Poverty and Environment:
Impact Analysis of Sustainable Dar es Salaam Project
on
"Sustainable Livelihoods" of Urban Poor

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RESEARCH ON POVERTY ALLEVIATION

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Abbreviations

ANOVA	Analysis of Variance
CBO	Community Based Organisation
CPR	Community Property Resources
EPM	Environmental Planning and Management
GN	Government Notice
Ha	Hectare
HBS	Household Budget Survey
HH	Household
HKMUM	Herbert Kairuki Memorial University of Medicine
HPI	Human Poverty Index
IFUP	International Meeting on Urban Poverty
IMTU	International Medical and Technolocal University
LMS	Living Measurement Studies
NGO	Non-Government Organisation
ODI	Overseas Development Institute
PC	Private Consumption
REPOA	Research on Poverty Alleviation
SDP	Sustainable Dar es Salaam Project
SPC	State Provided Commodities
TANESCO	Tanzania Electric Supply Company Limited
TTCL	Tanzania Telecommunication Company
UCLAS	University College of Lands and Architectural Studies
UDSM	University of Dar es Salaam
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNHCS	United Nations - Habitat

ACKNOWLEDGEMENT

ABSTRACT

The study was carried out to find out strengths and weaknesses in the institutional structure and associated legislation that support measures to improve the environment of the City of Dar es Salaam. The objective is to equip policy makers, particularly local government leaders, with an understanding of better means and ways of keeping the City of Dar es Salaam safe and clean without depriving its dwellers of their sustainable livelihoods. The understanding would help to avoid sending man dwellers to poverty which might lead to environmental degradation.

A wide range of issues received less poverty environment literature to date, the findings of this study constitute a real and deep scrutiny advance in understanding how different social groups under different conditions secure sustainablelivelihoods, andhow they relate to environmental management practices and environmental change.

The study empolyed a combination of survey methods (HBS and LMS) to collect primary data in combination with a detailed review of literature to investigate the relationship between poverty and environment in an urban setting. It has been found that the environment as resource base and natural sink of generated waste in all forms (solid, liquid or gaseous) has a linear relationship on urban poor. The higher the environmental degradation urban areas, the higher is the level of poverty by impoverishment process (vulnerability). Hence, poverty reduction strategies in urban areas should focus not only on improving the environment through provision of basic services and facilities but also should include policy and institutional changes that focus on intervening the vulnerability process. A major emphasis is placed on further research on dynamics of sustainable livelihoods as a poverty eradication and environmental management strategy.

1. INTRODUCTION

Poverty is inseparably linked to lack of control over resources, including land, skills, knowledge, capital and social connections. Urban poverty is rapidly increasing in pace with the overall urbanisation. It is a growing phenomenon in all countries and regions, and often poses special problems, such as overcrowding, contaminated water and bad sanitation, unsafe shelter, crime, and other social problems. The "Recife Dec-laration", which took place in March 1996 in Recife, Brazil and issued by the "Inter-national Meeting on Urban Poverty (IFUP)" that came up both with the idea and deci-sion to form IFUP and discussed it publicly for the first time has one of its paragraphs read:

> *"Urban poverty and its attendant human cost is perhaps the single greatest challenge of our time...The centrepiece of urban policy as we enter the 21st Century must there-fore be the struggle against poverty, with goals such as the integration of the informal city, the recovery and democratic use of public space, and the reversal of the trends towards the concentration of wealth and opportunities, which so often ends in a spiral of violence."*

It is a major challenge and it raises five interrelated questions: "What is poverty? Who should define it? How can it be measured? How does it affect the different groups of people and, lastly, how can it be eliminated?" In an extremely simplified form, there is in this field one most influential and longstanding set of answers to the afore-mentioned questions, that has been provided by specialised agencies and experts. It defines poverty as a relationship between income and consumption, it measures it by means of poverty lines and it suggests a few attempts on how to reduce it through macro-economic policies and specific single-line programmes designed within the areas of competence of sectoral agencies. Identifying the livelihood systems, survival strategies, and self-help organisations of people living in poverty and working in de-graded environment becomes one of the basic solutions to poverty alleviation.

Literature reflects the existence of a number of schools of thought that link poverty to environment. It is popular among policy makers in the development field to claim that poverty leads to environmental degradation. De Janvry and Gärcia [1988] have looked at a wide variety of experiences in Latin America. They state: "Even if the masses of rural poor are not the major agents of environmental degradation, important environ-mental problems in many regions of Latin America are associated with their activi-ties…" Other authors note a similar relationship, Southgate, (1988); Mink, (1993), among others. However, there is no-single development-related study that has docu-mented evidence on increases in poverty and correlated it with a change in the envi-ronment [Markandya, 2001].

Another school of thought contends that a poverty-affected community will have a more degraded environment than one that is not so affected. Jaganathan [1988] found no evidence that poverty was the driving force in the deforestation or in the damaging changes in land use when he looked at rates of deforestation and the level of poverty in West Java and land use and poverty in Nigeria. Similarly are studies carried out by Deninger and Mintzen [1996] and recently the study by Aheeyar [1998] and Linde-Rahr [1998].

A third presumption, again among policy makers, is that a declining natural environ-ment hurts the poorest sections of society. Studies by Dasgupta [1993, 1996] and Kadekodi [1995] have suggested that when resources are depleted the poor suffers most because of its dependence on natural resources. For urban environment, a pol-luted environment affects more the poor who by intricacies of urban economics and developments are more likely to live close to highly polluted areas, but the value they place on cleaner and safe environment is less than that of the rich. What is suggested here, is the issue of sustainable management of natural resources or sustainable devel-opment.

One of the programmes that address the issue of a degraded environment, as above, is the Sustainable Dar es Salaam Project (SDP) that is jointly financed by UNEP (United Nations Environmental Programme) and Habitat. SDP was launched in 1992, as a project for and by the people of Dar es Salaam. The multi-lateral donor institutions are, therefore, assisting the Government of Tanzania (GoT) to build the local capacity required to cope with the challenges of sustainable urban development. The ultimate goal is to build capacity within the local government administrative structure that would plan and manage the urban development for Dar es Salaam by involving the private sector, NGOs, and community groups.

As stated above, SDP as a capacity-building project seeks to bring in quite new ideas and new ways of doing things. In that line it must necessarily be a long-term process for a meaningful realisation of its objectives. However, the question is to what extent can SDP be able to ensure that the city of Dar es Salaam is able to effectively meet the needs (socio-economic and environmental) of its booming population gradually im-proving their living and working environment.

What is clear today, and it is generally agreed is that the SDP has succeeded in gener-ating a broad-based awareness of the basic SCP/EPM (Sustainable City Pro-gram/Environmental Planning Management). However, the existence of the 'Machinga' in the city of Dar es Salaam

and economic activities being carried out in open spaces not only constitute a problem in environment but signify lack of eco-nomic opportunities to the majority of the city poor. The fact that so many people are working in one place, a situation which posses danger to environment, with the non-existence of basic social services in the areas of work increase the level of environ-ment destruction. The poor living in such crowds without basic social services are a hazardous population group [Mashauri and Omari, 2001].

1.1 THE PROBLEM

Projects like SDP which intend to improve the environment, may at the same time increase the costs of producing an improved environment. How they impact on the poor will depend on what the resulting environment is, what share of the cost the im-provement have in the budget of the poor, and who suffers the loss of livelihood.

> *It is therefore necessary to have a fuller understanding of the distinction between coping or survival strategies, stabilisation, or adaptive strategies and even provide an insight into how growth can be achieved by the urban poor while maintaining an acceptable level of environmental degradation.*

1.2 OBJECTIVES OF THE STUDY

The study was carried to basically evaluate the SDP main objective of enhancing the availability of and promoting the sustainable use of natural resources (main livelihood sources of the poor) and reducing exposure to environmental hazards (which have significant impacts to the poor more than the rich) in and around the city of Dar es Salaam. Specifically the study set out:

1. To establish and assess the different kinds of livelihood strategies which the poor use.
2. To establish what economic incentives exist in the SDP to sustain and improve the livelihoods of the poor, especially in:
   • Managing open spaces, recreational areas, hazardous lands, green belts and urban agriculture; and
   • Managing the economy by integrating petty trading.
3. To establish environmental related impacts arising from alternative livelihood strategies being developed by the poor.
4. To investigate extent of work undertaken to improve solid and liquid

waste disposal to create an environment that is decent, safe and healthy to live in.

1.3 HYPOTHESIS

It is hypothesised that "Projects that aim at improving the environment have signifi-cant impacts on individuals' livelihoods".

1.4 RESEARCH QUESTIONS

- Does increasing poverty, caused by any one of a number of factors, result in the environmental degradation? Or is it the other way round?
- What correlation is there between changes in poverty and changes in the natural environment?

1.5 BACKGROUND TO THE STUDY AREA

The study area was the city of Dar es Salaam, where the Sustainable Project is being carried out. Kinondoni Municipality was selected as the main study area because some of its Wards have adequately implemented the SDP, hence they were expected to provide significant comparative data. The focus was the household where socio-economic changes take place with resulting impacts on the environment.

Kinondoni Municipality like other towns in developing countries is facing rapid popu-lation increase resulting to serious environmental problems including excessive pres-sure on existing environmental resources, infrastructure and other basic services. Ki-nondoni Municipal Council has adapted the EPM (Environmental Planning Manage-ment) process to strengthen the capacity of the Council to be able to better plan, coor-dinate and manage the growth and development of the Municipality and the City of Dar es Salaam by participation, and in partnership with other public, private and popular sectors, on a sustainable basis. Through the EPM process, different stake-holders have an opportunity to discuss problems, negotiate strategies and seek solu-tions collectively to priority issues of common concern.

Based on this EPM process, Sustainable Kinondoni Programme was initiated with emphasis put in the following areas:

- To encourage a cost effective and environmentally sound pattern of growth that forecasts future development options, hence, the emphasis in identifying key envi-ronmental issues that need to be addressed by responsible institutions;
- To ensure a management capability to continue with plan

preparation, implemen-tation, monitoring and evaluation. Here, emphasis is placed on inter-agency coor-dination and bringing together the responsible actors to assess key issues to be ad-dressed right from the beginning, develop their own proposals and gain a sense of ownership of the process; and

- To ensure self-financing of an integrated development and recruitment budget through adequate and enforced cost recovery mechanisms for the services pro-vided, hence the emphasis on costed 'bankable' action plans for early implementa-tion.

To what extent has the Municipal succeeded to meet the challenges as one of the pov-erty reduction strategies, was the subject of the study.

1.6   REPORT OUTLINE

This research report on Poverty and Environment: Impact Analysis of Sustainable Dar es Salaam Project on Sustainable Livelihoods of Urban Poor is presented in five Chapters. Chapter One is the introductory chapter, which highlights on the problem, objectives, hypothesis and the study area and data sources. The background informa-tion of the study area is also presented in this chapter. In Chapter Two methodological issues relating to the relationship between poverty and environment are highlighted. It is emphasised here that population; affluence; and technology determine impact on environment.

Chapter Three describes the methodology used to gather and analyse data to explain the linkage between poverty and environment by evaluation of Sus-tainable Dar es Salaam Project. How the collected data from the study area and exist-ing records and documents were analysed and results discussed is presented in chapter four. Chapter Four also discusses in detail the findings as well as presenting the link-age between poverty and environment in the Tanzanian context. Conclusion and rec-ommendations are highlighted in Chapter Five.

2.   POVERTY AND ENVIRONMENT: THE LINK

Anti-poverty strategies/programmes have usually been conceived and implemented at the national level, using per capita income or consumption measures and manipulation of sectoral policies as points of departure. Little, if any, attention is paid to the manner in which people live, the resources (assets) used for pursuing livelihoods, or the hu-man and financial costs associated with the implementation of national programmes that may affect, in one way or another, the livelihoods of the poor.

In 1869, Ernest Haeckel coined the word "ecology" to explain the study of the rela-tionships between different organisms and between organisms and their surroundings. Two issues were of particular interest. First, the limitations of resource supplies, which is caused by the depletion or absence of some nutrient or other materials needed to maintain a way of life. Second, the limitations of tolerance - tolerance to climatic changes, tolerance to toxic substances, and tolerance to competition. The limitations determine how some creatures can live and adapt to certain places while others cannot. They also explain the abundance of life-form in one location and occa-sional presence in another and why some species sometimes pass from existence.

When scientists first studied the earth from space they realised how interconnected the whole world was. They could for the first time observe how the ecology of one area of the world affected another. They also observed some of the human activities af-fecting our planet. In 1971 and 1972, Ehrlich and Holden, respectively, presented the following formula to express the impact of human activities on the natural system:

Where: I = Impact on the environment

P = Population

A = Affluence (consumption per person)

T = Technology (impact per consumption)

This has been simplified to: Damage (environment) = population x economic activity per person (affluence) x resource use per economic activity (resource) x stress on the environment per resource use (technology) x damage per stress (susceptibility). Based on the formula, the belief that the impact on the environment (environmental damage) we see today is a result of increase in human population patterns was popular up to 1970s. However, Tiffen et al. [1994] investigated situations where population growth and agricultural intensifications have been accompanied by improved rather than dete-riorating soil and water resources. This conclusion supports that of Boserup [1981] who reasoned that limits to agricultural production or population growth might be mitigated by technological advance, again this is contrary to the formula.

Recent studies on the relationship focus on "more people less erosion". A study by Boyd and Slaymaker [2000] examined how widespread are the prospects for positive outcomes of the 'more people, less erosion' theory by drawing on new studies in six countries (Burkina Faso, Ghana, Nigeria, Senegal, Tanzania and Uganda). They con-clude that there are a few reversal of natural resource degradation and no evidence of a wider trend towards environmental recovery. This is applicable to rural areas, but for

the urban situation the question is whether it is affluence or poverty (population consumption) or population density. Many studies have not succeeded to address the issue adequately.

2.1   URBAN SITUATION

It is generally hypothesised that rapid urban population growth leads to the rapid dete-rioration of environmental conditions because of an intrinsic relationship between poor people and their settlement patterns. Normally poor people, who move to town in search of employment, settle in squatter areas [Mbilinyi and Omari, 1996] intensi-fying the degradation of the environment even further. The extent of this deterioration limits national and urban economic development, and consequently affecting social and economic welfare. Generally, in such places, there is a shortage of reliable social services. For example, there are few, and sometimes none, latrines and refuse disposal places. Urban environmental problems have therefore almost universally been defined in terms of impacts on health rather than impacts on land productivity, forest and soil resources.

Researchers such as Hardoy et al [1992], Main and Williams, [1994], Hill and Upchurch, [1995], and Satterwarte et al, [1996] have asserted that urban envi-ronmental problems may undergo a variety of transportations which pass through a series of stages. The first stage is the dominance of biological pathogens or microor-ganisms because of poor sanitation, lack of clean water supplies, and waste disposal. The later stage is associated with epidemiological transition from infectious illness, such as cholera, to chronic diseases and conditions, such as lead poisoning or malnu-trition. The poor in urban areas may therefore continue to find themselves subject to biological pathogens after parts of the urban have adopted better sanitation.

The urban poor situation is further exacerbated by their lack of access to decision-making mechanisms that determine how resources are utilised. The urban poor exist at the fringes of societal activities such as employment, access to social services and are often displaced to environmentally unsafe areas of societal space without any re-course or voice on decisions which affect their livelihoods. Many local authorities are reluctant to shift their attitudes from a paternalistic approach to an empowering ap-proach, viewing this as loss of control over resources as well as a reduction in their power. Their responses to environmental health problems and risks are also dependent on the provision of institutional support by the state, international agencies and inves-tors rather than local communities [Forsyth et al. 1998]. In response to these short-comings, people in urban areas have shown willingness to organise themselves in

or-der to ensure access to water and sanitation [e.g. Beall, 1977], and particularly in the case of shanty-towns [Chant, 1977]. These measures at the end increase financial bur-den to the urban poor, accelerating the process of impoverishment.

As poverty increases, so do the struggles of vulnerable groups in their efforts to eke out a living under conditions that are hostile to their very existence - the lack of better social and economic opportunities. There is often a mix of individual and household survival strategies that are developed over time and enable the urban poor to cope with the circumstances. The mix of strategies includes labour market involvement (the 'machinga' case in the city of Dar es Salaam), adaptation to different technologies for production, social networking, changes in consumption patterns, labour and asset pooling, and at times even reverting to criminal activities which may have significant impacts on the environment.

Another problem for urban poor resulting from environmental degradation is its con-tribution to the processes of impoverishment. It is commonly assumed that in a cross-section of communities, the level of the natural environment up-keeping is superior in a richer community than in a poor community. On the other hand, to be more precise, a poverty-affected community will have a more degraded environment than one that is not so affected. Brooks and Sethi [1997] attempted to see how changes in the qual-ity of the environment have actually affected the people living there (both poor and the rich). They looked at how the changes in toxic release were distributed across US zip codes. Using a logit equation in which a value of one implied an increase in the level of and a zero implied a decrease or no change, they found that jurisdiction pov-erty was negatively related to increases in toxic releases. It did suggest, however, that the poor do not always fare worse as the environment changes over time. Unfortu-nately, no such data are available for developing countries.

There are a few recent studies on the distributional impacts of environmental regula-tions in developing countries. Eskeland and Devarajan [1996], looked at the distribu-tion of environmental costs for the transport sector in Indonesia and Mexico. They conclude from their study that, as expenditure on private and public transport in-creases as a percentage of income across quintiles, measures to reduce emissions from transport (particularly private transport) will have a progressive impact. According to research conducted by the Urban Environmental Management Programme, a joint ef-fort of UNHCS (Habitat), UNDP and the World Bank, the underlying causes to public health and productivity can be traced to 'inappropriate policies, inadequate cost re-covery, and insufficient political will and public unawareness'.

In developing countries these short-comings are aggravated by a lack of resources and insufficient investment in infrastructure on the one hand, and the inability of the local governments to effectively plan, co-ordinate and manage urban areas on the other. Worse is that an urban degraded environment threatens urban dwellers and reduces urban productivity and growth (UNCHS, 1994), endangers urban populations' lives, health and livelihoods. One of the greatest challenges for urban development practitioners, therefore is to ensure that urban areas remain both economically and envi-ronmentally sustainable, that is, allow for socio-economic growth within the ecologi-cal limits. This is because "there exists a complex pattern of interaction between en-vironmental resources which support life in a city and the use of those resources for urban development" (Majani, 2000).

2.2   TANZANIAN SITUATION

In Tanzania, the urban areas absorb around 20% of total population. Rapid urban ex-pansion, accelerated by the upward trend of poverty level in Tanzania rural, leads to environmental problems such as health and social risks and also poses major obstacles to achieving economic growth and development. Given the nature of Tanzanian eco-nomic development whereby investment in social sector is extremely low (Ngalula and Omari, 1996) the poor in such places will remain in poor social conditions for a long time unless there are deliberate policies initiated to alleviate poverty among them. In this way, poverty affects settlement patterns, which in turn, leads to the deg-radation of environment.

Since its establishment by Sultan Seyyid Majid in 1862 as a port and a trading centre to support new caravan routes being opened up, Dar es Salaam has been growing very rapidly. Whilst the city stagnated during the inter-war years, rapid growth followed unabated into the 1980s, despite the implementation of the Arusha Declaration in 1967 (which pledged the majority of the public for support to rural Tanzania, signifi-cantly reducing social and physical infrastructure investments in Dar es Salaam and other municipalities), and dedication of Dodoma as the new National Capital. It con-tinues to be the Primate City and major administrative, commercial, industrial and transportation centre in Tanzania. Given these facts Dar es Salaam continues to attract more investment and associated population boom.

 Approximately 70 per cent of the population live in unplanned settlements with mar-ginal access to piped water, sanitary waste disposal systems, drained roads, or basic social services; increasing the incidence of health problems. In case of sanitation, most households in Dar es Salaam have

their own toilet facilities, however, the situa-tion in many parts of the city is completely unhygienic. While flush toilets, which are common in affluent areas, require a good and continuous supply of water, in the ab-sence of water, these flush toilets become health hazards. Less than five per cent of the city population is served by the 130km of sewers in 11 systems and supported by 17 pumping stations, which are covering the city centre (constructed in the 1950's), the Ubungo and Vingunguti industrial areas, and the few outlying residential areas, discharging effluent into oxidation ponds, local water sources and directly to the ocean. Many of the oxidation ponds no longer operate due to lack of maintenance, resulting in raw sewage discharges into the surface drainage system. Untreated indus-trial effluent are also discharged directly to surface drainage systems for the lack of alternative system. Of the remaining 2.2 million people, approximately 80 per cent have access to on-site facilities (70 per cent being pit latrines and 30 per cent septic tanks), whilst the remaining 20 per cent (or about 380, 000 people) lack even elemen-tary sanitary facilities [Baruti et al, 1992].

While urbanisation continues to increase in Dar es Salaam (our case study), insuffi-cient (serviced) land is being made available resulting into further densification of un-planned settlements, unplanned densification of peripheral villages and further expen-sive linear expansion of the city. At the same time the limited number of plots that are made available lack coordinated service provision and sustainable cost recovery mechanism. This in turn frustrates plot development and encourages individual ser-vice connections, which foreclose on upgrading options at a later date. Thus the high population growth rate, limited public sector financial resources (as Tanzania is one of the poorest countries in the World), inadequate servicing of the city land is leading to a deterioration of the city environment. The extent of this deterioration limits na-tional and urban economic development. In addition, these might adversely affect the health and welfare of urban residents.

2.3   CONCEPTUAL FRAMEWORK: SUSTAINABLE LIVELIHOOD

Conceptually, livelihoods connote the means, activities, entitlements, and assets by which people make a living. Assets, in the particular context, are defined not only as natural (i.e. land, water, common-property resources, flora, fauna) but also social (i.e. community, family, social connections, knowledge, skills) and physical (i.e. roads, markets, health facilities, schools and bridges). The sustainability of livelihoods, therefore, becomes a function of how members of a society utilise assets to meet their needs without compromising those of future generations. Therefore, for the liveli-hoods to be sustainable, the resources (whether natural, social,

or humane) must be maintained. Within the selected set of ecosystem or biome, for example, urban setting, and over millennia, people have traditionally evolved ways of life and stores of knowledge that enable them to successfully and sustainably provide for their liveli-hood needs. (We may note here that many traditional societies have located themselves so as to better exploit several neighbouring ecosystems).

Experience has shown that poverty eradication is not simply a question of providing the urban poor with public goods and services to meet their basic needs. This may re-sult in the temporary alleviation of the condition of poverty but does not necessarily provide a sustainable solution to the problem of poverty. As poverty increases in ur-ban areas, so do the struggles of vulnerable groups in their efforts to eke out a living under conditions that are hostile to their very existence - the lack of social and eco-nomic opportunities. However, focusing on the availability of basic infrastructure and services provides an insight into the poverty-environment linkage (Figure 2.1)

Figure 2. 1: Conceptual Framework of Poverty-Environment Linkage

The evidence for direct, unilinear linkages between poverty and
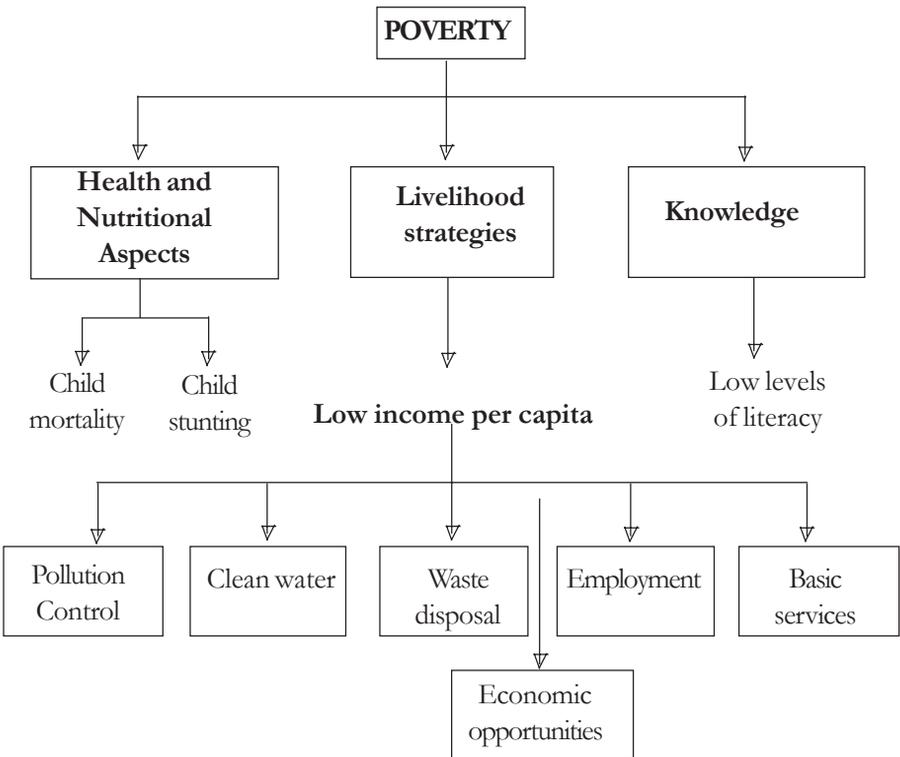
environment, as from literature appears very weak. However, this is not to say that there is no link between poverty and environmental degradation. On the contrary, the implications of pervasive environmental degradation on the livelihoods of the many millions of the poor are grave enough to warrant specific attention as a focus of development efforts (Figure 2.1). As a general point, explicit consideration of the degree and direction of causality between processes of impoverishment on the one hand, and processes of environ-mental change or degradation on the other, has been neglected in the existing litera-ture. More often than not, the existence of links has been assumed without proper analysis.

2.4   SUMMARY

Important qualitative differences, as noted in the preceding sections, exist between poverty-environment interactions in urban areas as compared with those in rural areas. Vulnerable groups in urban areas always develop coping and adaptive strategies. These strategies include partnerships at different levels in the society in an effort to eradicate poverty.

A second note from literature review suggests that the linkages between poverty and environment are not simply in the direction, 'poverty contributes to environmental degradation'. Environmental degradation also contributes to further impoverishment, implying a need for additional policy interventions, like the SDP, to address specific environmental problems in particular places. To what extent these interventions are designed and operationalised in conjunction with careful (often participatory) social and economic concerned is a priority issue for further research.

A significant problem of interventions (specifically associated regulations and meas-ures) in developing countries arises from various difficulties. One of them is control-ling the mushrooming petty traders and small-scale enterprises (informal sector) in urban areas. Regulators frequently shy away from such regulations, either from fear of the effects these may have on employment and incomes of poor households (consti-tuted as the main livelihoods) or for political motives. Studies of the distributional ef-fects of these regulations and measures are, however, few as pointed in earlier sec-tions.

More recently, but quite independently, global scientific knowledge and understand-ing of the ecosystems has grown. Yet the two sets of knowledge, local and global, have been poorly integrated, and have not been combined to inform a manageable set of policy alternatives. It becomes necessary then to study adaptive strategies of people to a set of ecosystems, deducing comparative knowledge that will be of use at the lo-cal, national and international levels.

3. RESEARCH METHODOLOGY

Although urban poverty and environmental degradation are unique to all urban areas in Tanzania, the City of Dar es Salaam was selected on the basis of time constraint due to the fact that the researchers are based in Dares Salaam where they have other commitments. Furthermore, baseline survey has been carried out and sufficient data collected and analysed in Kinondoni and Kawe Divisions (study areas) in the Munici-pality of Kinondoni, Dar es Salaam City. Kinondoni Division has Hanna nassif and Kijitonyama Wards (treatment areas in this study) where substantial upgrade of the infrastructure, drainage, sewerage and water supply has been carried out while Kawe and Msasani (comparison areas) are in Kawe Division. Subjects of the study came from households in the respective areas.

3.1 SAMPLING

The main technique in this research project was "purposive sampling" which was based on the research problem and focused on the Sustainable Dar es Salaam Project as an environmental improvement project, one of its objectives. In Kinondoni Mu-nicipality, adequate implementation of SDP has been carried out in Kinondoni Divi-sion in the Hannanasif and Kijitonyama Wards while in Kawe Division the implemen-tation was yet to be started at the time of this study.

The selection of localities from Hannanasif and Kijitonyama in Kinondoni Wards, as treatment areas, and Kawe and Msasani in Kawe Wards, as comparison areas, was done using "systematic random sampling" in order to increase sample efficiency and ensure that key treatment and comparison areas were included. This was done in con-sultation with Ward Executive Secretaries.

Hamlets (vitongoji) in the respective localities and corresponding households (HH) were selected by "simple random sampling" using the lottery method with a combi-nation of purposive sampling to include key elements for study (the poor, middle class and upper class households).

3.1.1 Sample Size

Basing on the 150 households in each treatment area, 75 households in each compari-son area, the following sampling size estimations were used:

- 30 per cent localities from wards to include treatment localities;
- 50 per cent hamlets from each locality to include treatment areas; and

- At least one household from each hamlet.

3.1.2 *Sample Composition*

Table 3.1 below shows the composition of the sample by Wards, Sub-wards, Hamlets and HHs from Kinondoni and Kawe Wards in Kinondoni Municipality, Dar es Sa-laam City. The total number of HHs for the study was 450 composed of 300 from treatment areas and 150 from comparison areas.

Table 3. 1: Composition of Sample by Wards

Ward	Sub-ward	Targeted Study Hamlets	Targeted Study Number of HHs	Study Number HHs Responded(%)
Kijitonyama	Kijitonyama	10	50	82
	Ali Maua "A"	10	50	78
	Mpakani "A"	20	50	70
Hannanasif	Hannanasif	10	50	74
	Kisutu	18	50	-
	Mkunguni	10	50	52
Kawe	Changanyikeni	10	25	-
	Mlalakuwa	8	25	-
	Mzimuni	12	25	88
Msasani	Oysterbay	15	25	-
	Mikoroshoni	10	25	100
	Bonde la Mpunga	10	25	84

3.2   DATA COLLECTION

Many types of data can be used to carry out impact analysis studies such as household surveys (e.g. HBS), Living Standard Measurement Studies (LMS), and focus group discussions fortified with field observations, as primary data.

3.2.1   *Primary Data*

In this study the following primary data collection methods were employed:

a) The above-mentioned HBS and LMS were integrated into one survey document and administered to each HH. The information collected included:
  - Household composition;
  - Dwelling and infrastructure;
  - Income generation activities (employment formal/informal or business);
  - Expenditures;
    - Payment for infrastructure
    - Daily expenses (consumption)
  - Household belongings;
  - Savings and credit;
  - Education;
  - Health; and
  - Nutrition.

b) The survey was complemented with structured and unstructured interviews with local government officials (Ward Executive Secretaries, Locality Chairpersons and Hamlet leaders). This was supplemented with focus group discussions with community leaders. The information included:
  - Demographic;
  - Infrastructure;
  - Environmental Management;
  - Economic activities;
  - Education and social activities;
  - Health; and
  - Empowerment (consultation and public participation).

c) Cross-sectional or panel surveys to qualitative open-ended interviews were also used to collect the following information:
  - Perception of poverty;
  - Perception of environmental degradation; and
  - Protection of environment and prevention of poverty.

d) Field observation was used to assess and verify information obtained from secon-dary data and interviews on quantity and quality of services provided by:
  - Infrastructure and utilities;

- Environmental state of affairs;
- Education facilities; and
- Health facilities.

3.2.2 Secondary Data

Secondary information was collected from published and unpublished research/study reports, Census results, and other statistics from the National Statistics Bureau par-ticular to the study areas.

3.3   DATA ANALYSIS

Collected raw data, composed of categorical and continuous, was first sorted, edited, coded and then entered into a computer spreadsheet and SPSS. The data was then ini-tially analysed using MS Excel Programme. Then the response rate was determined for each item in the questionnaire and the overall percentage of returns from the sam-ple size, where necessary appropriate graphical representations were made. The ini-tially analysed data was finally tested to draw inference, leading to a series of conclu-sions and recommendations. Nonparametric measures were used to analyse categori-cal set of data by use of logistic regression models and loglinear models. Continuous scale data were analysed by parametric measures (t-test, ANOVA, and regression) to determine the relationship between poverty and environment and subsequently testing the hypotheses.

3.3.1   Poverty: Interpreting the Data

The information gathered on poverty, was compiled in the profile form, which is an analytical tool that summarises poverty-related information of an area attempting to answer the following questions:

- Who are the poor?
- Where do they live?
- What are the main characteristics of their poverty?
- Why are they poor?

3.4   LIMITATIONS AND PROBLEMS ENCOUNTERED

There were a number of limitations and problems before and during the research. Some of the encountered problems and limitations included:

☐ difficulties in accessing some of the subjects of the study and/or documents that provide useful information ;

☐ some of the respondents, to whom questionnaires were distributed, had limited knowledge of the theme of the research;

☐ in a number of visited organisations, there was virtually no database.

Important documents were kept by individuals, which make it difficult for others to access; and

☐ in some instances, the sensitivity of the research topic made it difficult for some people to disclose the actual facts about who had a legal mandate for environ-mental matters in the country.

4.   FINDINGS AND DISCUSSION

Understanding the complex relationship between poverty and environment suggests investigating who owns the resources and how they are utilised (referred to as envi-ronmental entitlements). Poverty is basically lack of resources (natural, human, social, physical and financial). While the rural poor depend on natural assets and social assets for their livelihood, urban poor rely mainly on human assets (especially their physical abilities - informal employment to a large extent and knowledge - formal employ-ment) and partly on social assets within the African culture of dependence within the extended families.

However, in both cases (urban or rural) resources of capital are transformed by policies, processes and institutionalisation to give desirable outcomes (products, education, jobs, welfare, economic growth, clean environment, and others). It then becomes necessary to look at the local responses to change which are socially and environmentally specific and shaped by institutions, and that depending on these conditions, may lessen and promote sustainable livelihoods.

Unfortunately, most of the local and municipal structures are resource-strapped and in no position to ade-quately address the needs of the struggling masses of urban poor. In view of this it becomes necessary for the struggling poor to seek alternative strategies. These strate-gies include partnerships at different levels in the society in an effort to eradicate poverty.

Based on the understanding above, a three rank system of 'well provided, averagely provided and poorly provided' has been used throughout to segregate the community members at different levels of their welfare by a three point rank system. The rank system takes into consideration income and non-income poverty indicators, discussed in Chapter Two.

From Table 4.1 below households in study areas are averagely pro-vided. Poorly provided households are in areas like Ali Maua 'A', part of Hanna nas-sif, Bonde la Mpunga and Mzimuni which are associated with overpopulation and poor infrastructure services as discussed in the preceding sections.

Table 4. 1: Household Welfare

Study Area		Percentage		
Kijitonyama		Kijitonyama	Mpakani 'A'	Maua 'A'
Ward	Well-provided	2.4	8.6	10.3
	Averagely provided	97.6	80.0	51.7
	Poorly provided		11.4	40.0
Hannanasif Ward		Hanna nassif	Mkunguni	
	Well-provided	14.3	96.2	
	Averagely provided	57.1	3.8	
	Poorly provided	28.6		
Msasani and Kawe		Mikoroshoni	Bonde la Mpunga	Mzimuni (Kawe)
Wards				
	Well-provided	7.1		
	Averagely provided	85.8	38.5	58.3
	Poorly provided	7.1	61.5	41.7

Source: Field Survey

4.1   LIVELIHOOD STRATEGIES

As it was highlighted in Chapter Two, there is no strong evidence, so far, for direct, unilinear linkages between poverty and environment. However, the study based on the definition of sustainable livelihoods and the conceptual framework presented in Fig-ure 2.1, Chapter Two. By investigating the various strategies to improve the environ-ment, undertaken by the Municipal in study areas and how they have impacted on the livelihoods of the residents as well as the adapted strategies in these areas, that is the response of the residents (poor and rich), a fair conclusion has been arrived at. The following are the identified strategies:

4.1.1   *Employment*
Formal sector

Generally it is estimated that 360,000 residents of the Municipality are employed in both public and private sectors. Out of these 95 per cent are employed in the private sector and the remaining five per cent are employed in the public sector. In the study areas the situation is as depicted in Chart

4.1 below. A substantial number of people are unemployed accounting for about 30 per cent. Otherwise there is a big number of self-employed people doing petty businesses.

Chart 4. 1: Type of Employment
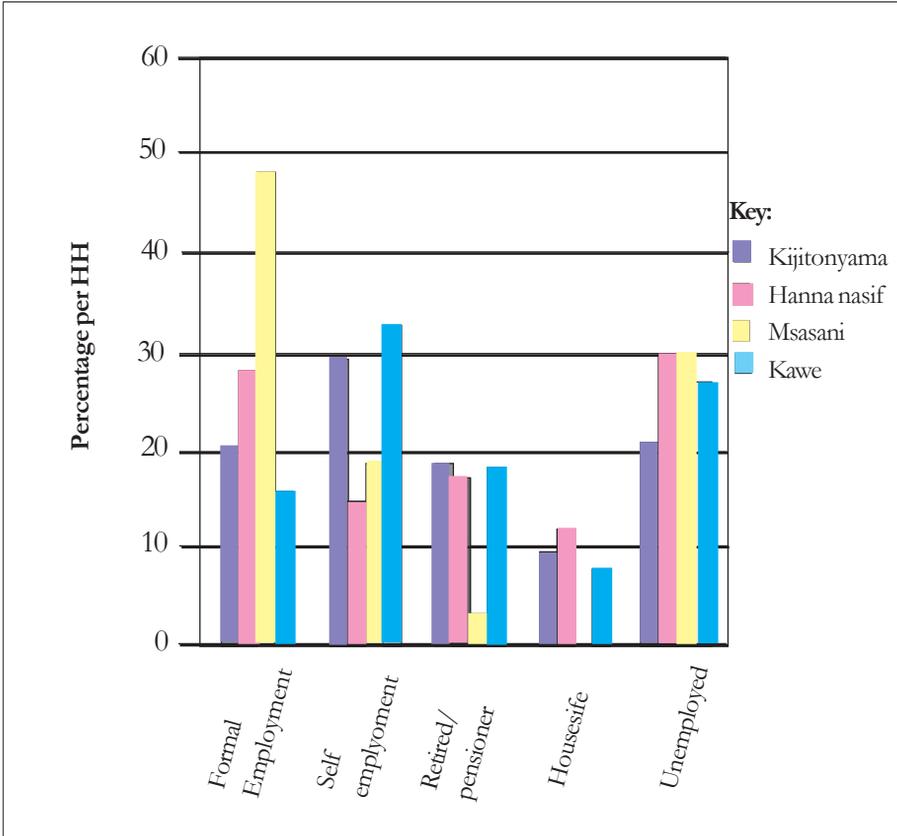
Source: Field Data

Informal Sector

The major economic activities of the informal sector, in the municipality, are retail businesses and services, agriculture, fisheries and bee-keeping. They also include animal husbandry, and are carried out over the entire 52,000 hectares of arable land. Although in the study areas tracts of land suitable for agriculture are not much, how-ever, members of the communities travel and earn a living in other areas on the same tract of land.

The other members of the communities operate small and medium

manufacturing en-terprises such as carpentry, shoe making and tailoring mart. Others are engaged in trade and commerce. Trade and commerce activities include: hotels, restaurants, pharmacies, garages, hair saloons, butcheries, groceries, bars and local brews, tailor-ing, milling machines, 'mitumba' selling, shops (retail and wholesale), guest houses, fish mongering and petty businesses. These are scattered throughout the Municipality. In the municipal there are 24 markets providing services in various wards, including those in Mwenge (Kijitonyama), Mkunguni (Kinondoni), Kawe (Kawe), and Msasani (Msasani).

4.1.2   Alternative Strategies

A working force of 200,000 people is self-employed. Many people are involved in petty businesses, fisheries, livestock keeping, and agriculture including horticulture. Only three per cent of the working force is engaged in subsistence agriculture in the 14 villages of the municipality. There are no big farms but small plots ranging from ½ to 6 acres. Others make small gardens around their houses in which various vegeta-bles and root crops like cassava and sweet potatoes are grown for family food and surplus for generating income. The per capita income of Kinondoni Municipal Coun-cil is estimated at Tshs. 150,000/= per annum in 2003.

During the participatory assessment and survey carried out, here are some of the adap-tive strategies identified:

- Each individual performs many jobs in addition to their primary occupations. Most of the residents are seasonal workers and unskilled labourers, such as paint-ers, construction workers, plasterers, plumbers, electricians, carpenters, drivers and porters as well as artisans producing seasonal items (Chart 4.2)

Chart 4. 2: Type of Profession/Industry HHs are Engaged in
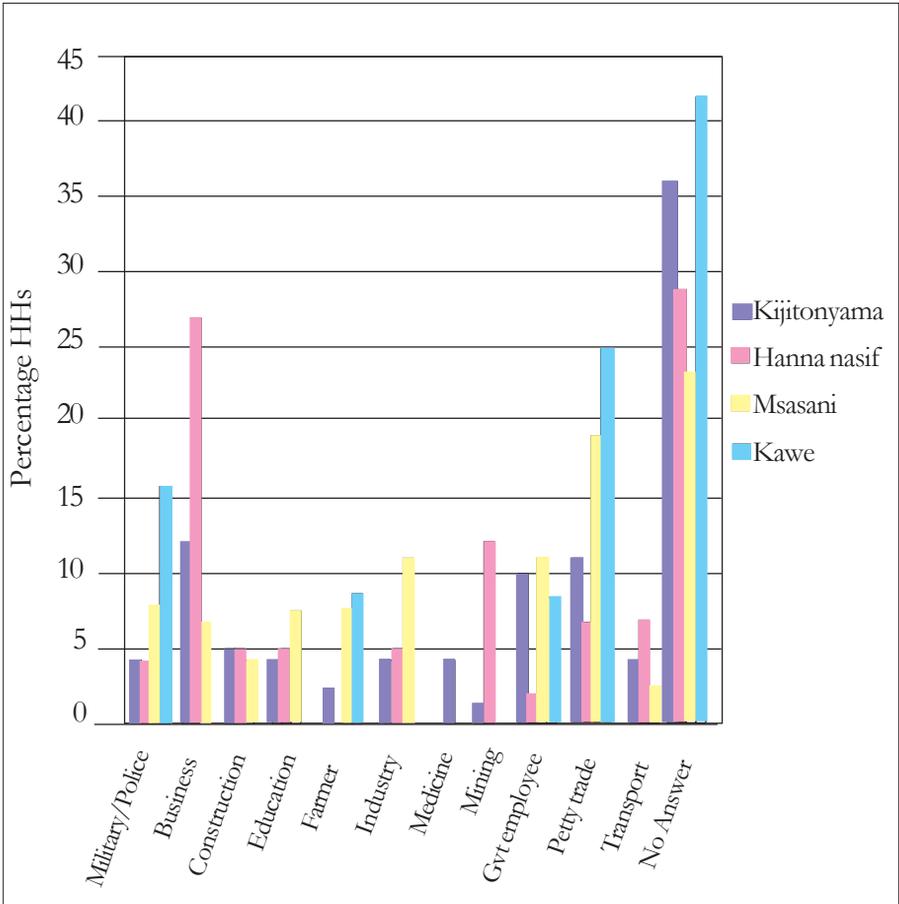
Source: Field data

As Chart 4.2 above shows petty trading is one of the main livelihood strategies in the unserviced settlements of Msasani and Kawe (including the no answer re-sponses in these areas).

- Households rely on multiple sources of income with each member of the family bringing in his or her own contribution. Child labour is widespread.

- Families, particularly women, participate in-group saving schemes borrowing from family, neighbourhoods, mosques, churches and others. Table 4.2 shows loan distribution to women groups from Municipal's established Women and Youth Development Fund to accelerate and facilitate credit to women and youth. The loan per group has increased from 400,000/- when fund was started to about 3,000,000/- today. This is a result of both proper management of the fund and loan.

Table 4. 2: Trend of Loans to Women, Youth Groups and Individuals (1998 - 2000)

Date	Phase	Recipients	Total	Amt Borrowed Tshs.
APRIL 1998	I	4 Groups		
		10 Individuals	14	6,380,000
JULY-AUG 1998	II	60 Groups		
		230 Individuals	290	49,400,000
APRIL-MAY 1999	III	24 Groups		
		44 Individuals	68	18,000,000
OCTOBER 1999	IV	1 Groups		
		1 Individual	2	700,000
APRIL-JULY 2000	V	224 Groups		
		13 Individuals	237	61,650,000
AUG-OCT 2000	VI	334 Groups		
		15 Individuals	349	108,000,000
Total			**960**	**244,130,000**

Source: Field Survey

- Some members of the communities are involved in petty trading. Petty trading involves small businesses within the self-employed sector. 16 per cent in Ali Maua 'A' (Kijitonyama Ward), 22 per cent in Bonde la Mpunga and 4 per cent in Mikoroshoni (Msasani Ward), and 3 per cent in Mkunguni (Hannanasif Ward) of the households are involved in petty trading like selling bums, groundnuts, fruit, fried fish, vegetables and others. The business has emerged to be an integral com-ponent of the Municipal economy, offering affordable products and services to Municipal residents. The sector provides self-employment opportunities not only to the unemployed youth and women, but also working staff, retrenchees, retired officials and the general public. The activities are mainly concentrated where there is effective demand for goods and services. The most common areas include: alongside busy streets of the Municipality such as Midizini and Manzese, at the designated market places, along major road junctions like that of Ubungo, and points of specific business attractions such as the Ubungo Bus Terminal, quarry sites, Mwenge Bus Stand and Community Centres. Businesses are operated by

groups of people or individuals. By the year 2000 there were about 10 effective groups, which were registered by the Municipal Authority and are operating in various settlements as shown in Table 4.3.

Table 4. 3: Some of the Groups or Petty Traders in the Municipality

S/N.	NAME OF GROUP	LOCATION
1	Tingatinga Group	Morogoro Store
2	Ubungo Small Business Association	Ubungo
3	Mafundi Seremala Group	Magomeni (Morogoro Road)
4	Nguvu Kazi - Group	Mzimuni - Mtambani Street
5	Mwenge Traders	Mikocheni 'B' - Mwenge
6	Jitegemee	Mkunguni - Hannanasif
7	Busara na Maendeleo	Mkunguni - Hannanasif
8	Nguvu Kazi	Mkunguni - Hannanasif
6	Chakuvikiuta	Manzese - Uzuri
7	Vijana General Works	Msasani
8	Mburahati Metro Co-Operation Society	Mianzini
9	Kim & Youth	Mzimuni
10	Mwado	Goba

(Source: Kinondoni Municipal Informal Sector (Aug. 2000)

4.2 SUSTAINABLE DAR ES SALAAM PROJECT

4.2.1 Objective

Sustainable Dar es Salaam Project is being implemented in the Kinondoni Municipal-ity under the name of Kinondoni Sustainable Project (KSP). One of the main objec-tives of the Kinondoni Sustainable Project is to strengthen the Municipality's capacity to better plan, co-ordinate and manage the growth and development of Kinondoni Ur-ban District through participation and in partnership with other public, private and popular agencies on a sustainable basis, by applying the Environmental Planning and Management approach. The objective of the study was to establish economic incen-tives formulated and put into practice to sustain and improve the livelihoods of the poor. Three SDP's objectives were

studied. They included:

- Managing open spaces, recreational areas, hazard lands, green belts and agricul-ture, which are traditional sources of livelihood of the urban poor;
- Managing the economy and integrating petty trading, an area which is accommo-dating quite a number of youths; and
- Managing solid and liquid waste to create an environment that is decent, safe and healthy to live in.

4.2.2   Open Spaces, Hazard Lands

From field observations, it was revealed that inspite of the Municipality's strategies, stated above, there is still lack of and encroachment into open spaces in the neighbourhoods and road reserves. Temporary structures that facilitate the informal sector have been erected upon these pieces of land. Residents have built in areas de-clared as hazard land, the case of Hanna nassif (Hannanasif Ward) and Bonde la Mpunga (Msasani Ward, Photo 4.1). Undeveloped plots, such as playgrounds, within the study areas, especially in Oysterbay (Msasani Ward), Kijitonyama and Mpakani A (Kijitonyama Ward) have also been occupied by petty trading activities; make shift restaurants and other petty trading businesses.

Photo 4. 1: Houses in the Hazardous Bonde la Mpunga, Msasani

In all study areas there are no longer open spaces available. While in planned settle-ments the once existed open spaces were either encroached into or officially allocated to other land use. In unplanned settlements every piece of land has had a dwelling or other structures built on. However, two patterns are quite clear. In the unplanned set-tlements of Ali Maua 'A', part of Hannanasif and Mkunguni, Bonde la Mpunga and part of Mikoroshoni and Mzimuni petty trading structures (makeshift type) are located alongside the narrow paths (Photo 4.2), making it difficult for vehicles and pedestri-ans to pass through. In planned settlements permanent structures have been extended into road reserves narrowing the road carriageways and thus also restricting the through way.

Some residents are engaged in vegetable gardening and livestock grazing on undevel-oped tracts of land that include dry river valleys and on hills. These conflicting inter-actions between development and environment calls for appropriate interventions to pave way for improved living conditions in communities.

Photo 4. 2: Petty Trading Structures, Ali Maua 'A', Kijitonyama Ward

To address the issue of poor land management the Municipality has adopted a partici-patory and public/private partnership approach by:

- managing development/environment interactions in making use of hazard and un-developed tracts of land;
- developing and managing the designated open spaces for recreation and other similar uses;
- accommodating urban agriculture and livestock keeping activities in an orderly manner;
- educating farmers so as to create awareness on appropriate farming techniques and environmental conservation; and
- encouraging livestock keeping and urban agriculture by involving Ward Devel-opment Committee (WDC) members in food gardening campaigns.

This approach has enabled a restoration of a habitable environment in Hanna nassif and Kijitonyama (Photo 4.3).

Photo 4. 3: Upgraded Hannanasif

On average the state of health in these areas is better than other areas, which are yet to adapt the EMP process, that is, Kijitonyama compared to Ali Maua 'A' and Mpakani Sub-wards in Kijitonyama Ward (Chart 4.3).

Chart 4. 3: Comparison State of Health in Kijitonyama Ward
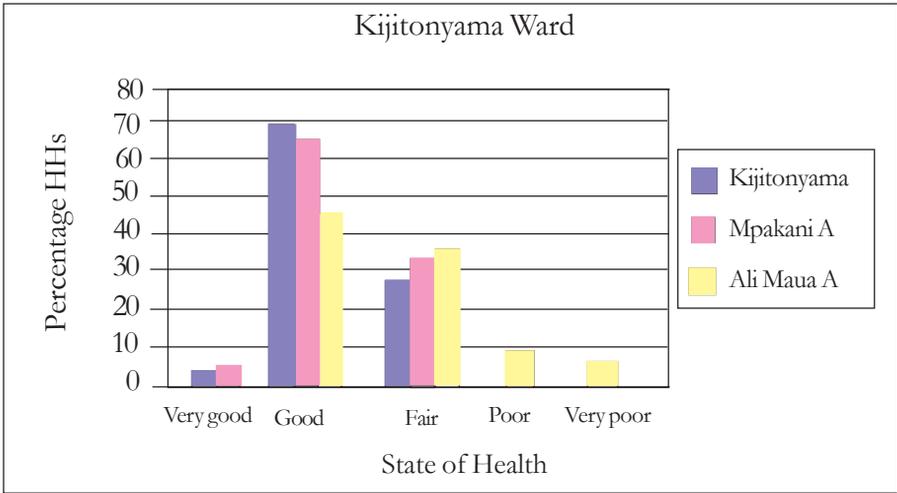
4.2.3 Managing the Economy and Integrating Petty Trading

Employment and income generating activities are crucial in promoting environmen-tally sustainable urban development. But depending on getting employment is a waste of time because there are limited employment opportunities in the formal sector. Women, youths, retired and retrenched persons are individually or jointly engaged in income-generating activities. The dominant income generating activities in the study areas, like any other areas in the Municipality, include food vending; water selling; selling of building materials such as sand, gravel, stones and limestone; urban farm-ing; and livestock rearing; carpentry and timber works; tailoring; motor vehicle repair garages; fish mongering; hair cutting and setting salons and many others. Unfortu-nately the business volume is small because of inaccessibility of small business ven-tures to credit from financial institutions. However, there are civil groups and co-operative societies, which contribute greatly to poverty eradication efforts by creating employment opportunities leading to improved living standards. These include Com-munity-Based Organisations (CBOs), Non-Government Organisations (NGOs) and Economic Development Fund Groups, which operate credit facilities to small eco-nomic activities; these include FINCA, PRIDE - Tanzania and the Nyerere Founda-tion.

On the other hand because of limited resources, the informal sector cannot compete with the formal sector but has successfully been filling the gap where the latter's ser-vices fail to reach some members of the community. This has to some extent helped improve the living standards of many households. Table 4.4 shows that most of the household members

engaged in petty trade, their households are averagely provided, these are such as Mzimuni (Kawe Ward) 35 per cent and Mkunguni (Hanna nassif Ward) 35 per cent. From the same Table 4.4, the plight of retired/pensioners in this country should be addressed, as their households are the ones, which are poorly pro-vided in unserviced and unplanned areas.

4.2.4 Waste Management

Table 4. 4: Occupation: State of Household Crosstabulation

Study Area		% HHs	
Mkunguni		**State of Household**	
(Hannana-sif)	**Occupation**	Averagely provided	Poorly provided
	Employed	35	
	Self employed	12	3
	Retired/pensioner	15	
	Petty Trading	35	
Mzimuni - Kawe		**State of Household**	
Ward	**Occupation**	Averagely provided	Poorly provided
	Employed	18	
	Self employed	11	26
	Retired/pensioner		11
	Petty trading	35	
Kijitonyama		**State of Household**	
(Kijitonyama Ward)	**Occupation**	Well-provided	Averagely provided
	Employed		25
	Self employed		23
	Retired/pensioner	2	20
	Petty trading		30

Source: Survey

Proper management of solid and liquid waste creates an environment that is decent, safe and healthy to live in. However, the opposite creates a health risky environment.

The residents in the Municipality indiscriminately dump and discharge solid and liq-uid waste (Charts 4.4 and 4.5).

**Chart 4. 4: Solid Waste Disposal**
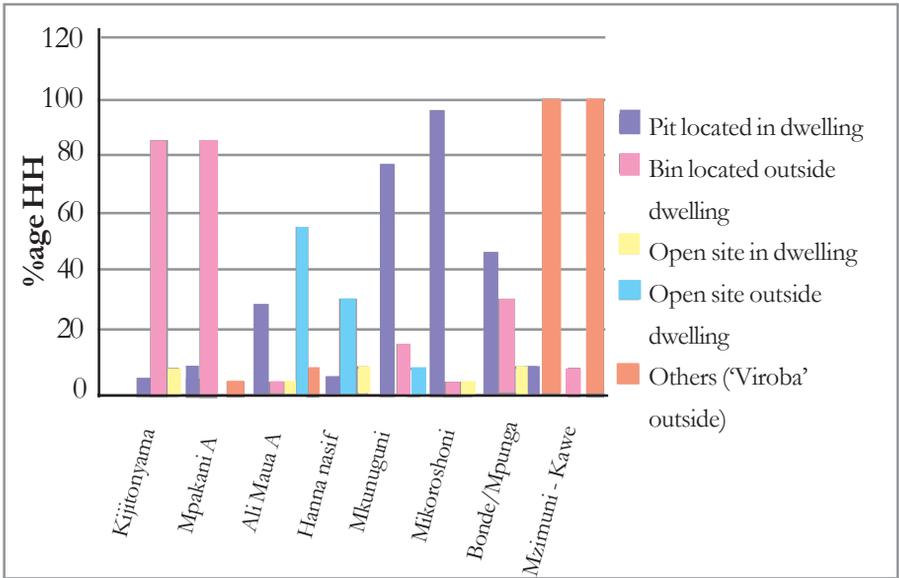
Chart 4. 5: Liquid Waste Disposal
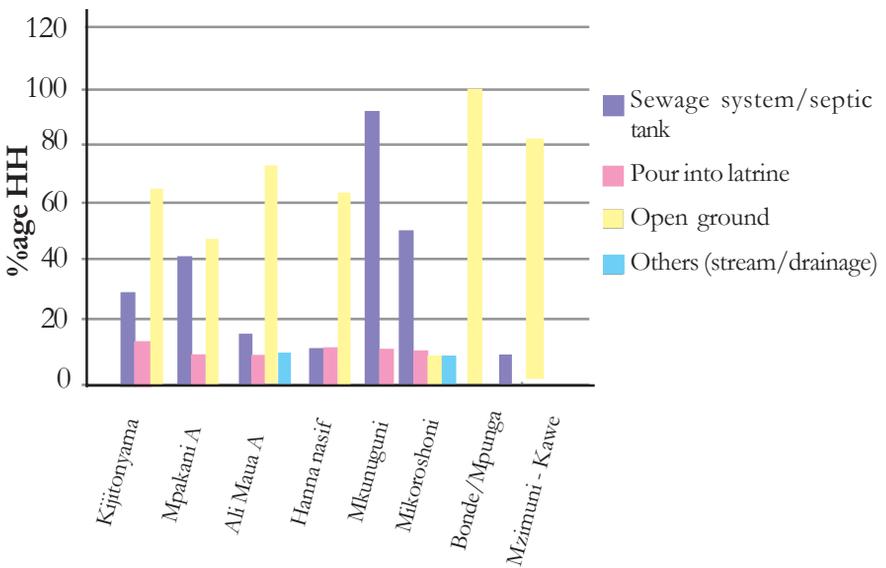
Efforts by refuse collection agencies/contractors and the local authority to dispose solid waste are frustrated by lack of enough resources needed for the job. The level of poverty among the Municipal residents (a monthly service charge of 1,500/- is con-sidered by many as high and most fail to pay) also contributes to this worsening situation.

Public toilets facilities are under-provided or provided below the required standards in places like markets, and bus stops and stands. Roadside storm water drains have been turned into dumping sites for both solid and liquid waste. Because of this they get clogged leading to floods during the rain season.

Flies, mosquitoes and other vectors on the other hand find a safe sanctuary for hiding and breeding in flooded sites. Domestic, commercial and industrial wastes are dis-posed of by means of pit latrines, septic tanks and soakage pits. And the disadvantage is that all these are good underground water contaminants. This situation has been brought about because of:

- non-practice of appropriate alternative waste management methods in the ab-sence of modern technology;
- lack of stakeholders' participation and partnership with the local authority in working out for ideas on how to come up with bankable projects that focus on addressing the issue of solid and liquid waste management;
- the lack of sites designated for carrying out waste activities such as collection points, transfer stations and sanitary landfills. Areas like Bonde la Mpunga (Msasani Ward) and Ali Maua 'A' (Kijitonyama Ward) solid waste is damped indiscriminately (Photo 4.4) leaving most of the area filthy;
- inadequate provision of sewage and storm water drainage systems in the Mu-nicipal;
- shortage of proper vehicles for collection, haulage and dumping of solid and liquid waste;
- presence of pit latrines and septic tank close to water sources;
- non-availability of clean and safe water to most of the residents in the Munici-pality especially in urban areas; and
- high poverty levels in turn affecting the ability of the majority to meet refuse collection costs.

Poor sanitation in the study areas, especially where upgrading of infrastructure ser-vices has not yet been implemented, these include: part of Mkunguni (Hannanasif Ward), Mikoroshoni and Bonde la Mpunga (Msasani Ward), Mzimuni (Kawe Ward) and Ali Maua 'A' (Kijitonyama Ward), has negatively affected the environment as follows:

Photo 4. 4: Indiscriminate Waste Disposal - Kijitonyama

- common occurrences of epidemics such as dysentery, diarrhoea, typhoid, cholera and skin related infections (Tables 4.5 and 4.6);
- high costs frequently incurred by residents and government on treatment drugs;
- contamination of surface and ground water due to indiscriminate dumping and discharge of solid and liquid waste respectively; and
- reduced productivity because the economically active age group is in poor health.

Generally, the overall development of the Municipality is threatened by this

Table 4. 5: Top Ten Diseases (Inpatient Admission)

S/N	< 5 YEARS OF AGE Disease	Cases	% of all diagnosed	> 5 YEARS OF AGE Disease	Cases	% of all diagnosed
1	Malaria	1,160	61.2	Malaria	18,475	63.2
2	Pneumonia	250	13.2	Diabetes	2,163	7.4
3	Acute Respiratory Infection	82	4.3	Pneumonia	1,403	4.8
4	Diarrhoea	78	4.1	Tuberculosis	965	3.3
5	Anemia	74	3.9	Acute Respiratory Infection	965	3.3
6	Burns	39	2.06	Diarrhoea	789	2.7
7	HIV/AIDS	34	1.8	HIV/AIDS	526	1.8
8	Poisoning	11	0.6	Cardiac Vascular Disease	526	1.8
9	Malnutrition	8	0.4	Anemia	438	1.5
10	T.B	6	0.3	Malnutrition	322	1.1

Table 4. 6: Top Ten Diseases (Outpatients)

		< 5 YEARS OF AGE		> 5 YEARS OF AGE		
S/N	Diseases	Cases	% of all diagnosed	Disease	Cases	% of all Diagnosed
1	Malaria	322,236	44.5	Malaria	514,262	40
2	Pneumonia	79,654	11	Pneumonia	57,854	4.5
3	Acute Respiratory Infection	86,895	12	Acute Respiratory Infection	192,848	15
4	Diarrhoea	86,895	12	Skin Infection	77,139	6
5	Anemia	28,965	4	Anemia	70,711	5.5
6	Skin Infection	79,654	4	Diarrhoea	96,424	7
7	Urinary Tract Infection	28,965	3	Urinary Tract Infection	64,283	5
8	Worms	21,724	3	Worms	64,283	5
9	Minor Surgery	21,724	1.5	Minor Surgery	70,139	6
10	Others	10,862	5	Others	77,139	6

Source: Kinondoni Municipal Council 2002

environ-mental degradation.

4.3   ENVIRONMENTAL IMPACTS AND POVERTY

Conceptually, it is assumed that the impact on the environment is dependent on hu-man activities on the environment and use of environmental resources in the course of development. The objective

here was to establish environmental related impacts arising from alternative livelihood strategies being developed by the poor. There is a strong relationship between the state of the environment in urban areas and the health and welfare of its dwellers. In treatment areas Hannanasif and Kijitonyama wards, the study contrasted serviced areas and unserviced areas located therein. This was to take care of the absence of pretreatment situation. To avoid biased conclusion, treatment areas were contrasted with comparison wards. It can generally be concluded that a degraded environment affects the poor more in urban areas than the rich.

Table 4.7 shows the relationship between welfare state of households, their methods of waste disposal (solid) and state of household health by crosstabulating. In the treatment areas of Kijitonyama ward i.e. Kijitonyama sub-ward, where infrastructure services have been upgraded, the general state of health is good and the households are averagely provided (57%). In contrast to Mzimuni (Kawe ward), Mpakani 'A' and Ali Maua 'A', where upgrading of infrastructure have not taken place, there is sub-stantial number of households living in poor health state and poorly provided (18%, 3% an 4% respectively). The high figure in Mzimuni is attributed to the high popula-tion density.

In the formula I = PAT (Impact on environment = Population x Affluence x Technol-ogy), the study has focused on affluence. Using descriptive statistics, as discussed in this chapter, it can be derived that 'level of poverty is inversely proportional to envi-ronmental degradation' i.e. a degraded environment hurts the poor more significantly. The higher the

Table 4.7: Methods of Solid Waste Disposal State of Household State of Health Crosstabulation

Study Area			% of House holds		
			Kijito-nyama		
			Method of Solid Waste Distosal	**Well provided**	**Averagely Provided**
Kijito-nyama Ward		Very good	Bin located outside dwelling/yard/ compound	3	
		Good	Pit located in dwelling/yard/ Compound		5
	State of Health		Bin located outside dwelling/yard /compound		57
			Open site in dwelling/ yard/compound		5
		Fair	Bin located outside dwelling/yard /compound		25
			Open site in dwelling/ yard/compound		5

Ali Maua 'A'

			Method of Solid Waste Disposal	Well provided	Averagely provided	Poorly provided	No Answer
Kijitonyama	State of Health	Good	Pit located in dwelling/yard/compound	3	11	3	3
			Bin located outside dwelling/yard/compound	3			
			Open site outside dwelling/yard/compound		18	8	8
		Fair	Pit located in dwelling/yard/compound		3	3	3
			Open site in dwelling/yard/compound			3	3
			Open site outside dwelling/yard/compound	3	11	3	3
			Recycle			3	3
			Sold		3	3	3
		Poor	Pit located in dwelling/yard/compound			3	3
			Open site outside dwelling/yard/compound		8		
		Very poor	Pit located in dwelling/yard/compound			4	4
			Open site outside dwelling/yard/compound			4	4

Kawe			Mzimuni		
			Method of Solid Waste Disposal	**Averagely provided**	**Poorly provided**
	State of Health	Very good	Pit located in dwelling/yard/compound	8	
			Bin located outside dwelling/yard/compound	8	8
		Good	Bin located outside dwelling/yard/compound	42	8
		Fair	Bin located outside dwelling/yard/compound		8
		Poor	Bin Located outside dwelling/yard/compound		18

population density on a degraded environment, the higher is the level of poverty of its community members.

5   CONCLUSION AND RECOMMENDATIONS

5.1   CONCLUSION

Sustainable Dar es Salaam Project (SDP) through the Environmental Planning and Management (EPM) approach, has shown that it can promote a development para-digm which shifts fundamentally from being technology driven and resource focused traditional development models, by focusing on:

- specific problems in urban areas which include youth unemployment; a large in-formal sector; inadequate urban infrastructure (especially safe water and sanita-tion); and a degraded environment; and
- special social groups which are at greater risk of getting poorer and poorer be-cause of the deteriorating environment.

These are the two factors that form the basis of a vulnerability process whereby indi-viduals, households and communities in general become poor and poor, that is, they are impoverished by the process of continuously

deteriorating environment. In the process, poor and non-poor households face the risks of becoming even more vulner-able by failing to manage future risks thus getting poorer and poorer.

Hence, policies like SDP and PRSP alone are not adequate strategies to address urban poverty. To address urban poverty a detailed research is needed to come up with ap-propriate strategies. Kinondoni Municipality, for example, has the administrative structure and capacity necessary to solve most of the problems it faces. What is re-quired is just commitment to resolve them.

Therefore, there must be an understanding that solutions must be found locally by building local technical capacities and financial resources if these solutions are to be effective and sustainable.

5.2   RECOMMENDATIONS

5.2.1 The informal sector supplies affordable goods and services and has forward and backward linkages with the formal sector. However, a great attention has to be paid on how the informal sector conducts business so as to make sure that the activities involved do not adversely affect the environment. Sensitising the informal sector business community on environmental cleanliness could play a positive role to this.

5.2.2 Controls which are not environmentally sustainable, should be checked before they get rooted to the communities or individuals involved to avert continued degradation of the environment.

5.2.3 To address the issues of unemployment and limited income generating oppor-tunities, the Municipal should fully participate and co-operate with all stake-holders in working together on the following sub-issues:

- accommodating the informal sector;
- promoting income-generating activities for both youth, women as well as the retired and the retrenched;
- creating awareness and commitment among small-scale industrialists and traders on environmental protection and conservation; and
- expanding and promoting Women and Youth Development Fund that will facilitate credit facilities to the target groups.

5.2.4 The concept of EPM should be spread to other unplanned settlements and ef-forts should be made to have them upgraded through community-based ap-proaches.

5.3   FURTHER RESEARCH

The new consensus on poverty reduction highlights labour-promoting development, greater access to social services, and effective, well-targeted safety nets as being of central importance. In this study it is noted that there is potential importance of 'sub-stituting employment for environment. In Chapter Four it was shown that households' welfare is improved where members are engaged in petty trade and/or are self-employed but in the process the environment is degraded further.

However, EPM process alone, under SDP, is insufficient for tackling the environ-mental problems of the various kinds of areas in which poor people are increasingly concentrated and are further promoting the degradation process, then the feasibility of other additional policies needs to be examined. Careful attention, therefore, needs to be paid to ways of targeting different types of environmental degradation appropri-ately. An ideal approach to gaining better understanding would be to conduct action-

research. This would initially be on a limited scale, to experiment with various insti-tutional delivery mechanisms, such as non-governmental and local membership or-ganisations by analysing and improving community coping and adaptive strategies.

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