# POVERTY ALLEVIATION BY USING LABOUR BASED INFRASTRUCTURE PROVISION IN INFORMAL SETTLEMENTS.

## THE CASE OF DAR ES SALAAM CITY (TANZANIA)

By

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DECLARATION.

With this statement I, Sarah Phoya, affirm that the research work upon which this thesis is supported on, is my own (except where acknowledgements indicate otherwise), and that neither the entire research endeavour nor any part of it has been, is being or is to be submitted for another degree in this or any other education institution.

Sarah Phoya August 2005

I dedicate this work to my family, in special to the man of my life, my husband Mr. Frumence and to my two beautiful daughters, Irene and Lorine.

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## ABBREVIATIONS

| | |
|---|---|
| CBO | Community-based Organization |
| CDC | Community Development Committee |
| CDC | Community Development Committee |
| CHS | Centre for Human Settlements |
| EMP | Environmental Planning and Management |
| FPI | Focal Point Institution |
| GDP | Gross income Per capita |
| GSS | Global Shelter Strategy |
| Habitat I | First United Nations Conference on Human Settlements |
| Habitat II | Second United Nations Conference on Human Settlements |
| HBS | Household Budget Survey |
| ILFS | Integrated Labour Force Survey |
| ILO | International Labour Organization |
| LBT | Labour Based Technology |
| MDT | (ILO) Multidisciplinary Advisory Team |
| NEPAD | New Partnership for Africa's Development |
| NGO | Non-governmental Organisation |
| PRSP | Poverty Strategy Paper |
| SDP | Sustainable Dar es Salaam Project |
| SMEs | Small and Medium Enterprises |
| TST | Technical Support Team |
| T.SHS | Tanzania Shillings |
| UCLAS | University College of Lands and Architectural studies |
| UNCED | United Nations Conference on Environment and Development |
| UNCHS | United Nations Centre for Human Settlements (Habitat) |
| UNDP | United Nations Development Programme |
| URT | United Republic of Tanzania |
| USA | United State of America |
| ZAR | South African Rand |

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# POVERTY ALLEVIATION BY USING LABOUR BASED INFRASTRUCTURE PROVISION IN INFORMAL SETTEMENTS: THE CASE OF DAR ES SALAAM CITY (TANZANIA).

By

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Chair: Dr Theodore Conrad Haupt
Major Department: Built Environment.

Labour based technology (LBT) is a strategy popularised by international organisations such as International Labour Organisation (ILO), United Nations Development Programme (UNDP) and Word Bank, to address poverty, unemployment and infrastructure provision especially in informal urban settlements. More emphasis has been placed on using the LBT approach in sub-Saharan countries where unprecedented urbanisation is taking place leading to the formation of informal settlements, high levels of unemployment as well as poverty. The LBT approach has been implemented in many developing countries including Dar es Salaam in Tanzania. However, there is little available evidence on the long-term impact of LBT on poverty alleviation and employment creation opportunities.

This study examined whether the labour-based approach to delivering infrastructure in informal settlements had impacted poverty alleviation and created sustainable employment opportunities. The study had five main objectives namely (1) To explore the situation of infrastructure in Dar es salaam informal settlements; (2) To examine LBT with respect to the nature and characteristics of the various forms used in practice to understand the advantages and disadvantages of each form; (3) To identify the nature of LBT approaches used to upgrade informal settlements; (4) To explore the extent to which LBT in infrastructure provision can contribute to creating employment and alleviating poverty; and (5) To examine the extent of private sector involvement and community participation in present LBT approach in the three settlements.

Literature was reviewed on using LBT approach to deliver infrastructure in informal settlements and its impact on poverty alleviation and creation of sustainable employment opportunities. The residents within the Hanna Nassif, Mabatini and Tabata informal settlements in Dar es Salaam Tanzania, were interviewed who participated in infrastructure provision projects. Semi-structured interviews were held with the community based organisations (CBOs), and local government authorities in the respective settlements.

The study suggests that the LBT approach to deliver infrastructure in informal settlements has the potential to create large-scale employment opportunities as well as alleviate poverty. However, the extent of the effectiveness of the LBT approach to create large-scale employment and alleviate poverty is dependant on several factors such as the type of the project; duration of the project; the level of the wages paid, and the measure of skills transferred

# CHAPTER 1
# BACKGROUND INFORMATION

## Introduction

Urbanisation, poverty reduction and employment are at the top of the development agenda in 21st century, be it at an international, regional or national level (Terje, 2003). These are the problems that development practitioners and policy makers continue to face even after more than half a century of development efforts (Islam, 2001). Commitments by development agencies such as the World Bank, the Bilateral Donor Organisations and various regional initiatives, namely, the New Partnership for Africa Development (NEPAD) in Africa, all illustrate the high level at which the issue of urbanisation, poverty and unemployment are placed (Tarje, 2003). According to the World Bank (2004), the world is out of balance. The number of people living in the world today is about six billion of whom more than one billion barely survive on less than one US dollar a day (approx ZAR 7). In 2000 about 1.1 billion people, almost one person in every five, lived on less than one US dollar per day, and almost half the world's people lived on less than two US dollars per day.

The challenges of population growth and poverty are greatest in sub- Saharan Africa which in 2000 had a population of 653 million people. The population growth rate is currently around 3%. The population is projected to reach 854 million people by the year 2010 (Thorndahl, 2003). The number of people living on an income of less than one US dollar per day increased from 243 million to 302 million people between 1990 and 1998.

Moreover, these figures are estimated as conservative, as Table 1.1 shows. The numbers for 2004 are estimated to reach 323 million and 336 million by 2015. Parallel to this population growth is the critical problem of high rates of unemployment (International Labour Office (ILO), 2003).

Table 1.1: Number of people living in poverty (millions)

| Region | People living on less than US$1 per day | | | People living on less than US$2 per day | | |
|---|---|---|---|---|---|---|
| | 1990 | 2004 | 2015 | 1990 | 2004 | 2015 |
| East Asia and Pacific | 470 | 261 | 44 | 1,094 | 873 | 354 |
| Excluding China | 110 | 57 | 3 | 295 | 273 | 98 |
| Europe and Central Asia | 6 | 20 | 6 | 31 | 101 | 48 |
| Latin America and the Caribbean | 48 | 56 | 46 | 121 | 136 | 124 |
| Middle East and North Africa | 5 | 8 | 4 | 50 | 72 | 38 |
| South Asia | 466 | 432 | 268 | 971 | 1,052 | 968 |
| Sub-Saharan Africa | 241 | 323 | 366 | 383 | 504 | 612 |
| Total | 1,237 | 1,100 | 734 | 2,653 | 2,737 | 2,144 |
| Excluding China | 877 | 896 | 692 | 1,854 | 2,138 | 1,888 |

Note: One US dollar is approximately ZAR 7
Source: World Bank, 2004

**Urbanisation Situation**

Significant proportions of population increases have been and will be absorbed in urban areas (UNCHS, 2000). The State of the World's Cities Report 2001, published by the United Nations Settlements Development Programme, which since 2002 has been known as UN-Habitat, presents several findings relative to urbanisation. Nearly 50% (3 billion) of the world's population lives in cities. The urban share of the total population is expanding; worldwide the urbanisation rate is about 0.8% (UNCHS, 2001). The fastest growth is in the developing countries where it is estimated there will be more than

150,000 new urban residents per day by 2006. By 2015, for the first time in history, more people in developing countries will live in urban rather than in rural areas (Thornndahl, 2003). African countries are facing the most serious situation since 34% of Africa's populations live in cities. At the average urbanisation rate of 1.6%, this proportion will increase to 46% in 2020. Since rapid growth of cities in Africa started only 40 years ago (after most African countries obtained their independence) these figures are alarming (Ameyibar & Basteck, 2003).

Cities are growing in three distinct ways: in number, in area and in population. For example the population growth rate in sub- Saharan Africa is 4% to 7% per year (Kombe & Kreibich 2000). While cities in developed countries are expanding in area because of growing affluence, in Africa the increasing demand for urban space is determined by population growth and rural-urban migration (Kreibich, 2000). One reason for this migration is the prospects that a city offers in the form of employment, housing and better standards of living. Young people from rural areas especially see no future in their home villages and move to the agglomerations. People are still coming into these cities where their children are being born since they believe that better lives lie ahead of them (Hall, 2000). Under this pressure of urbanisation the cities are confronted with several problems. The population has to be provided with land, housing, jobs and services. But city administrations are unable to cope with the demand for these provisions, because they lack resources in manpower and finances. According to Srivinas (2000), the cities are not prepared for the high magnitude of growth. Investment in infrastructure, including housing, has failed to keep pace with the growth in population, which in turn, leads to the formation of informal settlements with very high levels of poverty and poor

services, such as access roads, running water, drainage, sanitation and solid waste facilities.

The growth of informal settlements is more serious in sub-Saharan African countries. According to evidence from the World Bank (1991), since 1970, more than half of the cities in the developing world were estimated to have more than 40% of their population in slums and squatter settlements (Jinchang, 1997; Sethuraman, 1997). Further, research conducted in the majority of the cities in 1980 indicates that the situation was even worse in certain cities, for example, Addis Ababa, 85%; Luanda, 70%; Dar es Salaam, 60%; Bogota, 59%; Ankara, 51%; Lusaka, 50%; Tunis, 45%; and Karachi, 37%. (UNCHS, 1987; Jinchang, 1997)

In Tanzania the situation is worse as it remains one of the most rapidly urbanising countries in sub-Saharan Africa. Its annual urban growth rate is estimated at around 8% to 10% (Kilonde, 1994; Nguluma, 2003). The total population of Tanzania was 34.6 million in the year 2002 (URT, 2002). About 30% of the national population lived in Dar es Salaam (Nguluma, 2003). About 70% of the city population lives in unplanned settlements with marginal access to tap water, sewage systems, infrastructure or basic social services (Sustainable Dar es Salaam Project (SDP), 1992; United Republic of Tanzania (URT), 1996; Nguluma, 2003).

The major problems in these unplanned settlements revolve around people living in congested and overcrowded areas lacking basic services such as access roads, sanitation, drainage and solid waste management. There is also a lack of community facilities such as playgrounds and parks, public facilities such as dispensaries, schools and markets as

well as lack of income livelihood opportunities for their inhabitants. Poverty levels are very high in these areas. According to the Human Development Report 1992 of the United Nations Development Program (UNDP), the rate of urban poverty has increased by about 7% a year particularly in urban slum and squatter settlements. Poor people living in these areas face social and economic exclusion, with limited access to basic social infrastructure.

Inhabitants of these informal settlements are living with high rates of poverty due to a lack of employment opportunities (Islam, 2001). The only resource available to these areas is often the labour of the inhabitants. Employment is the key that unlocks the door of economic and social development (Samir, 1997). It is also a critical entry point to achieving the two goals of "adequate shelter for all", and "sustainable human settlements in an urbanising world" that were targeted by the international community during the Second United Nations Conference on Human Settlements (Habitat II), in Istanbul in June 1996 (Jingchang, 1997). At the International Colloquium of Mayors on Social Development held in New York in 1994, mayors from both the developing and developed world identified urban unemployment and inadequate social services as top priorities. Employment, therefore, is still the best route out of poverty (Carl, 1996).

**Urban poverty alleviation**

The definition of poverty is a matter of considerable controversy as different scholars define it differently. The differences partly revolve around the personal perspective taken. According to Mbughuni (1994), one may take the global, continental, national, regional or the individual perspective. Accordingly, poverty is perceived on the

basis of indices, which define the social status of a person or a group of people relative to the others or other social groups and social organisations of the respective community (Liviga & Mekacha, 1998). The World Bank (2000) defines poverty as the "inability to attain an accepted minimum standard of living". In the urban context, it refers to those families, who fail to meet basic needs and enjoy adequate access to social services and capital, which leads them to live below the official urban development standards. According to Lloyd-Jones and Brown (2002), households or individuals are considered poor when the resources they command are insufficient to enable them to consume sufficient goods and services to achieve a reasonable minimum level of welfare. Furthermore, even within a particular setting, poverty is more prominent among marginalised groups such as women, youth, the elderly and the handicapped. Poverty essentially has three closely interrelated aspects: "poverty of money", "poverty of access" and "poverty of power"(UNCHS, 2000). These make the working, living and social environments of the poor extremely insecure and severely limit the options available to them to improve their lives. Without choices and security, breaking the cycle of poverty becomes virtually impossible and leads to the marginalisation and alienation of the poor from society.

In the effort to alleviate poverty globally, various social and economical programmes have been introduced. The key issue is to create more employment and at the same time eradicating poverty. Among these programmes, various researchers and available literature have identified Labour-Based Technology as an approach to poverty alleviation and infrastructure provision and delivery. This approach has been proven to have a greater impact on creating employment while at the same time eradicating poverty

(Miller, 1996; Veen, 1996; Keddman, 1998; Taylor & Bekabye, 1999; Islam, 2001; Majeres & Veen, 2001; Mustafa, 2002).

According to *ILO (1996)*, the adoption of Labour Based construction methods in infrastructure such as basic services like roads, markets, housing, sanitation, drainage and waste management create more employment while at the same time reducing poverty. Islam, (2001) also emphasises that labour-based technology (LBT) is the best way to contribute to growth while creating jobs for the poor. Public investment programmes and particularly those in infrastructure have a huge employment creation potential in developing countries (ILO, 2003). Thorndahl (2003) argues that LBT offers the opportunity of employment to segments of the population who are often not in formal employment, including a high proportion of women and rural workers.

The Millennium Development Goal (MDG) set out by the UN Millennium Summit held in New York in 2000, established bold targets for poverty reduction to be achieved in a short time. Their key goal, to be reached by 2015, is to halve the number of people who in 1990, were living on less than one US dollar. To reach the Millennium Development Goal, many initiatives have been adopted that include using LBT in infrastructure provision and delivery (ILO, 2003; World Bank, 2003; 2004). There have been several other international policies which emphasise the issues of poverty and employment by using LBT in infrastructure provision and delivery. These include the ILO mandate on poverty alleviation of 1944, the ILO employment policy of 1964, Global Shelter Strategies (GSS) of 1988, the Recife Declaration, Agenda 21 of the United Nations Conference on Environment and Development (UNCED), The Copenhagen

Declaration and Programme Action, Habitat Agenda and Urban Employment Charter (Jingchang, 1997; ILO, 1998; UNCHS, 2000).

**Labour- Based Technology (LBT).**

Labour-based technology (LBT) is a structured method of providing or maintaining infrastructure to a specified standard, while optimising the use of labour, and employing people with fair working conditions. The use of labour is supplemented with appropriate equipment where necessary for reasons of quality or cost. LBT is a supervision-intensive system. It incorporates the idea of optimising the mix of labour and equipment to produce a cost-effective result. The main objective of this method is to create employment opportunities and alleviate poverty. In addition to these primary objectives, these programmes also pursue objectives relating to the creation of infrastructure and other assets (ILO, 1993; ILO, 1996; Majeres & Veen, 2001).

The term "labour-based" indicates that a flexible and optimum use is made of labour as a predominant resource, accompanied by appropriate light equipment to ensure cost-effective and quality aspects in construction. It therefore implies properly planned use of labour in economically efficient, humanly fair and hence sustainable manners. It produces technically sound results, socially and economically competitive with alternative equipment-based methods (ILO, 1996).

## Statement of the Problem

Considering that Dar es Salaam is facing increasing poverty, population growth and the lack of sustainable employment, especially in informal settlements which are characterised by a poor infrastructure, providing this basic and necessary infrastructure, employment opportunities and poverty alleviation in informal settlements remains a fundamental problem which it is argued could be addressed by following an LBT approach involving community participation.

## Hypotheses.

### Hypothesis 1

Informal settlements in Dar es Salaam are lacked basic infrastructure.

### Hypothesis 2

The provision of infrastructure and social services in informal settlements using LBT creates large-scale employment.

### Hypothesis 3

The provision and delivery of infrastructure in informal settlements using LBT reduces the level of poverty in the settlements

### Hypothesis 4

Lack of understanding of the potential benefits of the LBT approach hinders infrastructure provision in informal settlements.

### Hypothesis 5

Present LBT approaches do not promote community participation.

## Objectives.

The primary objective of the study is to investigate the impact of LBT in informal settlements with regard to poverty alleviation, provision of social services, infrastructure and employment creation or opportunities. This goal will be achieved through the following specific objectives, namely

1. To explore the status of basic infrastructure in informal settlements in Dar es Salaam
2. To examine LBT with respect to the nature and characteristics of the various forms used in practice to understand the advantages and disadvantages of each form.
3. To identify the nature of LBT approaches used to upgrade informal settlements.
4. To explore the extent to which LBT in infrastructure provision can contribute to creating employment and alleviating poverty.
5. To examine the extent of community participation in present LBT approach in the three informal settlements.

## Research Methodology

The research approach will be based on both qualitative and quantitative methods to achieve each objective as summarised in Figure 1.1.

The literature will be reviewed relative to the use of LBT to reduce poverty and create employment while delivering infrastructure. The sources of information will include books, newspapers, newsletters, journals, seminars, and workshop reports.

Data will be collected on the LBT approaches used in the three settlements as well as the extent of community participation. This data will be gathered from members of each of the communities, local authorities and members of the construction project teams.

The data gathered will be analysed using the Statistical Package for the Social Sciences (SPSS). The findings from this analysis will be discussed and compared with the literature reviewed. Conclusions will be drawn and recommendations formulated from the findings of the study. Figure 1.1 summarises methods which will be used to achieved each objective.

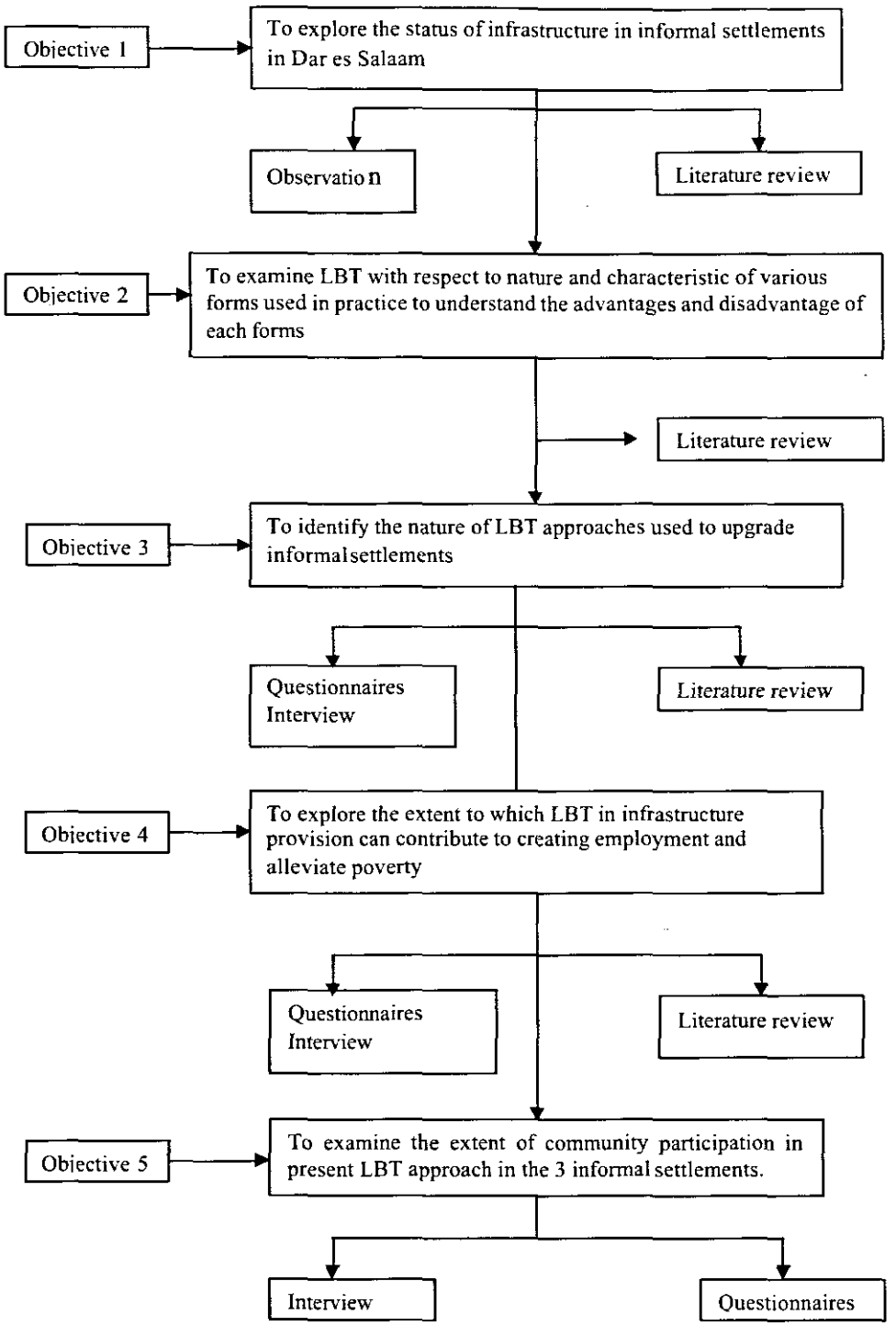


Figure 1.1: Research methodology

## Limitation of the Research

The study will be limited to Dar es Salaam with emphasis on three informal settlements, namely Hanna Nasif, Tabata and Temeke. The infrastructure in these settlements has been upgraded using LBT. The research will be completed in South Africa with data collected in Dar es Salaam. The project is intended to be completed by October 2005.

## Definitions of Key Terms and Concepts

**Poverty**. This is the inability of people to attain an accepted minimum standard of living. In the urban context, it refers to those families, which fail to meet basic needs and enjoy adequate access to social services and capital, which leads them to live below the official urban development standards (World Bank, 2000).

**Poverty alleviation.** This is the process of improving livelihoods of poor people (World Bank, 2000).

**Labour based Technology**. Structured method of providing or maintaining infrastructure to a specified standard, while optimising the use of labour, and employing people with fair working conditions (ILO, 1996).

**Informal settlement.** This is a dense settlement comprising communities housed in self-constructed shelter under condition of informal land tenure (Hindson & Cartery, 1994).

**Infrastructure**. This is physical infrastructure, which includes water supply, access roads, sanitation facilities, drainage systems and solid waste management (Menendez, 1991).

**Upgrading**. This is the improvement of physical infrastructure such as access roads, drainage systems, sanitation facilities, water supply and solid waste management (World Bank, 1996).

## Assumptions

It is assumed that all participants in this study will give accurate feedback on their experiences with LBT and that access will be given to any relevant documentation on the LBT approach followed in the three settlements.

## Ethical

To comply with internationally accepted ethical standards, no names of individuals will be recorded on research instruments. In this way no individual will be linked to a particular completed instruments, thus assuring anonymity No compensation will be paid to any of the respondents for the participation in the study. Quality assurance will be done with respect to the following aspects:

- General conduct and competence of interviewers where interviews and surveys are conducted;
- Correctness and completeness of responses especially where open ended questions are concerned;
- Quality of data capturing by encoders; and
- Frequency distributions run to check that all variables contain only values in the accepted ranges and variable labels.

## Organisation of the Study

The introductory chapter outlines the research problem addressed by this study. It also sets out the objectives of the study and includes a brief description of the research methodology that will be used.

The literature on urbanisation and situations of Dar es Salaam informalsettlements, including poverty and unemployment in informal settlements, government initiatives in poverty alleviation and provision of infrastructure in informal settlements will be reviewed in chapter two. In chapter three the literature on applications of the LBT in informal settlements is reviewed.

The methodology used in the study is discussed in chapter four. The analysis of the data is described in chapter five. The research findings are discussed and compared with the findings of the literature in chapter six.

Chapter seven concludes the study and highlights any recommendations as well as recommendations for further study

# CHAPTER 2
# INFORMAL SETTLEMENTS IN DAR ES SALAAM.

As the previous chapter presented background to the research, this one provides an overview of urbanisation and the situation regarding infrastructure in Dar es Salaam informal settlements. Given the close relationship between infrastructure, employment and poverty in informal settlements, the chapter reviews these factors together with the government initiatives to reduce poverty in Tanzania, as a country in general and specifically, focusing on conditions in the informal settlements. The government upgrading informal settlements initiatives and previous response to informal settlements together with policy contexts and institutional framework are discussed in this chapter.

## City of Dar es salaam

The City of Dar es Salaam known as the "Haven of Peace" is the industrial, commercial and governmental centre of Tanzania. It serves the nation (and several neighbouring land-locked countries) through its natural harbour and communication linkages. This city is located along the eastern shores of the Indian Ocean, covering an area of 1,350 square kilometres. The population is 3 million with the growth rate of 8% per annum - one of the highest in sub-Saharan Africa. Table 2.1 illustrates population growth in Tanzania and Dar es Salaam.

Table 2.1: Basic facts on Tanzania and Dar es Salaam.

| | Tanzania | Dar es Salaam |
|---|---|---|
| Area | 945,000km$^2$ | 1350km$^2$ |
| Population | Approx. 30 million | Approx.3million |
| Growth rate | 2.8% | 8% |
| Urbanisation | Estimated 20% | |
| Poverty | 50% of the total population and 60% of the rural population are below the poverty line | |

(Source: URT, 2002; Nguluma 2003).

Dar es Salaam was founded in the 1860s as a summer residence for the sultan of Zanzibar and developed by Germany colonial interests after 1885 (SPD, 1992; Ferrera, 1994; Sanya 1997).

In 1891, it became the capital of German East Africa. Dar es Salaam passed to British control in 1916, and its main growth as a modern city began in the 1940s. It became the capital of newly independent Tanganyika in 1961 and continued as the seat of administration when Tanganyika and Zanzibar merged to form Tanzania in 1964. Dar es Salaam is currently seven times larger than the next largest urban centre of Mwanza (Sheuya, 1997; Nguluma, 2003). The city is divided into three districts or municipalities: Temeke, Ilala and Kinondoni. There are three different levels of locally elected "urban" councils, namely urban, municipal, and city, representing small, medium and large cities, respectively. All of these local authorities have responsibility for the provision of infrastructure services within urban boundaries and are the legal owners of these assets (Slauza, 2002).

**Urbanisation and Formation of Informal Settlements**

Dar es Salaam has experienced rapid urban growth in the last two decades accounting for about 30% of the total population of Tanzania (Burra, 1997; Nguruma, 2003). It has been regarded as the main destination in rural-urban migration, which the country has witnessed since its political independence in 1961 (Oyieke, Nnkya & Kofi, 1997). Rural-urban migration and natural growth equally shared the increase in Dar es Salaam's population to date (CHS, 1995).

In the past ten years, the population of Dar es Salaam has doubled as shown in Figure 2.1 below. This urbanisation trend implies a huge deficit of housing, particularly for low-income urbanites. Due to limited formal housing provision and resource constraints, the rapid population growth has impacted on the emergence, growth and proliferation of informal settlements.

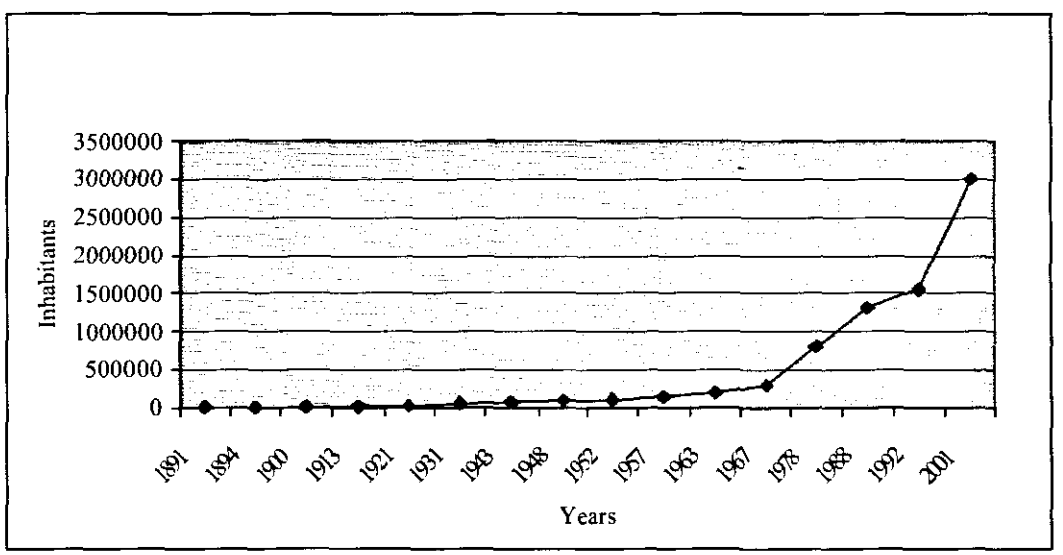


Figure 2.1: Population Growth of Dar es Salaam 1891-2001. (Sources: National Population Centre Report, 1988; Kilonde, 1994; Strategic plan 1998 & Nguluma 2003).

Efforts to plan the development of Dar es Salaam started in 1984 when the first Master Plan was prepared. The Master Plan introduced general guidelines for development of the city, which led to the construction of low-cost tenant houses near the city centre around the harbour. After independence in 1961, housing was in short supply because of high rural-urban migration, and squatting increased rapidly. Initially, attempts were made to clear the slum areas, but in 1972 the government changed its policy and ordered that squatter settlements be improved rather than being demolished (SPD, 1992; URT, 1996).

In the 1978 Master Plan, squatting was accepted and the focus shifted to uplifting these areas (CHS, 1995). To date, about 70% of the city population live in unplanned settlements with marginal access to tap water, sewage systems, infrastructure or basic social services (ILO, 1998; URT, 2002; Nguluma 2003). A survey conducted in 1999, under the Sustainable Dar es Salaam Project, indicates that there are about 54 informal settlements widely distributed throughout the most urbanised parts of the Dar es Salaam region (Figure 2.2). Some of the largest are located close to the main arterial routes especially Kilwa, Morogoro, Nelson Mandela, and Pugu roads (Amer and Thorborg, 1996). Figure 2.2 shows the geographical area in which these informal settlements are scattered around Dar es Salaam.

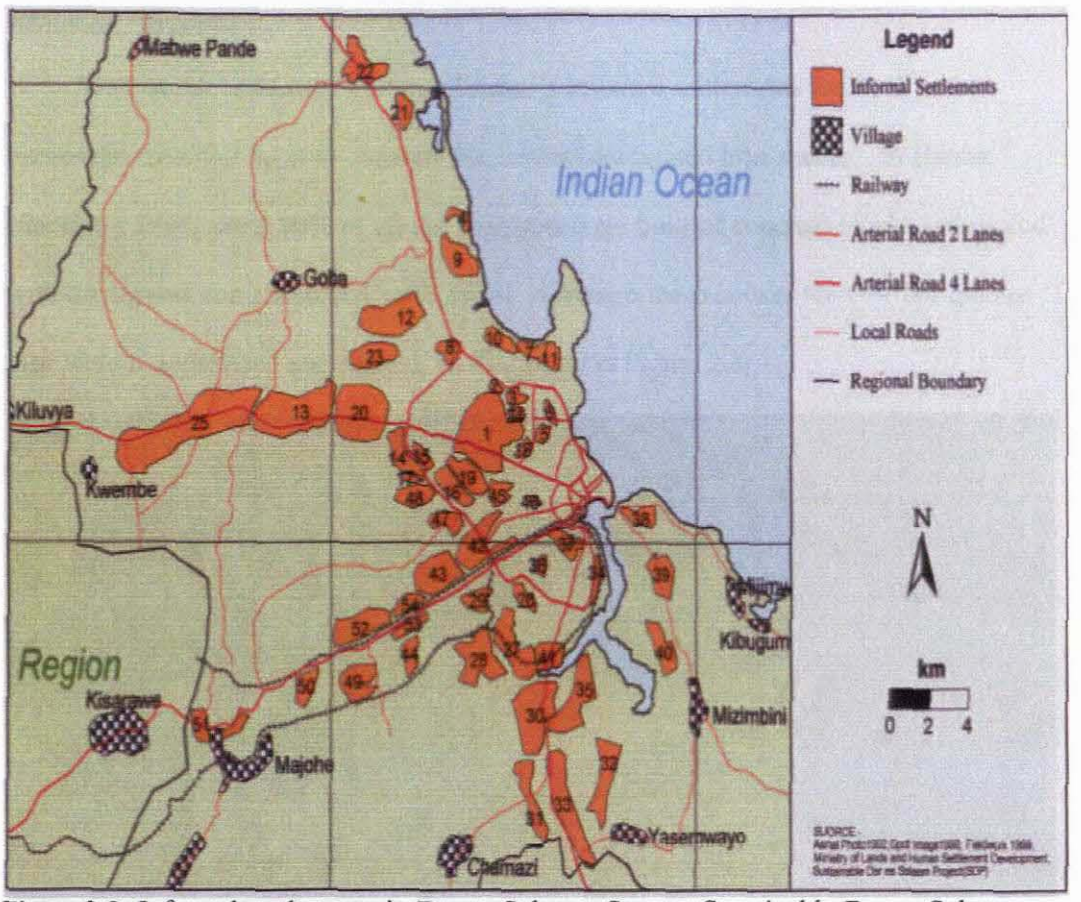


Figure 2.2: Informal settlements in Dar es Salaam. Source. Sustainable Dar es Salaam project (1999)(used with permission: attached in appendix B)

**Situation of infrastructure in Informal Settlements in Dar es Salaam.**

Having explored the formation of informal settlements in Dar es Salaam, this section provides the information on the status of infrastructure in these informal settlements. The infrastructure discussed in this section include housing; access roads and footpaths; water supply system; sewerage and sanitation; drainage system; and solid waste.

**Housing Situation**

Most of the buildings in Dar es Salaam's informal settlements are built with permanent materials such as concrete blocks and corrugated iron sheets. In Hanna Nassif, by 1998, about 90% of all the buildings were built of concrete blocks and roofed with corrugated iron sheets (UCLAS 1998). Although these houses were of fair quality they were not plastered nor painted, as illustrated in Figure 2.3.

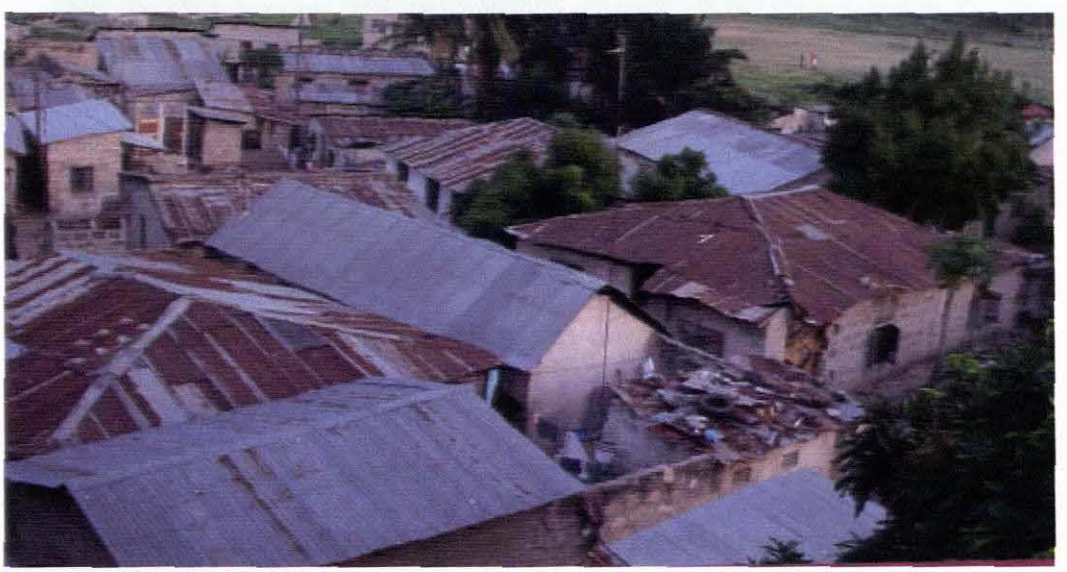

Figure 2.3: Situation of houses in Kigogo informal settlement. February 2005

**Access Roads and Footpaths.**

Access roads and footpaths are a major problem in informal settlements. The majority of houses are not accessible by car. Due to the fact that these informal settlements are unplanned, paved roads or footpaths are often absent. Houses are constructed very close in such a way that there is no provision of pathways as illustrated in Figure 2.4. In other informal settlements where there is provision of pathways those pathways are narrow and earthen as shown in figure 2.5.

Figure 2.4: Houses constructed very close in Kigogo informal settlement. February 2005

Figure 2.5: Pathway to interior Kigogo informal settlements. February 2005

During rainy seasons, such pathways are easily eroded, making mobility within the informal settlement risky and inconvenient. Vehicular access into the settlement's interior is difficult and causes problems especially for local traders when restocking their businesses. The inadequacy of access also implies that ambulances or fire engines cannot access victims in cases of emergency. Consequently people die or lose property through infernos just because they are beyond the reach of emergency services. According to the survey conducted in 1998 by the University College of Lands and Architectural Studies (UCLAS) in the Hanna Nassif settlement, about 60% of households were not accessible by road (UCLAS, 1998; Nguluma, 2003).

As these settlements need to connect to other areas unplanned linkage routes have been established. However, most of the main roads to informal settlements are earthen which means during the rainy season they are easily eroded and flooded as figures 2.6 and 2.7 show. Therefore transportation becomes difficult in these areas.

Figure 2.6: Main road to Mbezi informal settlement. January 2005.

Figure 2.7: Main road to Keko informal settlement (Source: SPD, 2002).

**Water Supply**

Water is another critical condition facing the informal settlements with many having no supply at all. Most people travel long distances to collect water for domestic use since there is no adequate supply of public taps (Lugalla, 1997). Long and time-consuming queues of mostly women and children are therefore a common feature in the settlements. Some people buy water at very high prices (Water Aid and Tearfund, 2003). Based on a 2001 survey of 4000 homes, it was revealed that only 11% of district residents had a private water connection through Dar es Salaam's water utility service, DAWASA (Dar es Salaam Water and Sewage Authority).

The remainder of the population obtained water through traditional wells, community kiosks, or purchased water from privately owned wells or water vendors. Women and girls were found to bear the primary burden of water collecting activities, frequently walking long distances and/ or waiting for long periods before obtaining water (International water and sanitation centre, 2003). Some of the residents get their water

from dug wells, ponds, streams, and polluted rivers. For example, one of the residents from Vingunguti settlement complained to one of the researchers, stating that:

> The river is filthy. It accommodates everything – human remains, industrial waste, and all waste from Vingunguti abattoir flow into this river. People bathe and some defecate and children play and swim throughout the day. The whole river basin stinks. But a lot of us get our domestic water from here. I have no doubt that the several diseases we suffer from are manufactured here. We are poor! We have no alternative. We have complained to the city fathers, some of them have even visited these areas and promised to do something but nothing has happened so far. Instead of solving our problems, they keep on sending to us researchers like you. We have seen several people of your kind but our situation has not changed. Go and tell your bosses that we want good water, electricity and dispensaries and not research! We know that you people are using our situation of poverty in order to enrich yourselves. We are tired now (Lugalla. 1997: 6)

Zainabu Rajabu from Tungi Street in Temeke informal settlement explained her daily experience of getting water as follows:

> "I have to wake up early, around five am every day, before people go to mosque for morning prayers. I can spend 30 minutes collecting up to five small buckets of water. We normally have to ensure that we reach the place before the water vendor comes, as they push us backwards when they collect the water. We are not strong enough to resist which means we have to wait longer and sometimes, we don't even get to reach the water. We are forced to buy water from a vendor taken from the same source for as much as 100 T shillings or more per can" (Water Aid and Tearfund, 2003: 26).

**Sewerage and Sanitation**

In general, low incomes, poor water supply, and absence of infrastructure in informal settlements translate into poor sanitation as well. Traditional pit latrines are the most commonly used form of sanitation, as there is no water–borne sewage system in the settlements. Small numbers of people have flush toilets, while others with no sanitation at all opt to defecate in the rivers. Data collected by the University College of Lands and Architectural Studies (UCLAS) in Hanna Nassif in 1998 indicate that 93% were using pit latrines as a form of sanitation (Nguluma, 2003). In the Vingunguti settlement only 9.4%

had flush toilets, 5.4% had no system of sanitation, and the rest were using pit latrines (Lugalla 1997). In the Temeke settlement only 1.3% had septic tanks, 22.5% used open defecation and the rest used pit latrines (Water Aid and Tearfund 2003).

The existing latrines are generally in a deplorable and dangerous condition. Most have no covers for the pit openings and have very unstable floors. The fact that latrines are shallow and are not emptied results in unsanitary conditions which are at their worst during the rainy season when the whole place is flooded (Lugalla, 1997). Notwithstanding, the system of emptying is not adequate since the city council is unable to provide trucks for this purpose. Even if they could provide trucks, the cost of such services are unaffordable to most of the people (Ibid). Evidently, the situation is dangerous for children and human habitation.

**Drainage System**

Household wastewater and storm water are the main sources of running loose water. As the drainage system is poor and there is frequently no conscious provision made for it, wastewater is easily disposed of on the paths / drains outside the houses. This situation leads to pools of dirty stagnant water, especially if the wastewater does not find its way to the rivers. During the rainy season floods occur especially in the low-lying ground and in shallow pit latrines that heighten the health risks. In Hanna Nassif, for example, before upgrading initiatives were undertaken between 1993-2000, the drainage condition in the settlement was very poor. On the 10th of May 1991, it rained heavily, 72 houses collapsed and the whole of the central depressed area was flooded. Pit latrines were flooded and human excreta got mixed with rainwater. Together with uncollected

solid waste, the settlement was reduced to an unhealthy living environment (ILO, 1998; Nguluma, 2003).

**Waste Disposal**

Facilities for disposing of garbage are lacking in the informal settlements. Consequently, most urban residents and operators have to bury or burn their waste or dispose it off haphazardly. Common features of African urban areas are stinking heaps of uncollected waste. Waste is disposed off carelessly at roadsides, in open spaces, or in valleys and drains as shown in figures 2.8 and 2.9, which exhibit that garbage is left uncollected along the roadsides and untreated for a long time.

Figure 2.8: Waste was disposed of haphazardly at roadsides in the Kigogo informal settlement. Jan 2005

Figure 2.9: Waste was disposed in valleys and drains in Hanna Nassif informal settlement. Jan 2005.

As a matter of fact only 15.2% of those surveyed in Vingunguti settlement have waste pits. Nearly 60 % of the residents deposit their garbage outside their houses and 23.4% diposit it on their streets (Lugalla, 1997). In Temeke informal settlements, only 2% benefit from solid waste collection by the city (Water Aid and Tearfund 2003).

**Unemployment Situation.**

Tanzania has experienced a major employment problem throughout the 1990s due to the weak performance of the economy in the 1980s and continuing economic stagnation (United Republic of Tanzania (URT), 1996; 2001). The streamlining of the civil service in the late 1980s and early 1990s and the privatisation of the public sector in the 1990s have contributed to the reduction of employment in the formal sector (Nkya, 2002).

The Integrated Labour Force Survey (ILFS) 2000/01 showed that overall unemployment increased substantially and that it is higher amongst women than men in urban areas. Unemployment was particularly high amongst people of aged between 15 and 34 (URT, 2000/01). Table 2.2 shows that Dar es Salaam has the highest unemployment rate. It has increased from 22% in 1990/91 to 26% in 2000/01, while in the rural areas the unemployment rate has remained constant. In other urban areas, the rate of unemployment increased from 6% in 1990/91 to 10% in 2000/01. This situation revealed that the unemployment problem is great in urban areas, and affects more woman than men.

Table 2.2: Unemployment rates by sex and by geographical location

| Sex | Dar es Salaam | | Other Urban | | Rural | |
|---|---|---|---|---|---|---|
| | *1991/92* | *2000/01* | *1991/92* | *2000/01* | *1991/92* | *2000/01* |
| Male | 11% | 19% | 4% | 8% | 2% | 2% |
| Female | 39% | 35% | 7% | 15% | 2% | 2% |
| Total | 22% | 26% | 6% | 10% | 2% | 2% |

(Source: URT, 2000/01)

This employment predicament is particularly critical in informal settlements given that they need to purchase with cash food and other essentials such as ensuring better

housing (IFPRI 2001). The average income earner in the Dar es Salaam is responsible for supporting four people, a significant burden given a low level of earnings. Less than one quarter of household heads are able to take on an additional job to supplement income (ibid). The majority of people are self-employed, rather than wage earners.

The research conducted in Temeke informal settlement showed that nearly one out of every five residents were seasonally employed, meaning they were part-time farmers cultivating small plots in vacant spaces of the semi-urban areas, or part time employees to companies around the cities.

However, Table 2.3 gives an indication of employment trends in Temeke informal settlment. Findings from Table 2.3 suggest that 9.4% of Temeke residents have more stable employment as government employees; private firms and skilled workers employ 5%. About 7% are artisans, 12.5% indicated they were not employed at all, and they were dependent on the income of relatives, or from rents they charge to families living in rooms of their houses. Many of Temeke's residents have shown the ability of the poor to survive. They were able to squeeze themselves into some form of income-earning activity that they classified as employment (Water Aid and Tearfund, 2003). Table 2.3 gives an indication of employment trends in Temeke informal settlement.

Table 2.3: Employment trends in Temeke informal settlement.

| Type of employment | Frequency | Percentage |
|---|---|---|
| Fully employed in government | 15 | 9.4 |
| Fully employed in private sectors | 8 | 5.0 |
| Seasonally employed | 24 | 15.0 |
| Petty trading | 75 | 46.9 |
| Self employed (artisans) | 11 | 6.9 |
| Part-time employment | 3 | 1.9 |
| Not employed | 20 | 12.5 |
| Retired | 4 | 26.5 |
| Total | 160 | 100 |

(Source: Water Aid and Tearfund, 2003)

**Poverty Situation in Tanzania**

Tanzania has been pre-occupied with three developmental problems namely ignorance, diseases and poverty. Despite sustained efforts since the mid 1980s to address the country's economic and social problems, the incidence of poverty in Tanzania is increasing. Over the past decade, the incidence of poverty is seen to have increased with the increasing numbers in the population from about 27% to over 50%. A number of studies also revealed that the majority of Tanzanians were very poor (World Bank, 1993; 2000; URT, 2001). According to the PRSP report (2000), between 15 and 18 million Tanzanians lived below the poverty line of $0.65 a day. Of these, nearly 12.5 million lived in abject poverty, spending less than $0.50 on consumption a day.

Basically, poverty incidence has stagnated or worsened during the 1990s. Poverty remains predominantly a rural phenomenon, although the number of poor in urban areas, mainly the unemployed and those engaged in the informal sector, is growing fast. In both rural and urban areas, the poor typically lack capital and human assets: they are less educated, of ill health and have large families. The vulnerability of the poor is increased by preponderance of disease, including the rapid spread of HIV and AIDS (PRSP, 2000).

Based on the 1991/92 Household Budget Survey, around 27% were households with total expenditure that was insufficient to obtain enough food to meet nutritional requirements, and about 48% of the households were unable to meet their food and non-food basic requirements. The results of various updated estimates for year 2000 suggests that poverty levels may have increased to well over 50% for Mainland Tanzania (Nkya, 2002). The latest Household Budget Survey (HBS) conducted in 2001 as indicated in Table 2.4 reveals that 35.7% of the Mainland population live below the basic needs (upper) poverty line, and 18.7% below the food (lower) poverty line. Ten years earlier the proportions were 38.6% and 21.6% respectively (URT, 2002).

Table 2.4: Income, poverty indicators, baseline and targets.

| Indicator | Baseline Estimated | Year/source | Actual 2003* | Targets 2003 | 2010 |
|---|---|---|---|---|---|
| % of population below the basic needs poverty lin e | 36% | 2000-01(1) | - | 30 | 17.8 |
| % of the population below the food poverty line | 19% | 2000-01(1) | - | 16 | 9.3 |
| GDP growth rate (%) | 4.9 | 2000(1) | 5.5 | 6.3 | |
| Agricultural grow th rate (%) | 3.4 | 2000(1) | 3.3 | 5 | - |
| Food price inflation in urban areas (%) | 6.8 | 2000(1) | - | - | - |
| % of working age population not currently employed | 5 | 200-01(1) | - | - | – |
| % of population aged 15-24 years old not currently employed in urban areas | 28 | 2000-01(1) | - | - | - |

*Note: for actual 2003, most of the social-economic indicators in this section have not been worked out. The information is obtained from HBS and latest is the 2000/01 HBS. (Source: National Bureau of Statistics).*

While the results of the 2000/01 household budget surveys indicate that poverty has declined in urban areas over the last ten years, especially in Dar es Salaam, there are "clusters" of people in urban areas who remain poor and vulnerable. These "clusters" can be traced by an analysis of poverty profiles, especially taking into account livelihoods, living conditions, access to land, and access to social services. The recent surveys, mainly the HBS and the ILFS, and the Participatory Poverty Assessments (PPA) carried out in various urban areas reveal some of the characteristics of these clusters. The living conditions in urban areas provide an indication of the identification and location of the poor and vulnerable groups. Poor people have limited access to land and housing in urban areas thus ending up living in unplanned, marginal and risky areas.

The recent study on urban poverty showed that more than 60,000 people were estimated to be living in 5,700 houses in valleys in Dar es Salaam, which exposes them to the risks of floods and diseases (Lerrise & Kyessi, 2002). Overcrowding in terms of occupancy rate is among the indicators of poverty in urban areas. The 2000/01 HBS shows a high level of overcrowding in rooms of residence for urban dwellers, especially in Dar es Salaam.

The survey conducted in Temeke informal settlement in 2002 indicated that a poverty stricken community where more than 70% of income earning residents earned less than US $ 1 each day as shown in Table 2.5

Table 2.5: Income earning in Temeke informal settlement.

| Income group in Tsh | Frequency | Percentage |
|---|---|---|
| Less than 1,000 | 21 | 13.1 |
| 1,001 to 2,000 | 16 | 10.0 |
| 2,001 to 5,000 | 33 | 20.6 |
| 5,001 to 10,000 | 47 | 29.4 |
| 10,001 to 15,000 | 26 | 16.3 |
| 15,001 to 20,000 | 6 | 3.8 |
| Above 20,000 | 11 | 6.9 |
| Total | 160 | 100 |

Note: One US dollar is roughly equivalent to 1,000 Tanzanian Shillings (TSh).
(Source: Water Aid and Teafund, 2002)

From Table 2.5 most respondents (47 cases) earned from TSh 5, 000 to TSh10, 000 per week. A total of 73.1% of respondents earned TSh10, 000 or less each week (Water Aid and Teafund, 2002).

**Government Initiatives in Poverty Alleviation**

Since independence in 1961, the government of Tanzania has been formulating various strategies aimed at alleviating poverty. The policy regime between 1967 and 1985 was based on socialism and self-reliance with the state assuming the role of facilitator of social and economic growth, a standard setter and provider of essential public services. The national efforts to combat poverty though centrally directedresulted in a significant improvement in per capita income and access to education, health and other social services until the 1970s. Thereafter, these gains could not be sustained because of various domestic and external problems as well as policy weaknesses (URT, 2001; Nkya, 2002; World Bank, 2002).

In response to the stagnation and reversal in poverty indicators as well as declining quantity and quality of basic social services, the government designed comprehensive strategies and articulated a number of targets in order to arrest the situation. Some of the targets are derived from international goals while others are national targets set in a more ambitious implementation timeframe. The key documents that articulated strategies and targets include; The National Poverty Eradication Strategy (NPES) adopted in 1997, which spells out a vision of a society without abject poverty, and with improved social conditions. This vision which is in line with the International Development Goals, remains a point of reference for current poverty actions (URT, 2000).

In June 1999, the Government issued "Poverty and Welfare Monitoring Indicators," a document intended to provide the basis for monitoring the implementation and evaluating the impact of poverty eradication programs. The indicators were to facilitate the development of baseline data for assessing the status of poverty and welfare, in order to guide policy and programs for reducing poverty (URT, 2001; Kitilla, 2003).

Other policies include the National Strategy for Poverty Eradication by 2010; the Development Vision 2025, a National Vision of Economic and Social Development; Tanzania Assistance Strategy (TAS), Medium Term national Strategy for Poverty Reduction developed in the context of the enhanced Highly Indebted Poor Countries (HIPC) initiative; and Poverty Reduction Strategy Paper (PRSP), an integral part of the HIPC process focusing mainly on poverty alleviation in the context of government budget constraints (URT, 2002). Government has been addressing employment creation through policy actions on private sector development, Small and Medium Enterprises

(SMEs), agricultural and rural development, micro financing and employment intensive programmes. Such efforts include measures to enhance productivity through job and business management skills, access to flexible loans and market support for poor women and their families. The government placed emphasis on labour based technology and upgrading informal settlements (Sliuzas, 2002).

## Upgrading Informal Settlements.

### Overview Upgrading

The World Bank (1996) defined upgrading "as improving the physical environment of the slums and squatter settlements". Upgrading includes improvement and installation of basic infrastructure like water, sanitation, waste collection, access roads, footpaths, storm water drainage, lighting, public telephones and land regularisation among other things. The Cities Alliance (2002) put it slightly differently by saying that upgrading consists of physical, social-economic, organisational and environmental improvements undertaken cooperatively and locally among citizens, community groups, and local authorities to ensure improvements in quality of life for individuals. To Abbott (2000) upgrading is the improvement of the settlements ensuring minimal relocation of the residents.

What is emphasised through these definitions is the 'on site improvement' by provision of basic services and through the participation of the residents. An upgrading program may comprise of various combinations, depending on the target community's needs, priority and affordability levels" (Development and Upgrading Strategy, 1999). Upgrading or slum improvement, as it is also called in low income urban communities

means a package of basic services: access roads, drainage, clean water supply and adequate sewage disposal to improve the well being of the community. Therefore, upgrading for the purpose of this study will be improvements of physical infrastructure such as access roads, drainage system, sanitation facilities, water supply and solid waste management.

**Previous Responses on Informal Settlements and Upgrading Programmes**

Informal settlements have been a feature of Dar es Salaam for many years. Like other countries in the region, Tanzania inherited an urban planning system that was focused more on the needs of the European population (Rakodi, 1986 and King, 1991). In the colonial period, the status of the indigenous population was typically seen as only temporarily urban, and this view was reflected in the relative disinterest in their living conditions. However, when the conditions in the so-called African areas were seen to pose a potential threat to public health generally the colonial authorities may have intervened (Sliuzas, 2002). In 1947, the growth of slums and shanty areas in the city was deemed out of control and in the same study identifies Keko, at this time, as being one of those areas "...dangerous to health and order"(Sliuzas: 20).

In the colonial period and shortly after independence in 1960s, informal settlements were often neglected and subjected to demolition and resettlement. The policy was to clear all squatter housing and shantytowns and replace them with conventional (standard) housing. This optimistic approach of solving the housing problem by the Government (direct provision of houses) was not successful because of population growth in urban areas and socio-economic set-up. The Slum Clearance Programme became un-affordable and was terminated in 1969 (ILO, 1998; World Bank Report 2001).

In 1972, the Government adopted a more humane and softer approach to 'squatters' and developed the Sites and Services and Squatter Upgrading Programme. Like in many other developing countries, the programme aimed at enabling beneficiaries to undertake construction of houses by themselves. The Government was responsible for the provision of serviced sites, basic infrastructure, community services and housing loans. With financial assistance from the World Bank-International Development Agency (IDA), substantial physical improvements in unplanned settlements took place. The programme was implemented in the city of Dar es Salaam and the Municipalities of Mwanza, Mbeya, Iringa, Tanga, Tabora and Morogoro (ILO, 1998; World Bank, 2001). The programme had little long-term impact (Magembe & Rodell, 1983; Materu, 1986; Materu, 1993; Schmetzer, 1986; Kaitilla, 1987; Kironde, 1991; Sanyal, 1994; URT, 2001). The reported problems generally matched those identified by Sanyal (1987) as contributing to the failure of such projects: a lack of understanding by residents of their obligations, inefficient collection of user charges, a lack of incentives and sanctions for compliance with requirements and insufficient political support.

After the withdrawal of the World Bank support, the Government alone could not finance additional projects. Desperate efforts under the Third Phase saw isolated projects in Dar es Salaam city with negligible physical improvements in unplanned settlements. Thus the decade of 1980-1990 was characterized by the expansion, consolidation and emergence of new unplanned settlements. It was also during this period that the upgraded areas experienced rapid deterioration of the services, which were provided under the First

and Second Phases of the Programme due to lack of maintenance (World Bank Report 2001, Sliuzas, 2002).

**Policy Contexts on Informal Settlements**

Observing these disappointing trends in 'Squatter' development, the Government formulated the Urban Development Policy in 1995 to address these problems. The Policy stated clearly that the Government efforts would, from then onwards, be directed to stop the growth of unplanned settlements by:

- Timely planning of all potential areas for urban development in the periphery of towns so as to pre-empt haphazard development.
- Designating special areas for low income housing with simplified building regulations. These areas would be provided with minimum level of services, which the residents could afford.

The policy acknowledges the considerable stock of houses in unplanned settlements that must be preserved. It recommended that existing areas would therefore not be cleared but upgraded. In upgrading, the unplanned settlements will be provided with minimum level of facilities for adequate sanitation and other basic services. Except for unplanned housing in hazardous areas, the land rights of residents of unplanned settlements would be protected. Upgrading plans would be prepared and implemented by local authorities with the participation of residents and their local community organisations. Local resources would be mobilised to finance the plans through appropriate cost recovery systems. In implementing the National Urban Development Policy, the Ministry of Lands, Housing and Urban Development (MLHUD) was handed over the Sites and Services Programme to Urban Local Authorities. The same ministry was restructured with the understanding that its future involvement in these programmes

would only be at policy level. The execution would be vested upon the Urban Local Authorities (World Bank Report 2001, ILO 1998).

The National Land Policy (1995) also emphasised the issue of unplanned settlements. The policy provided a comprehensive overview of all matters concerning land tenure, land administrative and land use management. The National Land Policy (1995) had the following policy statements relative to unplanned settlements:

- Existing unplanned settlements would not be cleared but will be upgraded and provided with facilities for adequate sanitation and other basic services except for unplanned housing in hazardous areas.
- Upgrading plans would be prepared and implemented by local authorities with the participation of residents and their local community organisations. Local resources would be mobilised to finance the plans through appropriate cost recovery systems.

The National Land Policy went a long way in legalising unplanned settlements and providing its inhabitants with legal rights to the land. In addition, the Policy called for the upgrading and servicing with the participation of their residents through their own community based organisation (CBOs) or non-governmental organisations (NGOs) (National Land Policy 1995, ILO, 1998).

### Upgrading Projects Programme and Labour Based Technology in Informal Settlements

Since 1992, the Dar es Salaam urban planning system has been the subject of a major reform and revitalisation effort. The traditional expert led planning approach (Armstrong, 1986) based on received concepts, standards and procedures (Kironde, 1992) had been moving toward more performance oriented planning through a combination of strategic planning and action planning in provision of infrastructure in informal settlements (Halla, 1994, Sanyal 1994a and Kyessi 1994b, Davidson, 1996). The

UNCHS Sustainable Cities Program introduced the Environmental Planning and Management (EPM) approach in Dar es Salaam to improve the capacity of the city council to better plan, coordinate and manage urban development functions in partnership with other institutions. The upgrading projects of the Hanna Nassif community and Tabata were part of this EPM approach, also supported by the ILO and the Ford Foundation. The focus was on community participation through community-based organisations (CBOs). Basic infrastructure improvements were carried out using, in large part, community labour and a micro-credit program (SPD, 1999; Kessy, 2002).

Community based infrastructure provision and delivery has been successful in Hanna Nassif and Tabata settlements. Hanna Nassif, as a case study, covers approximately 50 Ha and has a population of about 20,000. It was the first settlement to be upgraded with a community-based approach when the community-based organisation (CBO) approached the city council for assistance to improve roads and reduce flooding problems. Over the period of 1994 to 2000 various local and international organisations have worked with the community to improve living conditions, employing where possible local residents in labour-based construction activities.

The Tabata project started in the mid-1990s under the Community Infrastructure Project (CIP) umbrella that was created to build on the Hanna Nassif experience. The area covered was 171 Ha with a population of about 14,000. In terms of income, Tabata was more mixed than that of Hanna Nassif (Kyessi, 2002).

Economic prospects of the poor, as well as to the national economy. Experience had shown that slum-upgrading projects were associated with social and economic benefits that were particularly high.

## Chapter Summary

In this chapter we have witnessed the urbanisation trend in Dar es Salaam, which is very high, and has led to the formation and considerable growth of informal settlements. The situation of these informal settlements as highlighted is apparently not conducive, as most of them lack basic services such as water and sanitation as well as there is high rate of unemployment and poverty. The Government assisted by World Bank and other international organizations has made tremendous amount of efforts to solve problems facing these informal settlements by taking initiatives - one of them was to upgrade informal settlement by using labour based technology. Despite a number of government and community endeavours problems persisted until to date.

# CHAPTER 3
# LABOUR-BASED TECHNOLOGY IN INFORMAL SETTLEMENTS

In this chapter, the application of Labour Based Technology (LBT) in infrastructure delivery and provision in informal settlements is discussed. This discussion will include potential benefits and importance of LBT in service delivery to the employment creation and poverty alleviation. The key players in the provision of infrastructure in the settlements will be identified as well as their role and responsibilities. Finally this chapter will discuss the critical issue in implementing and designing LBT programmes.

## Introduction

The International Labour Organisation (ILO) has promoted Labour-Based Technology over several decades under employment-intensive programmes (EIPs) as a means of assisting in the creation of employment opportunities and the alleviation of poverty. Additional to the primary objectives, these programmes pursue objectives relating to the creation of infrastructure and other assets (Jinchang, 1998; ILO, 2003). In the late 1980s, the International Labour Organisation (ILO) transferred its experience in LBT rural works program to the urban sector through its Special Public Works Programme using community participation and small-scale enterprises (Miller, 1995; ILO, 1996; Keddeman, 1998; Jinchang, 1997).

**Importance of the Infrastructure and Comparative Advantages of the Use of LBT**

The importance of infrastructure and the construction sector is related to economic growth and development. The adequacy of infrastructure is often used as a measure of the success or failure of the country in the delivery of benefits, economic growth, poverty alleviation and environmental sustainability (Haupt, 1996). The quality of infrastructure services directly determines the quality of life for a community and its productivity (Word Bank, 1994). The 1994 World Bank report also recognised that good infrastructure raised productivity and lowered production costs. Public infrastructure of acceptable quality stimulates economic growth and is a prerequisite for economic and social development. The quality of infrastructure and service provision is important in attracting Foreign Direct Investment (FDI), with the potential to generate new employment opportunities (Kessides 1993; World Bank, 1994).

Construction, rehabilitation and maintenance of infrastructure account for almost half of domestic capital formation, absorbs up to 70% of public investment funds, accounts for some 40% of international assistance in development countries and for 3% to 8% of GDP (ILO 1994; Stock & Veen 1996; Islam, 2001; ILO, 2003). Several studies have concluded that the role of infrastructure on growth and development is not only substantial, but also significant and frequently greater than that of investment in other forms of capital (Haupt, 1996; Islam, 2001). Furthermore, infrastructure has been identified as the key to poverty reduction as services provided by infrastructure contribute directly to social economic welfare (Haupt, 1996).

Several in-depth studies by the ILO and other agencies such as the World Bank, have suggested that the utilisation of the labour based approach to construct, operate and maintain infrastructure is cost effective particularly when compared to the equipment based technology (Keddeman, 1998; ILO, 1998; ILO, 2003) as shown in Table 3.1 and Figure 3.1.

Table 3.1: Employment and investment impact of technologies

| Gravel roads | Equipment-based | Labour-based |
|---|---|---|
| Total cost (index-100) | 100 | 70-100 |
| Foreign exchange requirement (index=100) | 100 | 40-90 |
| Employment generated per unit of investment (index=100) | 100 | 200-400 |
| Equipment cost as % of total cost | 80-85 | 30-40 |
| Labour-cost as % of total cost | 10-15 | 40-60 |

(Source: ILO, 1999).

From Table 3.1 it evident that the labour based approach is 10% to 30% less expensive than the equipment approach in financial terms. It potentially reduces the foreign exchange requirement by 10% to 60% and creates for the same level of investment two to four times more employment.

Figure 3.1 suggests that labour-based methods cost less than equipment-based methods. In direct financial terms they are 18% less expensive for full rehabilitation of feeder roads and 50% cheaper for spot rehabilitation. In economic terms, labour-based methods are even more advantageous being 38% less expensive for full rehabilitation and 60% for spot rehabilitation.

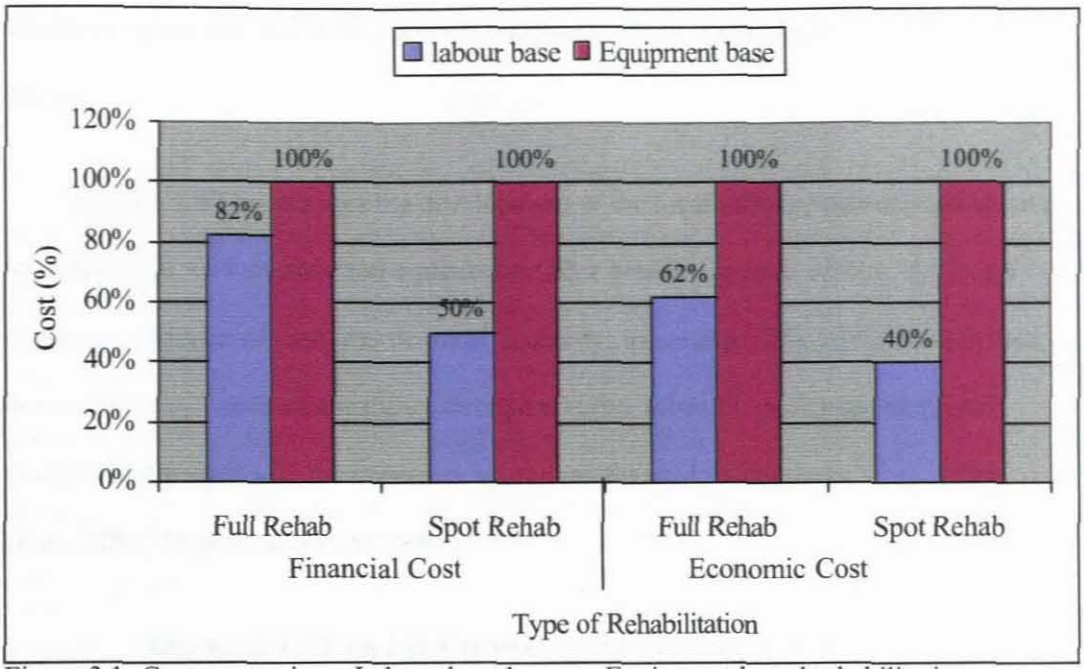


Figure 3.1: Cost comparison: Labour based versus Equipment based rehabilitation. (Source: Taylor and Bekabye, 1999)

The experiences of various countries such as Ghana, Lesotho, Madagascar, Rwanda, Zimbabwe, Cambodia, Laos and Thailand indicate that labour based infrastructure provision is generally in financial terms about 10% to 30% less costly than the more equipment based option in financial terms. It potentially reduces foreign exchange requirements by 50% to 60% and creates for the same level of investments two to four times more employment (ILO, 1998; Majeres & Veen, 2001; Islam 2001; ILO, 2003). Other comparative studies of labour based versus equipment-intensive projects have shown a transfer of knowledge in labour-based road works to local communities—knowledge useful for later maintenance and employment creation. Further, labour-based construction methods have environmental advantages. They use less fuel, emit less exhaust fumes, raise less dust, and are less likely to seriously damage the terrain bordering a construction site. Labour-based methods require less manoeuvring space,

which is a good alternative for informal settlements (ILO, 1996; Tailor, 2000; Islam, 2001).

Finally, LBT encourages the development of the local industry manufacturing hand tools and light road construction equipment. Other benefits include savings in foreign exchange; injection of cash into the local economy; increasing skills of the local people; better chance of future sustainability through a higher sense of local ownership; and familiarising people with the necessary operations for road maintenance (ILO, 1996; Islam, 2001; Majeres and Veen, 2001).

### Impact of LBT on Job Creation in Infrastructure Investments

To a certain extent poverty is associated with lack of employment opportunity. Employment creation is seen as one of the most effective means of poverty alleviation (Keddeman 1998). Various estimates have been made of the potential macroeconomic impact on employment of using LBT for the production of infrastructure. One of these, a joint ILO/European Union mission to Ghana in 1993, considered that if 20% of public investments and 10% of private investments in infrastructure would be executed with LBT, this would amount to a labour based investment budget of about 100 million US dollar per year and create 50,000 direct and 75,000 indirect jobs more than those that would be created by equipment construction methods (ILO 1998; Majeres & Veen, 2001).

Similar estimates exist in other countries. The conclusions are arguably on the safe side, as they are based on the assumption that one directly created job would be at the rate of 1.5 indirect jobs (Majeres & Veen, 2001). Using a macroeconomic model to measure

the impact of labour-based investment projects on the economy of Madagascar, a study estimated the differential effects of employment versus equipment-intensive approaches on the principal economic variables such as production, consumption, employment and foreign trade. The analysis clearly shows the superiority of the labour-based approach, which is 30% to 80% less costly, depending on the type of infrastructure. It creates 2.5 times more jobs, increases the national income and household consumption 2.5 times and saves 30% of foreign currency requirements. In 1995, the employment-based sector actually created 12,000 direct and 23,000 indirect (equivalent full-time) jobs (Majeres & Veen, 2001; Islam, 2001; ILO, 2003). Another project in Madagascar of more than US $ 50,000 million for infrastructure in rural and urban areas executed with LBT approach, generated 16 million worker days of employment equivalent to 16,000 full time jobs per year over 5 years, compared to 4,000 jobs that would have been created if equipment based methods were used (ILO, 2003).

A macro-economic study in Senegal has shown that provision of infrastructure using LBT created 4.1 million worker days compared to 312,500 worker days using an equipment approach. The LBT approach potentially created 13 times more employment (Majeres & Veen, 2001; ILO, 2003). The Department of Public Works (1997) acknowledged that the figures for employment generation by construction industry were higher than in other industries. In South Africa, for example, the construction industry in 1997 generated between 11 and 23 direct, indirect and derived jobs per R1 million invested, an average of approximately 17 jobs per R1 million invested (CIDB, 2004).

Another interesting macro-economic indication from a study on Rwanda (1991) was that labour-based investment in rural roads increased national returns by a factor of 2.8, while the same investment implemented with equipment-intensive methods had a multiplier effect of only 1.2. It is important to note that these high employment creation potentials do not result from additional investments, but from different choices of technology such as labour based made in the framework of existing investment budgets by considering fundamental labour standards (Majeres and Veen, 2001).

The high employment creation potential of construction is also illustrated in Figure 3.2 which suggests that the employment generation effect is much higher for labour-based than for equipment-based work. In the labour-based projects studied the proportion of the cost spent on wages, mostly for the unskilled, ranged between 44% and 60%, against 3% to 8% in equipment-based works.

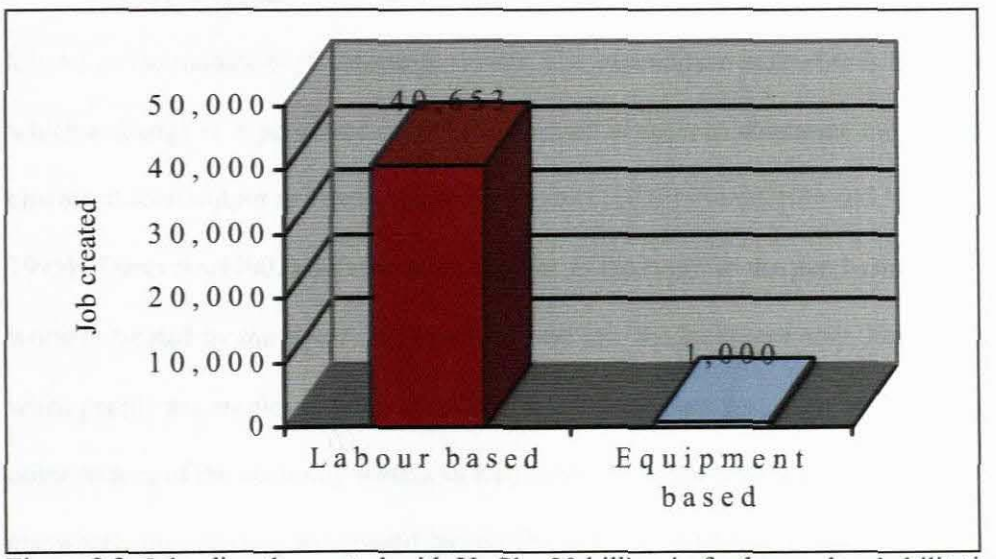


Figure 3.2: Jobs directly created with Ug.Shs 30 billion in feeder roads rehabilitation. (Source: Taylor and Bekabye, 1999).

The most important determinant of the extent to which LB work earnings generate income multipliers is probably the level or value of income transferred (Dereveux, 2002). Direct income benefit accrues to the poor through income transfer (ILO, 2002). In a study of Ahmednagar in India on the Employment Guarantee Scheme (EGS), for instance, it was found that the direct income transferred to the participants in infrastructure provision was high and provided substantial alternative employment opportunities. The income stabilisation effects were also substantial. In the absence of EGS some of the poorest would have been without incomes for survival (ILO, 2002). In another Indian study it was observed that EGS projects generated net income gains to the participants. These direct transfer benefits led to reduction of poverty (Ghaiha, Katsushi & Kaishik, 2001).

The income transferred to the participants during construction projects attract business investments around the sites due to the fact that people will spend their wages on goods and services. Retailers and hawkers appeared on paydays to sell foods and groceries, second hand clothes and consumer goods to the workers (Devereux, 2002). The earliest impact studies in Kenya concluded that cash earnings in roads areas as compared with non-roads areas were between two to six times higher (RARP, 1994). In Nigeria also a phenomenal growth in front porch retail business in the area of road demonstration projects was observed (Keddeman, 1998).

Technological options in infrastructure expenditure can generate higher levels of employment, first in the construction itself and then in the economy as a whole. If the technologies used in construction are labour-based, the employment multiplier will be even greater (Keddeman, 1998). In Senegal for instance LBT created 8 times more

purchasing power compared to equipment approach (ILO, 2003). Several surveys and micro-economic estimates on spending patterns have been done to determine the impact of increased earnings. For instance in Ghana, Thailand and Sri Lanka, some of the youth involved in LBT projects spent their earnings on housing improvements, production inputs and investment in business (Keddenman). A study done in Mozambique revealed that some of the participants spent their earning on house improve ments as the 22-year-old single mother working on road rehabilitation reported:

> "With the money that I earned in 1998 and 1999, on road rehabilitation works, I have extended my house from one bedroom to three, added a lounge and it is built with baked bric ks. I then bought a radio, bicycle and clothing for my children and myself. Next I will buy iron sheet to cover my house" (ILO, 2003: 18).

In the States of Andhra Pradesh and Madhya Predesh in India, concerted efforts are being made for the development of degraded lands on a watershed basin by using LBT which involved all potential beneficiaries. It has been documented in a study of a village in Gujarat that almost the entire population who participated in the project were brought above the poverty line (Nayyer, 2002). Although employment on LBT tended to be low-waged and temporary, it was possible for workers to derive long-term income benefits.

Sustainable poverty reduction through LBT works can be achieved in several ways. These include expanding cove rage to increase the number of poor people who benefit, raising the wage rates, and extending the duration of employment to allow participants to accumulate sufficient income to graduate out of poverty and gain skills (Devereux, 2002). Although typical employment in the construction sector is for a very short period, Devereux (2002) argued that employment sustained for longer periods at reasonable wage levels can provide sufficient income to cover basic substance needs as well as

investment in assets, thereby further enhancing income. At the lowest level, the minimum average employment period was100 days with an estimated daily wage level of US $1 (Devereux, 2002;Thorndahl, 2003). However, the main product component of LBT is the transfer of skills that enhances the potential for workers to find better employment after the project than they were able to secure before or to apply their new skill in the informal sector or self-employment (Thorndahl, 2003).

In Botswana, for example, LBT programmes have given some participants the opportunity to upgrade from low-paid to alternative or self-employment. For the poor who were previously engaged in low paying marginal wage employment, access to a infrastructure projects allows them to move to better paying project works. The projects thus appeared to have contributed to moving some households to the middle-income group (Teklu, 1995). In LBT safety nets, the potential for upgrading existing skills or transferring new skills to workers was justified by the concern with producing assets of reasonable quality. These skills might be technical (to do with nature of the work) or managerial (to do with the process of the work) or there might be a broader level of empowerment as was the case in Sri Lanka.

> Very poor people were trained in simple skills like reading plans and filling in forms; so that they could go on to contribute to the planning of their own infrastructure and public facilities. At the implementation level, local artisans who were employed for their skills found that the responsibility they held in small projects and the increased complexity of projects which community contracting entailed could be tacked to the gradual but noticeable improvement of their skills. In tackling the Sewerage system, artisans found themselves learning more about levelling and gradients, than they had previously known. They learned by themselves partly by having to do the work and partly through technical assistance given by technical skill assigned to oversee the project (UNCHS/ILO 1995: 185-186).

Labour standards also can contribute creating a long-term impact of employment creation and alleviating poverty in application of LBT approach in infrastructure provision. Thorndahl (2003:20) argue that labour standards attack different facets of poverty directly through empowerment, human rights and wages by ensuring the creation of decent work opportunities, based on the observance of a series of minimum labour standards. Observance of labour standards gives an immediate impact, which ma y turn into a long-term impact because of institutionalisation of the standards and a growing awareness of their rights amongst workers. Figure 3.3 summarises the linkage between LBT approach and poverty alleviation.

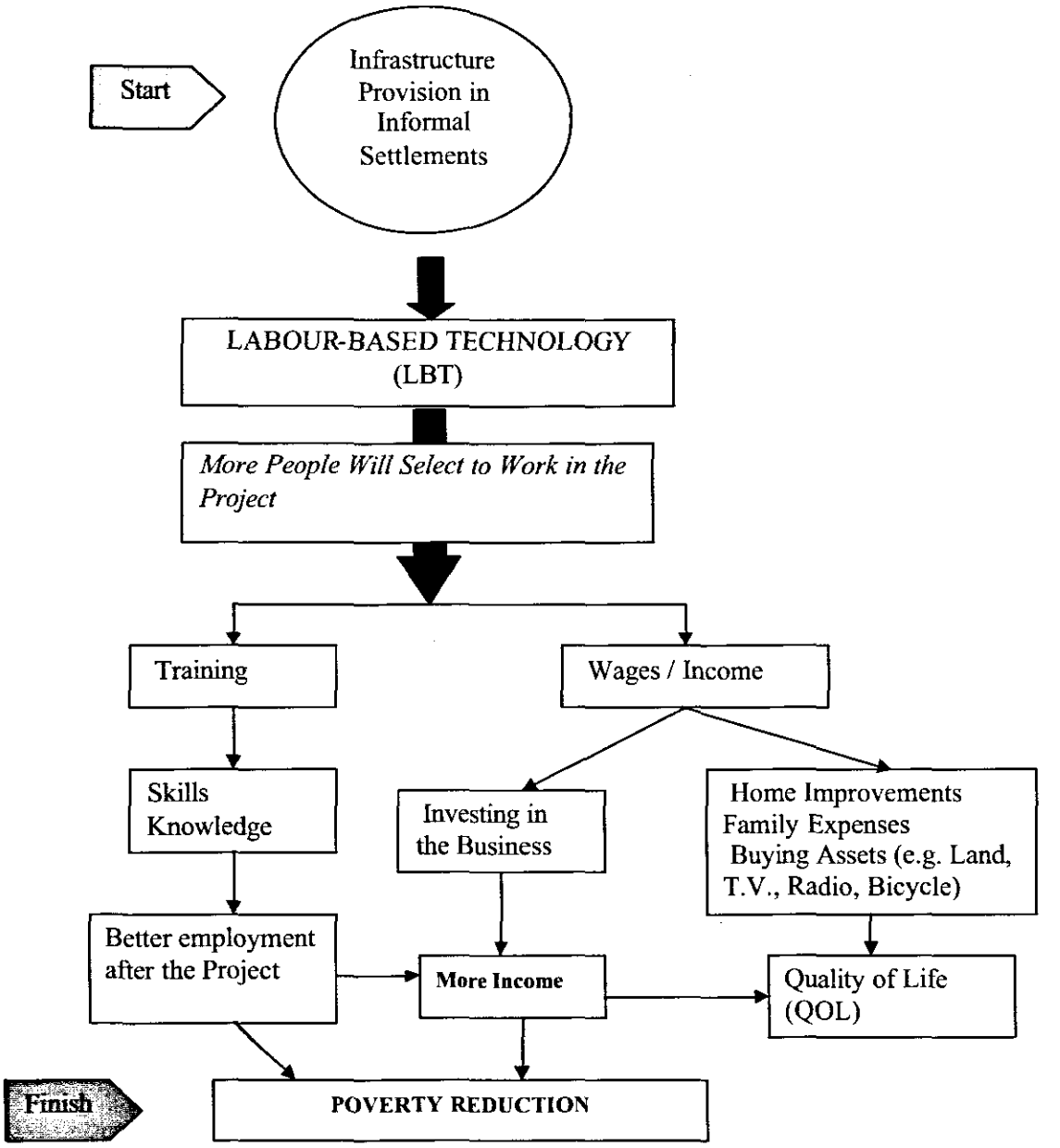


Figure 3.3: A summary of the impact of LBT on poverty alleviation.

**Application of LBT in Upgrading Informal Settlements.**

There is tremendous potential for income and employment generation in the building of urban infrastructure (Jinchang, 1997). This could involve the private sector, in the form of small contractors using labour-based methods, or community procurement (Cotton, Sohail & Tayler, 2000). The application of LBT in upgrading informal settlements is involving the communities and the private sector under the following modes of execution, which are broadly accepted by many donors and governments (Thorndahil, 2003:12).

- The development of a system of tendering and contracting which favours local small enterprises and community groups using employment-based techniques, allowing these enterprises access to public contracts and offering them certain guarantees (including the timely payment of their fees), as well as introducing minimum labour conditions for the employment of workers;
- The institutionalisation of the approach through the creation of employment and investment policy units with steering committees that include the social partners such as contractors and workers;
- The provision of training to the government officials concerned, engineers and consultants, small enterprises and community groups wishing to tender for contracts and workers, as well as the development of courses in universities and colleges on the relevant labour-based techniques;
- The provision of the necessary credit, appropriate tools and equipment to the enterprises involved; and
- The organization of participants, including the enterprises, workers and consultants concerned.

**The roles of key Players in Upgrading Informal Settlements.**

The LBT approach to delivering infrastructure in informal settlements facilitates the development of constructive partnerships, but only if there is a clear goal-oriented division of tasks between the key partners. In this section the roles and responsibilities of

the six key actors will be described. These key actors include communities as beneficiaries; Community based organisation (CBO), Private sector, local authorities; employers and work organization; focal point institution; Non Governmental organisation (NGOs); and international development organisations

**Communities as Beneficiaries**

Communities were generally low-income groups and they were usually poor. Not only poor financially, but also weak in terms of their power to influence decision-making on matters relating to their livelihoods. They were often totally excluded from the development process by the top-down practice of government management in planning and budgeting (Jinchang, 1997).

However, through a LBT approach to upgrading their areas, they became beneficiaries by getting employment from the particular project and also from the infrastructure provided (Cotton, Sohail & Tayler, 2000). Their role and responsibility involved electing a representative who would select and develop activities, identify the most pressing problems as well as participate in construction activities and implementation of the project (ILO, 1993; Cotton et el 2000; Tournee & Wilma, 2001).

**Community-Based Organisations (CBOs)**

The urban poor had to organise themselves into community based organisations as legal entities to avoid the risk of exclusion and marginalisation in the development process. These organisations enabled them to deal collectively with governments and interested donors, thus helping them secure technical and/or financial assistance (Jinchang, 1997).

- They contributed to the planning and design of selected activities, collecting and managing community contribution,
- Checking that the works were carried out as envisaged by their community safeguarding labour standards and ensuring proper operation and maintenance arrangements
- CBOs may also represent an institutional means to improve the employment situation of the urban poor through building institutions that articulate their interests. These institutions provided vital social services and crisis support together with acting as channels for assistance.
- They improved linkages with the formal sector and provide a catalyst for community-based upgrading (Jinchang, 1997; Cotton et el, 2000).

Community Development Committees (CDCs) usually represent the community by supervising community day-to-day operations of the urban community-based development programmes. Members of CDCs are generally democratically elected by community members to help secure their full participation. As CDCs act between municipalities and communities, their roles include

- Identifying local needs and priorities;
- Participating in the planning and design of the proposed facility;
- Consulting on a regular basis with the whole community to ensure community understanding and commitment to the project;
- Establishing an effective conflict resolution mechanism for conflicts related to the project arising within the community;
- Negotiating contracts with the municipality for execution of works, provision of services, and maintenance;
- Ensuring that work is carried out according to contract; and
- Encouraging the entire community to participate in and support the project, including mobilization and collection of community contributions (ILO, 1993; Jinchang, 1997; Cotton et el 2000; Tournee & Wilma 2001).

**Private Sectors**

Small and medium-sized enterprises (SMEs) are recognised as being the engines of employment creation (ILO, 1995). The system is such that provision in the tendering and bidding system facilitates access by SMEs to public works. Urban informal settlement upgrading programmes can involve SMEs in infrastructure provision as started in Jinchang (1997: 19).

- Assisting residents of poor communities to establish and develop their own private enterprises on an individual, family or group basis within the manufacturing and service sectors;
- Capturing involvement of existing small-scale construction enterprises and creating new enterprises for provision of infrastructure using labour-based techniques and community participation methodology; and
- Developing collaboration between small and micro-enterprises on the one hand and medium and large enterprises on the other.

SMEs, which can be involved, include small-scale construction enterprises, small-scale building materials enterprises and small-scale recycling and waste collections enterprises (ILO, 1993; Jinchang, 1997). In turn, these enterprises involved have to guarantee certain minimum conditions for their works. The required condition includes minimum wages, non-discrimination, elimination of force and child labour, the right to organised, protection of wages, safety and health and insurance against work accidents as well as the use of labour standard and promotion of social progress (Kessy, 2002).

**Local Governments**

Municipalities operate under the jurisdiction of the state and federal governments to manage cities and towns. The potential role that a local government can play in infrastructure investment is to plan, design, coordinate and monitor labour-based

and community-participation actions and programmes at the local level, particularly in terms of financial and human resources (Vanderchuere, 1996). Therefore, capacity building of local governments should

- Manage different mix of labour and equipment, apportioning work to small-scale, and at times, informal sector contractors, and evaluating investment plans to increase their impact on employment creation and on informal sector development;
- Identify new market opportunities for which a given municipality may have a comparative advantage, and recommending priority infrastructure investments required to attract new outside investors;
- Move from the traditional role of "provider" to that of "facilitator" in particular, in dealing with the urban informal sector and enhancing its potential for employment creation, rather than simply regarding it as something to be ignored or outlawed.
- Capacitate building of local governments needs to be encouraged by central governments through decentralizing necessary resources.
- Raise their own funds, either on local and international financial markets, or by directly approaching the donor community (Jinchang, 1997; Kessy, 2002).

**Employers' and Workers' Organisations**

Workers and employers organisations are also expressing keen interest in collaborating with labour based infrastructure programmes as vehicle to reach out to workers in informal sectors. The organisations have generally the following responsibilities:

- To promote job creation and workers right in integrated manner;
- Insist application of labour rules and regulation;
- Protect the right of association;
- Assist the development of contract documentation;
- Provide contractors, communities and workers with training in subjects related to labour legislations and working conditions; and

- Promote subcontracting and improve their technology, management skills and services offered for modern sector enterprises such as occupational health services and various welfare facilities (Jinchang, 1997; ILO, 1998).

**Focal Point Institutions (FPI)**

Most third world countries have research and training institutes with considerable technical expertise on technologies and procedures relevant to local infrastructure projects (Jinchang, 1997). However, in a national programme for infrastructure construction and maintenance, there is a need for coordination, monitoring and selected research work, while at the same time securing access to credit for small enterprises.

One important criterion for selecting a Focal Point Institution (FPI) is its capacity to work closely with the private sector and communities (ILO, 1996). Training is important for small-scale contractors and communities. The aims of the designated FPIs include:

- Effective input of national policy-makers in the review and development of policy and regulatory approaches
- Review of resource allocations of their budgets to incorporate lessons learned from employment-intensive and community-participation construction interventions and informal sector development,
- Focused research to generate necessary baseline data and case studies to demonstrate the effectiveness of the labour-based, community-participation methodology; and
- Finding and helping implement solutions to social and technical problems confronting communities of the urban poor on a sustained basis (Jinchang, 1997).

**Non-Government Organisations (NGOs)**

Non-governmental organisations (NGOs) are the organisations formed by members of community to pursue community development agenda for the betterment of livelihood.

These are the key players in assisting informal sector development in third world countries (ILO, 1993). The strength of NGOs is their independence, knowledge of local conditions and capacity to communicate directly both with community based organisations and municipalities. They have contributed substantially to the success of projects aimed at improving living conditions, employment and incomes of the urban poor. They can:

- Gain access to required inputs in difficult circumstances;
- Contribute training and other technical assistance inputs of a high quality and direct cultural and situational relevance;
- Assist communities to develop their own advocacy and planning bodies; and
- Function as intermediaries and even interlocutors in politically sensitive situations (ILO, 1993; Jinchang, 1997).

**International Development Organisations**

Both bilateral and multilateral development organisations are partners in urban poor settlement improvement initiatives. Ideally, their role should not just be that of "donors" providing financial support. They should also be substantive partners bringing their own experience, success and failures, which can improve the effectiveness of such interventions, through training of town planners, local government technicians, community based organisations (CBOs), small entrepreneurs, non governmental organisations (NGOs), focal point intuitions (FPIs) and consultants; through technology transfer - particularly South-South - in the area of credit schemes; and through policy dialogue with governments (Jinchang, 1997).

According to their respective mandates and comparative advantages, United Nations agencies including United Nations Development Programme (UNDP), United

Nations Centre for Human Settlements (UNCHS) and United Nations Volunteers (UNV), the European Development Fund, and other bilateral donors such as the Ford Foundation, have become partners of the ILO in settlement upgrading programmes (ILO, 1996). Figure 3.4 illustrates the summary support of upgrading informal settlements programme which link the actors and their relations.

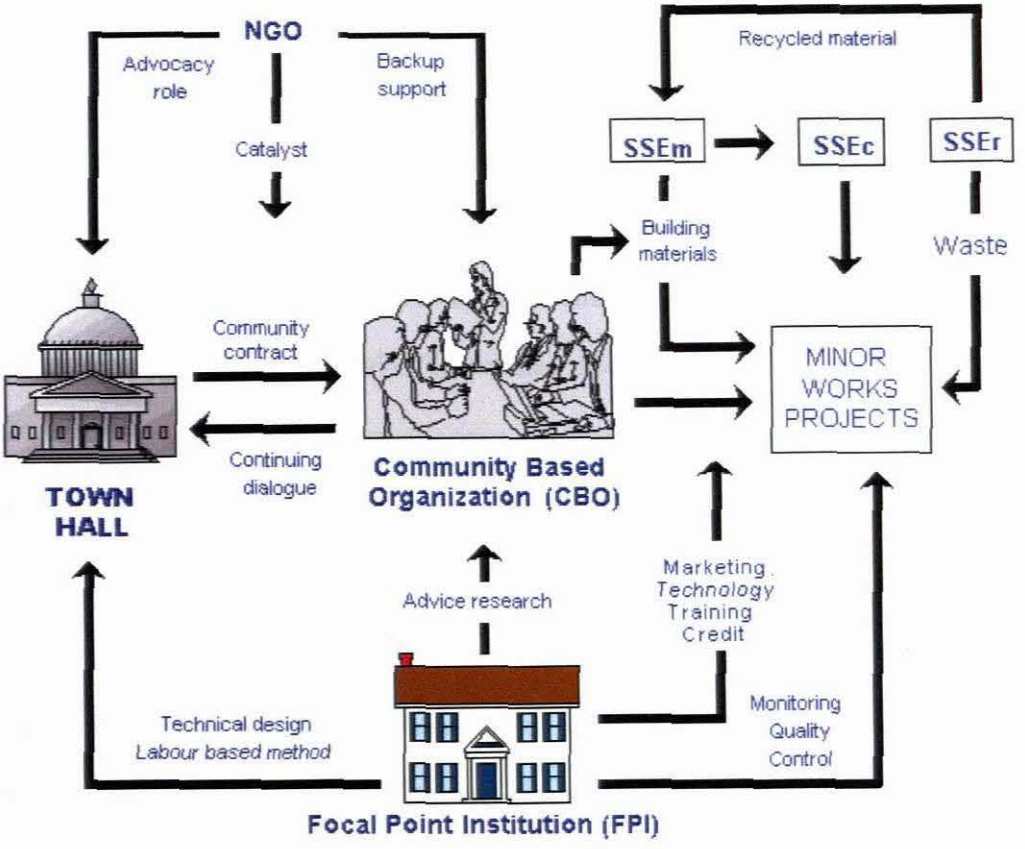


Figure 3.4: Support programme: Actors and their relations. (Source: ILO, 1993; Jinchang, 1997).

Note: NGO; Non government organisations, SSEm: small scale enterprises bulding materials, SSMc: small scale entrepises in construction, SSEr :Small scale enterprises in recycling

## Critical Issues in Implementing LBT Programmes

An urban works programme (or project) for low-income communities through labour-based approach could be formulated and implemented on the basis of the policy issues and actors discussed in section 3.6. A programme's design has to clearly specify the development and immediate objectives the programme aims to achieve, such as employment creation and poverty alleviation as recommended by ILO (ILO, 2003)

### Supportive Policies and Legislative Environment.

An enabling policy and legislative environment that supports LBT is essential for optimum impact on economic growth and attaining objectives of employment creation and poverty alleviation. Such policies should be homegrown through consultation with all stakeholders and generally, be driven by the countries themselves and not be imposed by donor considerations (ILO, 2003). The policies should:

- Be responsive to grass root priorities and balance national and regional needs, in terms of growth, economic and social objectives; and
- Promote local resource utilisation (Thorndahl, 2003: 23).

Sustainable mechanisms for resource allocation to achieve policy objectives should be established. These mechanisms include creating an enabling legislative environment to support the implementation of the policies. For example to adopt procurement that favours the involvement of local contractors and communities. This procurement enhances the achievement of the social objectives such as employment creations and poverty alleviation (Tayler & Bakabye, 1999; Majeres, 2003).
This is an example of the policy and legislatory landscape of Lesotho

> In Lesotho, for example, the programme of supportive policy and legislative environment is undergoing continuous transformation in order to address the issue of employment creation and poverty alleviation. In late the 80's the government

> adopted a policy that promoted the extensive use of local resources in all sectors and gave its commitments by both establishing a new institutional that promotes the application of LBT approaches and allocates resources on an increasing scale on recurrent and capital. Planning and prioritisation tools for rural and urban roads have been refined to include social issues, local needs and a long-term government development plan (ILO, 2003: 31)

**Adequate Technical Knowledge and Skills.**

The issue of technical skills in all stakeholders is very important. The government should assess, identify and address capacity constraints at all levels and for all stakeholders. The stakeholders include managers and engineers, supervisors, contractors and workers as well as communities. The capacity-building capability should be established and should ensure continued development of required capacity (Edmonds and Johannessen, 2003).

Knowledge and experiences should be captured through a regular monitoring and impact assessment and documentation and inform policy and planning and improve implementation from lessons learned. Institutionalisation and dissemination of lessons learnt together with best practice will facilitate the programme. To carry out research and development and or partner with private sector and institutions of higher learning to advance knowledge and practice (Bental & Veen 1999; Edmonds & Johanessen, 2003). Example from Kisii Training Center (KTC) in Kenya.

> KTC is the complex training centre which was established in 1985 to cope with minor road construction training using LBT. It is the area where LBT road training for Kenya and sub-Sahara Africa and beyond is carried out. In 1988, the ILO with Swiss funding developed and ran international engineer's pilot course on LBT road construction and maintenance at KTC. This development was prompted by the need to utilise the institution to the maximum and the opportunity foreseen in the rising demand for LB roadwork technology training in sub-Saharan Africa (ILO, 2002).

**Appropriate Planning Systems in Place**

Proper planning is essential to ensuring that the assets created benefit the communities for which they were created. Local level planning involving the participation of target beneficiaries in the identification, prioritisation, and actual implementation result in the creation of assets that address the real needs of the communities and engender the sense of ownership within communities. Appropriate planning should be effective, sustainable and must be owned and driven by the needs and objectives of the beneficiaries. There should be development and adoption of participatory programmes in local level investment planning approaches and building of the relevant capacity at all levels to support these systems. Planning strategies should be cognisant of cross-sectoral needs and establish the appropriate cross linkage as in the case of Integrated Rural Accessibility Planning (IRAP) (Mhina, 1997; ILO, 1998; Dingnen , 2000; Thorndahl, 2003).

Local level investment planning is an important undertaking in ensuring that investment decisions are made by target beneficiaries at thelocal level and that resources are allocated efficiently. The integrated Rural Accessibility Planning (IRAP) tool was designed for this very purpose, and uses a bottom-up participatory approach that involves communities at the different stages of the planning process. IRAP offers a mult-sectoral and integrated planning approach that addresses interventions that enhance rural people's access to social and economic needs, in line with the context of integrated rural development. Integration is across both sectors and within a local levels planning system within the districts. The tool fits well within decentralised environment as it enhances the process through capacity and skills development at a local level (ILO, 2003: 32).

**Appropriate Technical Standards and Procedure.**

It is important that the assets created are of the appropriate standards and quality required for their intended purpose. But levels of infrastructure are often limited by inappropriate standards adopted from different economic or physical environment. Flexibility is needed to ensure local conditions are taken into account and local needs are addressed. For example in unplanned urban settlements, congestion may mean that adhering to rigid standards would require unnecessary demolition of existing structure (ILO, 2003; Thorndahl, 2003).

**Partnerships for Implementation**

The programmes should explore innovative ways to address implementation constraints by using private sector and community initiatives, public private partnerships and cooperative structures, as was the case of Maseru (Cotton, Sohail & Tayler, 2000; Tournee & Wilma, 2001). The following is a scenario in Maseru

> Maseru City Council, Lesotho has been unable to meet its responsibilities and properly address the expanding and grave challenge of urban unemployment in the city. The city has therefore embarked on an approach allowing for community involvement right from the beginning. The projects are formulated around priorities needs, focusing on the use of LBT approaches and involvement of communities. This has helped the city to better respond to actual needs while at the same time creating employment opportunities for the mostly needy. It also engenders community empowerment and ownership (ILO, 2003: 33).

The LBT programme should also define roles and responsibilities of partners clearly and ensure partners have the requisite capacity to play their respective roles. Roles and responsibilities can be established through community contract. This contract approach is based on partnerships and is achieved through a process of negotiations that

arrive at a contract that is a satisfactory and feasible by both partners (Coton et el 2000; Tournee & Wilma, 2001).

**Decent Work**

A decent working environment motivates workers, leading to increased productivity (ILO, 2003). The LB programme should create awareness of decent working conditions and standards for all stakeholders, from policy makers and planners to implementers, contractors and workers (Thorndahl, 2003; ILO, 2003). The programmes should incorporate into procurement procedures social clauses that ensure decent working conditions and standards. The systems should be established to monitor and ensure good working conditions and standards of work and strengthen tripartite structures to enable dialogue and articulation of obligations and rights (Jenning, Ladbury & Cotton 2003; ILO, 2003). The following is an example from South Africa.

> The Government of South Africa has recently adopted a Code of Good Practice that applies to special public works projects targeted at poverty alleviation and the reduction of unemployment. The Code aims at the regulating and standardising the conditions of works and the remuneration of workers. With the view of having the support of all role players, the Code was extensively consulted and discussed among the tripartite partners before it was gazetted (ILO, 2003: 33).

## Chapter Summary

The key literature of the application of LBT approach, its impact in delivering infrastructure has been reviewed. The literature suggested that the application of LBT in infrastructure provision in informal settlements has the potential to create employment ant alleviate poverty. The key players in infrastructure provision especially in informal settlements have been identified and their potential roles explained. Several examples of the LB approach have been discussed.

# CHAPTER 4
# RESEARCH METHODOLOGY

This chapter presents the methods by which the research has been conducted. It describes the data needed and its treatment as well as method of data collection, research techniques, delimitation and sampling.

## Quantitative and Qualitative Methods

Social science studies identify two principal approaches to research namely, qualitative and quantitative approaches (Patton, 1987; Denzin & Lincoln, 1994; Nachmias & Nachmias, 1997; Fellows & Liu, 2003; Silverman, 2004). Quantitative research is characterised by structured and standardised data collection through experiments and surveys (Nachmias & Nachmias, 1997; Fellows & Liu, 2003; Silverman, 2004). Quantitative methods use standards that fit various opinions and experiences into pre-determined response categories. The advantage of the quantitative approach is that it measures the reactions of a great many people to a limited set of questions, thus facilitating comparisons and statistical aggregation of the data (Patton, 1987; Welman & Kruger, 2001).

Qualitative research, on the other hand, views individuals or organisations in a holistic manner rather than reduced to isolated variables and hypotheses. Qualitative data provides depth and details through direct quotation and careful description of programmes, situations, events, people, interactions and observed behaviours. The

deailed descriptions, direct quotations and case documents of qualitative methods are collected as an open-ended narrative, without attempting to fit programme activities or peoples' experiences into pre-determined, standardised categories such as the response choices that constitute typical questionnaires or tests (Patton, 1987; Welman & Kruger, 2001; Fellows & Liu, 2003; Silverman, 2004). Based on the nature and perspective of this study a qualitative approach was used in general to collect data, and in particular, the case study method detailed descriptions, direct quotations and case documents of qualitative methods are collected as an open-ended narrative, without attempting to fit programme activities or peoples' experiences into pre-determined, standardised categories such as the response choices that constitute typical questionnaires or tests (Patton, 1987; Welman & Kruger, 2001; Fellows & Liu, 2003; Silverman, 2004). Based on the nature and perspective of this study a qualitative approach was used in general to collect data, and in particular, the case study method.

**Data Collection**

Yin (1994:78) states that "data collection for case studies relies on many sources of evidence such as documentation, archival records, interviews, direct observation, participant-observation and physical artefacts." He further notes that there are other sources of evidence such as films photographs and videotapes. For this study, data was collected from both primary and secondary sources. The primary data was obtained from key participants of infrastructure provision projects in three informal settlements namely Hanna Nassif, Tabata and Temeke located in Dar es Salaam.

The key participants of these projects included community members, community based organisations (CBOs), local authorities and project team managers. Intensive

structured interviews were conducted and questionnaires were completed during the period December 2004 to February 2005. The main issue investigated included the socio-economic conditions of the residents, physical infrastructure, and the impact of the participation of residents in infrastructure provision in terms of employment creation and poverty alleviation.

Data collected from CBOs included reports on how the projects were initiated, how mobilisation took place, issues of training and supervision, and strategies used to achieve the project objectives. Data collected from local authorities included information on the process of implementing LBT in infrastructure provision in informal settlements. Since local authorities acted as facilitators and implementers of the infrastructure projects in informal settlements, the issues of tender procedure, tender documentation, tender adjudication and contract forms, involvement of communities and the private sector in planning and implementing were investigated. Figure 4.1 gives an insight on the researcher visiting one of her case studies (Hanna Nassif) for data collection.

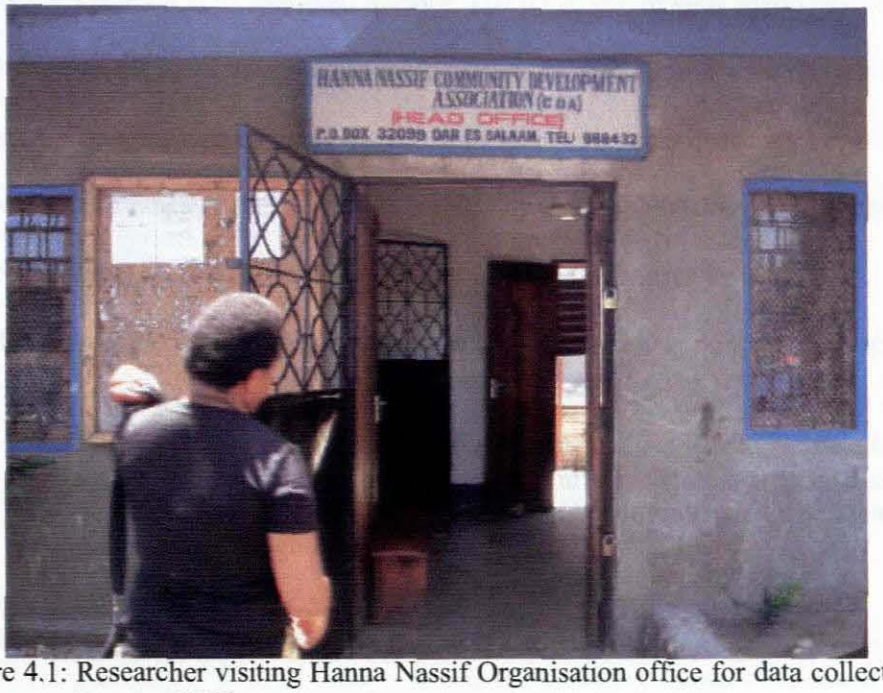


Figure 4.1: Researcher visiting Hanna Nassif Organisation office for data collection January 2005

The secondary data used in the study was obtained through reviewing the relevant literature in publications and information sources from various libraries both in Tanzania and South Africa. Additional information was collected from international sources that included conference papers, articles, reports, books, journals, and the World Wide Web. This (secondary) data was used to establish criteria and theories against which the findings of the empirical research were to be compared.

**Structured and In-depth Interviews**

The interview has been identified as one of the most important sources of case study information (Yin, 1994; Welman & Kruger, 2001; Fellow & Liu, 2003). There are typically three forms of interview. The open-ended interview, during which one asks respondents their opinion about ongoing events; the focused interview where respondents are interviewed for a short period of time during which the interviews may remain open-

ended and assume a conversational manner. The focused interview involves a small number of people in an informal group discussion focused around a particular topic or set of issues. The third type of interview demands more structured questions by which the interviewer administers questionnaires perhaps by themselves asking the questions and recording responses with little scope for probing these responses by asking supplementary questions to obtain more detail to pursue new and interesting aspects.

> "Overall, interviews are essential source of case study evidence because most case studies are about human affairs. These human affairs should be reported and interpreted through the eyes of interviewees and well-informed respondents can provide important insights into situations" (Yin 1994:85).

In simple terms, interviewing provides a way of generating empirical data about the social world by asking people to talk about their life experiences. In this respect, interviews are special forms of conversion.

> In society, information is increasing acquired by way of interviews. A common way of interviews is that of a one-way pipeline for transporting knowledge. Recently, we have come to recognise the interview as a meaning making conversation –a site and occasion for making meaning. It is more like two-way informational streets than a one-way data pipeline" (Silvermen, 2004: 143).

The principal aim of this study concerns the views of people on the impact of the LBT approach in provision of infrastructure to employment creation and poverty alleviation after the project has been completed. The unstructured questionnaires and in depth interview method has been preferred and were conducted personally. Figures 4.2 and 4.3 give an insight or testimony to the dynamics of interviews and discussion between researcher, supervisor and respondents.

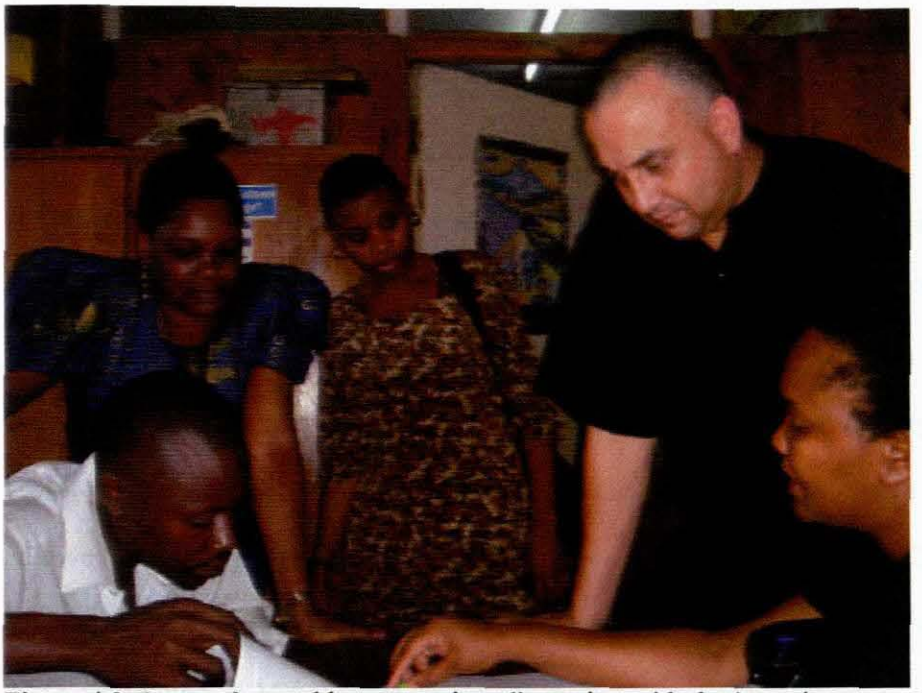

Figure 4.2: Researcher and her supervisor discussing with the interviewees and CBO leader in Hanna Nassif office. January 2005

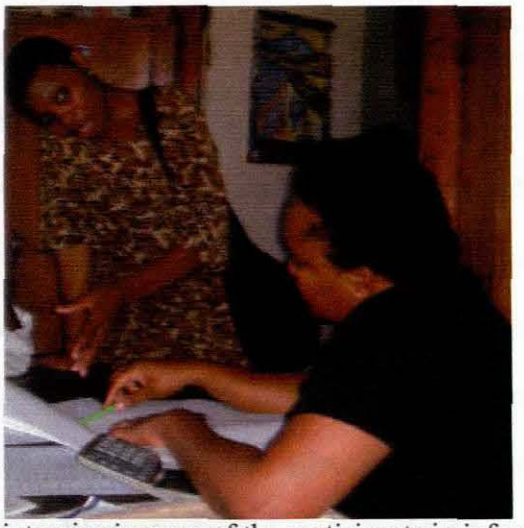

Figure 4.3: Researcher interviewing one of the participants in infrastructure provision in Hanna Nassif. January 2005

**Interviews with Participants on Infrastructure Provision**

**Sample Selection**

The qualitative or semi-structured interviews were conducted with 86 participants in infrastructure provision from three settlements namely Hanna Nassif (47), Tabata (20), and Mabatini Temeke (19), all of which are located in Dar es Salaam. These three informal settlements have been upgraded by provision of infrastructure using labour-based technology. In Hanna Nassif, there was provision of storm water drains, access road to a level of morram, and tap water supply system by construction of 10-water reserve tanks. The project started in 1993 and was completed in 2000. Since Tabata the project involved the provision of a potable water system, more than 15 potable wells were constructed. In Mabatini the project involved the provision of storm water drains. In all three informal settlements, the key participants were communities.

Interviews involved those residents who directly participated in the projects and included masons, storekeepers, labourers and treasurers. There were other key participants who were working with the communities by implementing, facilitating and supervising those projects. These participants included community-based organisatios (CBOs), local authorities and project teams that included engineers and consultants. A total of 86 participants, three CBOs namely Hanna Nassif, Tabata and Mabatini, and three local authorities (Municipalities) namely Kinondoni, Ilala and Temeke were selected for interview. Hanna Nassif is located in Kinondoni Municipal while Tabata and Mabatini are located in Ilala and Temeke Municipals respectively. The project teams involved in the projects were under the authority of local municipalities.

**Questionnaire Design.**

The questionnaire for residents who had participated in the project (indicated in appendix D) consisted of three parts with a total of 52 questions. Both open and close-ended questions were used to interview participants in infrastructure provision. Although some of the questions were closed such as question 17,18,19,20, 24,25, 36, 38,and 48 during the interviews the questions were formulated in a more open way. As stated in Fellows & Liu 2003:

> "Questions occurred in two primary forms -open and closed. Open questions are designed to enable the respondent to answer in full; to reply in whatever form, with whatever content and to whatever extent the respondent wishes in interviews or research may be probe" (Fellows &Liu 2003:109)

**Part One** of the questionnaire was based on information about the demographics of the respondent including its main activities, average income earning per month and whether he/she had experience on construction before he/she participated in the project. **Part Two** sought information on the position of respondents in their households, type of building structure in which they were living. **Part Three** investigated the impact of the participation. This includes how the respondents contributed in the project, the amount of money paid by the project, and if they receive any training, and how they used the money which they were paid. In this section the impact of the participation of residents in infrastructure projects especially after these infrastructure project completed was investigated. The impacts investigated include the employment status of the respondents after infrastructure projects were completed, their average income level, and their life condition. These questions were used only in Hanna Nassif and Temeke. In Tabata some of the questions such as question from 28 to 42 were omitted due to the nature of

approach used to deliver infrastructure in Tabata. The approach used in Tabata project was conducted on self-help basis thus there were neither payments no training.

The questionnaire for CBOs (See appendix E) consisted of total of 22 questions both open and closed. The information required questions included reports on how the projects were initiated, how mobilisation took place, issues of training and supervision, and strategies used to achieve the project objectives.

The questionnaire issued to local authorities (In appendix F) consisted of total of 24 questions both open and closed. The information required in the questions included the process of implementing LBT in infrastructure provision in informal settlements, the issues of tender procedure, tender documentation, tender adjudication and contract forms. They also sought aspects of involvement of communities and the private sector in planning and implementing LBT projects.

**Sampling Procedure**

The objective of sampling is to provide a practical means of enabling the data collection and processing components of research to be carried out while ensuring that the sample provided a good representation of the population (Fellows & Liu, 2003). Sampling can be conducted randomly or not. Random selection methods include "simple random sampling" and variations such as stratified sampling, systematic sampling and cluster sampling. Non-random selection includes methods such as judgemental or purposive sampling (Welman & Kruger 2001; Fellows& Liu, 2003).

Random sampling from a well-defined domain with known population, such as from within the geographic boundaries of the study site, enables survey results to be

statistically generalisable to the entire study site. Consequently each member of the population has an equal chance of being included in the sample and each sample of particular size has the same probability of being chosen (Welman & Kruger, 2001). The degree of sampling error in sample estimates of population measures can be calculated through standard formulae (Fellow & Liu, 1997).

In order to obtain a representative sample of the participants in the infrastructure provision projects, the list of residents that participated in the projects was obtained from the CBO offices. In Hanna Nassif a total of 2,000 participants were on the list while in Tabata and Mabatini 500 participants were on each of their lists. These lists formed the population frames from which a systematic random sample was selected. Systematic random sampling is used where the population frame is known and the sample is selected systematically by mean of a constant interval between one selection and another, but the first selection is selected randomly. The CBOs, local authorities and project team formed another population each. From each a total of three-population frames were identified, and all of them were selected.

## Methodological Problems

During the course of conducting this research several methodological problems were encountered.

- Several studies had previously been carried out in the Hanna Nassif settlements. Community development leaders had therefore spent much time dealing with researchers while neglecting their daily duties and other responsibilities. Consequently, they decided that all researchers must pay 20,000Tsh each to CBOs to become a member of that organisation and thus eligible for any assistance required for their research. The researcher therefore paid 20,000 Tsh in Hanna Nasif (1 South African Rand is equivalent to 180Tsh)

- Many participants felt some kind of invasion of their privacy, especially when asked about their monthly income.

- Several participants had built their houses from funds where the sources were questionable. Many thought that the researcher was in reality representing the government anti-corruption bureau. Consequently they hesitated to respond to questions that related to their income and expenditure.

- Residents in Hanna Nassif had the impression that the researcher possessed large sums of money. The area had been the subject of research by many international organisations who paid them to complete questionnaires. These situations led to researchers who had no funding failing to collect data from that area. The researcher paid 1000Tsh for each completed questionnaire to be able to gather the data needed.

- There were situations where residents agreed to participate in the study but when responding to questions posed they provided short information responses such as "Yes", "No' or "I do not know". They did not want to elaborate on issues no matter how hard the researcher tried to probe. There was one case where the respondent said, "Why don't you sit down and fill in the answers at home by yourself. I am sure you know the answers".

- It became apparent that people who were interviewed are desperate and with poor livelihood opportunities and insecure incomes, and some tended to be negative while being interviewed. They viewed researchers as people who took up their time unnecessarily. They thus developed negative attitudes towards questions that explored their livelihood and careers. These were typical experiences in Mabatini where poverty and income insecurity is pervasive.

- In Tabata and Temeke accessing many of the participants was very difficult since they worked great distances from where they lived. The researcher spent a lot of time and money to get to some of these people. She made appointments with them. They insisted that she come early around 7 o'clock in the morning with the condition that they would get something from her. The distance between where she was staying and Temeke was about 35 km. The researcher woke up around 5 o'clock in the morning and managed to get there on time and paid them 1000 Tsh each. There were only five participants.

## Chapter Summary

In this chapter, the method used to gather the data from residents who participated in infrastructure delivery in Hanna Nassif, Tabata and Mabatini as well as their CBOs and local authorities were discussed. The method used to gather data was qualitative

method in form of case studies. The research tools used were semi structure questionnaires and interviews which all were conduced personally. The sample selection, questionnaire design and administration, methodological problem were all discussed. Data collected are analysed in the next chapter.

# CHAPTER FIVE
# DATA ANALYSIS

This chapter presents the findings of three case studies (Hanna Nassif, Tabata and Mabatini) together with the results of interviews with participants in infrastructure provision projects. The participants in the study include residents of Hanna Nassif, Tabata and Mabatini informal settlements, community based orga nisations (CBO) and representatives from the local authorities. The findings will be discussed relative to each settlement with specific focus on the following subheadings:

- Historical background of the settlement;
- Findings from interviews of community residents;
- Findings from interviews of CBO; and
- Results from the interviews with local authorities.

The findings from each settlement will be compared with those of the other two settlements to determine the commonalities and differences. Conclusions will be drawn after comparing the findings, which were measured against the review of the literature. The Statistical Package for the Social Sciences (SPSS) has been used to analyse the quantitative data. Tables are used to summarise the data while histograms and pie charts supplement the tables accordingly.

## Hanna Nassif Informal Settlement

### Background of Hanna Nassif

Hanna Nassif is one of the oldest unplanned settlements in Dar es Salaam. It is located in Kinondoni District - 4 km to the north of the City Centre. The settlement covers an area of 46ha, and its borders include a planned area on the eastern side,

Kawawa Road on the northern side and the Msimbazi Valley on the southern and western sides (Kessy, 2002). Before the emergence of Hanna Nassif as a settlement, it was farmland belonging to a person of Greek origin known as Hanna. Upon his death another settler by the name of Nassif claimed the land. Hanna Nassif thus derived its name from these two settlers (Kessy, 2002).

Several studies confirm that in 1975 there were 995 houses in the area (Lupala, 1997; Konye, Lupala & Malombe, 1997; ILO, 1998; Kessy, 2002). By 1992 the number of houses had almost doubled to 1, 888 units. A study conducted by the University College of Lands and Architectural Studies, two years later, showed that this figure had risen to 2,136 units (SDP, 1995). Based on a sample of 60% of the houses, the 1994 study estimated the population to be approximately 19, 000 inhabitants spread over 4, 277 households, representing an average of 4.4 inhabitants/household. By 2002 the population of Hanna Nassif had increased further to 32,000 inhabitants with 8,230 households representing an average of 3.9 inhabitants/household (Population Census Report, 2002). Table 5.1 summarises details of Hanna Nassif informal settlement. It provides information on the location, the area covered by the settlement, population as well as population density. It also indicates the unemployment rate in the settlement, housing, condition literacy and infrastructure provided using LBT approach.

Table 5.1: Summary of details of Hanna Nassif informal settlement

| Characteristics | |
|---|---|
| Location | Kinondoni |
| Area | 0.46km$^2$ |
| Total population | 32,000 |
| Population density | 41,304p/km$^2$ |
| Employed | 60% |
| Unemployed rate | 40% |
| Literacy | 87% |
| Housing situation | 90% permanent |
| Infrastructures provided | Storm water main drains, access road and water supply system |

Before 1994, the settlement had no roads, drainage, tap or water supply system and/or solid waste management system in place. Moreover, the settlement experienced seasonal flooding due to the absence of proper drainage systems. Until 1992 the road network was very poor in the entire area to the extent that a large number of houses lacked vehicular accessibility. Existing roads were further invaded by house extensions narrowing them to the extent that only one car could pass through at a time. The drainage condition in the settlement was very poor. For example, on 10$^{th}$ of May 1991 it rained heavily, 72 houses collapsed and the whole of the central depressed area was flooded. Pit latrines were flooded and human excreta got mixed with rainwater. Together with uncollected solid waste, the settlement was reduced to an unhealthy living environment (Kessy, 2002; Nguluma, 2003)

The settlement was then upgraded with ILO, UNDP and the Ford Foundation support in two phases. The first phase took place from March 1994 to March 1996 while the second phase was from 1996 through 2000. The upgrading programme included the construction of the 2 km access road to a level of murram (murram road is shown in

Figure 5.1), 1.2 km main storm water drains including 150m gabions (main storm water shown in Figure 5.2), 3.7 km side drains as shown in Figure 5.3, 10 road drifts and 10 vehicular culverts crossing the main drains, two major outlets for drainage discharge into Msimbazi Creek, 16 road crossings, 128 foot bridges, 2.5 km water pipes and 7 water kiosks, in which three of them had a capacity of 10,000 litres each and the other four having a capacity of 5000 litres each (Figure5.4 shows one of the water kiosks).

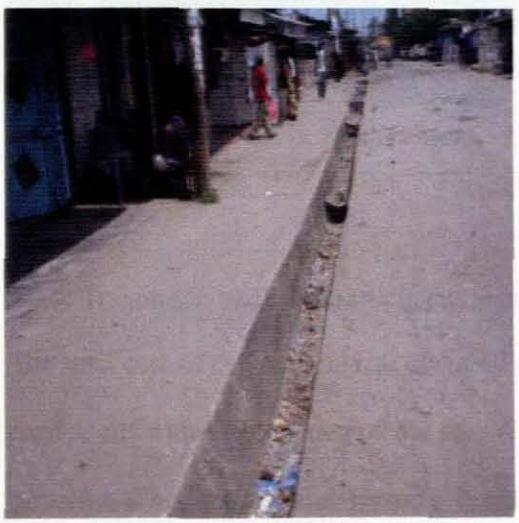

Figure 5.1: Murram road with main storm water drain in Hanna Nassif, January 2005.

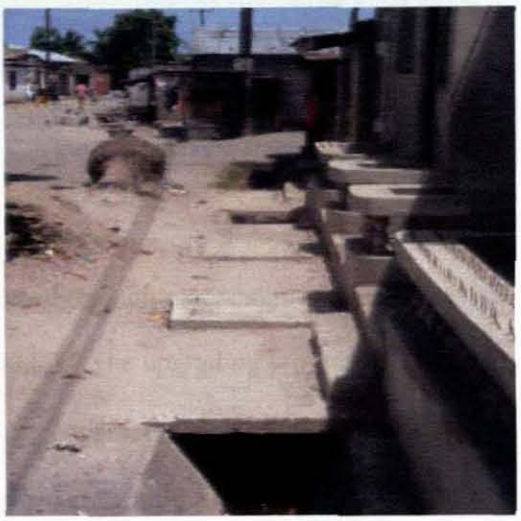

Figure 5.2: Storm water drain in Hanna Nassif, January

Figure 5.3: Side drain in Hanna Nassif, January 2005.

Figure 5.4: Reserve tank at Hanna Nassif, January 2005.

Training in skills for participants was conducted through workshops and seminars. The total cost of the projects was about US $ 1,600,000. The upgrading programme was carried out with the intention of not demolishing any houses, creating employment opportunities and alleviating poverty. It involved the community, using a labour-based approach. One critical element was that the community was involved in planning, designing and implementation. Today Hanna Nassif stands as an upgraded informal settlement with relatively improved and conducive living environment (Nguluma, 2003).

**Survey Findings: Community Members (Residents)**

The main issue investigated from the residents in Hanna Nassif settlement included the impact of the participation of residents in infrastructure provision in terms of employment creation and poverty alleviation.

**Demographic information**

The sample for the interviews comprised 47 participants. The distribution of the age and gender of respondents who participated in the project is shown in Table 5.2

Table 5.2: Gender and age of the respondents

| | Gender | | |
|---|---|---|---|
| Age | Female | Male | Total |
| 21-30 | 15% | 28% | 43% |
| 31-40 | 9% | 23% | 32% |
| 41-50 | 8% | 13% | 21% |
| >51 | 0% | 4% | 4% |
| Total | 32% | 68% | 100% |

Males (68%) dominated the sample with the majority being between 21 and 30 years of age. Further, 50% of the respondents were married, 14.3% were single and 4.3% each were either widowed or divorced. Therefore, most of the respondents had family responsibilities. Less than half of the respondents (43%) were heads of their households and consequently bore the responsibility of providing for the daily needs of their families. Furthermore, 10% of the respondents, though not household heads, were the only employed persons in their households. The respondents' current average income earning per month is presented in Table 5.3

Table 5.3: Average income earning per month

| Income (Tsh) | Frequency | Percentage |
|---|---|---|
| 10,000- 45,000 | 12 | 26% |
| 46,000-150,000 | 28 | 61% |
| > 151,000 | 6 | 13% |
| Total | 46 | 100% |

Table 5.3 indicates that the average monthly income for the majority of the respondents (61%) ranged between Tshs 46,000 and Tshs 150,000. This wage range was higher than the national minimum salary/wage of Tshs 45,000 per month set by the government. The amount earned per month gave an approximately ranged between Tshs

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1533 and Tshs 5000 per a day which is higher than Tshs 1100 expenditure per capita per day for Dar es Salaam (equivalent to US $ 1). The education levels of the residents is presented in Figure 5.5

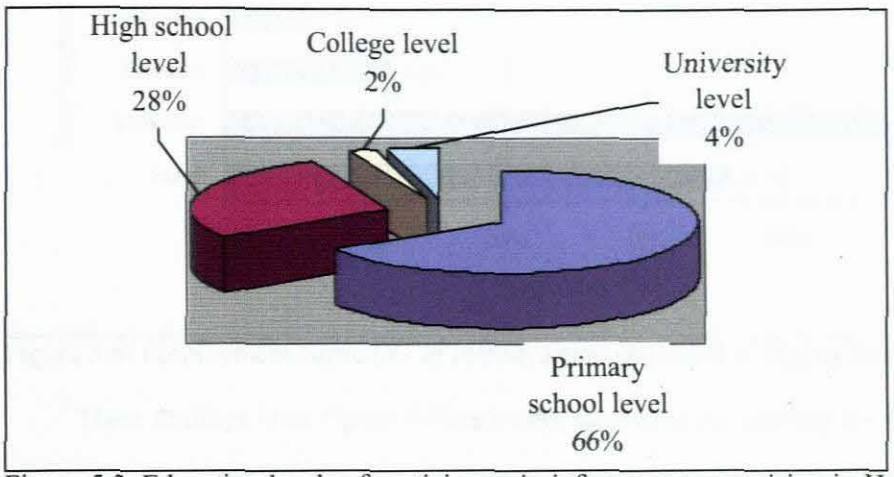


Figure 5.5: Education levels of participants in infrastructure provision in Hanna Nassif.

From Figure 5.5 it is evident that majority (66%) of the respondents had primary school level education. This finding suggests that they were most likely to be affected by high levels of unemployment and poverty. They would therefore likely not have sufficient income to provide for their basic family needs.

**Participation in the infrastructure works.**

This section describes the participation of the residents in the infrastructure works in terms of type of employment, length of employment, payments, awareness of the project, training, motivation and spending patterns of the income earned from the project.

Type of employment

Out of the sample of 47 persons, 17 were 'fundis' or semi-skilled experts in the construction field and 22 were labourers. The remainder were employed in other capacities. The employment profile of the sample is shown in Figure 5.6.

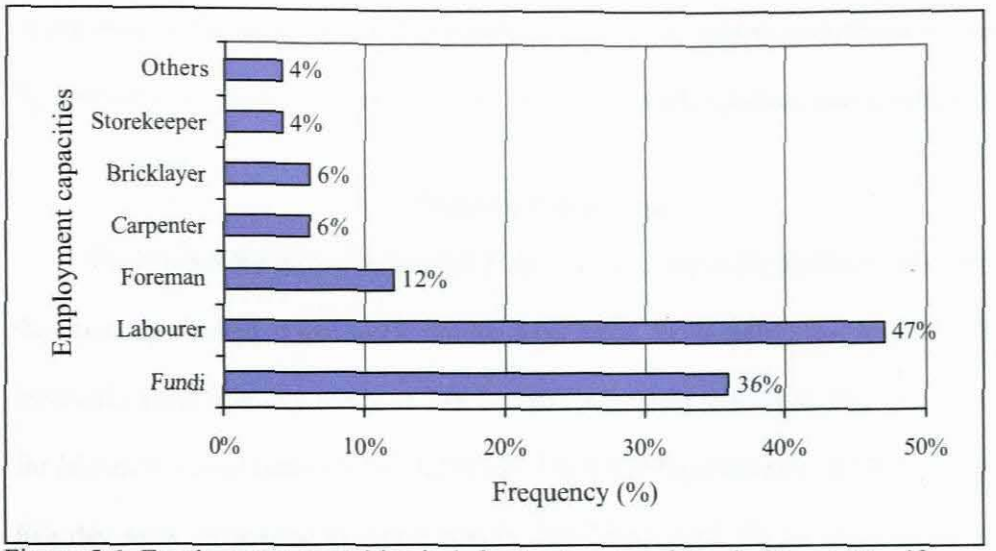


Figure 5.6: Employment capacities in infrastructure provision in Hanna Nassif

These findings from Figure 5.6 are hardly surprising considering the work was labour intensive, requiring extensive excavation and construction and that a number of activities typically done by labourers.

Length of employment

The project contract for Hanna Nassif infrastructure provision lasted for six years in two phases of three years each. The distribution of the length of employment of residents on the project is presented in Table 5.4.

Table 5.4: Length of Employment

| No of years | Frequency | Percentage |
|---|---|---|
| <1 | 7 | 12% |
| 1-5 | 26 | 74% |
| 6-10 | 3 | 9% |
| Total | 36 | 100 |

Most residents (83%) were employed for more than one year. This employment period was much higher than that suggested in the literature (100 days). It is therefore suggested that the employment period was considerable sufficient for the participants to

accumulate sufficient income and experiences which may lead to ground out of poverty by investing on business or getting better employment after project was completed.

## Methods of payments

Workers on the project were paid at the end of every week for the number of days they actually worked in that week. On the other hand, the treasurer and storekeeper received a fixed monthly salary of Tsh 17,500 (equivalent to R 113). The average wage for labourers varied between Tsh 4,250 and Tsh 4,500 (equivalent to R30) for a typical five-day week, increasing to approximately Tsh 7,000 (ZAR 46) for a seven-day working week. Fundis and foremen, on average, received between Tsh 8,000 and Tsh 8,500 (ZAR 53) per week with a supplementary amount if they worked on weekends.

In comparison, semi-skilled labourers namely those who dug trenches were paid an agreed sum per metre for the trench they excavated. For example, for every 20 metres excavated the team of approximately 6 workers was paid Tsh 100,000 (ZAR 667). This amount was then divided equally amongst each of these workers. The findings suggest that although the amount of money which workers were paid was small it was possible for them to save and improve their standards of living.

## Awareness of the Project.

The respondents were asked how they became aware of the project. Their responses are shown in Figure 5.7.

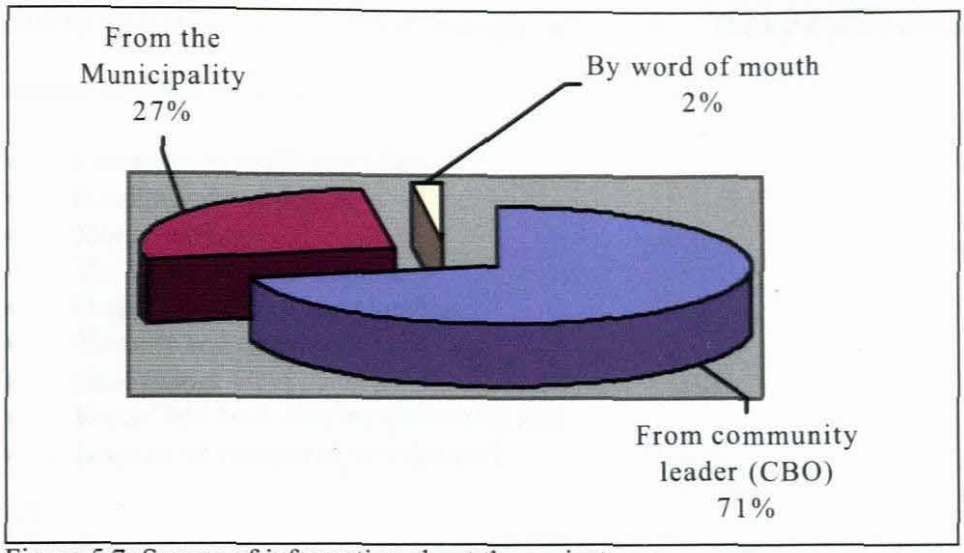


Figure 5.7: Source of information about the project

Evidently the most frequent source of information about the project as it appears in Figure 5.7 was the leadership of the community-based organisation (CBO) 71%, and another contribution of 27% from the municipality. Considering that the CBO was established particularly to address the challenges of infrastructure in the settlement it was the link between government and community. It therefore was the most likely source of information to residents.

## Training

Skill enhancement was targeted as the vehicle to enhance the sustainability of employment creation and poverty alleviation on the infrastructure project. Residents were asked several questions relative to training. More than half (54 %) of the residents had previous construction experience. Almost two-thirds (61%) of the residents had received training in the CBO office before the project commenced. Most (85%) received on-the-job training in the specific construction activities. In addition, the duration of training ranged from one week to six months. Each participant had to attend between 3 and 4

training sessions at various intervals throughout the project. The topic addressed in the training sessions included:

- Construction health and safety;
- Handling of equipment;
- Mortar mixing;
- The construction of gabions;
- Drain maintenance and plumbing;
- Masonry and carpentry;
- Steel fixing;
- Record and book keeping (treasurer); and
- Issuance of equipment (storekeeper)

This was the first opportunity for 47% of residents to participate in infrastructure works. Therefore the on-the-job training they received became important in helping them to secure better employment after the project was completed.

## Motivation

With respect to what motivated them to participate in the infrastructure project, various reasons were given. The overriding reason (60%) was the possibility of the project being a source of income to better provide for the basic needs of families such as rent, food and medical expenses. Other reasons included skills training and additional experience (19%); proximity of the job to place of residence thereby reducing transportation costs and flooding (6%); community spirit of working together (to work together with the community) (2.2%). The remainder (12.4%) cited environmental concerns and the positive impact the project would have in terms of the health of the local population.

Spending pattern of the money earned

Residents were asked about the wage they earned from the project and how they used these funds. The distribution of wages is shown in Table 5.5.

Table 5.5: Wage earned from the project

| Income earned | Frequency | Percentage |
|---|---|---|
| <100,0000 | 13 | 28% |
| 100,000-500,000 | 20 | 42% |
| >501,000 | 7 | 15% |
| Not sure | 7 | 15% |
| Total | 47 | 100% |

Just less than half (42%) of the residents earned between Tsh, 100,000 to Tsh, 500,000 equivalent to between R 667 and R3330 with 28% earned below Tsh, 100,000. For the spending patterns of residents see Table 5.6.

Table 5.6: Spending patterns of the money earned from the project.

| Expense | Percentage | Ranking |
|---|---|---|
| Family expenses | 70% | 1 |
| Investing on business | 32% | 2 |
| Personal savings | 26% | 3 |
| Home improvement | 21% | 4 |
| Others | 6% | 5 |
| Insurance policy | 2% | 6 |

The findings from Table 5.6 suggest that expenditure on family expenses such as food, clothes, medical and rent were dominant. As family expenses are the basic needs, for some of the respondents, this was the only source of income they had to provide for their basic needs. On the other hand, almost one third (32%) of the residents were able to invest in their own businesses, indicating that some residents were able to ensure sustainability of their income, creating sustainable employment while at the same time

alleviating poverty. Others used their income on home improvements and personal savings, which also contributed to improving their quality of life.

Impact of level of education to spending pattern

The cross tabulation was performed in order to ascertain if the level of education impacted spending patterns. The results of analysis are presented s in Table 5.7.

Table 5.7: Spending patterns and levels of education

| Spending pattern | Levels of education | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | PS | Rank | HS | Rank | CL | Rank | UL | Rank |
| Family Expenses | 74% | 1 | 38% | 3 | 0% | 2 | 33% | 1 |
| Business Investment | 23% | 2 | 54% | 1 | 0% | 2 | 33% | 1 |
| Home improvement | 23% | 2 | 46% | 4 | 0% | 2 | 33% | 1 |
| Personal savings | 16% | 4 | 23% | 2 | 0% | 2 | 0% | 4 |
| Insurance policy | 0% | 5 | 0% | 5 | 100% | 1 | 0% | 4 |

PS: Primary school level, HS: High school level, CL: College level, UL: university level

The findings from Table 5.7 suggest a strong correlation between the level of education and spending pattern. Expenditure on family expenses dominated (74%) for primary school level education followed by business investments and house improvement (23% each). A few of them (16%) were able to save some of their income. On the other hand, more than half (54%) of residents who had high school level education invested in their own business followed by personal savings (46%). About one third (38%) used their income on family expenses and home improvement. Additionally, the residents who had college level education spent most of their income on insurance cover, while those who had university level spent their income on personal savings, investing in businesses and family expenses.

Impact of gender on spending pattern

To determine whether there was any correlation between spending patterns and the gender of residents, the data on spending patterns and gender was cross tabulated. The cross tabulation is shown in Table 5.8.

Table 5.8: Cross tabulation on spending pattern and gender

| Spending pattern | Gender | | | |
|---|---|---|---|---|
| | Male | Rank | Female | Rank |
| Family expenses | 37% | 1 | 26% | 2 |
| Personal saving | 34% | 2 | - | |
| Business | 31% | 3 | 53% | 1 |
| Home improvement | 22% | 4 | - | |
| Insurance Policy | 3% | 5 | - | |

Findings from Table 5:8 reveal that there is correlation between gender and spending pattern. Males spent most of their income on family expenses as ranked 1st, followed by personal savings (2nd) and business investment (3rd). On the other hand, more than half (53%) of the female invested their money in businesses as ranked 1st followed by family expenses.

**Impact of infrastructure project to the participants**

This section describes the impact of participation of the residents in the infrastructure provision works after the project was completed in terms of employment creation opportunities and poverty alleviation. The situation of employment after the project is compared with the situation before and four years later after the completion of the project. Other impacts such as home improvement, appreciation of residents, and success of LBT in poverty alleviation as well as recommendation of the respondent are also described

Employment

The residents were asked to indicate their employment situation before they participated in infrastructure project. The result is shown in Figure 5.8

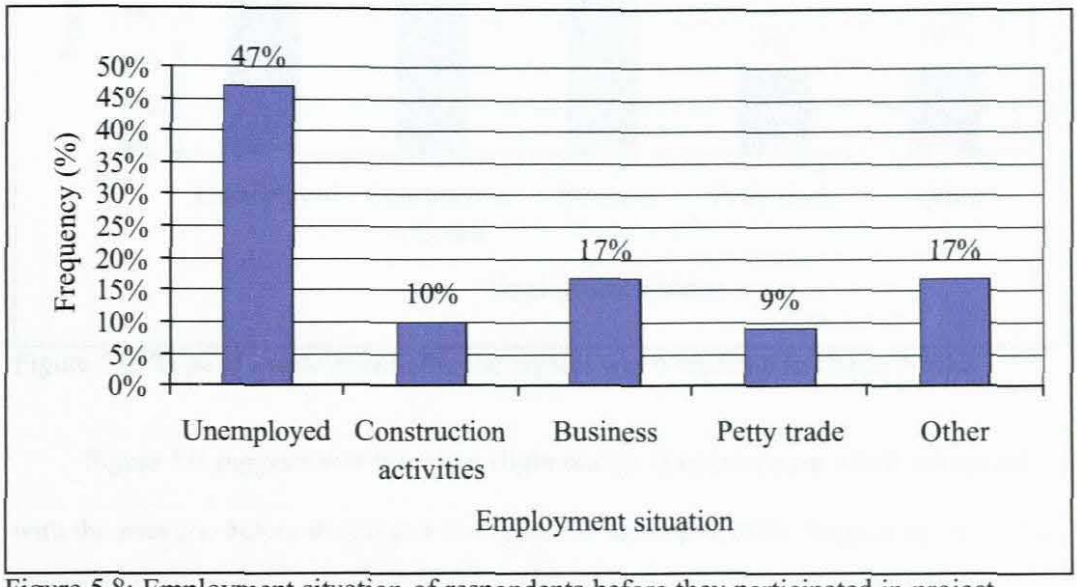


Figure 5.8: Employment situation of respondents before they participated in project.

Prior to the commencement of the infrastructure provision works as evidenced from Figure 5.8, 47% of the residents were unemployed, and they admitted that participating in infrastructure project was their first job. Furthermore, 17% of the residents were doing business, 10% were working on construction activities, 9% were petty traders and 17% were employed in different other sectors. To compare the situation of employment before the project and after project was completed, respondents were asked if they managed to secure employment after the project was completed and asked to indicate the type of employment which they secured. The result is presented in Figure 5.9.

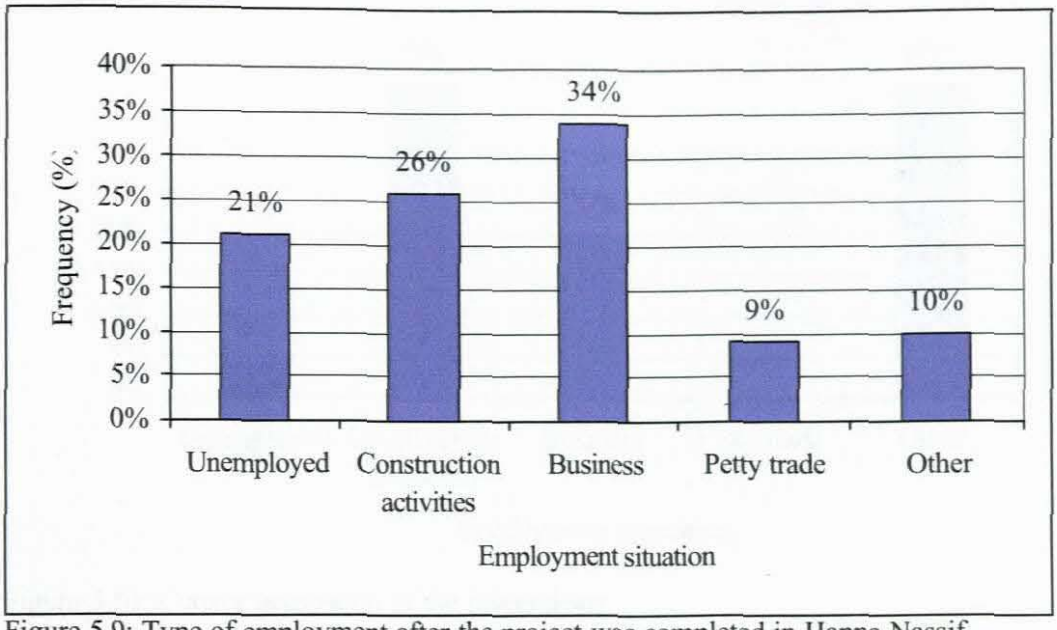


Figure 5.9: Type of employment after the project was completed in Hanna Nassif.

Figure 5.9 suggests that there is a slight change in employment trends compared with the situation before the project in Figure 5.8. Unemployment dropped by 26%. The number of residents employed in construction activities and those who were investing in their own business doubled. For those who were employed in other private sectors their number dropped by 7%. Petty trades remained unchanged. However, 73.3% of residents secure employment between one to three months while 13.3% each secured employment seven months to one year after the project was completed. These findings of employment situation were then compared to the employment situation four years after, because this study was conducted four years later after the completion of the infrastructure projects. The result is presented in figure 5.10.

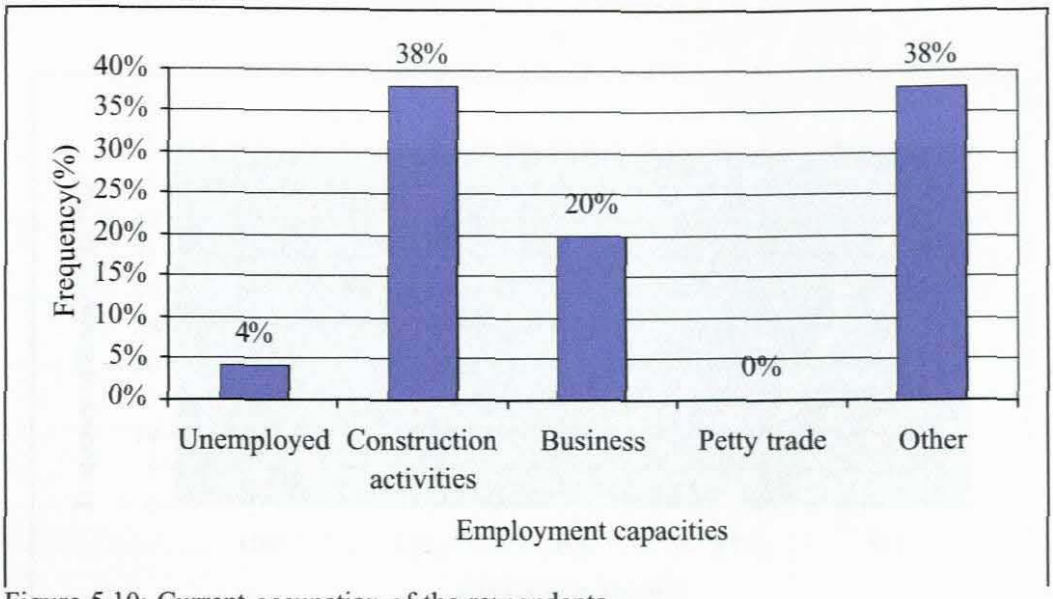


Figure 5.10: Current occupation of the respondents

The findings from figure 5.10 suggest that unemployment dropped by 17% (from 21% to 4%). The number of residents employed in construction activities increased by 12% (from 26% to 38%). Residents who were engaged in business investment such as hair dressing saloon, tailoring, clothes shops, grocery and fast food dropped by 14% while for those employed in different private sectors as a storekeepers, welding industries, carpentry and security companies increased by 18%.

Figure 5.11 summarises the employment situation of the residents before they participated in infrastructure project; soon after infrastructure project was completed; and four years later after infrastructure project was completed.

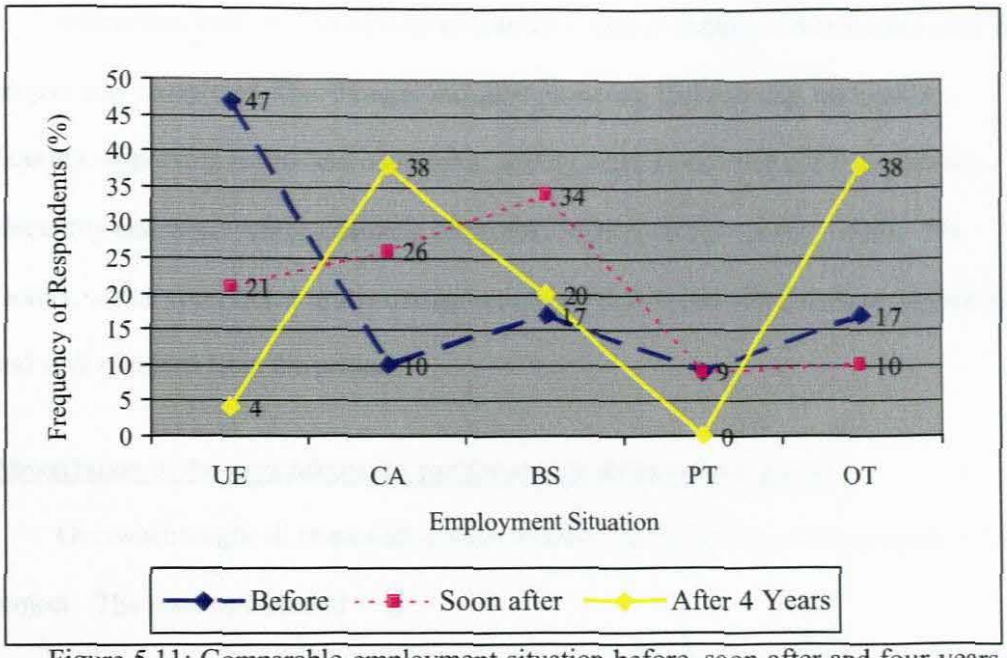


Figure 5.11: Comparable employment situation before, soon after and four years later of the residents participated in infrastructure project.

Note: UE: Unemployed, CA: Involved in construction activities, BS: Business investment, PT: Petty trade, OT: employed in other sectors.

Through participation of residents in infrastructure projects, Figure 5.11 illustrates that unemployment dropped from by 43% (47% to 4%) and created sustainable employment to the residents. The number of residents who secured employment in construction activities increased by 28% (10% to 38%) while the number of residents who were employed themselves by investing in their own business increased by 3% (17% to 20%). On the other hand, residents who secured employment in other sectors as drivers, carpenters, storekeepers increased by 21% (17% to 38%).

Home modification/improvement

More than half (68.2%) of respondents were able to improve their houses after the project was completed. The changes included plastering and painting the houses, flooring, improving toilets and bathrooms, adding extra rooms and utilities such as electricity and water where available. Therefore improved their quality of life. The factors, which contributed to the changes made to their houses were income, knowledge and skill obtained from the project.

Appreciation of the respondents for participated in infrastructure works.

Overwhelmingly all respondents were positive regarding their participation in the project. The reasons included:

- Acquired skill and experience that helped them to secure employment;
- Earned income and improved life style/Houses;
- Fund helped them to start businesses;
- Knew the infrastructure and construction activities;
- Managed to improve their areas by solving problems of flooding and infrastructure; and
- Bought assets such as plots and farms.

Impact of the participation in infrastructure provision to the residents and their family

The respondents were asked what the impact was of their participation in infrastructure works and their families. The findings are presented in Table 5.9

Table 5.9: Impact of the participation

| Impact | Percentage | Ranking |
|---|---|---|
| Improve living standard | 49% | 1 |
| Acquire skills to get more employment | 47% | 2 |
| More income to make investments | 30% | 3 |
| Others | 2% | 4 |

From Table 5.9, it is evidently that participation of residents in these infrastructure works allowed them to improve somewhat their family's standard of living and to

effectively cover their basic needs which could not otherwise have been attained. Moreover as a result of the project, the skills acquired helped some respondents to secure better employment to better provide for the basic needs of their family. In addition income earned from the project helped several respondents to invest in new businesses and therefore ensuring sustainability of income to the family

In essence, 92% of all respondents were willing to participate in future infrastructure construction works and reasons included

- They will be able to gain more skills and experiences which will help them to reduce poverty
- They will gain more money, which will help them to investing in businesses

Success of LBT in poverty alleviation and employment creation

Most (97%) of respondents agreed that LBT was successful in terms of poverty alleviation and employment creation opportunities. The reasons given by respondents were:

- They got income, which helped them to improve living standards.
- Skills obtained help them to secure better employment and income.
- Many people got skills and became self-employed
- Crime was reduced.
- Improved infrastructure reduced diseases such as malaria, and cholera.

Recommendation of LBT approach to other informal settlements

All respondents recommended the LBT approach to other informal settlements needing infrastructure and reasons included:

- LBT provides income to the local people which will help them to improve their standards of living; and
- LBT helps the unemployed people to acquire skills to improve their lifestyles and secure better employment.

The respondents made the following recommendations to improve the LBT approach in future.

- Good management and leadership through sensitisation and information dissemination campaigns to better inform people about the project, their roles and responsibilities;
- Additional training for workers to improve the quality of the infrastructure produced and to secure better employment after the project has been completed. The training should be provided to all workers and leaders in CBOs;
- An increase in the wages paid to better cope with the cost of living and enable future investment; and
- Introduce LBT approach in infrastructure provision in other areas.

**Findings from CBO: Hanna Nassif Community Development Association (HNCDA)**

The Hanna Nassif Community Development Association (HNCDA) was a CBO formed by residents in Hanna Nassif to address the infrastructure problem. HNCDA leaders were interviewed by the researcher to report on what role the HNCDA played in the delivery of infrastructure in Hanna Nassif, how the projects were initiated, how mobilisation took place, issues of training and supervision, and strategies used to achieve the project objectives.

**The role of the HNCDA in infrastructure delivery in Hanna Nassif settlement**

Before the Hanna Nassif Community Development Association (HNCDA) was established in 1997, the Community Development Committee (CDC) was established by the local community to mobilise people to contribute towards financing, participation in design and construction of proposed infrastructure services including the future operation and maintenance thereof. The chairman of HNCDA commented as follows when asked how they had conceived the project:

> "We created CDC in order to address the problems of flooding experienced during the rainy season due to the absence of drainage channels. Some houses collapsed and people moved from one place to another with a lot of problems. At the same time uncollected solid waste and wastewater from pit latrine overflowed during the rainy season, creating an unhealthy living environment. We had to act for our development. In 1991, we sought the collaboration of the city authority, and other local actors so as to come up with upgrading proposals which will involve the community from the beginning".

The objectives of the project were to reduce the problems of flooding and the water supply system while at the same time avoiding the demolishing of any houses, creating employment opportunities and alleviating poverty. The approach of mobilising people in the community was crucial for a number of reasons.

**Mobilisation of community**

The CDC and later the HNCDA played vital roles in creating community awareness. To ensure that the community participated fully in the implementation of the initiatives, Ten-cell leaders were used to deliver information from one home to another. In some cases, loudspeakers were used to inform and mobilise residents. On other occasions primary school pupils were used to convey information to their families. Placards and announcements were placed on the HNCDA notice board (Shown in figure 5.12) and other visible places along the junctions. All community residents were allowed to participate in the infrastructure project except children and the aged. Priority was given to those who had construction experience. Many of them were employed as "fundi" (someone having skills and experienced in construction).

Relative to how the community benefited from the project the chairman of HNCDA suggested during his interview that:

> "Some members of the household have got employment and acquired skills in the provision of infrastructure without paying for transport cost or paying for the training. Many residents have opened up small business due to income earned from the project".

In addition, skills obtained during the project enhanced the porapats of residents finding better employment after the project was completed. The picture below (Figure 5.12) was taken during the researcher's visit to the Hanna Nassif community project office where information and decisions about community development were deliberated. The office has its contact details displayed for the community above the front door.


Figure 5.12: Hanna Nassif Community Development Association office. January 2005.

**Relat ion with local authority**

The Hanna Nassif Community Development Association (HNCDA) was well linked with the local authority in Kinondoni as the local authority responsible with urban development and management in Dar es Salaam. The United Nations Development Programme (UNDP) and the Ford Foundation through the local authority provided funds for delivering infrastructure to the Hanna Nassif settlement. The local authority officer

from Kinondoni chaired the steering committee, which was responsible for all construction activities. The technical support team providing training, town planners and engineers, were also from the Kinondoni local authority.

**Challenges encountered by HNCDA during the project.**

Most of the community members and leaders read and wrote in Kiwashili. However most of the documents that were prepared and used were in English. For the management of day-to-day activities it was difficult for most community leaders to use the documents without the help of the technical support team. Conflicts within the community presented other challenges. The chairman of HNCDA pointed out that:

> "Since it was our first time dealing with this kind of project there were a lot of conflicts regarding power, especially on fund management. Also the nature of Hanna Nassif is heterogeneous socially and economically, which created a fertile ground for vested interests such as the "elite" and "non elite". This situation has brought about community conflicts thus was hindered delay in implementing the project."

**Lessons learned by HNCDA**

The Labour Based Technology (LBT) approach provides the population of Hanna Nassif with opportunities to identify their priority needs and improve their living standards due to the income they earned from the project. Skilled acquired help the community member to get better employment. Above all, this approach enhanced the community's sense of ownership and responsibility to ensure the sustainability of the infrastructure. The Chairman made the following statement when asked about maintenance and involvement of the community:

> "The HNCDA is liable for maintenance and we have established a maintenance mechanism and employment generation activities. Most funds are collected for the maintenance including water charges and monthly house hold contributions. Also households are cleaning or hiring labourers to clean the drains fronting their houses".

**Success of the project.**

The leaders of the HNCDA agreed that the project was successful since they achieved their objectives. Reasons given included:

- Skills obtained helped the community member to find better employment and more income hence sustainability of employment and alleviation of poverty;
- People earned income and improved their living standards hence alleviating poverty;
- Managing to improve services such as drains, access roads and the water system which created a better environment for more investment in housing and micro enterprises, financial savings from less frequent bout of malaria and other diseases because of the control of flooding and solid waste collections; and
- Crime was reduced.

**Findings from Local Authority: Kinondoni Municipality.**

The Kinondoni local authority under the Kinondoni municipality is responsible for all infrastructure provision in Kinondoni area specific in Hanna Nassif. The researcher held interviews with the local authority staff who were involved in Hanna Nassif project. The information required included the role of the local authority in infrastructure delivery in informal settlements, the process of implementing LBT in infrastructure provision in informal settlements, the issues of tender procedure, tender documentation, tender adjudication and contract forms, the level of involvement of communities and the private sector in planning and implementing LBT projects.

**Role of the local authority in providing infrastructures in informal settlements**

The role of the local authority was to facilitate the delivering of the infrastructure to the Hanna Nassif settlement to obviate the problem of flooding from which they had suffered for many years. They assisted the community by providing technical support, funds and training. According to the project engineer in Kinondoni municipality

> "In Hanna Nassif we worked hand in hand together with the community to initiate, design and implement the project from the beginning up to the end. Our main objectives were service delivery with reasonable cost at the same time creating employment to the local people and alleviating poverty"

The project was well conceived as the Hanna Nassif community initiated it themselves based on their experience of previous flooding. The community was aware of their problem and ready to change the situation. The approach used was Labour Based Technology (LBT) through a community contract, adopted from Sri Lanka with support from the International Labour Organisation (ILO). All residents participated from the commencement of construction work through to the maintenance of completed infrastructure while at the same time generating employment and income. Knowledge and skills were acquired on-the-job at the construction site.

**Involvement of the community in design and implementing the project**

The most appropriate way of ensuring community participation in planning and design is to reflect upon and meet the local community's capacity to understand and realize the scope of a project. The approach involved community members since they would be responsible for the day-to-day activities in the field. The designer's proposals were presented in Kiswahili to enable the community members to follow the discussions and express their views in a language that they understood. Different designs were fully discussed and the community made the final choice of design and approach. The project engineer remarked:

> "The main task of the technical staff was to design the construction works and to present the different options and cost consequences to the community. They must assure that appropriate building standards were followed and good quality observed. Flexibility in the design and implementation of the infrastructure improvement was adopted."

**Tender documents**

The technical support team assisted the construction committee in Hanna Nassif to prepare simple documents that quantify the works (Bills of Quantities) and the prices for the various activities. Simple contract documents were used which were in Kiswahili, written simply and understandably, had very specific measurable descriptions, and had clearly defined incentives and sanctions. The project engineer explained:

> "The community act as the contractor responsible for implementation of all civil works. The chairman of construction committee signed the contracts on behalf of the community and was responsible for the all construction works in the project. The contract was signed in HNCDA' meeting room (shown in figure 5.13). The committee worked under the guidance of the engineers who were fully time on the sites to control quality and train the worker in order to build their capacity'

*Figure 5.13: HNCDA meeting room, January 2005.*

The photograph (Figure 5.13) was taken during the researcher's visit to the Hanna Nassif settlement and indicates the Hanna Nassif meeting room where all committee discussions, meetings and some of the training was held.

**Challenges and Lessons learned by the Kinondoni local authority**

Challenges encountered during the project according to the project engineer included the following:

- There was no previous expertise in dealing with community contracts in Tanzania, since Hanna Nassif was the first informal settlements upgraded in urban settlement in Tanzania;

- The project consumed considerable time especially in the beginning of the project because of training, mobilising people and approving designing considering the main objective of not demolishing any house; and

- Throughout the project period there were many conflicts within the community. Occasionally the project was stopped while the conflicts were resolved which lead to the extension of six month of the project period.

In response to the lessons learned, the project engineer responded that:

> "The Hanna Nassif initiatives in using LBT in infrastructure provision have shown that the use of LBT approaches could be appropriate for the urban settlement. As observed from Hanna Nassif, the evidence in construction and the sense of ownership among the community member can develop if they are actively involved from the beginning. LBT also imparts to the residents the skills for routing and periodic maintenance and better employment after the project completed"

**Success of the project**

The objective of the project was achieved. An infrastructure to Hanna Nassif was provided without demolishing a single house. The community participated in executing the work. The project cost was reasonable and less expensive than using equipment intensive approach. Flooding was totally reduced. The project engineer agreed that the LBT approach impacted on opportunities for employment and poverty alleviation. He commented as follows:

> "The quality of life in Hanna Nassif community has improved as paid labour creates opportunities for improved household incomes. Some of the household have managed to be employed themselves in micro enterprises due to the income earned from the project. The skill acquired from the project help household to get better employment after the project. In future the LBT approach can be improved by improve more skills to the local people also emphasis on good management and leadership"

**General Lessons Learned on LBT Approach in Delivering Infrastructure in Hanna Nassif Settlement**

- The LBT approach to delivering infrastructure in Hanna Nassif has enabled the participants to improve their living standard. Income earned by the workers improved the quality of their family lives, including improving their homes. Many were able to invest savings to start or expand economic activities. However, the provision of training and technical expertise and skill on-the-job at the construction site empowered the community to secure better employment;

- The level of education and gender of participants had an impact on the spending patterns of income earned form the project. While residents with primary school level education spent more on family expenses, those with high school level education allocated more to business investments and personal savings, leading to create sustainable employment. In addition males spent more on family expenses while females spent more on business investments;

- The Community Development Organisation (CBO) played a vital role in making the community aware of the project, organising the community, implementing and supervising the project. A strong commitment on the part of CBO despite having low capacity in term of skills and technology, enabled them to work with the various actors involved in the project;

- The implementation of LBT works requires the work to be well organised, especially the labour force. The high level of supervision was particularly important as the workforce often consisted of community members with no prior experience in construction; and

- Local authorities still had the role of delivering infrastructure in informal settlements. Although the communities were involved in constructing the infrastructure local authorities were liable for financing projects, training, designing and implementing them.

**General Challenges on LBT Approach in Delivering Infrastructure in Hanna Nassif Settlement.**

- The time and effort required to ensure full participation of the community in discussing contract proposals and reaching agreements. This process not only time consuming but also costly in terms of support staff and resources needed;

- The non-homogeneity of communities could lead to power struggles and conflicts, endangering the implementation of the project and its execution. Conflicts may also be caused by ambiguities in the roles and responsibilities of the various partners such as community members, CBO leaders and the local authority; and

- Effective management and leadership are critical. The process of laying down the principles of accountability and people involvement in the decision making process by the project team is necessary for the realisation of participation in and willingness of the residents to contribute to maintenance.

## Mabatini Informal Settlement

### Background of Mabatini

The Mabatini informal settlement is located in the Temeke district some 5km away from the Temeke municipality head office. The population of the Mabatini is 8,000 inhabitants with 1,000 households, representing an average of 8 inhabitants/household (Population Census, 2002). Table 5.10 summarises the details of the Mabatini informal settlement and provide information on the location, population and unemployment rate in the settlement as well as infrastructure provided using the LBT approach.

Table 5.10: Summary details of Mabatini informal settlement

| Characteristics | |
|---|---|
| Location | Temeke |
| Area | n.a |
| Total population | 8000 |
| Population density | n.a |
| Employed | 10% |
| Unemployment rate | 90% |
| Literacy | n.a |
| Housing situation | n.a |
| Infrastructure provided | Surface water drains |

Before the settlement was upgraded, the area had experienced serious flooding during the rain season, due to the lack in the drainage system. The settlement was then upgraded in term of the Public Works Programme with support from the Tanzania Social Action Fund (TASAF). Upgrading programme commenced in 2002 and was completed in 2003. It included the construction of 2.0 km of surface water drain (shown in Figure 5.14), installation of 7 lines each 6.8m, fabrication and installation of 53 concrete slabs

and construction of 2 headwalls to culverts. The total cost of the project was Tsh 40,946,130 (R 272,980) and was funded by TASAF (Tanzania Social Action Fund). The project involved the community itself using a labour-based approach. They were involved in planning, designing, implementation and construction. Figure 5.14 illustrates the surface water drain in the Mabatini settlement

Figure 5.14: Surface water drain in the Mabatini settlement, February 2005

**Survey Findings: Community Members (Residents)**

The residents in the Mabatini settlement were interviewed. The information gathered included the impact of the participation of residents in storm water drainage provision in terms of employment creation and poverty alleviation.

**Demographic information**

The sample for the interviews comprised of 19 participants. The distribution of the age and gender of residents who participated in the infrastructure project are shown in Table in 5.11.

Table 5.11: gender and age of the respondents

| | Gender | | |
|---|---|---|---|
| Age | Female | Male | Total |
| 21-30 | 16% | 21% | 37% |
| 31-40 | 26% | 21% | 47% |
| 41-50 | 5% | 11% | 16% |
| Total | 47% | 53% | 100% |

Males (53%) dominated the sample with the majority being between 21 and 40 years of age. Further, 58% of the respondents were married, 26% were single, 10% were either widowed and the remainder were divorced. Therefore, most of the respondents had family responsibilities. Additionally, 43% were heads of their households and consequently bore the responsibility of providing for the daily needs of their families. Further, 94% of the respondents, though not household heads were the only employed person in their households. However 73.7% of the respondents were living in permanent structures constructe d of concrete blocks and covered with corrugated iron roofing sheet.

Regarding the level of education of the residents, all respondents had at least primary school level education, which suggests their probable vulnerability to high levels of unemployment and poverty. The average income per month is shown in Table 5.12.

Table 5.12: Average income earning per month

| Income (Tsh) | Frequency | Percentage |
|---|---|---|
| 10,000-40,000 | 9 | 60% |
| 46,000-150,000 | 5 | 33% |
| > 151,000 | 1 | 7% |
| Total | 15 | 100% |

Table 5.12 indicates that the average monthly income of the residents who participated in infrastructure provision for majority of respondents (60%) ranged between Tshs 10,000 to Tshs 40,000. This monthly income range was less than the national minimum wage of Tshs 45,000 per month established by government. Further this range

provide approximately the amount earned per day between Tshs 333 to Tshs 1333, which is lower than Tsh 1000 the expenditure per capita per day for Dar es Salaam (Tshs 1000 equivalent to US $ 1).

**Participation in the infrastructure works**

This section analyses the participation of the respondents in the infrastructure works in term of type of employment, length of employment, payments, awareness of the project, training, motivation and residents spending pattern of income earning from the project.

Type of employment

Out of the sample of 19 persons, 4 were fundis and 14 were labourers. The employment profile of the sample is summarised in Figure 5.15.

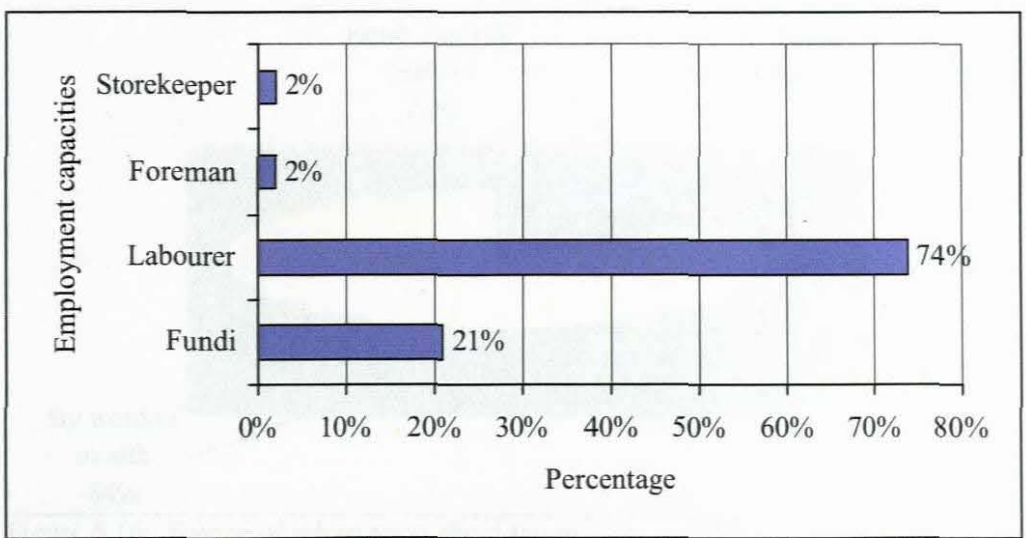


Figure 5.15: Employment profile of infrastructure provision participants in Mabatini settlement.

These findings as are in keeping with the profile or composition of labour force in labour intensive programmes, which require extensive excavation and construction activities typically done by labourers.

Length of employment

In Mabatini the contract period was only one year. Fundis were employed for the entire project period while labourers were employed for three weeks only to allow more people to participate. Labourers were paid 1200Tsh (R 8) per a day while Fundis and semi-skilled labourer were paid Tsh 2800 (R 17) per day. They were paid at the end of each week for the number of days they actually worked in that week. The findings suggest that the employment for labour was generally only three weeks. This period was too short to accumulate income and gain experience.

Awareness of the project.

The respondents were asked how they had become aware of the project. Their responses are shown in Figure 5.16.

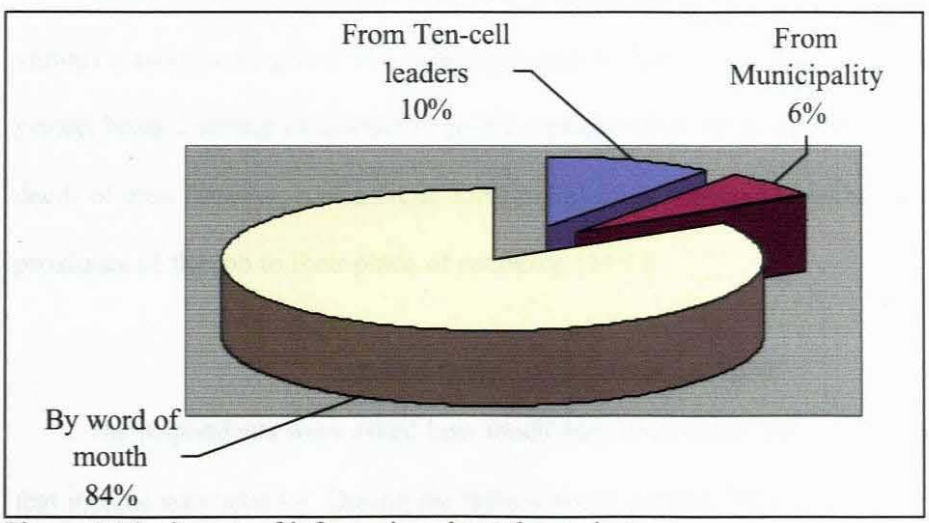


Figure 5.16: Source of information about the project.

Evidently the predominant source of information about the project was by word of mouth either from relatives or neighbours. Considering that there was no CBO in the

Mabatini settlement, the primary mode of communication was through Ten-cell leaders, relatives and neighbours.

## Training

Skill enhancement was targeted as the vehicle to enhance the sustainability of employment and poverty alleviation on the infrastructure projects. Residents were asked several questions relative to training.

Only 15% of the respondents had previous construction experience. However, 15% of the residents received training before and during the project for a period of one week. The majority were employed as labourers and were given the tasks, which did not require specific skills.

## Motivation

With respect to what motivated them to participate in the infrastructure project, various reasons were given. The overriding reason (89%) given was the possibility of the project being a source of income to enable participants to better provide for the basic needs of their families, such as rent, food and medical expenses. Another reason was the proximity of the job to their place of residence (11%).

## Spending pattern of the money earning

The respondents were asked how much they had earned from the project and what that income was used for. During the infrastructure project, 74% respondents earned amounts not exceeding Tsh 100,000 (R667) while 21% earned about Tsh 672,000 (R 4480). The spending patterns of residents are shown in Table 5.13.

Table 5.13: Spending patterns of money earned on project

| Expense | Frequency (%) | Ranking |
|---|---|---|
| Family expenses | 94% | 1 |
| Invest in business | 36% | 2 |
| Personal saving | 10% | 3 |

The findings from Table 5.13 suggest that expenditure on family expenses such as food, clothes, medical and rent were dominated. As family expenses are basic needs for many respondents, this was the only available source of income to provide for their basic needs. On the other hand, almost one third (36%) of the residents were able to invest in their own businesses, indicating that some residents were able to ensure the sustainability of their income, creating sustainable employment while at the same time alleviating their poverty. Others (10%) were able to save some of their income which also contributed to improving their quality of life.

Impact of gender on spending pattern

To determine whether there was any correlation between spending patterns and the gender of the participants these were cross tabulated. The results are shown in figure 5.14.

Table 5.14: Cross tabulation on spending pattern and gender

| Spending pattern | Gender | | | |
|---|---|---|---|---|
| | Male | Rank | Female | Rank |
| Family expenses | 100% | 1 | 88% | 1 |
| Business | 30% | 2 | 44% | 2 |
| Personal saving | 20% | 3 | - | |

Findings from Table 5.14 reveal that there is no correlation between gender and spending pattern. Expenditure on family expenses such as food, clothes, medical and rent dominated for both males and females followed by business investments.

**Impact of participation in infrastructure project**

This section describes the impact of participation of the residents in the infrastructure provision works after the project was completed in terms of employment opportunities and poverty alleviation. The situation of employment after the project was compared with the situation before, and one year later after the completion of the project. Other impacts such as home improvement, appreciation of residents, success of LBT in poverty alleviation and recommendation of the respondent are also described.

Employment

The residents were asked to indicate their employment status before they participated in the infrastructure project. The results are shown in Figure 5.17.

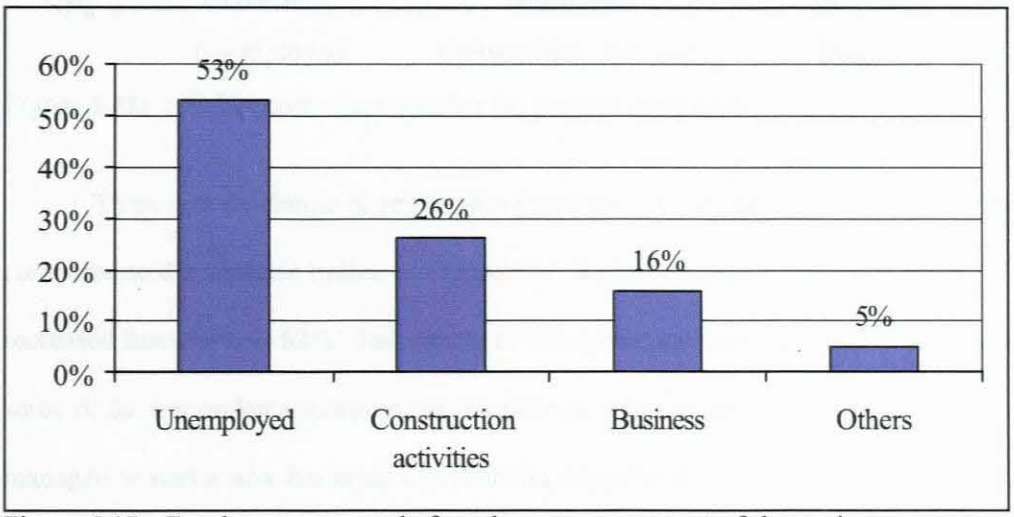


Figure 5.17: Employment status before the commencement of the project.

Prior to the commencement of the infrastructure provision works, 53% of residents were unemployed and that participation in the infrastructure project was their first job. Further, 16% were self-employed in business 26% were working on construction projects and 5% were employed in other sectors. To compare the employment situation of the residents before and after participation in infrastructure project, the respondents were

asked if they had managed to secure employment after the project was completed and asked to indicate the type of employment which they secured if any. The results are presented in Figure 5.18.

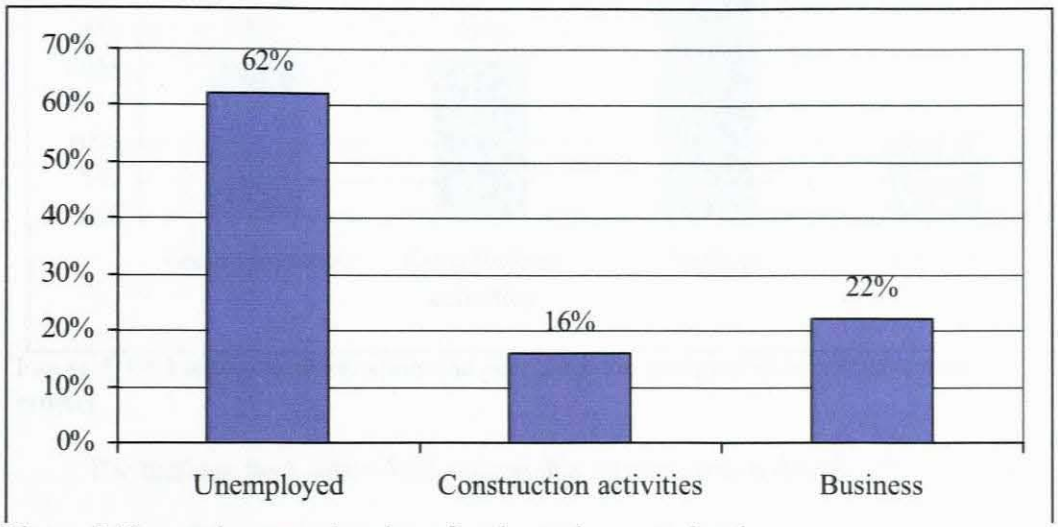


Figure 5.18: employment situation after the project completed

There was no change in employment patterns after the project completed, when compared to the situation before in Figure 5.17. Rather the rate of unemployment increased from 54% to 62%. Investment in businesses increased from 16% to 21%, as some of the respondents continued to run their existing businesses while a few of them managed to start a new business. Construction activities decreased from 26% to 16%. The situation suggests that most of the residents might have left their previous employment after while being employed in the project contributing to increased unemployment after the project was completed. This employment situation was then compared to the situation after one year since this study was conducted one year after the completion of the infrastructure project. The results are presented in figure 5.19.

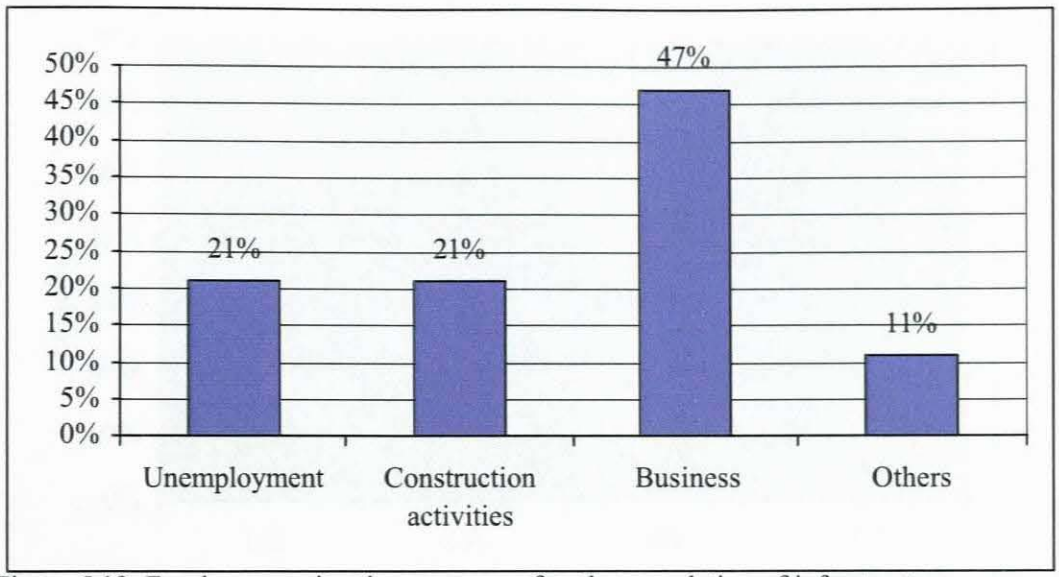


Figure 5.19: Employment situation one year after the completion of infrastructure project.

The findings from figure 5.19 suggest that unemployment dropped from 62% to 21%, construction activities increased from 16% to 21%, business investments such as hair dressing saloon, tailors, clothes shops, grocery and fast food increased from 22% to 48% while 11% were employed on different private sectors as a storekeepers, welding carpenter and security companies.

Figure 5.20 summarises the employment situation of the residents before they participated in infrastructure project; soon after infrastructure project was completed; and one year later after infrastructure project was completed

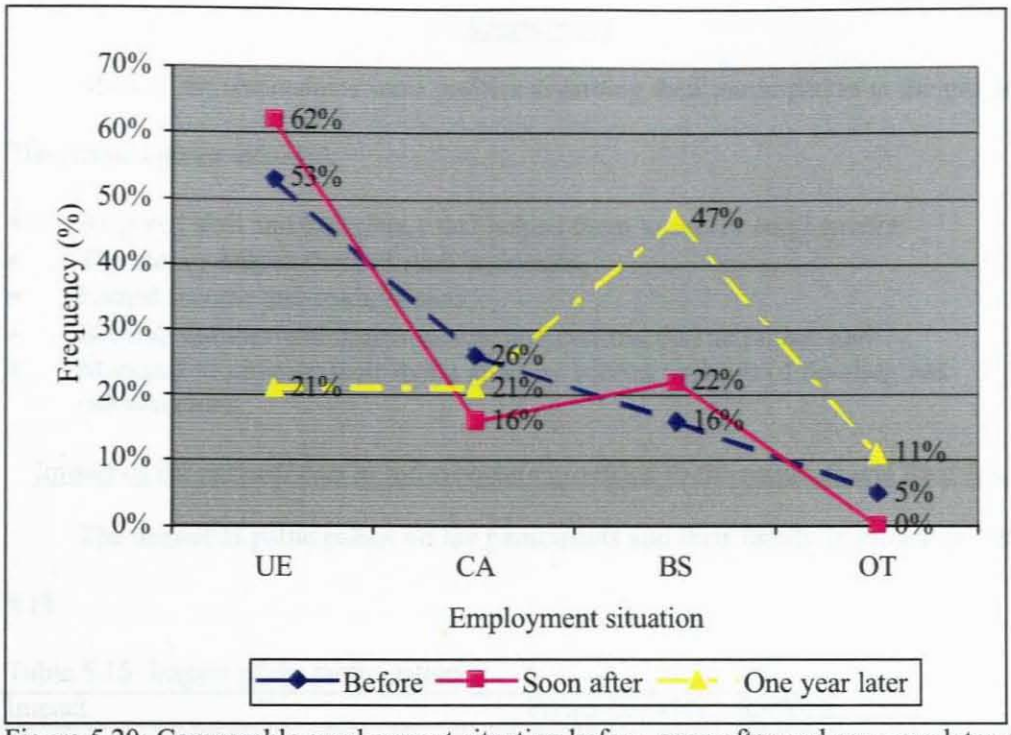


Figure 5.20: Comparable employment situation before, soon after and one year later of the residents participated in infrastructure project.

Note: UE: Unemployed, CA: Involved in construction activities, BS: Business investment, OT: employed in other sectors.

Through participation of residents in infrastructure project, unemployment dropped from by 32% (53% to 21%) while the number of residents who were self employed in their own businesses increased by 31% (16% to 47%). On the other hand, residents who secured employment in other sectors as drivers, carpentries, storekeepers increased by 6% (5% to 11%). However the number of residents who secured employment in construction projects decreased by 5% (26% to 21%).

House modification

All respondents were unable to improve their home after the project was completed. The primary reason was the income earned was too little.

Appreciation

Most of the respondents were positive regarding their participation in the project. The reasons given included;

- Acquired skill and experience that helped them to secure employment;
- The money helped them to start businesses;
- Earned income and made friends;
- Became familiar with infrastructure and construction activities; and
- Managed to improve their living areas by solving problem of flooding and infrastructure.

Impact of the participation in infrastructure provision to the residents and their family

The impact of participation on the participants and their family is shown in Table 5.15.

Table 5.15: Impact of the participation

| Impact | Frequency (%) | Ranking |
|---|---|---|
| More income to make investments | 45% | 1 |
| Improve living standard | 33% | 2 |
| Acquire skills to get more employment | 9% | 3 |
| Others | 9% | 3 |

Participation of residents in the infrastructure provision project allowed them to invest in small businesses, namely grocery shop sand stalls while some of them expanded their already existing businesses. On the other hand, few residents were able to improve somewhat their family's standard of living and effectively cover their basic needs. Moreover, as a result of the project skill acquired few residents secured better employment.

All respondents were willing to participate in future infrastructure construction works. Reasons given included:

- They would be able to gain more skills and experiences which would help them to reduce poverty; and
- They would generate more income, which would help them to invest in businesses.

Successful of LBT in poverty alleviation and employment creation

Only 15.8% of all respondents agreed that the LBT approach was successful in poverty alleviation and employment creation. The reasons given by these respondents included;

- Skills obtained helped to find better employment and income;
- People earned income and improved living standards;
- Many people acquired skills and became self-employed; and
- Improved infrastructure reduced poverty.

The reasons given for LBT not being successful included:

- The employment period was too short;
- The income earned was too little; and
- Training was not provided for the majority of participa nts.

Recommendation of LBT approach to other informal settlements

All respondents recommended the LBT approach to other informal settlements needing infrastructure and reason included:

- LBT provided income to the local people which would help them to improve their standards of living; and
- LBT helped unemployed people to acquire skills to improve their lifestyle and secure better employment.

The respondents made the following recommendations to improve the LBT approach in future.

- Good management and leadership through sensitisation and information dissemination campaigns to better inform people about the project, their roles and responsibilities;
- Training for workers to improve the quality of the infrastructure produced and to secure better employment after the project has been completed; and
- Increase in the wages paid and the length of employment in order to improve standards of living.

**Survey Findings from CBO: Mabatini Sub-ward.**

The Mabatini sub-ward was the main mediator between the government and the community. A Sub-ward is the lowest level of local government in the community. It was used as a mediator because there was no community based organisation (CBO) in Mabatini. Sub-ward leaders were interviewed to report on what role the Mabatini sub ward played in delivering surface water drains in Mabatini, how the project was initiated, how mobilisation of the community took place, issues of training and supervision, and strategies used to achieve the project objectives.

**Involvement in the project**

There was a problem of flooding in Mabatini area for many years especially during the rainy season. The Temeke municipality was aware of the problem, as the sub ward leaders had submitted several previous complaints to them. There was no CBO in Mabatini. Under the Public Works Programme, the Tanzania Social Action Fund (TASAF) secured funding to address the problem of flooding in the Mabatini area. The main project objective was to provide a storm water drainage system by involving the community in executing the work. The project committee member commented relative to how they had mobilised the community as follows:

> 'TASAF under Temeke Municipal come to our area and talk with us about the project. We organise the meeting with the community and people from TASAF. We sat a meeting on Saturday so that at least every one can attend. Ten-cell leaders were used to deliver information to their people, laud speaker were also used to inform people about the meeting. During the meeting many people attended and the TASAF officer informs people about the project and we selected the committee, which will work together with TASAF to implement project. 12 people were selected in the committee and chaired by officer from TASAF. People who had construction knowledge were employed as fundis while others were employed as labourer".

**Training programmes**

Fundis worked together with the technical support team from the Temeke municipality who assisted them with on-the-job training in the construction of storm water drains. A few months before the project was completed, each fundi was allocated ten labourers to work with them and train them. The project committee member relative to how the entire process of infrastructure provision benefits the community responded as follows:

> "The provisions of storm water drain reduce flooding 80%. Now we are not worry about flooding anymore. Community members get exposed to the construction activities. Some people for the fist time for their life got employed to the project and get paid though the emplo yment was for short period. Few of them manage to make investment in small business while others paid rent and school fees for the children".

**Maintenance of improved infrastructure**

Presently the Mabatini community are still struggling to form their own CBO, which will assist in all development programmes in the Mabatini area. Consequently there is no permanent system of maintenance in place. After the CBO has been formed it will formulate maintenance programmes. He clarified

> "As I told you we have the problem of political issue in this area. People elect the Sub-ward leaders on interval of five years. For example during the project the sub ward leader was from ruling party. This year we had an election and the sub ward leader is from opposition party. We ne ed an organisation, which will not be controlled or affected by political issues. An organisation, which will look the future of Mabatini residents and the future of improved infrastructure."

**Challenges encountered by Mabatini sub-ward**

The challenges encountered included the following

- Dealing with many people at the same time was difficult;
- Different people had different ideals with every one seeing his/her idea as the best; and
- Low levels of education and lack of unity and political issues. In Mabatini there was a very strong opposition party, which opposed any effort taken by ruling party.

When he was asked what lessons had been learned, He responded:

> "When people are organising they can do a wonderful work, which you couldn,t even imagine. They can solve their own problem with reasonable cost and got the ownership of that work and they respect it. People within Mabatini are motivated and they are ready for any other project within Mabatini".

**Survey Findings from Local Authority: Temeke Municipality**

The Temeke local authority under the Temeke municipality is responsible for all infrastructure provision in Temeke area and specifically in Mabatini. The researcher held interviews with local authority staff who were involved in Mabatini project. The information gathered included the role of the local authority in delivery infrastructure in informal settlements, the process of implementing LBT in infrastructure provision in informal settlements, the issues of tender procedure, tender documentation, tender adjudication and contract forms, the level of involvement of communities and the private sector in planning and implementing LBT projects.

**The roles of local authority in providing infrastructures in informal settlements**

The role of local authority is to provide the infrastructure services in informal settlements by involving the community within the settlement, provide funds, technical support and training for the projects, with objectives related to employment creation and

poverty alleviation. Those settlements which have the most serious problems like flooding, epidemic disease, and infrastructure are given priority.

The project manager responded to how the project conceived follows;

> "The project was well conceived as people in Mabatini were aware on the flooding problem. We initiate the project and as you know in Mabatini there was no CBO people were not organised and the issue of political is strong in that area. When we speak to them, they appreciated and participated well in the implementation of the project"

**Tender documents**

The approached used for infrastructure delivery was LBT as people within the community were employed by the project to execute the construction work under the supervision of a technical support team from the Temeke municipality. The contract documents were prepared by the municipality. The technical support team assisted the construction committee on pricing and signing the tender documents. In the Temeke municipal there was a programme of servicing informal settlements in term which they categorised them according their needs. When fund became available, they approach the specific settlement and negotiated with the leaders in the settlement. The intention of these projects was that at least 40% of the total project cost had to be allocated to employment of local labour.

**Challenges and lesson learned by Temeke municipal**

The following quotation from discussions carried out by the researcher and the project manager in Temeke municipal indicate the challenges and lesson learned from the Mabatini project:

> "Since the Mabatini area was no community organisation, it was difficult to organise people, which are not unite. We used lot of time to organise people and mobilise them to implement the project. Also the issue of political is strong in Mabatini. There are two different groups, which were very strong, and the

opposition party take the project as political issue. But what I learned was community can solve their problem without depend on government. The approached used was less expensive and the community have empowered".

**Success of the project**

The LBT was new to Temeke municipal. However, they achieved their objectives which was to provide storm water drainage by involving the community at a reasonable cost. The TASAF project manager responded to whether the LBT approach really worked in term of employment creation and poverty alleviation, responded

> "In my opinion The LBT approach has impacted on employment creation and poverty alleviation if the community attained skills/training and if the project sustain for a long period. The project like in Mabatini was not real working because the project period was very short and labourers were replaced after three weeks, which actually was little money, they got. For fundis it was ok because at least they were employed from the beginning up to the end of the project. Training also was not considered to the labourers who were majority, so after the project people end up to their normal life".

**General Lessons Learned on LBT Approach in Delivering Infrastructure in Mabatini Settlement**

- The LBT approach in delivering infrastructure in Mabatini had enabled a few participants to improve their living standard. Income earned by the workers improved the quality of their family lives, and some were able to invest savings to start or expand economic activities;
- Training and length of employment in the project had an impact on employment opportunities and poverty alleviation;
- For the implementation of LBT works it is important that the works are well organised, especially the labour force. The high level of supervision was particularly important as the workforce often consisted of community members with no prior experience in construction work; and
- Authorities were liable for financing the project, training, designing and implementing the project.

**General Challenges on the LBT Approach in Delivering Infrastructure in the Mabatini settlement.**

- The time and effort required to ensure the full participation of the community, to discuss contract proposa ls and reach agreements. This is only time consuming but also costly in terms of support staff and recourses

- The employment period for most of the residents was very short for the accumulation of income and training and experience;

## Tabata Informal Settlement

### Background to Tabata

The Tabata settlement is characterised by flat land and undulating terrain. It is located in the Ilala municipality some 10km from the city centre. The settlement covers an area of 171 ha and its boarders include Msimbazi River on the southern side, Nelson Mandela highway on the eastern side, the Mabibo settlement on the northern side and the Segerea on the western side. The population of Tabata is 14,000 inhabitants with 2,283 households representing an average of 6.2 inhabitants/households. The population density is 80 inhabitants per hectare (Kessy, 2002). Table 5.16 summarises details of the Tabata informal settlement. It provides information on the location, the area covered by the settlement, population as well as population density. It also indicates the unemployment rate in the settlement, housing condition, literacy and infrastructure provided using LBT approach.

Table 5.16: Summary details of the Tabata informal settlement

| Characteristics | |
|---|---|
| Location | Ilala |
| Area | 1.71 $km^2$ |
| Total population | 22,000 |
| Population density | n.a |
| Employed | 47% |
| Unemployment rate | 53% |
| Literacy | 90% |
| Housing situation | 98% permanent |
| Infrastructures provided | Potable water supply |

Before the emergence of the Tabata as a settlement it was a rural area with the traditional name of Kichwele. The name of Tabata originates from the wrong pronunciation of the Swahili phrase 'nitapata" (I will find it) by an Arab settler (Kessy

2002). Rapid development of Tabata as a settlement commenced after the completion of the Nelson Mandela highway in 1978.

Before upgrading the Tabata informal settlement, community infrastructure services were either inadequate or absent. Up to 1997 the Tabata settlements suffered from insufficient water supply, which made residents to spend much time and travelling long distances to fetch water (Kessy, 2002). Most of the residents in Tabata bought water from water vendors, which was very expensive while others obtained water from unprotected well.

In 1998 the Tabata Development Fund (TDF), a community-based organisation in collaboration with the Community Infrastructure Programme (CIP) of the local authority established a community based potable water community system in the Tabata settlement.

Community participation and self-help from the community was the major input in the water provision process. The approach was cost effective, labour intensive in the sense that it utilised idle resources (physical labour) available in the settlement. The local distribution network was designed with two electric pumps, two storage tanks having the capacity of 95,000 cubic litres (shown in Figure 5.21) and eighteen communal standpipes. Water was pumped from boreholes into raised tanks and distributed into the pipe through gravity. The 18 standpipes were evenly distributed to all parts of the settlement with a distance of between 150 and 200 metres between them.

Figure 5.21: Potable well with two storage tanks in Tabata, February 2005

**Survey findings: Community Members (Residents)**

The residents in the Tabata settlement were interviewed. The information gathered included the impact of the participation of residents in potable water provision process in terms of employment creation and poverty alleviation

**Demographic information**

The sample for the interview comprised 20 participants. The distribution of the age and gender of respondents who participated in the project is shown in Table 5.17.

Table 5.17: Gender and age of the residents

| | Gender | | |
|---|---|---|---|
| Age | Female | Male | Total |
| 21-30 | 10% | 30% | 40% |
| 31-40 | 15% | 35% | 50% |
| 41-50 | 5% | 5% | 10% |
| Total | 30% | 70% | 100% |

Males (70%) dominated the sample with the majority being between 31 and 40 years of age. Further, 65% of the respondents were married, 25% were single and 10% were either widowed. Therefore, most of the respondents had family responsibilities. Additionally, 40% were heads of their households and consequently bore the responsibilities of providing for the daily needs of their families. Further, 10% of the respondents, no body was working in their households. All respondents lived in permanent structures constructed of concrete blocks and covered with corrugated iron roofing sheets while several were covered with roofing tiles. The education levels of the residents are shown in figure 5.22.

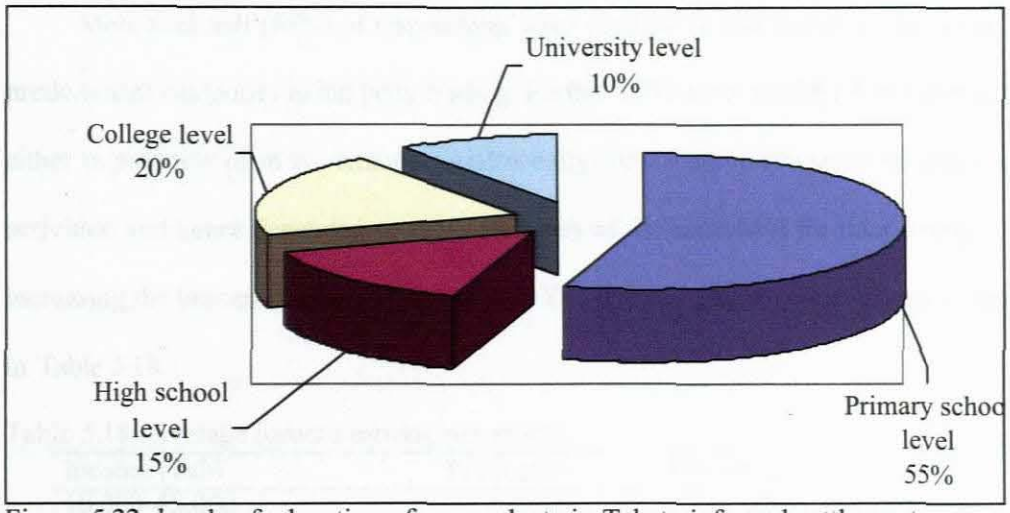


Figure 5.22: levels of education of respondents in Tabata informal settlement

From Figure 5.22 it is evident that the majority (55%) of the respondents had primary school level education suggesting that, they were most likely to be affected by high level of unemployment and poverty. They would therefore likely not have sufficient income to provide for their basic family needs. The current occupations of the residents is presented in figure 5.23.

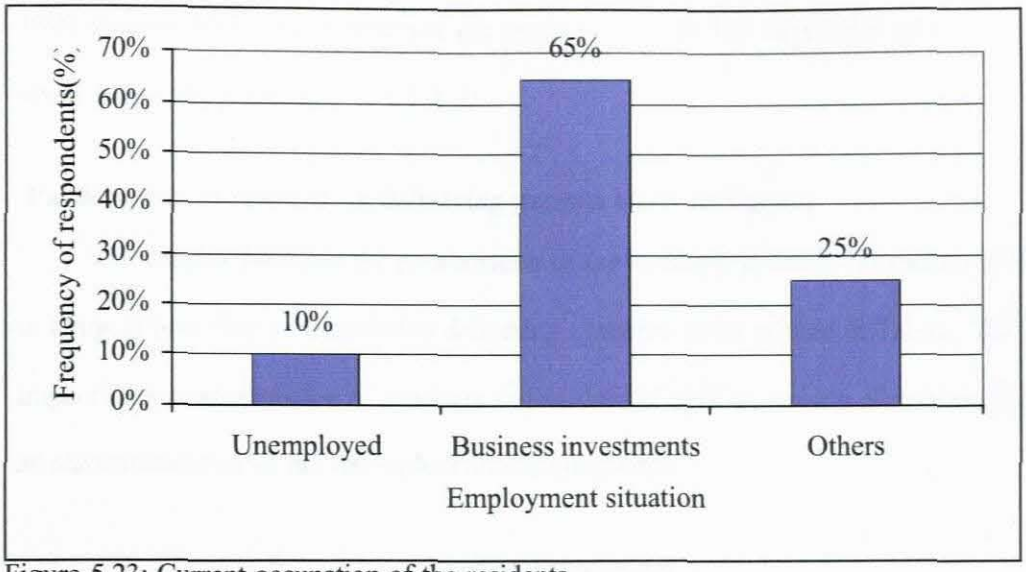


Figure 5.23: Current occupation of the residents.

More than half (65%) of respondents were engaged in self-employed activities, the predominant categories being petty trading. Further 25% were employed in other sectors either in privately or in government. Additionally, 10% were not engaged in economic activities, and hence depended on other members of the household for their living, increasing the burden of poverty in that area. The average income for residents is shown in Table 5.18.

Table 5.18: Average income earning per month

| Income (Tsh) | Frequency | Percentage |
|---|---|---|
| 10,000-45,000 | 10 | 50% |
| 46,000-150,000 | 6 | 30% |
| > 151,000 | 4 | 20% |
| Total | 20 | 100% |

The average monthly income of the residents who participated in the infrastructure provision project ranged from Tsh 10,000 to Tsh 45,000 (equivalent to ZAR 66 to 300) for majority of residents which is less than the minimum wages in the public sector which is about Tsh 45,000. Further the amount earned per day ranged between Tshs 333 to Tshs

1000 and was below the expenditure per capita per day for Dar es Salaam, which was about Tshs 1100 (equivalent to US $ 1).

**Participation of residents in delivering potable water in Tabata.**

This section describes the participation of the residents in the infrastructure works in terms of how they participated in delivering a potable water system in Tabata. The impact such as appreciation of residents and success of LBT in poverty alleviation as well as recommendation of the respondent are also described.

Type of employment

Out of the sample of 20 persons, all respondents participated as labourers. They participated from the beginning of the project until it was completed. The project was done on a self-help basis. There was no payment and no training for any participants. All participants became aware of the project via the community based organisation (CBOs).

Appreciation and Impact

Most (75%) of the respondents were positive regarding their experience in participation in infrastructure provision. Quarter (25%) of the respondents remained indifferent. Reasons given included the solution of the problem of water in their area. This problem caused them to spend large amount of times and money on travelling long distances to fetch water.

Those who responded negatively did so because they expected some not to pay any water charges, but none was provided. After the project had been completed nobody was interested in their well being even about them though they solved a major problem in their community.

The impact of their participation included

- There obtaining new friends; and
- Solving the problem of water resulting in their businesses growing as well.

Half (50%) of the respondents were willing to participate in future infrastructure construction work. Reasons included:

- They managed to solve their problem without depending too much on government; and
- They worked together with the community to continue solving other problems within their area.

Other reasons included

- They felt that they had wasted the time with empty promises being made;
- They would participate in the future only if there were some remuneration or training; and
- Only a few contributed their labour without gaining anything for themselves personally.

Success of LBT in poverty alleviation and employment creation

Only 15.8% of all respondents agreed that LBT was successful in alleviating poverty and creating employment. The reasons given for success was included the improvement of the water system in Tabata saved time and money which could be used in other economic activities.

The reasons for the approach not being successful included

- There was no programme for employment creation and poverty reduction;
- Participants were not paid; and
- The self-help approach did not alleviate poverty.

Recommendation of LBT approach to other informal settlements

More than half (60%) of the respondents recommended the LBT approach to other informal settlements needing infrastructure. Reason included:

- The reducing of problems being faced those areas;

- They wanted the changes, which they had made in their areas to spread to other areas; and
- People could solve their problems themselves without being dependant on government.

The respondents recommended that to improve the LBT approach more successfully in future:

- Participants should be motivated by either being paid or training;
- Programme of employment creation and poverty reduction should be associated in the project; and
- Good management and leadership.

**Findings from CBO: Tabata Development Fund (TDF).**

The Tabata Development Fund (TDF) was a CBO formed by the residents in Tabata to address their infrastructure problem. In this study TDF leaders were interviewed by the researcher to report on the role of TDF played in delivering infrastructure in Tabata, how the projects were initiated, how mobilisation of the community took place, issues of supervision and maintenance, and strategies used to achieve the project objectives.

**Involvement of the project**

The Tabata Development Fund (TDF) emerged as a result of the challenges that faced the community in its surroundings and environment, one of them being hazards which were associated with city dump sites located near settlements. The TDF started informally in 1989 with a group of seven people. The main objective of the TDF was to sensitise the residents of the Tabata community to assume more responsibility in responding to the problems and constrains confronting them. In this way Tabata has managed to challenge the city authorities to remove the dumpsite from Tabata. The TDF

has continued in facilitating the attainment of the basic needs of the community such as water supply improvement and lobbying for introduction of public transport in the settlement. TDF registered in 1993 as a legal CBO and the motto of TDF is "self-help". Responding to the question on objectives of TDF and how they initiated the project, the TDF chairman explained

> "In 1997 a decision was reached to design a community based water supply system for the settlement. The decision was prompted by the chronic problem of water supply in the area. TDF took the measures of searching for an alternatives source but by involving the community from the beginning. The main actor in the water provision initiatives was TDF acting as the community agent and the initiator. The residents participated as self help in voluntary labour, contribution of skills and ideas, cash, space for water points and other materials and equipment".

**Mobilising of the people**.

The problem of poor water supply affected many residents in Tabata for many years. The majority of residents were aware of the problem and were ready to solve the problem. Ten cell leaders, unit and neighbourhood community meetings, leaflets, posters and the TDF newsletter were used to mobilise people. Elected unit representatives collected house to house contribution.

The following quotation from the discussion carried out by researcher and the TDF chairman highlights the relationship between the TDF and the local authority

> "We had linked with Ilala municipal, as TDF did not have the capacity to organise and implement the project alone. In working with the technical support team, we developed an effective organisation system that is that is relying upon. We had our own local knowledge and Local authority know the policy. However we were learning how to implement a community based water supply system. TST comprises Dar es Salaam city council officers, Town planners, Land valuer and civil engineer both from Ilala municipal".

**Maintenance of water supply system**

Water is available in Tabata at a price in order to meet the cost for operation and maintenance of a system. An elaborate community based operation and maintenance system had been established in Tabata as one of the objectives of putting in place a sustainable water supply. The finance and technical committee supervised the operation and maintenance. The Dar es Salaam Water Supply (DAWASA) and the TST staff continue to give technical support to the TDF on the water initiatives. Technicians (Fundis living in the area) and member of the TDF are hired to make repairs to leakages and broken parts. Different groups of people were involved in the monitoring and supervision of the project and performed various functions.

**The challenges and lesson learned by TDF**

The major challenges in Tabata relative to the water supply include social, economics, cultural and leadership. Socially and economically, the Tabata community is a mixed society with poor households expecting to be paid when contributing their labour. They saw their engagement in the improvement as an opportunity for income and employment generation. They were prepared fully to participate if they were assured of a day's pay. Several high-income households did not participate actively in the self-help activities because they could afford to obtain and store enough water from different parts of the city. Other of the residents in Tabata still endorses the old ideology that municipal community services such as water should be provided to residents free of charge. The chairman of TDF responding to the question on lessons gained from the project

> "What I learned from Tabata is that community can substantially contribute to the provision of infrastructure if they are well organised and actively involved from the beginning in infrastructure development. Mobilisation and participation is necessary in creating trust, self help sprit and sense of ownership. It ensures longer

> life of the infrastructure provided as they regarded as theirs and takes care of them since they contributed toward the construction".
>
> The project was successfully and we manage to meet our objective. We have solve the problem of water in Tabata, our wives and children are not travel a long distance for fetching water, And sometime when the whole city had the problem of water does not affect us. Due to that our area is most attractive for investors"

**Findings from Local Authority: Ilala Municipality**

The Ilala local authority under the Ilala municipality is responsible for all infrastructure provision in the Tabata area. The researcher held interviews with the local authority staff who were involved in the Tabata project. The information gathered included the role played by the local authority in the delivery of infrastructure in informal settlements, the process of implementing LBT in infrastructure provision in informal settlements, the issues of tender procedures, tender documentation, tender adjudication and contract forms, involvement of communities and the private sector in planning and implementing LBT projects.

**Role of local authority in providing infrastructure in informal settlements**

The role of the local authority was to facilitate the delivery of infrastructure to the Tabata settlement to obviate the problem of the poor water system, which the community had endured for many years. They assisted by providing technical support and funds. The main project objective was to provide a community based water system at reasonable cost. On responding to how the project was conceived, the project engineer explained:

> "In Tabata the project was well conceived as the community initiate the project. They were well organised and they have a very strong and good CBO leaders. Every one in the community was aware on the problem of water, they were ready for anything to contribute money and their labour so as they can solve the problem of water".

The approach used in Tabata was self-help in that mainly voluntary labour was used because it is the capital of the poor and by doing the work themselves reduced investment costs. The approach was cost effective and labour intensive in the sense that it utilised the physical labour available in the settlement. The project engineer remarked as follows:

> "The cost for putting up the infrastructure has been kept lower than I imagined. Direct costs involved were for the purchasing of pipe materials, pumps and the water metres and also the construction of the tanks and erecting the pumps, which needed technical, know how. We together with TDF team supervise the works".

**Involvement of community in planning and implementing the project**

During the planning for the water supply system, the community was tasked to select areas to locate the water points for standpipes. Again the community together with public institutions identified where the distribution line would pass. The project engineer clarified as follows:

> "In the selection of water points for the communal water standpipes as inputs to the planning and designing of the water system, neighbourhood representatives called meetings of unit representatives and residents to discuss and agree for location of the water point. First the owner of that land must contribute and agree on the proposed place of water point. Land is private owned".

**Tender documents**

The Tabata project required a specialist contractor in drilling potable water. There were very few such contractors in the country. A private consultant prepared the design and tender documents. The construction and digging of trenches and placing of pipes were done by the community themselves. The construction committee negotiated with the contractor and awarded the tender.

**Lessons learned by Ilala municipality**

The following quotation from the discussion between the researcher and the project engineer highlighted the lessons learned from the Tabata community water supply system:

> "The community sees that the infrastructure they have participated is belongs to them and thus they are duty bound to maintain it during construction and after the completion. People's altitudes and behaviour have changed whereas the community used to believe that provision of infrastructure was the duty of government. The community of Tabata has understood that the government along cannot provide with the infrastructure they need thus they have to participate in their provision and maintenance. They will to contribute money and their labour to improve other infrastructure in the settlement. In Tabata the approach adopted was self-help. There was no programme of employment creation and poverty alleviation".

**General Lessons Learned on the LBT Approach in Delivering Infrastructure in Tabata Settlement**

- The LBT approach used in delivering infrastructure in Tabata was self-help, because of the need to reduce the cost of provision. The self-help included use of voluntary labour, contribution of skills and ideas, cash and space for water points;
- There was no programme of employment creation and poverty alleviation. However the availability of potable water in the settlement has positively impacted the health of people and business which saving both money and time (The time taken to fetch water had dramatically decreased from an hour or more to only eight seconds and the price of water reduced by up to five times the initial price; and
- The formation or existence of a strong community organisation was a prerequisite to successful planning, design and execution of community-based infrastructure upgrading. It would therefore appear logical that in selecting a settlement for replication of a community based infrastructure-upgrading project, one of the decisive factors should be the existence of a strong CBO, with proven commitment, willingness and some ability to contribute cash or kind towards solving commonly problems.

**General Challenges on LBT Approach in Delivering Infrastructure in Tabata Settlement.**

- The LBT approach used in delivering infrastructure in Tabata was self-help driven by the need to reduce the cost of provision. However the ability for contributing effectively in terms of finance or materials was limited because of the prevalence of

poverty among the residents. Most Tabata residents earned less than Tsh 1070 per capital per day. More than 40% of the active population were unemployed. Although voluntary self-help is the capital of the poor the absolute poor, and those with no income could not participate effectively without pay on the project;

- The non-homogeneity of communities could lead to power struggles and conflicts, endangering the implementation of project and its execution. Conflicts may also be caused by ambiguities in the roles and responsibilities of the various partners such as community members, CBO leaders and local authority;

- Management and leadership is critical. Thus the process of laying down principles of accountability and peoples involvement in the decision making process seems to be very basic for the realisation of participation and willingness to contribute for maintenance; and

- Improvement of basic infrastructure, whether undertaken through a private or a community contract, is an expensive undertaking. It is an exercise that requires heavy capital investment, which often is unavailable locally. This is particularly true in low-income informal housing, because inhabitants are predominantly poor, and public resource allocation priorities for such settlements are low. Replicating what has been realised in Tabata therefore requires combined efforts involving the state, donors, communities and the private sector.

**Chapter Summary.**

The findings of three case studies (Hanna Nassif, Tabata and Mabatini) together with the results of interviews with participants in infrastructure provision projects were discussed. The findings discussed include those from the Hanna Nassif, Tabata and Mabatini informal settlements, community based organisations (CBO) and representatives from the local authorities. The findings suggested that infrastructure delivery by using LBT approach has potential in creating employment opportunities which at the same time alleviating poverty. The comparison of findings related to each settlement is attached in appendix A.

# CHAPTER 6
# FINDINGS AND DISCUSSIONS

This chapter discusses the findings of the previous chapter against the background of the literature reviewed. The chapter is subdivided into ten sections and structured as follows:

- The use of LBT approach in informal settlements;
- Project initiation;
- Employment potential;
- Employment duration;
- Training potential;
- Income generation potential;
- Role of community based organisations (CBOs);
- Long term impact of LBT;
- Success of LBT in creating employment opportunity; and
- Success of LBT in alleviating poverty.

## The Use of LBT Approach in Informal Settlements.

Literature reviewed indicated that the LBT approach is particularly applicable in urban settlements, due to the reliance of people on cash incomes and the congestion that often makes equipment-based approaches impractical. The potential advantages of using the LBT approach include

- It is less expensive in financial terms compared to an equipment-based approach;
- It requires less manoeuvring space;
- It requires less fuel and emits less exhaust fumes;
- It raises less dust; and
- It is less likely to seriously damage the terrain bordering a construction site (ILO, 1996; Tailor, 2000; Islam, 2001; Majeres & Veen, 2001).

The present study confirmed that the main objective of infrastructure provision projects in Hanna Nassif, Mabatini and Tabata was to deliver infrastructure at a reasonable cost without demolishing any house in the process. Since these informal settlements are congested, the application of equipment based approaches would necessarily lead to the demolition and destruction of many houses while at the same time the total cost of the project could be higher. The heavy plant and equipment would potentially emit larger volume of exhaust fumes and raise large quantity of dust, which are both unhealthy.

The LBT approach also provided better chances of future sustainability through increased local ownership, and familiarisation of people with the procedures needed to maintain the provide d infrastructure. In Hanna Nassif, Mabatini and Tabata, the responsibility for maintenance was left to the residents though their CBOs.

**Project Initiation.**

Before the provision of infrastructure to Hanna Nassif, Tabata and Mabatini, the local residents suffered serious problems related to the absence of infrastructure such as time and money spent on transport due to the absence of access roads; time and money spent on fetching water; seasonal flooding due to the absence of a good drainage system, and the unhealthy environment created by uncontrolled solid waste. These are common problems, which affect other informal settlements in Dar es Salaam (Lugalla, 1997; UCLAS, 1998; Nguluma, 2003; Water Aid and Tearfund, 2003).

However, residents within the Hanna Nassif and Tabata settlements took the initiative and organised themselves by forming CBOs, to directly tackle their

infrastructure problems. These initiatives contributed to the success of the LBT approach in delivering infrastructure in informal settlements. Reasons included the commitment of the communities and the people who felt a sense of ownership and accepted the projects as their own and were therefore willing to participate.

These findings are supported in the reviewed literature (ILO, 1993; Cotton, Sohail & Tayler, 1998; Tournee & Wilma, 2001). Considering the fact that most of informal settlements in Dar es Salaam are lacking basic infrastructure, it is therefore a strong point to the residents of the other informal settlements need to organise themselves and address their problems. The government, through the local authorities played role of encouraging, mobilising and assisting them. As the problems are experienced by people within the community, proposals for solutions should therefore start from them.

**Employment Potential of LBT Approach**

One potential advantage of using the LBT approach is the opportunity to offer employment without gender discrimination to segments of the population who were not in formal employment including high proportions of poor people. It offers employment opportunities to people who are skilled, semi-skilled and unskilled (Majeres & Veen, 2001; Thorndahl, 2003).

The present study suggests that the majority of the residents in the Hanna Nassif, Tabata and Mabatini settlements employed on the infrastructure provision projects had only elementary education implying that they were probably unskilled. While the majority were youth many had family responsibilities. Both males and females were employed as labourers and 'fundis', females representing one third of the total

participants. Further the study revealed that participation in infrastructure projects was in many case the first job for the residents in these three settlements. High levels of unemployment and poverty therefore previously most likely affected them. Participation in these infrastructure projects presented a great opportunity to them.

The economic concept known as the multiplier effect is used to determine the impact on employment and poverty alleviation. In effect this means a boost to the purchasing power of workers created by the injection of cash into the local economy. For instance, when people are employed, they spend much of their wages on goods and services from other sectors of the economy which, in turn, generate employment and spending elsewhere, thus starting an upward spiral of increasing employment (Keddeman, 1998; Devereux, 2002; Thorndahl, 2003).

A total of 24,430 workdays was created in Hanna Nassif during the construction, which were 4,430 above the target of 20,000 workdays. The findings indicated that as more workdays generated, the more the multiplier effect. Similar findings were reported in Kalerwe settlements in Uganda, which generated 14,307 workdays in the local community, and multiplier effect was very high (Islam, 2001; ILO, 2003).

**Employment Duration.**

Employment duration is one of the key indicators used to measure the success of LBT approaches in alleviating poverty and creating employment opportunities. Although typical employment in the construction sector is for a very short period, Devereux (2002) argued that employment sustained for longer periods at reasonable wage levels can provide sufficient income to cover basic substance needs as well as investment in assets,

thereby further enhancing income. At the lowest level, the minimum average employment period was 100 days with an estimated daily wage level of US $1 (Devereux, 2002;Thorndahl, 2003).

The present study shows that most of the residents in Hanna Nassif were employed for one year or 365 days, which was much higher than the targeted 100 days. In Mabatini however, most of the residents were employed for only three weeks or 21 days, which was far lower than the targeted 100 days. More residents in Hanna Nassif had worked sufficiently long enough to accumulate income and work related experiences compared with Mabatini. Therefore there were better able to improve their living standards and benefited positively from the LBT relative to alleviating poverty.

**Training Potential**

One of the main products of the LBT approach in alleviating poverty and creating employment is the transfer of skills. The transfer of skills effectively enabled workers to find better employment once the project had been completed than they were able to find before. There were able to apply their new skills in the informal sector or in self-employment. In projects, which lasted for longer periods, the participants acquired more skills and experience (Devereux, 2002;Thorndahl, 2003).

In Hanna Nassif the project lasted for six years in two phases of three years each. Most of the residents (85%) who participated in the infrastructure works, received on-the-job training for about six months in different sessions. Both men and women learnt new skills in preparing pre-cast moulds for drains, mixing ratios of materials and other skills of construction during implementation stages of the project. Besides, most of these residents

indicated that they were involved in construction works for the fist time. The on-the-job training they received became important in helping them to secure better employment after the project was completed.

Similar results were reported by Teklu (1995) in Botswana where the participants in infrastructure projects were given the opportunity to upgrade their skills. For the poor who had previously engaged in low paying marginal wage employment, access to infrastructure projects allowed them to move to better paying project jobs. The projects have then effectively contributed to moving some households to the middle-income group.

However in Mabatini the project period was one year. Most of the residents were employed for an average three weeks to allow more people to participate in the project. These three weeks were not enough for effective training to take place. However those employed as fundi, received on the job training in specific tasks. The Hanna Nassif project provided more training to its residents. More effective employment creation opportunities were created in Hanna Nassif compared to Mabatini.

**Income Generation Potential**

Arguably the most important determinant of the effectiveness of the LBT approach in alleviating poverty is probably the level or the value of the income generated. Direct income benefits accrue to the poor through income transfer. Targeted wage has been used to provide employment for vulnerable people. By so doing a certain amount of income is transferred to each worker in a given period of time. The focus of the wages was direct at alleviating the economic aspect of poverty.

Keddeman, (1998) reported that the setting of wage levels should target poorer groups. Thus if wages are higher, they will attract people with higher income while poor people will have a better chance to obtain employment when the wage level is low. Appropriate wage levels are therefore crucial for effectiveness of LBT approaches. Thorndahl (2003:6) indicated minimum wage of US $ 1 per day for construction works. At Hanna Nassif and Mabatini infrastructure projects, the wage rates for participants were considerable and appropriate as no one was paid less than US $ 1 per day. The principle of equal payment for work of equal value was reasonably well maintained.

However, the impact of these wage rates depended on how the workers spent their income earned. It is indicated in the literature that the spending of the earnings during the construction is one of the most striking and visible effect of the LBT programmes in alleviating poverty and creating employment opportunities (Keddeman, 1998; Devereux, 2002). This study revealed that in Hanna Nassif and Mabatini, most of the incomes earned were spent on basic household requirements such as food, medical care, clothing and rent. Keddeman reported similar findings on six ILO projects in developing countries. This indicated that most of the income earned was spent on the basic requirements.

However, the present study indicated that some few community members (almost one-third) in Hanna Nassif were able to save their income and start or expand their existing businesses and therefore enhanced sustainable income. Moreover, some residents used their income to improve their homes while others saved their income for personal uses hence ensuring quality of life. Similar findings were reported by Keddeman in a

study in Ghana, Thailand and Sri Lanka where the youths participated in infrastructure projects and spent their earnings on business investment and home improvement.

The present study also found that the level of education of the participants has an impact of spending patterns of income earned from the infrastructure project. In Hanna Nassif for instance, residents who had primary school level education spent most of the incomes earned on basic household requirements such as food, medical care and clothing. Residents who had secondary school level education spend most of their income on business investments and personal savings. In Mabatini however, the linkage of spending pattern, level of education was not noticed because almost all residents who participated in infrastructure provision had primary education. It therefore appears logical that in implementing LBT approaches, the level of education within the communities and appropriate wage levels be considered.

**The Role of Community Based Organisations**

Community Based Organisations (CBOs) have been identified as the effective link that is required to bridge the gap between the people and the other actors such as government, private sectors, non-governmental organisation (NGOs) and international development organisations. CBOs, being part of the community are better placed to play this mediator role and have the mechanisms to reach and communicate with the people and give feedback to the other actors.

The Hanna Nassif Community Development Agency (HNCDA) in Hanna Nassif and Tabata Development Fund (TDF) in Tabata were the major mediators between the government and the communities and have played a pivotal role at all stages of the

project. The roles which they performed included problem identification and prioritisation, planning, design and implementation.

The HNCDA and TDF have also played an active role in mobilising residents to contribute in cash or in any kind. They negotiated with landowners to freely contribute the land required for utility services, negotiated and arbitrated disputes. They also marshalled political support necessary to facilitate decision-making, particularly during the critical project implementation stages. Tasks such as procurement of construction materials and equipment, administration of funds allocated to specific packages, negotiating and signing of community contracts, recruitment of labour and payment were activities also undertaken by the HNCDA and TDF. Resource inputs (size of the workforce, materials execution time and costs) were estimated and agreed upon with the HNCDA and TDF construction committee.

The findings are consistent with previous international studies, which highlighted the role of the CBOs (Jinchang, 1997; Cotton, Sohail & Tayler, 1998). The CBO here becomes the very much-needed mediator between the community and other actors, as it is easier to meet and discuss with a group as opposed to a community of hundreds or thousands.

Formation or existence of a strong community based organisation seems to be a prerequisite to successful planning, design and execution of infrastructure by using LBT. It would therefore appear logical that in selecting a settlement for replication of the LBT approach in delivering infrastructure-upgrading project, one of the decisive factors should

be an existence of a strong CBO, with proven commitment, willingness and some ability to contribute cash or kind towards solving common problems.

**Long term Impact of LBT Approach**

The infrastructure provision projects in Hanna Nassif and Mabatini were well appreciated by community members. This is because their participation in these infrastructure works allowed them to improve their family's standards of living and to effectively cover their basic needs. These improvements could not have been achieved if they did not participate in the infrastructure project. Moreover as a result of the project, the skills acquired enabled some respondents to secure better employment and provide better basic needs to their families. Similar findings were reported by Teklu (1995) in Botswana. There, skills acquired allowed some lowly paid residents to secured better employment and move to the middle-income group.

Additionally, income earned from the project was greatly appreciated as it helped several residents to invest in their businesses and therefore ensuring sustainability of income for the family and at the same time creating employment. Similar findings were reported by Nayyer (2002) in India where the incomes earned from the EGS project provided a lot of alternative employment opportunities for the participants.

Besides, the skills imparted to the various CBOs in Hanna Nassif have created capacity and put in place a strong institution that is playing a leading role in training members from other CBOs in the city. The residents were empowered and this ensures their dignity. The morale and initiatives of the civic-society particularly, the participation of residents in matters that concern their living environment has increased remarkably.

**Success of the LBT Approach in Employment Creation.**

Four years after the infrastructure project was completed, more employment opportunities have been created for the residents in Hanna Nassif settlement due to the skills and income they received by participating in the infrastructure project. The level of unemployment in Hanna Nassif has been reduced almost to two third the previous level. The income earned during the project allowed some residents to make investments and re-investments in small businesses or in farming. Some residents used their income to undertake some home improvements, inducing a multiplier effect for the entrepreneurs in the area through increased demand for renovation works. Moreover, through the training received during the works, some residents found permanent jobs or have been able to become self-employed in the construction sector.

The numbers of residents who work in the numerous construction sites in different parts of the city or launch their own independent construction activities increased almost four times. Also, the number of residents who engaged in business investments increased by 3% while many residents secured employment in different sectors as drivers, watchmen, storekeepers, and treasurers. These trends as highlighted in Figure 5.11 represent the significant potential of LBT approach in creating sustainable employment opportunities.

Additionally, in Mabatini, unemployment was reduced by a lmost one third and more people employed themselves on business investment as illustrated in figure 5.20. However most of those investments were petty trades which do not sustain for long. Therefore the impact of employment creation opportunities by using the LBT approach was more effective at Hanna Nassif rather than in Mabatini.

**Success of the LBT Approach in Alleviating Poverty.**

The essence of poverty is deprivation. Simply, it is measured as shortfall from some minimum acceptable standard of consumption or income. Income level is an indicator of socio-economic status and can therefore be seen as an important determinant of resources for obtaining access to health care, education and adequate housing (Muphy, 2002). Delivering of infrastructure in Hanna Nassif by using the LBT approach has enabled the residents to improve their living standards. The income earned by workers improved the quality of their family lives by improving the quality of their homes and some invested savings which enable them to start or expand economic activities. However, the provision of training and technical expertise through on-the-job training at the construction site has empowered the community to secure better employment and therefore enhanced income.

Income levels of the residents after the infrastructure project revealed that most of the Hanna Nassif residents earned between Tsh 50,000 to Tsh 100,000 per month. The incomes earned by residents were higher than the minimum salary/wage set by the government, which is Tsh 45,000. Furthermore, the amount earned per day ranged between Tshs 1533 to Tshs 5000, which is higher than expenditure per capita per day for Dar es Salaam, which is Tshs 1100 (equivalent to US $ 1) (URT, 2001; HDP, 2002; URT, 2002). These results indicated that most of the residents are now above the poverty line. It may be observed that the income from their business investment activities and the employment which they secured after the project was completed has improved their situation.

Contrary to these findings, most of the residents in Tabata and Mabating earned between Tsh, 10, 000 and Tsh 50,000 that was below the minimum salary/wage set by the government. They earned less than 1100 per a day which indicates that they are still under the poverty line.

Based on the government's definition of income groups, most of the households in Hanna Nassif, Tabata and Mabatini settlements are in the low-income group. However, based on the definition of 'alleviation', which is to raise worse situation of people to a better position, the poverty situation among the residents was reduced in Hanna Nassif. It is therefore indicated that the LBT approach alleviated poverty in Hanna Nassif. In Mabatini and Tabata, the situation was not improved. Hence, LBT approach did not alleviate poverty. The reasons behind this were that in Tabata the approach was self-help, there was no payment and training. In Mabatini, however, the wage rate was good but the employment period was very short, and the majority of participants did not receive training.

The findings also revealed that the availability of infrastructure facilities was an imperative prerequisite for poverty alleviation. The constructed storm water drains in Hanna Nassif and Mabatini has decreased the prevalence and incidence of water-born diseases such as malaria, dysentery, cholera and bilharzias. The decreased of water born disease enhance a savings to the poor in the way of reduced medical bills in addition to those reduced house repair cost for damage occurring during annual flooding. Roads constructed have improved accessibility to informal sectors, economic activities and micro enterprises, leading to improved productivity and increased sales. Availability of

waters system in Hanna Nassif and Tabata has impacted on the health of communities and business. Money and time saved will be used in other economic activities. (The time taken to fetch water has dramatically decreased from an hour or more to only eight seconds and the price of water reduced five times.

## Chapter Summary

The research findings have been discussed and compared against the literature reviewed. The findings indicated that the LBT approach has the potential to alleviate poverty and create employment opportunities. The level of poverty in Hanna Nassif has been reduced and at the same time a good number of employment has been created. However in Mabatini and Tabata, poverty has not been reduced.

Several factors which enhanced the success of the LBT approach in alleviating poverty and creating employment opportunities have been identified. The factors include employment period on the project; wage rate; coverage of participants; the measure of skill transferred and spending patterns of income earned during the project as well as education levels of the residents.

Further, LBT seems to be the best alternative in delivering infrastructure in informal settlements. This is due to the fact that most informal settlements are congested, and the LBT require less manoeuvring space and less expenses in financial terms. It emits less exhaust fumes, raises less dust, and is less likely to seriously damage the terrain bordering a construction site. Additionally, implementing of the LBT approach require the well-organised community with strong CBO leaders. Furthermore, the availability of infrastructure also has an impact of alleviating poverty and creating employment.

# CHAPTER 7
# SUMMARY, CONCLUSION AND RECOMMENDATION

## Summary

This study sought to determine whether the labour-based approach to delivering infrastructure alleviated poverty, and if it created large-scale employment opportunities. The research topic as stated in the introductory part of this work was to investigate poverty alleviation using labour based infrastructure provision in informal settlements in Dar es Salaam, Tanzania. The primary objectives of the study within the context of infrastructure provision in informal settlements in Dar es Salaam, Tanzania were:

- To explore the situations of infrastructure in informal settlements in Dar es Salaam;
- To examine LBT with respect to the nature and characteristic of the various forms used in practice to understand the advantages and disadvantages of each form;
- To identify the nature of LBT approaches used to upgrade informal settlements;
- To explore the extent to which LBT in infrastructure provision can contribute to creating employment and alleviating poverty; and
- To examine the extent of private sector involvement and community participation in present LBT approach in the three settlements.

The study was designed to test the following hypotheses

- H1: most of informal settlements in Dar es Salaam are lacking basic infrastructure
- H2: Provision of infrastructure and social services in informal settlements by LBT creates large-scale employment opportunities;
- H3: Provision and delivery of infrastructure in informal settlements by LBT reduces poverty;
- H4: Lack of understanding of the potential benefits of the LBT approach hinders infrastructure provision in informal settlements; and

- H5: Present LBT approaches do not promote private sector involvement and community participation.

This chapter tests the hypothesis and summarises the findings relative to each objective.

**Situations of infrastructure in informal settlements in Dar es Salaam.**

Infrastructure delivery in informal settlements is the major problem facing Dar es Salaam city. Poor infrastructure such as access roads and footpaths; safe water system; drainage system; waste disposal as well as sewerage and sanitation characterise most of its informal settlements. Majority of household in these informal settlements are not accessible by car, whichcause problems especially for local traders when restocking their businesses. The inadequacy of access also implies that ambulances or fire engines cannot access victims in cases of emergency. People thus end up dying or losing property through infernos just because they are beyond the reach of emergency services (Lugalla, 1997; UCLAS, 1998; URT, 2002; Nguluma, 2003).

Long and time-consuming queues of mostly women and children are therefore a common feature in the settlements due to the absence of a tap water system Traditional pit latrines are the most commonly used form of sanitation, as there is no water–borne sewage system in the settlements. The fact that latrines are shallow and are not emptied results to unsanitary conditions which get to its worst during the rainy season when the whole place is flooded (Lugalla, 1997). As the drainage system is poor and there is frequently no conscious provision made for it, therefore wastewater gets easily disposed of on the paths / drains outside the houses. During the rainy season floods occur especially in the low-lying ground and in shallow pit latrines that heighten the health risks. Consequently, most residents and operators have to bury or burn their waste or

dispose it off haphazardly due to absent of solid waste management. On the other hand, high levels of poverty and unemployment are the major challenge in these informal settlements (Lugalla, 1997; URT, 2001; 2002; Water aid and Teafund, 2003).

**The nature and characteristics of LBT compared to various forms used in practice.**

The labour-based technology and equipment approaches are methods used to deliver infrastructure in informal settlements. The advantages of LBT approach compared with the equipment approach include

- It is generally in financial terms about 10 to 30% less costly than the more equipment based option;
- It potentially reduces foreign exchange requirements by 50% to 60%;
- It creates for the same level of investment two to four times more employment;
- It has environmental advantages such as using less fuel, emitting less exhaust fumes, raising less dust, and less likely to seriously damage the terrain bordering a construction site; and
- It requires less manoeuvring space in high density and congested living areas (ILO, 1996; 1998; Tailor, 2000; Majeres & Veen, 2001; Islam 2001; ILO, 2003).

The present study indicated that the infrastructure provision projects in Hanna Nassif, Mabatini and Tabata were driven by the need to deliver infrastructure at reasonable cost while at the same time not demolishing any existing house. Due to these informal settlements being density populated and congested, the application of a equipment based approach would lead to demolishing and destruction of many houses while at the same time the total cost of the project would be higher. The LBT approach was therefore an imperative option.

**The nature of LBT approaches used to upgrade informal settlements.**

The application of LBT in de livering infrastructure in informal settlements can either involve the private sector in the form of small contractors, or community procurement (Cotton, Sohail & Tayler, 1998). Community procurement can be represented in different ways such as

- Contracting out systems;
- Labour only community contracts; and
- Fully community contracting (Jinchang, 1997).

This study revealed that the residents within the Hanna Nassif, Tabata and Mabatini settlements suffered serious problems due to lack of basic infrastructure. They took the initiative and organised themselves forming community based organisations to address their infrastructure problems themselves. The fully community contracting approach was adopted in all three case studies in that the communities acted as the contractors

The CBOs in each of the communities took full responsibility for the actual construction, the financial and technical aspects, management of the project budget and the procurement of construction materials, tools and light equipment.

**Impact of the LBT in infrastructure provision on creating employment opportunities and alleviating poverty.**

Various studies in developing countries by Keddman (1998), Dereux (2002) and Thornland (2003), highlighted the potential of LBT to create employment opportunities and to alleviate poverty. They identified factors which contribute to the success of LBT approaches. These factors included skills transferred, rates of wage paid, spending

patterns of participants/beneficiaries of the income earned from the projects, extent of participation by the community and the length of employment of the participants.

The findings of this study revealed that:

- Projects which provided skills to participants had more potential to create sustainable employment and alleviate poverty; and
- Projects which had longer project periods provided more sustainable employment for participants allowing them to accumulate more skills, experiences and income.

**The extent of private sector involvement and community participation in present LBT approach in the three settlements.**

The extent of private sector involvement and community participation was examined in the study. However, the study focused more on community participation due to the nature of the projects. The study identified those key criterions used to implement LBT approach used by local authorities as:

- Community assurance to participate in all stages;
- Community awareness of the problem they are facing; and
- Community participation in designing and implementing the project and maintaining the infrastructure.

The CBO leaders were the main intermediaries between the government and the communities. They used various methods as the means of communication to ensure full participation of communities. Such methods include

- Ten-cell leaders: This is the lower level of political organisation in Tanzania which at every ten-houses/units there is a leader. Those leaders were used to deliver information from one home to another;
- Loudspeakers were used to inform and mobilise residents;
- Primary school pupils; were used to convey information to their families;
- Unit and neighbourhood community meetings were conducted at different areas in community; and
- Leaflets, posters, placards and announcements were placed on the CBO's, notice board and other visible places along the junctions.

In Hanna Nassif for example, the designer's proposals were presented in Kiswahili to enable community members to follow the discussions and express their views in a language that they understood. Different designs were fully discussed and the community was empowered to make their own choice.

In Tabata, selection of water points for the communal water standpipes was the inputs to the planning and designing of the water system. CBO leaders called meetings of unit representatives and residents to discuss and agree on the location of the water point. Different location of the water points were fully discussed and the owner of the selected area was asked to contribute and agree on the proposed place of water point. Land was private owned

**Hypothesis Testing.**

**H1: Informal settlements in Dar es Salaam are lacking basic infrastructure.**

Literature was been reviewed and observations made on status of infrastructure in informal settlements in Dar es Salaam. The findings revealed that the situation of infrastructure in these informal settlements is apparently not conducive as most of them had insufficient basic services such as water, access roads, footpath, drainage system and sanitation as well as there is high rate of unemployment and poverty.

The hypothesis that informal settlements in Dar es Salaam were lacking basic infrastructure is not rejected.

**H2: Provision of infrastructure and social services in informal settlements by using LBT creates large-scale employment opportunities.**

The study revealed that the LBT approach in infrastructure provision in informal settlements has huge potential in creating sustainability of employment opportunities. The literature (Keddman, 1998; Devereux, 2002; Thorndahl, 2003) showed the potential of LBT in creating employment opportunities. The study revealed that several years after completion of the infrastructure projects:

- The level of unemployment in Hanna Nassif and Mabatini were reduced almost by two thirds;
- Many residents became involved in economic activities such as ability in creating self employment by investing in micro or becoming employed in the construction industry as mason, plumbers, carpenters and some even acquired leadership positions like foremen. Several residents were employed in other sectors as drivers, storekeepers, treasurers and watchmen; and
- The extent of employment opportunities is dependant on the duration of the project, the level of the wage paid, measure of skills transferred and the type of the project.

The hypothesis that provision of infrastructure and social services in informal settlements by LBT creates large-scale employment opportunities cannot be rejected.

**H3: Provision and delivery of infrastructure in informal settlements by using LBT reduces poverty.**

The study revealed that the LBT approach in infrastructure provision in informal settlements has potential to alleviate poverty. The literature (Keddman, 1998; Dereux 2002; Thornland, 2003) identified several indicators of measured poverty such as income or expenditures, as well as housing, assets, health status, education and employment status. The present study found that although the LBT approach has potential to alleviate poverty to some extent, it does not always work. The incomes of most of the residents were still low. The majority of the residents were still living below the poverty line since

they were still earning less than Tsh. 45,000 per month, which is also less than Tsh. 1100 per day. However, the study identifies the factor which led to ineffectively reducing poverty. Such factors include

- Inadequate project time duration for the residents to accumulate sufficient income and receive on-the-job training.
- Self help approach, in which residents contributed their labours with no payments for the participants and the training was not provided.

The study is not conclusive therefore the hypothesis that provision and delivery of infrastructure in informal settlements by LBT reduces poverty is rejected.

**H4: Lack of understanding of the potential benefits of the LBT approach hinders infrastructure provision in informal settlements.**

The study revealed that using the LBT approach for infrastructure delivery in informal settlements was a new phenomenon in Tanzania. The approach used was adapted from that used in Sri Lanka. It was exercised for the first time in Hanna Nassif where it was completed in 2000. Its potential has been taped and now it is used as a model project to deliver infrastructure in other informal settlements. Before that, the LBT approach was not well known, not only by communities but also by municipalities. Due to the facts that the LBT approach was not known, delivering infrastructure in informal settlements was very insubstantial.

The hypothesis that lack of understanding of the potential benefits of the LBT approach hinders infrastructure provision in informal settlements cannot be rejected.

**H5: Present LBT approaches do not promote private sector involvement and community participation.**

The study found that delivering of infrastructure in three informal settlements was the process of community involvement. One criterion used to implement the LBT approach in delivering infrastructure in informal settlements is assurance of the community to participate in all stages. Thus, the community must be aware of the problem they are facing and must participate in designing and implementing the project and maintaining the infrastructure. Therefore, the LBT approach directly promotes community participation.

The hypothesis that the present LBT approaches do not promote private sector involvement and community participation can be rejected.

## Conclusion

Based on the results of the study, the application of the LBT approach in delivering infrastructure has the potential to alleviate poverty and create large-scale employment. However, the extent of the effectiveness of the LBT approach in alleviating poverty and creating employment opportunities is dependent on:

- **The length of the project period**: A project sustained for a longer period provides larger employment opportunities for workers and allows them to accumulate income, skills and experiences.
- **Reasonable wage rate**: On projects which provide reasonable wage rates reasonable period of employment, there was a grater chance of alleviating poverty.
- **Coverage of the project**: Where the project covered a wide range of activities it would potentially employ more people in the community and therefore more people will have employment opportunities and have the possibility of alleviating poverty.

- **The measure of skills transferred**: Projects that provide skills traing and transifer to the participants, have more potential in creating sustainable employment opportunities and in alleviating poverty.
- **Levels of education of the participants**: If the level of the participants is at least secondary level of education, it is easier for them to learned and apply the skills taught during in the project which eventually would impact on alleviating poverty though sustainable employment.

The LBT approach has the potential to not only alleviate poverty and create employment opportunities to the workers but also several other advantages. It uses less fuel, emits less exhaust fumes, raises less dust, and is less likely to seriously damage the terrain bordering a construction site. It requires less manoeuvring space which is good for informal settlements, which are normally dense and congested.

Considering that infrastructure delivery in informal settlements is the big challenge as most of Dar es Salaam's informal settlements lack basic infrastructure, the improvement of these settlements by using LBT approach could offer an ideal opportunity in terms of jobs, income generation and provision of services and materials. Given widespread poverty and un (der) employment, the general recommendation is to use labour-based technologies, noting the inhibiting factors.

However, implementation of the LBT approach requires that communities initiate projects themselves, be well organised and be ready to participate. On the other hand, there should be an existence of CBOs which link the communities and governments. Local authorities as facilitator remained as the driver in delivering infrastructure in informal settlements. They provided funds, technical supports and trainings.

## Recommendations for Further Studies

The LBT approach has a potential in alleviating poverty. However, the same approach of LBT may be implemented in different areas and give different results. Even though the study was conducted with specific reference to the Tanzanian context, further studies could explore the applicability of the issues raised within different African countries especially in South Africa where this approach is more utilised and comparisons could be drawn between Tanzanian and South African cases

## LIST OF APPENDICES

APPENDIX A: FINDINGS SUMMARY FROM HANNA NASSIF, MABATINI AND TABATA

| FINDINGS | HANNA NASSIF | MABATINI | TABATA |
|---|---|---|---|
| Project initiator | Residents due to the problem of flooding | Residents | Residents |
| Level of education | 66% primary education | 100% primary education | 55% primary education |
| Project period | Six years | One year | One year |
| Length of employment | 83% were employed more than one year | Labourers were employed three weeks, Fundi employed for one year. | NIL |
| Training | 85% received on job training | 15% receive on job training | No training |
| Payment | 52% earned 4250-4500 per week, 36 % earned 8000-8500 per week (fundi) | 74% earned 6000 per week<br>20% earned 14,000 per week (fundi) | Self help |
| Motivation | Source of income | Source of income | To reduce problem of water |
| Spending pattern | 70% family expenses, 32% business investment, personal savings, home improvement. | 94% family expenses, 36%business investment and personal savings | NIL |
| Employment | Unemployment were reduced 47% to 4%<br>Construction activities increase 10% to 38%<br>Business increased 17% to 20% | Unemployment were reduced 53% to 21%<br>Business investment increased 16% to 47%<br>Construction decrease from 26% to 21% | Unemployed 10%<br>Business 65%<br>Others 25% |
| Average income per month | 61% earned Tsh 46,000 to 150,000<br>26% earned below 45,000.<br>Income per capita per day is Tsh 1533 to 5000 | 60% earned Tsh 10,000 to 40,000<br>Income per capita per day is Tsh 333 to 1000 | 50% earned Tsh 10,000 to 40,000<br>Income per capita per day is Tsh 333 to 1000 |
| Home modification | 62% were able to improve their home | Nil | NIL |
| Appreciation | 100% positively<br>Income and skills | 100% positively<br>Income and skill | 75% positively<br>Solving problem of water |
| Impact of | Income earned help to | Skill and income to | They got friends |

| | | | |
|---|---|---|---|
| participants | improve standard of living,<br>Income to invest business<br>Skill enhanced better employment | start business and secure better employment | |
| Successful in alleviate poverty and employment creation opportunity | 97% agreed.<br>They got income, which helped them to improve living standards.<br>Skills obtained help them to secure better employment and income.<br>Many people got skills and became self-employed | 85% did not agreed<br>The employment was for short period.<br>The income earned was too little | 85% did not agree<br>There was no programme for employment creation and poverty reduction<br>Participants were not paid.<br>It was self help approach so it did not alleviate poverty |
| Future improvement of LBT | • Good leadership<br>• Raising wage rate<br>• More training | • Good leadership<br>• Increased length of employment<br>• Training to all participants | Participants should be motivated by either being paid or training;<br>Programme of employment creation and poverty reduction should be associated in the project; and<br>Good management and leadership. |

## APPENDIX B: PERMISSION TO USE INFORMATION

Dear Sarah,

We don't have any problem with using our information for studying purpose.
Best regards,
Anna Mtani
Sustainable Dar es salaam Project (SDP)

----Original Message---
From: Sarah Utou (mail:sarahfrumence@yahoo.co .uk)
Sent: 15 march 2005
To Sustainable Dar es salaam Project (SDP)
Subject: Permission to use information.

To: Whom it may concern

RE: Permission to use information.

I am currently working on my masters proje ct in South Africa, specific looking on poverty alleviation by using labour based infrastructure provision in informal settlements in Dar es Salaam Tanzania. I would like to use some of your map on Dar es Salaam informal and the photo on main road to Keko informal settlement from your 1999 document in my thesis.

Thank you in advance,

Sarah Phoya,
Departiment of Built Environment
Cape Peninsula University of Technology
Bellville
South Africa

APPENDIX C: INTRODUCTORY LETTER FOR DATA COLLECTION

Peninsula Technikon

**Faculty Research Office – Engineering Faculty**

P.O.Box 1906, Bellville, Cape Town, South Africa, 7535
Tel: (021) 959-6637/6666, Fax: (021) 959-6743

26 November, 2004

**TO WHOM IT MAY CONCERN**

Dear Sir or Madam:

**STUDY TO EVALUATE POVERTY ALLEVIATION BY USING LABOUR-BASED PROVISION OF INFRASTRUCTURE IN INFORMAL SETTLEMENTS: THE CASE OF DAR ES SALAAM CITY**

Ms. Sarah Phoya is registered for an M. Tech (Construction Management) degree in the Department of the Built Environment at the Cape Peninsula University of Technology. Her research topic requires her to collect data from community members, local authorities, private sector participants, contractors, and other stakeholders who were involved in infrastructure projects in Hanna Nassif, Tabata and Temeke.

Your participation is critical to the success of this project. We invite you to participate in the interview survey, which involves a variety of questions designed to obtain your perspectives and opinions relative to their involvement in the infrastructure projects in the areas mentioned. The interview will last about 30-45 minutes. Naturally, you may answer only those questions that you feel comfortable in answering.

The results of this study are part of a major research effort. Should you have any questions please feel free to call the project supervisor, Dr Theo C Haupt on any of the above numbers. Responses provided will be kept strictly confidential. Research data will be summarized so that the identity of individual respondents will be concealed. You have our sincere thanks for participating in this valuable study.

Yours faithfully

Dr. Theo C Haupt
Research Coordinator

APPENDIX D: INFRASTRUCTURE PROJECT PARTICIPANT QUESTIONNAIRES

## SECTION 1 DEMOGRAPHICS

Q.1 Location: _____

Q.2. Gender:

| | | | |
|---|---|---|---|
| Female | | Male | |

. Q.3. Marital status

| | |
|---|---|
| Single | |
| Married | |
| Divorce | |
| Widow/widower | |

Q.4.Highest level of schooling

| | |
|---|---|
| Primary school level | |
| Secondary school level | |
| College education level | |
| University level | |

Q.5. Age: _____
Q.6.Current Occupation: _____
Q.7 Average Income per month: _____
Q.8 How long have you lived in this area? _____
Q.9 How much previous construction industry experience have you had?

_____

## SECTION 2: HOUSEHOLD INFORMATION

Q.10. What position do you hold in the household?

| | |
|---|---|
| Head | |
| Son | |
| Daughter | |
| Relative | |
| Tenant/boarder | |

Q.11. Number of household members:

- Total:_____
- How many are working?: _____

Q.12 Living conditions (place of residence):

⇒ Type of structure:

| | |
|---|---|
| Permanent | |
| Semi-permanent | |
| Temporary | |

Construction materials used to erect the structure:

| Walls | | Roofing | |
|---|---|---|---|
| Concrete blocks | | Roof tiles | |
| Burnt bricks | | Corrugated iron sheeting | |
| Mud blocks | | Grass | |
| Timber frame | | Thatch | |
| Corrugated iron | | Asbestos | |
| Other (specify below) | | Other (specify below) | |

Walls: _____
Roofing: _____

**SECTION 3: PARTICIPATION IN INFRASTRUCTURE PROJECT/S**

Q.13. In what capacity were you employed?

| Category | | For how long? |
|---|---|---|
| Fundi | | |
| Labourer | | |
| Foreman | | |
| Carpenter | | |
| Bricklayer | | |
| Storekeeper | | |
| Other (please specify below) | | |

Q.14. Basis of employment

| | |
|---|---|
| Full time employment | |
| Part-time/Casual | |
| Temporary | |
| Contract | |
| Other (specify below) | |

---

Q.15 For whom did you work?

| | |
|---|---|
| Community | |
| Municipality | |
| Contractor | |
| Subcontractor | |
| Supplier | |
| Manufacturer | |
| Other (Specify below) | |

---

Q.16 How did you become aware of this project?

| | |
|---|---|
| From community leader | |
| From the Municipal<br>From NGO | |
| From contractor | |
| Religious organization | |
| By word of mouth | |
| Newspaper announcement | |
| TV | |
| Radio | |
| Internet | |
| Other(specify below) | |

---

Q.17. Did you possess/have the skills needed to perform the work in this project?

| | | | |
|---|---|---|---|
| Yes | | No | |

Q.18. If No, where did you obtain/receive the Training to perform such work?

| | |
|---|---|
| From the community | |
| Municipality | |
| From NGO | |
| From contractor | |
| Funding agency | |
| Other (specify below) | |

Q.19.When did you get the training?

| Time | | For how long? | Training agency |
|---|---|---|---|
| Before the project commenced | | | |
| During project | | | |
| Other (Specify below) | | | |

Q.20. Was the training received on the job?

| Yes | | No | |
|---|---|---|---|

Q.21 If No, where did you receive it? _____

Q.22. Was this the only training you received?

| Yes | | No | |
|---|---|---|---|

Q.23. If No, what other training have you received? _____

Q.24. Was this your first job?

| Yes | | No | |
|---|---|---|---|

Q.25. If No, what other work have you performed?

_____

Q.26. Why did you leave that job?

_____

Q.27. What motivated you to participate in the infrastructure delivery project?

_____

Q.28. How much did you earn on the project? _____

Q.29. When were you paid?

| | |
|---|---|
| Daily | |
| Weekly | |
| 2 weekly | |
| Monthly | |
| Other (specify below) | |

Q.30. On what basis were you paid?

| | |
|---|---|
| Hourly | |
| Daily | |
| Weekly | |
| Monthly | |
| Other (specify below) | |

Q.31. What did you do with the money you earned?

| | |
|---|---|
| Family expenses | |
| Investment in business | |
| Personal Savings | |
| Insurance policies<br>Improve house | |
| Other(specify below) | |

Q.32. How much did you invest?

| | |
|---|---|
| Business | |
| Savings | |
| Home improvement | |
| Insurance | |
| Other (specify below) | |

Q.33. If you invested in a business, what type of business?

Q.34. After the project was completed, were you able to find employment?

| Yes | | No | |
|---|---|---|---|

Q.35. If Yes, please indicate

| | |
|---|---|
| What type of employment? | |
| When you obtained it? | |
| For how long?<br>At what salary? | |

Q.36. Were you able to use the skills you earned during this project?

| Yes | | No | |
|---|---|---|---|

Q.37. Have you made any changes/ improvement/modification to your house since the project was completed?

| Yes | | No | |
|---|---|---|---|

Q.38 If Yes, which changes: _____

Q.39. If No, why not? _____

Q.40. Which of the following have contributed to the changes you made to your house?

| From participation in the project | Yes | No |
|---|---|---|
| Income/wages | | |
| Knowledge | | |
| Experience | | |
| Training | | |

Q.41 Utilities:

| | Before the project | | After the project | |
|---|---|---|---|---|
| Utilities | Yes | No | Yes | No |
| Electricity | | | | |
| Tap water | | | | |
| Sanitation: Pit latrine | | | | |
| Septic tank | | | | |

Q.42. If you installed any of the utilities in Q.41 after participating in the project, was this as a result of any of the following?

| | Yes | No |
|---|---|---|
| Participation in project | | |
| Money saved | | |
| Knowledge gained | | |
| Experience | | |
| Training received | | |

Q.43. How do you feel about your participation in the infrastructure provision project?

| | |
|---|---|
| Positive | |
| Negative | |

Q.44.Why do you feel this way _____

_____

Q.45. What was the impact of participation in infrastructure provision on you and your family?

| | |
|---|---|
| Improved my living standards | |
| Acquired skill which help me to get other employment | |
| More income to make investments | |
| Others (specify below) | |

_____

Q.46. If there was another opportunity to do the same type of job again in the same manner would you be interested?

| Yes | | No | |
|---|---|---|---|

Q. 47. Explain your answer

_____

Q.48. Do you feel that the LBT approach, was successful in alleviating poverty and creating employment?

| | Yes | No |
|---|---|---|
| Alleviating poverty | | |
| Creating employment | | |

Q.49. Explain your answer

---

Q.50.Would you recommend the LBT approach to another informal settlement needing infrastructure?

| Yes | | No | |
|---|---|---|---|

Q.51. Explain your answer

---

Q.52. Please suggest how this approach could be improved to be more successfully implemented in future

---

## APPENDIX E: QUESTIONNAIRE TO BE USED FOR COMMUNITY BASED ORGANIZATION INTERVIEW

1. What are the objectives of CBO in infrastructure delivery project?
2. How did you become involved with this project?
3. Was it your first time in dealing with this kind of project?
4. How do you go about initiating the community in the process of infrastructure provision in your settlements?
5. Do all the residents of this area participate in this process?
6. If yes, how?
7. If No,why?
8. Which member of community involved in infrastructure provision?
9. Was their any contract/ rule applied to select the members
10. Who decided for these rules
11. How does the community involved in training programme
12. How does training conducted, which member were decided to learn what
13. How does the entire process of infrastructure provision benefit the community?
14. Did you have any experience or aware of community involved in infrastructure provision project before this project
15. What is your relation with local authorities,
16. After project completed what kind of activities are you involved with
17. Who are legible for maintenance
18. How do the community involved in the maintenance
19. Was the project successful?
20. Was your objectives achieved
21. If yes, describe how
22. If no why not
23.

## APPENDIX F: QUESTIONNAIRE TO BE USED FOR LOCAL AUTHORITIES INTERVIEW

1. Describe your role as the local authority in the provision of infrastructure in informal settlements?
2. What is your PRIMARY objective?

| | |
|---|---|
| Employment creation | |
| Poverty alleviation | |
| Service delivery | |
| Reduced costs | |
| Other (Specify below) | |

3. How was this project conceived
4. Who initiated the project?

| | |
|---|---|
| Local authority | |
| Community | |
| Funding/Aid agency | |
| Government | |
| Other (Specify below) | |

5. Is the Labor Based Technology the preferred approach to deliver infrastructure in informal settlements?

| | | | |
|---|---|---|---|
| Yes | | No | |

6. Which of the following criteria or desired outcomes are considered in designing and implementing the LBT approach?

| | |
|---|---|
| Employment creation | |
| Poverty alleviation | |
| Skills transfer/development | |
| Service delivery | |
| Reduced costs | |
| Other (Specify below) | |

7. Do you engage/involve local communities in designing and implementing the LBT approach on projects?

| | | | |
|---|---|---|---|
| Yes | | No | |

8. Please explain your answer
9. How does the municipality/local authority establish priorities in informal settlements?

10. What is considered?
11. How is the project team decided upon?
12. What are the key issues that influence the awarding of a tender for the provision of infrastructure?

| | |
|---|---|
| Price/budget | |
| Time/project duration | |
| Quality | |
| Health and safety | |
| Track record of tenderer | |
| Environment | |
| Other (Specify below) | |

13. How is the tender awarded
14. Who prepares the contract documents?
15. During the awarding/adjudication process is there direct contact with the community and private sector?

| Yes | | No | |
|---|---|---|---|

16. If NO, is there an intermediate appointed to deal/negotiate with them?

| Yes | | No | |
|---|---|---|---|

17. What challenges have you encountered in dealing with the LBT approach
18. What lessons have you learnt relative to the LBT approach?
19. Were you aware of the LB approach before this project?

| Yes | | No | |
|---|---|---|---|

20. Did you achieve your objectives relative to the project?

| Yes | | No | |
|---|---|---|---|

21. Please explain your answer
22. In your opinion, do you really think the LBT approach has impacted on employment creation and poverty alleviation?

| Yes | | No | |
|---|---|---|---|

23. Please explain your answer
24. What suggestions do you have to improve on the LBT approach to achieve your objectives?

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