to the appearance of a house. 17 respondents out of 21 in-depth interviews said they were satisfied that their houses are modern because they are built of modern building materials. However, the remaining four people were of the opinion that material and other developmental aspects of house design like the separation of functions and health issues are important.

The fact that the Government of Tanzania does not put any emphasis to development of traditional building materials, people in the informal settlements are forced to use modern material. The National Housing and Building Research Agency (NHBRA) in the country has done a number of researches on how to improve local building materials such as sisal cement sheets and tiles, mud dried bricks and stabilized soil blocks. However, research dissemination is not accorded adequate attention. Research reports end up on the shelves and normally information does not reach people in need of the results. In the hot and humid weather like that of Dar es Salaam, the use of corrugated iron sheets is not suitable because they absorb heat, which is transmitted into the house. If there is no provisioning of ceiling board, then the house could be hot and uncomfortable to live in. The National Housing and Building Research Agency (NHBRA) did research on this type of material and they proved to be good insulators and therefore poor conductors of heat. The materials are produced by using simple technology; they can also be produced on a small scale. There has been minimum dissemination of information on alternative roofing materials for the people to be aware of new types of roofing materials.

### 3.3. Separation of Functions

Separation of functions in a house allows for the smooth performance of activities to take place. In situations like Hanna Nassif settlement where many households are accommodated in rented rooms, a house to them is a room. Within such a room all functions such as cooking eating, sleeping and resting take place. This causes conflict in terms of space available. Cleanliness is also hampered because of mixed use considered to have elements of modernity according to Hanna Nassif residents. To some interviewees however, separation is an important attribute of cleanliness within the house. One of the questions asked is; how important is the separation of activities in the house? One of the respondents said:

*Separation of functions makes it possible to locate toilets, which could at times release bad odor, away from the living room and sleeping rooms. This makes it possible to live comfortably in the house*  
**(Interview with Amina who sells fruits and vegetable, tenant)**

Out of 21 interviews 11 refer the kind of separation that creates strong links up to the kitchen, store, dining room and sitting room. They also prefer a master bedroom which has an in-built toilet facility.

*The dining room should be located near the kitchen, the sitting room next to the dining room. However, the toilet room should be placed a little far from the sitting room and kitchen but such that it can easily be accessed from other parts of the house (Interview with Mrs. Mfikirwa, a house owner).*

Sanitation facilities are regarded important especially on separating toilets from other facilities so as to ensure that the sanitary condition in the house is healthy. Other separations are related to functional qualities. For example, by cooking food especially if the type of stove used is charcoal and paraffin. These stoves produce fumes; therefore, they should be placed away from sleeping and resting rooms for health reasons.

It is often assumed that separation of activities is a reflection of an increased standard of living of which an increased number of dwelling spaces is an inherent part. It is nevertheless, not always true that the number of dwelling space increase with the standard of living. Similarly one cannot take for granted that differentiation of dwelling space is necessarily accompanied by a differentiation of activities. Household activities are not fixed to specific locations. One or more activities can take place at different places depending on factors like weather and time horizon.

Separation of men and woman, children and their parents in the house is considered an important aspect by the respondents. Out of 21 interviewees 18 responded that they would like to have separate rooms for children and the parents. Also between girls and boys as it ensures privacy and respect between different sexes and age groups. On this preference one respondent had this to comment:

*To ensure a disciplined upbringing of the children, girls and boys should stay separated, even if rooms are small. Separation should be ensured, notwithstanding constraint in space (Interview with Mr. Mustafa, a retired military police officer).*

The strategies employed by people in the Hanna Nassif settlement in ensuring this separation between different age and sex groups include renting of rooms at nearby houses especially for boys. Also use of double –decker beds for children of same sex but different age groups. Room extensions, where a room is big enough, to ensure that different age and sex groups are separated. One of the respondents observed that.

*An approach employed to ensure separation include separating a room by a curtain, renting a room for the boys in a nearby house and making an extension of the house to ensure comfortable accommodation of the entire family (Narration from Mr. Mpoki, who is a house owner, living in his house but also renting some rooms in nearby house where his boys are accommodated)*

#### Another respondent said:

*When I got married we used to rent one room in a Swahili house. When I got my first child I started worrying of what is going to happen when I get a second and third child. I advised my husband that we have to do something. We looked for a plot to build a two –roomed house without success. There was an open space on the plot of the house we are renting. We approached the house owner with a request for permission to extend two rooms from his house on agreement that we should not pay rent until the costs of the extensions would be recovered. The landlord agreed so we extended two rooms as planned. We are now renting three rooms. The girl's rooms are used for cooking and receiving visitors. Now I am satisfied because I have separate rooms for girls and boys. (Interview with Mrs. Saidi who is a tenant).*

Transformation of houses in Hanna Nassif settlement leads into the provisioning of modern house because there is an aspiration to separate functions. Even if it is not totally achieved the respondents show that they aware of the importance of the separation of functions. They attempt to transform their houses to meet this goal. However, the extent to which functions have been separate should be taken into account. For instance, if there is limited space, the sitting room can be used for sleeping during the night. Receiving visitors could take place during the day.

Housing development in informal settlements is not for nuclear family living and individualism as in developed countries. Social feature of modern way of living in urban informal settlements is that of renting out rooms in one housing unit and sharing of facilities. It is also assumed that there is now a decrease of entertaining extended families. Results from interviews within the settlement demonstrate that the residents are conscious of the need for separation of functions between businesses and residential. Business areas are associated with noise, pollution, danger of fire, wastewater, which are unsuitable for a residential area if the separation is not done properly. This also depends on the type of business. For example, in Hanna Nassif there were carpentry workshops and milling machines which generate a lot of noise and dust. These are unhealthy to people living nearby. There are also pubs where drinks are sold and music played for long hours. These business cause nuisance to the residents as reported by one respondent:

*I feel disturbed by the commercial activities taking place in the neighborhood during nights it is hardly possible to sleep because of loud music from bars and customers who make a lot of noise (Interview with Mr. Nassib who is a house owner. His house is located adjacent to two bars).*

Another respondent was concerned with the separation of residential areas and working areas. He commented that:

*Separating working places from residential premises reduces risks such as fire outbreak and pollution from chemicals. The working environment and residential*

*quarters should be separated. The superstition of these two also ensures concentration as people can easily work without being disturbed with family matters (Interview with Mr. Hussein, a house owner)*

Separation of functions has also a social benefit in the sense that when people work far from their homes, they cannot be interfered with by domestic matters. However, seven respondents out of 21 who responded to an in-depth interview, pointed out that if the two are put together people can work extra hours, as they will be closer to their homes thus enhance productivity.

To some respondents separation of functions in Hanna Nassif is linked with traditional ways of living and the position of the men and woman in the society. Thus is an anti modernist and cannot be treated as a developmental aspect. However it is worth mentioning in order to present the views to some residents on the raised issue. Quite often within many traditional societies, men and woman do not eat together, a phenomenon which was reflected in Hanna Nassif and is implicitly an aspiration for more separation space for the function of eating. One woman informed the researcher as follows:

*In the tribe I belong to, men and women eat separately. So when we made extensions of our house we intended to have two distinct rooms for eating but due to lack of funds we managed to extend only two rooms for sleeping. Men are therefore eating in the sitting room and woman in the backyard (Interview with Ms. Amina who sells fruits and vegetables).*

The practice of women and men eating separately is a traditional one and respected in many tribes. There is historical reason behind the practice. In polygamous societies where a man is married to more than one wife, the men received special treatment from each woman. Women have to impress their husbands. Special food is prepared for the male parent, while the female parent and children eat different food. This preferential treatment could provide an explanation for separating eating space. Due to modernization these habits are disappearing, especially in urban settings. In many households in urban areas men and women are eating together while only a few men who still wish to maintain the traditional ways of living eat separately from other household members.

Self-contained household are directly related to the separation of functions. This is a house with differentiation in spatial organization, where toilet and bathroom are located inside the main house. Understandably, a self-contained house has a sitting room, a dining room, bedrooms, toilet and bathroom. It may also have a guest room and study room. Out of 21 people interviewed, 18 said they prefer a self-contained house. Issues of water shortage problems or of water connection to each plot are not given a serious consideration by residents when they construct or transform their houses to self-contained units. Few household members have managed to provide reservoir

waster tanks in their premises. Problems that might occur in the future have not been to own a self-contained house. These houses are considered to be modern as long as there is a provision for the separation of functions as explained by a 35 years old respondent.

*I consider my house to be modern because it has different rooms for different functions. I also consider my house to be modern because it is a self-contained house; the bathroom and toilet are located within the main house (Interview with Mr. Mfinanga, house owner).*

A self-contained house is preferred by Hanna Nassif resident because toilets and bathrooms are contained in the main house making it convenient to use such facilities both during day and night. In this type of house it is expected that a sitting room would be furnished with modern furniture like sofas, a coffee table, which are well arranged. People value and admire the elements of a self-contained house relating to modernity. A sitting room is an area to welcome visitors and watch television. It is an area where the social status of the household can be depicted, as remarked by a female respondent.

*I like my setting room so much. I always keep this place neat and clean. I do not even want my children to sit on sofas or spend time at the sitting room. They make the area looks untidy. I usually arrange my sofas and coffee table in such a way that the area looks inviting. I want my visitors to know that I am a clean person and I know how to maintain the house. Sometimes when I want to recall some good memories I sit alone in the sitting room and this makes me feel very happy. I also display my television and music system in the sitting room to show my visitors that I am a modern person. (Interview with Mrs. Msangi, a house wife).*

The sitting room is a reception room where visitors are received. A sitting room is where a display cupboard is placed to show glassware and other decorations.

The dining space is another important part of a self-contained house according to the respondents. Usually the common furniture here are dining table and chairs. To eat in a dining room is a feature which is linked to modernization according to Hanna Nassif residents. Traditionally, especially on the coastal, meals were eaten while sitting on a floor mat. By sitting at dining table means that each one will use her/his own plate, not like the practice in traditional way of eating, where one big plate is used by more than one person. Although some houses were found to have dining spaces, observation showed that some members of households are not using the space. A number of people prefer sharing food in one big plate. Some of the respondents said dining tables are used only when there are visitors in the house. This implies that even though houses are being transformed as means of modernization, people's ways of living has not totally changed. There are traditional ways of living that are perpetuated despite modernization of the houses.

A kitchen in a self-contained house is one of the dominating features where there are “modern” facilities like a kitchen sink, electric cooker, refrigerator and cupboards. Although these facilities are found in self-contained houses the electric cooker is rarely used due to high cost of electricity. Charcoal and paraffin stoves are commonly used.

As noted in the case of eating, one may conclude that the combined use of electric cooks and paraffin or charcoal stoves is a duality of modernity and tradition. The desire of people to use modern equipment in Hanna Nassif is hampered by the economic disability, in this case by the households’ limited capacity to afford electricity bills.

The front verandas is not a typical aspect of separation for is its usually a semi-private space. A veranda has an important functional aspect in a coastal weather. It allows breeze to pass through and is therefore a comfortable space to spend time rather than inside the house. Although it originates from the Swahili house type and is therefore regarded as a traditional element, it is surviving modernization because of its important function.

Self-contained houses usually well defined front elevation. The front elevation is defined by the front veranda prominent feature in the traditional Swahili house type. In the traditional Swahili houses the front veranda is simple and recessed to form part of the main house where the roof of the veranda is part of the main house supported by wooden poles. In self-contained houses the veranda can be part of the major house structure or with a separate roof for an extended veranda protruding from the main house. In many instances one finds that the main house is roofed with the corrugated iron sheets or roofing tiles. Veranda is often roofed with a concrete slab. The concrete slab can have more than one function; it can be used as a roof and as a structure to support storage water tanks and a television satellite dish. Special attention seems to be paid to the design of the entrance veranda where flower pots are usually arranged. The front veranda could be regarded as traditional but still modern.

### 3.4. Climatic comfort

Climatic comfort is considered important as a developmental aspect in house design. Climatic comfort is also considered by the people of Hanna Nassif as one of the important factors in a modern house. Big windows, which allow adequate ventilation and light in the house, are considered to be elements of a modern house. One respondent said that:

*I extended my house from four to six rooms. Later on I changed the size of windows because I realized they were small. I can now see a lot of difference on my house. There is more light in the rooms and also cross ventilation which makes the rooms cool to some extent, compared to when the house had small windows. These qualities enhance my idea of a modern house (Interview with Mr. Mpoki, who built a horizontal extension and later changed the size of the windows).*

All 21 houses where in-depth interview were administered have reasonably big windows to facilitate cross-ventilation and adequate lighting. Even though big windows allow more light in to the house; it does not necessarily follow that the house will be cool. This is because houses have been constructed too close to each other blocking cross-ventilation. In the circumstances people are forced to use fans to bring down the room temperature. However, if house had small windows the situation would be worse.

In a hot and humid climate like Dar es Salaam, indoor climate depends on the control of air movement and radiant heat. So it is not only big windows, which can contribute to making sure that indoor comfort is achieved. Other issues contributing to indoor comfort are light and well-insulated roofs, reflective surfaces and designs that ensure the penetration of cool air into the house. Trees surrounding the house contribute to indoor comfort.

Priority for improved outdoor space is considered secondary by the Hanna Nassif resident in relation to increase of indoor space. Outdoor space are used for extensions rather leaving space for a green area. A good design not only considers the four walls of the house but also space around the building. This is maximum utilization of plots. Too little outdoor space is left in each plot, indicating the need to extend houses vertically in order to save outdoor space while at the same time increasing indoor space.

For full maximization of ventilation, it is important not to have enclosure walls, or if enclosure walls like fencing walls are put in place, they should be perforated to obstruct vision but not air movement. Shade is also important for outdoor comfort. In Hanna Nassif there is the provisioning of overhangs and verandas in houses, which provide shade. Much as shade from trees is important, in most of the transformed houses, tree planting for shade has not been taken into account. Plantation of trees which can filter sunlight, reduce air temperature by evaporation and reduce glare have not been part of transformation process in Hanna Nassif. Due to high plot coverage, outdoor place left for tree planting has remained minimal resulting in indoor discomfort despite the improvement of some of the housing elements.

### 3.5. Toilet facilities

Design for health and sanitary standards are considered important in classic modernism especially the developmental aspects of house design.

Improved toilet facilities are also related to modern way of living depending on the type of toilet one has in Hanna Nassif. A clean toilet which is properly ventilated and easy to clean is considered modern as compared to the traditional pit latrine. When they asked what type of toilet facility they prefer, out of 21 interviewees, 20 preferred a toilet which is located in the house rather than a pit latrine. Having a toilet facility contained in the house has the advantages of guaranteeing convenience of use especially during the night.

However, one of the noteworthy disadvantages of a toilet facility incorporated within the house is the bad odor during water shortages. They are equally not suitable for use by large families.

*It is a good thing to have an in-built toilet facility, particularly where the regularly flow of water is guaranteed, as it ensures security among family members after dark. I used to have a pit latrine but I did not like it because it was difficult to keep it clean. When I made an extension I also provided an Indian type flush toilet in the main house (Interview with Mr. Lada, 48 years old, a house owner)*

One of the major problem facing residents of Hanna Nassif and indeed informal settlements at large is connection of clean water. Water supply is uncoordinated and unreliable. Water shortage is a common phenomenon due to water rationing in the city especially during the dry season. Therefore, water is fetched and stored in big containers from other areas within the city. What was observed is that for some of the people who are not connected to water supply system but a flush toilet system are forced to use water buckets to clean toilets after use.

Although most people prefer self-contained houses, as long as the distance from the main house to the toilet is not too far, it is not necessary to have a toilet in the house. What is important is for the toilet to be easily cleaned and well ventilated to reduce odor and the pit should have a lid to keep out flies. Often pit latrines are in bad conditions not having ventilation pipes and are poorly designed for ease of cleanliness. There is a big possibility that they pollute ground water. The 23 residents who have water closet toilets have made provisions for septic tanks and soak away pits. In other cases there are only soak away pits.

Location of toilets inside the main house is an innovation from the traditional practice, where toilets are located outside the house. Flush toilets require skills to fix the accessories making sure that the toilet is functioning well, as compared to the traditional pit latrine in which squatting slab can be built by most artisans.

#### 4. DISCUSSION

It might be considered controversial to discuss modernization of houses in informal settlements where houses are of poor quality and most people living in these houses are low-income earners. The author finds that discussions on modernisation and modernity have to be done carefully. The concepts have to be used in a particular context. The process of transformation of houses taking place in informal settlements in Tanzania, could be related to modernization when considering the process of change which is taking place. This process of change is taking place without involvement of professionals. Pandelaki and Shiozaki (2010) contend that this kind of development needs attention of professionals like Architects and Planners

otherwise there is a compromise on the quality of end product.

Empirical investigations from Hanna Nassif settlement shows that residents have attempted to modernize their houses in terms of the use of “modern” building materials. The term modernization as perceived by many residents of Hanna Nassif means houses constructed with concrete blocks and corrugated iron sheets as compared to houses constructed with mud and poles. Therefore the houses are modern in the context of Hanna Nassif. Such houses when compared with say apartment blocks in Dar es Salaam in high-income areas built from other sophisticated materials like glass and steel, Hanna Nassif houses could be considered less modern.

Larsson (1992:132) states that “housing modernization generally denotes the process whereby traditional housing is being replaced by modern housing”. In the present study it is established that modern materials are being used to replace traditional materials. It may however, be argued that the materials change factor is not enough to make a house modern. As Larsson puts it “tradition and modern housing do not necessarily constitute a dichotomy”. The housing transformation cannot be considered as a one-way procedure that is replacing only traditional elements.

The study further showed that despite the transformations taking place, there are still some elements of the traditional Swahili type house. The traditional elements, which are fast disappearing, include traditional building materials. As already noted, houses built of traditional materials are invariably replaced with “modern” materials. To have a house that is considered modern yet retaining some traditional elements has been observed by Tran Hoai Anh (1999) in a different context.

Housing modernisation through transformation not only takes into account changes from traditional materials like mud and pole to “modern” materials such as concrete blocks and corrugated iron sheets, but also such other changes like spatial organisation. Some houses can be regarded as modern in terms of materials used but maintain traditional features because of their layout. A typical example is the layout of the Swahili house type. Although some Swahili houses are considered modern by the Hanna Nassif people because of the use of concrete blocks, corrugated iron sheets and decorations, the layout is still traditional. For instance the use of space in a Swahili house sometimes change, rooms may be converted for use into a kitchen, a sitting room or a dining room or to make a provision for inbuilt toilets. Nevertheless the layout still remains traditional, where the main features are the front veranda, corridor from where all the rooms are accessed and a communal backyard.

One of the problems inherent in modernism is the emphasis on the use of industrially produced and non-renewable building materials. It has been indicated in the present study that the transformation of houses in informal settlements use such materials. Concrete blocks and corrugated iron



sheets are extensively used in the transformation of houses. These types of materials use non-renewable energy for both production and transportation. Insensitivity in the use of materials is detrimental to the environment for it does not take into account the principles of sustainable development. In order for sustainability to prevail it is important to take into account the use of renewable materials and avoid materials that consume a lot of energy during production. Traditional building materials abundantly found in non-industrialized countries include adobe and rammed earth. Due to the colonial influence and modernism, houses constructed of these materials are considered as temporary and inferior structures

Modern building materials are preferred more than traditional, even though traditional building materials consist of many qualities including suitability to climatic conditions and easy maintenance. There is a need to promote the use and production of local building materials and raise awareness of the potentiality of local building materials. Although traditional materials are regarded to have short life span, there are known options to improve on their quality. A tendency among most people is to build houses by using modern materials available in the market. This encourages the importation of materials which are expensive. This tendency hampers the development of a local/traditional building materials industry. "Modern" building materials are often expensive. They are also standardized and the technology to use them is readily available. Universities, vocational training centers and technical colleges teach on how to use "modern" materials. There has also been a failure on the part of research institutions, which deal with the promotion of local building materials to disseminate information through demonstration or pilot projects of local materials to promote their penetration into everyday housing and building practice. There is thus a need for training institutions, local authorities and private sector organizations such as contractors and producers of building materials to play a leading role in promoting the use of local building materials. This could be achieved through continued experimentation and evaluation of their performance. The government has to provide an enabling environment to facilitate the achievement of desired results through training and research. Developing a local building materials industry is considered important. So far the establishment of this type of industry in Tanzania has not been successful due to the absence of interaction among the available technical resources, institutional mechanisms and user knowledge. There is also a need to assess the available construction technologies with a view to incorporating local materials and suggesting areas of improvement for better performance. One of the features depicting housing modernization in Hanna Nassif settlement is the increase of rooms for rent which is an urban phenomenon related to modernization. Larsson (1990) states that rooms for tenants is a departure from traditional ways of living.

This is also true of the case in Hanna Nassif where residents rent out rooms in houses, which were initially meant for

members of the immediate family only. High rates of urbanization in Tanzania, especially people moving from rural to urban centers creates the demand for rooms for renting. In rural Tanzania people do not rent out rooms or houses. However, due to modernization forces which are also penetrating into rural areas one can assume that in the near future, in rural areas, people will also rent out rooms. The argument here is, changes are not taking place in urban areas only. There are some rural areas which are experiencing drastic changes in housing. Renting out rooms is one of the key sources for house owners to supplement their incomes. Some of the house owners have used the income from room renting to develop their own houses, including extension or alterations. Rooms housing tenants, assist house owners to gain income which can be utilized further for housing development. Room renting is a direct outcome of urbanization and commercialization of houses in the same way as observed in Botswana (Larsson, 1990). . Housing can also be regarded as a process for economic opportunities (Kanyama, 1995; Marcussen, 1990; Habitat, 2004; Tannerfeldt and Ljung, 2006). Modernization has in reality increased the value of a house not only from usage point of view but also as an income-generating venture. Room renting also contributes to the housing stock in the settlement, thereby ameliorating the problem of housing shortage.

Apart from the use of certain building materials the residents of Hanna Nassif identify modernity with clear separation of functions. It was observed that houses for owner occupation tend to have more functional separation than those for renting. Functions such as kitchen, bedroom, sitting room, store, toilet and bathroom. Such houses depict the social status of the owner in the sense that in most cases, people who occupy such houses are economically well-off and thus socially better than those who live in rented premises

Mixed uses particularly in rented rooms provide a challenge to the perception of housing modernisation purely based on the separation of functions. The argument here is that modernization has to be perceived as a process rather than an end in itself. Residents of Hanna Nassif may exaggerate the issue of separation of functions. They stated that a house with separation of functions is considered modern. Most of the interviewees prefer most activities to be separated. This could be linked to colonial influence. There are some functions which could be combined without bringing about conflict of functions for instance dining and sitting room or cooking and dining

The transformed houses illustrate that modernization brings about change in the interaction between individuals and society. Individuals who own modern houses consider themselves to be socially superior in comparison to tenants in rented accommodation. They consider themselves as "modern" because they live in modern houses. They also regard themselves as having fulfilled their aspirations and dreams to own modern houses. The views of Tran Hoai Anh (1999) could be related to what has transpired in Hanna Nassif although her study was conducted in a different

context in terms of culture and class of people. Her study focuses on houses of middle class people. She observes that modernisation brings about the dialectics of change in the relationship between the individual and society. The houses also exhibit that social changes and modernisation have a significant impact on people's views, their vision for the future, their notion about self-identity and awareness and their conception of how to be modern. It was noted in Hanna Nassif that people with good houses command respect among residents within the community. This is not a unique feature limited to the study area. In many parts of Tanzania, even in the rural areas, general knowledge shows that living in a better or a relatively high quality house is considered not only modern but also socially and economically sound.

## 5. CONCLUSIONS

Housing modernization through transformation not only takes into account changes from tradition materials like mud and pole to "modern" materials such as concrete blocks and corrugated iron sheets, but also such other changes like spatio organization. Some houses has been regarded as modern in terms of materials used but maintain traditional features because of their layout.

Modernization has increased the value of a house not only from usage point of view but also as income generating venture. Room renting also contributes to the housing stock in the settlements, thereby ameliorating the problem of housing shortage

Apart from use of certain building materials, the residents identified modernization with clear separation of functions. Extensions were made to create rooms for sleeping, dining, cooking, sitting and resting, toilets and bathing facilities.

There is a need to promote the use and production of local building materials and raise awareness of the potentiality of local building materials. Although tradition materials are regarded to have short life span, there are known options to improve on their quality. A tendency among most people is to build houses by using modern materials available in the market. This encourages the importation of materials which are expensive. This tendency hampers the development of local/traditional building materials industry.

"Modern" building materials are often expensive. They are also standardized and the technology to use them is readily available. Universities, vocational training centers and technical colleges teach on how to use "modern" materials. There has also been a failure on the part of research institutions, which deal with the promotion of local building materials to disseminate information through demonstration or pilot projects of local materials to promote their penetration into everyday housing and building practice. There is thus a need for training institutions, local authorities and private sector organizations such as contractors and producers of building materials to play a leading role in promoting the use of local building materials. This could be achieved through continued experimentation and evaluation of their performance. The government has to

provide an enabling environment to facilitate the achievement of desired results through training and research. Developing a local building materials industry is considered important. So far the establishment of this type of industry in Tanzania has not been successful due to the absence of interaction among the available technical resources, institutional mechanisms and user knowledge. There is also a need to assess the available construction technologies with a view to incorporating local materials and suggesting areas of improvement for better performance. This could facilitate better accessibility to improved local building materials.

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