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Scoping Study on Urban and Peri-urban Livestock Keepers in Dar es Salaam City

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1.0 Background

The diversity and numbers of livestock in cities in Tanzania have been increasing over years due to their unique ability to 'clean-up' empty plots, utilise garbage, provide fresh food and generate cash for low income residents. On the other hand, they contribute to pollution and environmental degradation and can be a nuisance to the public at large. The system of livestock keeping differs between cities depending on whether they are kept in rich or poor settlements or else in urban or peri-urban settings (Urban Agriculture Magazine, Vol.1, No. 2, 2000).

Livestock keeping is generally illegal within city boundaries; however, authorities frequently turn a blind-eye to their presence until such time as problems arise. In a few urban locations, livestock keeping is legal or quasi-legal. In most urban areas, livestock are kept to contribute to a householders' livelihood and food security and city authorities sometimes provide incentives for keeping livestock (Garnett, 1996). However, a number of problems with the keeping of livestock in urban and peri-urban areas occur which may differ from one city to another, depending on the level of development and poverty (Berg 1984). The problems include access to grazing land and water (both for drinking and other purposes), storing animal dung for sale or disposing of it. The difficulties for urban authorities include the roaming of animals on public highways which contribute to traffic chaos, poor management or lack of facilities for disposing of animal dung and complaints about related offensive odours, flies and other vermin and their concern for hazards to human health.

Due to poverty and a high rate of urbanisation in most cities in Africa, many households in urban and peri-urban areas keep livestock on a small-scale. While these livestock provide a certain degree of security, the majority remain dependent on an additional source of income for their livelihood (Kyessi, 1997). Income generation in the urban centres make livestock an attractive option, because relatively, there is often enough space and fodder. In most African cities where poverty levels and the scale of urbanisation are alarmingly high, livestock keeping offers an important opportunity to escape from poverty. Livestock keeping also provides an opportunity to foster closer rural-urban linkages (as exists in India) as well as inputs for crop producers (Sawio; 1993 and 1998).

Many cities in sub-Saharan Africa including Dar es Salaam are experiencing rapid urbanisation as a consequence of rural poverty (UNDP, 1998; Kombe and Kreibich 1999). The city of Dar es Salaam is estimated to accommodate slightly more than three million inhabitants (or 25 percent of the national urban population, DCC, 1998). The city's population record dates back as far as 1867 when there were only 900 inhabitants, with Europeans in the majority (Kombe and Kreibich, 1999). Since then, the city population growth rate has resulted in a doubling of the population every decade, one of the highest in urban sub-Saharan Africa (UNDP, 1998). Due to the rapid pace of urbanisation the capacity of the local authority, Dar es Salaam City Council (DDC) and its respective Municipal Councils (Kinondoni, Ilala and Temeke) to cope with the unprecedented needs in both urban and peri-urban areas have been progressively diminishing (Lupala, 2001). Some of the peri-urban settlements have experienced population growth rates of over 200 percent per annum (Sumberg, 1999). As a consequence, Mwamfupe (1994) and Lupala (2001) showed that in addition to the city centre itself, urban development tends to take place along the major roads leading out of the city. In the peri-urban interface zones, where densities are relatively low, there is a great potential for home-based, but urban oriented agriculture and livestock keeping.

Currently, a number of forces have precipitated the mushrooming of urban farming and livestock keeping in the city of Dar es Salaam. They include poverty and non-enforcement of laws, regulations, and by-laws (Urban Farming Regulations, 1992; Lupala, 2000).

Table 1.1: Livestock in Dar es Salaam City

Year	Dairy	Layers	Broilers	Local Fowls	Ducks	Pigs	Goats
1985	3,318	221,920	146,205	88,720	4,900	6,795	1,361
1986	4,200	292,000	180,500	93,389	6,800	8,601	2,617
1987	5,278	390,000	194,500	98,304	8,100	10,454	3,820
1988	7,105	445,000	237,000	103,341	10,449	13,383	5,764
1989	8,597	551,800	282,083	108,508	13,479	15,658	8,531
1990	10,402	664,232	335,624	113,933	17,388	18,946	12,626
1991	12,586	824,448	399,393	119,630	22,431	22,925	18,686
1992	15,229	1,027,275	475,276	125,611	28,936	27,739	27,655
1993	18,286	1,225,392	565,579	131,891	37,327	33,564	40,930

Source: Urban Agriculture Magazine, Number 4, July 2001

2.0 Study Objectives

The main focus of this study was to compile information on issues facing poor livestock keepers living in urban and peri-urban environments in Dar es Salaam.

Specifically:

1. To identify and source appropriate information from official and grey literature; and undertake a limited survey of representative communities.

2. To compile information under the following sub headings:

- to establish numbers and characteristics of livestock keepers in Dar es Salaam: age and sex of the keepers; reasons for keeping livestock; specifications of affiliation with relatives/friends in the peri-urban and rural environments.

- to know the actual number and species of livestock; constraints to livestock keeping – feeding, shelter, disease, governance, access to clean water and other rare necessities.

- to identify knowledge deficiencies and research opportunities of both reactive and predictive nature.

- to explore the existing/potential public health, environmental and animal welfare issues.

- identity of institutions (public, private and civil) which represent the needs of (that is, speak for) poor livestock keepers in these environments.

- to identify policy issues associated with livestock keeping in urban and peri-urban areas eg. legislation on keeping animals.

3.0 Conceptual and Methodological Issues

3.1 Conceptualising the peri-urban zone

The term peri-urban refers to a transitional zone of the city where land for farming competes with land for urban-related functions such as housing and industry. Normally, it is within this zone that the most recent and on-going expansion of urban development takes place. In the peri-urban zones the future of the city and expectations of the adjacent rural communities interact and portray the phenomenon of new development and urban growth (Murphy, 1966; Della, 1992; Hornby, 1995; Kreibich and Tamakloe, 1996; Mattingly, 1999). It is a zone where, in most cases, the rivalries between urban and rural (regional) authorities are portrayed or simply as put by Berg (1984) and Dillinger (1995), an 'area of administrative confusion'. Cognisance to the dynamics of land use development and the characteristic finger-like geographical shape/boundaries of Dar es Salaam, the definition formulated by this study encompasses both the built-up areas along the major roads leading out of the city and the ribbons of built-up areas along those major roads. This is particularly important for the context of Dar es Salaam because the two contrary areas, urban and rural, appear to co-exist and any study on the dynamics of land use development is bound to address the factors that link them together.

Researchers and town-planners have used different methods and criteria to delineate the peri-urban zones of rapidly growing cities with diverse forms of difficulty and to date, no universally acceptable distinction exists between urban, peri-urban and rural definitions, largely because of complications in culture and space economies[1]. According to Islam and Khan (1992), the factors that may be taken as indicators of urban influence to the surrounding rural areas are heterogeneous due to city topographical features and the fast rate at which the rural part is changing. The basic criteria to delimit the peri-urban zones include: land use influx, mixed rural urban functions, interaction with the main city, settlement pattern, socio-economic development, house type, occupational structure, availability of urban amenities and proportion of non-agricultural activities. As far as Dar es Salaam is concerned, the criteria based on the number of households engaged in urban agriculture could be misleading. Recent studies by the Sustainable Dar es Salaam Project (SDP 1997) show that even in the inner city, 3 of every 4 households are involved in urban agriculture in one way or other. Ironically, some households even in the remote peri-urban zones of Dar es Salaam are not engaged in agricultural activities. Admittedly, this is a complex situation[2]. Thus, after a pilot study in the peri-urban zone, a cautious approach of delineating the peri-urban zone was adapted based largely on the spatial extent of competition between agricultural use and urban related functions. With the help of aerial photographs, it was obvious that the major roads leading out of the city influence land development and its spatial structure.

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[1] (See Smith 1937; Salter 1940; Wehrwein 1942; Andrews 1942; Fiery 1946; Dewey 1948; Duncan 1956; Murphy 1960; Young 1962; Morill 1966; Harvey 1965; Pastalan 1967; Pryor 1968; Kimani 1972; Mazambani 1982; Lal 1984; Van den Berg 1984; Chakravorty and Islam 1984; Phadke and Sita 1987; Islam and Khan 1992; Mwamfupe 1994).

[2] Haggett (1965) admits that it is hard to tell where the peri-urban zones begin and end, and any attempt to draw the boundaries in empirical terms convincingly will end up being an arbitrary one. Similar feelings and experiences are shared by Davies in Cape Town, De Blij in Mombasa, and Murphy and Vance in some of the USA cities.

Normally, an outward expansion of the city would be undertaken up to the point where the marginal net benefit from the last unit of suburban development is equal to the marginal net benefit from the last unit of redevelopment and modification within the built up area (Goodall 1972). In the case of Dar es Salaam, the extension of urbanised ribbons along the major roads has made the opening-up of new homes possible in remote areas forming housing clusters in-between the major roads. Until recently, these clusters were characterised by semi-rural land uses. This stretch widens as the distance increases from the city centre. Therefore a settlement located in-between two major roads at the furthest distance from the city centre suffers most from dual increase in distances, namely, along the major road and a road/path branching from the major road to the geographical location inward.

The halfway distance in the X-ring and in-between the major roads, is the shortest of all rings, while the halfway distance at Y-ring is shorter than that at Z-ring, and the halfway distance at Z-ring is the longest (see Figure 3.1 for conceptualisation and Table 3.1 for actual distances). In this study, the settlements located in the Z-ring are those located beyond the distances regarded as remote settlements in the Table below. These are *very remote* rural locations like Chekeni-Mwasonga, Mwongozo, Kipera, Kazimzumbwi, Pande, Pugu, Gezaulole, etc.

The household economy is based primarily on subsistence farming supplemented by illegal charcoal making at a commercial scale. Land ownership is customary and a small number of urban dwellers who bought land in these villages own large tracts of land, between 30 and 70 hectares. These are the indicators of a long-term land speculation and locational remoteness from the city centre and/or the major roads.

The settlements located in the Y-ring are regarded as *remote* because of the characteristics they posses. These characteristics are clearly shown in the Table below. They include various distinct distances, time and their related inconvenience. For instance, vehicular distance to remotely located communities in the outer city is prolonged because of poor road conditions (Table 3.1). The interpretations include the pattern of land use, housing densities, extent of land regularisation i.e. some kind of spatial orderliness, form of land regularisation – collective or individual, land tenure and land availability for various uses. In view of the transport costs required and inconvenience to be overcome, it is not practical to construct a house in these areas, occupy it and still afford commuting costs to the city centre on a daily basis.

Adjacent to the city fence, the boundary-free settlements are denoted by the X-ring. Within this ring the accessibility and transport to the city centre is far cheaper, less-time consuming and more comfortable than in Y and Z-rings (Table 3.1). These settlements are referred to as *less remote*.

The peripheral urban growth in the X and Y rings appear autonomous from the city centre because the cycling distances and walking (short-cut distances) from the settlements to the nearby peri-urban centres are still largely preferable to the local communities. This can be related with the radial road network that facilitated the formation of the peri-urban centres along the major roads (Table 3.1). Within these centres there are relatively higher order service levels than those located in the remote communities.

Table 3.1: Peri-urban settlement types: location-accessibility relationships

Settlement/geographical location	Distance along the major roads from the city centre (KM)	Distance from the major roads to remote locations (KM)	Estimated vehicular time from the major road (HRS)	Specific constraint (s) to travel convenience	Distance from the city built up area (KM)	Meandering distance due to lack of direct access from the city fence (KM)
Remote settlements						
Kwembe	23.5	3.0	0.25	none	9.0	0.0
Mbezi	19.0	2.0	0.25	Lack of bridge to cross the river[3], gully erosion	not relevant	n.a.
Kinyerezi	10.0	4.5	0.50	muddy	5.0	8.5
Nyantira	14.5	7.0	0.75	sandy, river (cut off)	0.5	13.0
Goba	15.4	8.0	1.25	gully erosion	5.0	11.0
Less-remote settlements						
Changanyikeni	10.0	3.0	0.20	none	0.0	n.a.
Kitunda	14.5	4.0	0.25	none	2.0	n.a.
Msewe	10.0	1.0	0.10	none	0.0	n.a.
Segerea	11.5	3.0	0.25	muddy		
Buza	8.5	3.0	0.20	potholes	0.0	n.a.
Makongo	12.0	3	0.20	none	0.0	n.a.
Salasala	20.0	2.0	0.25	potholes	0.0	n.a.
Ununio	26.0	2.0	0.15	sandy, potholes	0.0	n.a.
Local urban centres along the major roads						
Tegeta	8.0	-	-	none	-	
Boko	22.5	-	-	potholes	-	n.a.
Bunju	29.0	-	-	potholes	-	n.a.
Kimara	14.0	-	-	regular jams	-	
Mbezi centre	19.5	-	-	none	-	n.a.

[3] This implies a bridge or a culvert is missing to link the settlement to the city or major road with the shortest possible way. During rainy seasons pedestrians have to wait for the water level to go down and take off their shoes in order to cross the river valley and go to the nearby bus stop (along the major road) to catch public transport.

Settlement/geographical location	Distance along the major roads from the city centre (KM)	Distance from the major roads to remote locations (KM)	Estimated vehicular time from the major road (HRS)	Specific constraint (s) to travel convenience	Distance from the city built up area (KM)	Meandering distance due to lack of direct access from the city fence (KM)
Luguruni	24.5	-	-	none	-	
Kibamba	27.5	-	-	none	-	n.a.
Kiluvya	31.0	-	-	none	-	n.a.
Ukonga	10.5	-	-	none	-	
Gongolamboto	14.5	-	-	none	-	n.a.
Mbagala Kuu	7.0	-	-	none	-	n.a.
Mbagala Rangitatu	11.0	-	-	none	-	n.a.
Kongowe	14.0	-	-	none	-	n.a.

Source: Sheets No. 186/1-2, 186/3 and 186/4 and 186E/3; Scale 1:50000 and 1:2500, Surveys and Mapping Division, (1988) and pilot studies 1998.

3.2 Methodology

One of the critical issues in research is the selection and adoption of methodology. The major challenge in relation to this study was to find a meaningful demarcation between scoping and comprehensive levels of study.

Case Study Approach, Data Collection and Sampling Procedure

In a **case study approach** sampling is necessary because it is not possible to involve all the livestock keepers in the process; it is necessary to have a representative sample in order to capture diversity of the livestock keepers' views. Since the settlements in Dar es Salaam have varied characteristics, the purpose of the city-wide study was to have a sample which illustrated the differences and similarities represented by the rest of the selected cases. City wide comparisons may therefore be limited due to typological variations.

A simple **stratified random sampling** procedure together with a purposive sampling technique was applied to provide a reasonable spread within the study area. The ward and population distribution maps proved very useful to explain the settlement patterns. This was level one of data collection where city-wide inventory of livestock was conducted. Even at this level some households keeping livestock (say 3 to 4) and other stakeholders were interviewed in order to supplement the information or fill in gaps as shown in Table 1 below.

Data collection

The study considered the combination of **secondary and primary information** from the reports and documents on livestock keeping in the city of Dar es Salaam and the empirical findings from the fieldwork respectively.

The selection of methods and tools for situation analysis was closely related to the underlying purpose of the enquiry, which is to understand livestock keeping in urban and peri-urban locations with a focus on the urban poor (Martin *et al,* 2001). Besides, the focus was particularly on the methods which would help to build and facilitate strategic participatory diagnosis and learning (*Ibid*).

Secondary Information

The major objective was to review documents and reports on livestock keeping in Dar es Salaam city, land tenure and land use systems, institutions (public, private and civil) which represent the needs of (that is, to speak for) poor livestock keepers in these environments, policy and legislation issues.

Primary information

Checklists

A checklist was the main tool of data collection to carry out the fieldwork (See Appendices A and B). This was, however, supplemented with key informants and focused group discussions. At the case study level, the head of each sampled household was interviewed based on a simple checklist (see Appendix A). A separate checklist was used in gathering the information from the institutions (see Appendix B). However, it should be noted that more information was gathered during the discussions beyond what the checklists intended.

Interviews

Stakeholder and **key informant interviews** were administered by the use of checklists in selected areas. The interviews helped to clarify some pertinent issues not covered in secondary information gathering.

Table 3.2: Households Interviewed in three Municipalities of the City of Dar es Salaam

S/N	Municipality	No. of Wards	Names of Wards	Households Interviewed
1.	Temeke	4	Mtoni	3
			Temeke 14	1
			Kurasini	3
			Keko	2
	Sub-Total			9
2.	Ilala	14	Kipawa	3
			Ukonga	3
			Kinyerezi	3
			Buguruni	3
			Mwananyamala	3
			Msasani	2
			Pugu	3
			Kivukoni	3
			Mchikichini	1
			Ilala	2
			Jangwani	2
			Kariakoo	0*
			Tabata	3
	Sub-Total			30
3.	Kinondoni	11	Manzese	3
			Tandale	3
			Magomeni	3
			Mzimuni	3
			Kigogo	3

			Mabibo	2
			Bunju	3
			Kawe	3
			Kunduchi	2
			Ubungo	2
			Kibamba	3
			Kinondoni	2
	Sub-Total			32
	Grand-Total	29		71

Source: Households Survey, 2002

NB:

Only four wards were chosen from Temeke Municipality because other wards are neither urban nor peri-urban. They are rural and therefore did not qualify for the study whose focus is on the urban and peri-urban areas.

*****This ward constitutes the most concentrated commercial activities in the city such that no animal can be reared.

Key Informant Interviews (KIIs)

Information through interviews with key stakeholders and decision makers facilitated clarification of issues that could not be well articulated from the previous means of data collection and triangulation. The respondents had the opportunity to seek clarification to questions; at the same time the interviewer could probe for a deeper understanding of the theme being explored.

Focused Group Discussion (Brainstorming with key stakeholders):

This method entails opening dialogue with specific groups of livestock keepers and the largely local informal institutions concerned with livestock keeping in urban and peri-urban zones. Besides being a way of collecting data, this method is envisaged to triangulate the information gathered from the key informants (Table 3.3).

Table 3.3: Data Collection Matrix

S/N	Data type	Methods	Tools	Source
1	General Information on the City Location in terms of geography, climate, population, population density, growth rate, size (ha). Distribution of High-density and Low-density areas in terms of population and the location of low-income	Documentary Review	Checklists	Dar es Salaam Regional Profile, Dar es Salaam Sustainable Project Reports,

S/N	Data type	Methods	Tools	Source
	households within the city, city boundaries and description of urban and peri-urban areas including land and land use characteristics *.			Dar es Salaam Environmental Profile
2	Livestock keepers in the city of Dar es Salaam Ownership of animals Numbers of livestock keepers Characteristics of livestock keepers Gender aspects; Age, Sex of livestock keepers, work distribution, benefits distribution, decision making on husbandry practices, decision making on buying/selling of animals. Reason for keeping livestock Commercial and subsistence livestock keeping Contribution of livestock to household economy and family food security (goods or services obtained) Affiliation to relatives/friends in the peri-urban and rural environment	Documentary Review Focus Group Discussion (Brainstorming with stakeholders) Interviews	Checklists	Households Institutions (Public, Private and Civil)
3	Livestock Types Number and Species of Livestock Livestock husbandry practices – feeding, scavenging and foraging practices, shelter, animal health, access to clean water Urban/Peri-urban Linkages in terms of Resource Flows	Documentary Review Interviews Focus Group Discussion	Checklists Observations	Households Institutions (Public, Private and Civil)
4	Institutions Number of Institutions (Public, Private and Civil) which represent the needs of (that is, to speak for) poor livestock keepers Institutional set up for livestock keepers	Institution Inventories, Observations,	Inventory Sheets Checklists	Institutions (Public, Private and Civil)

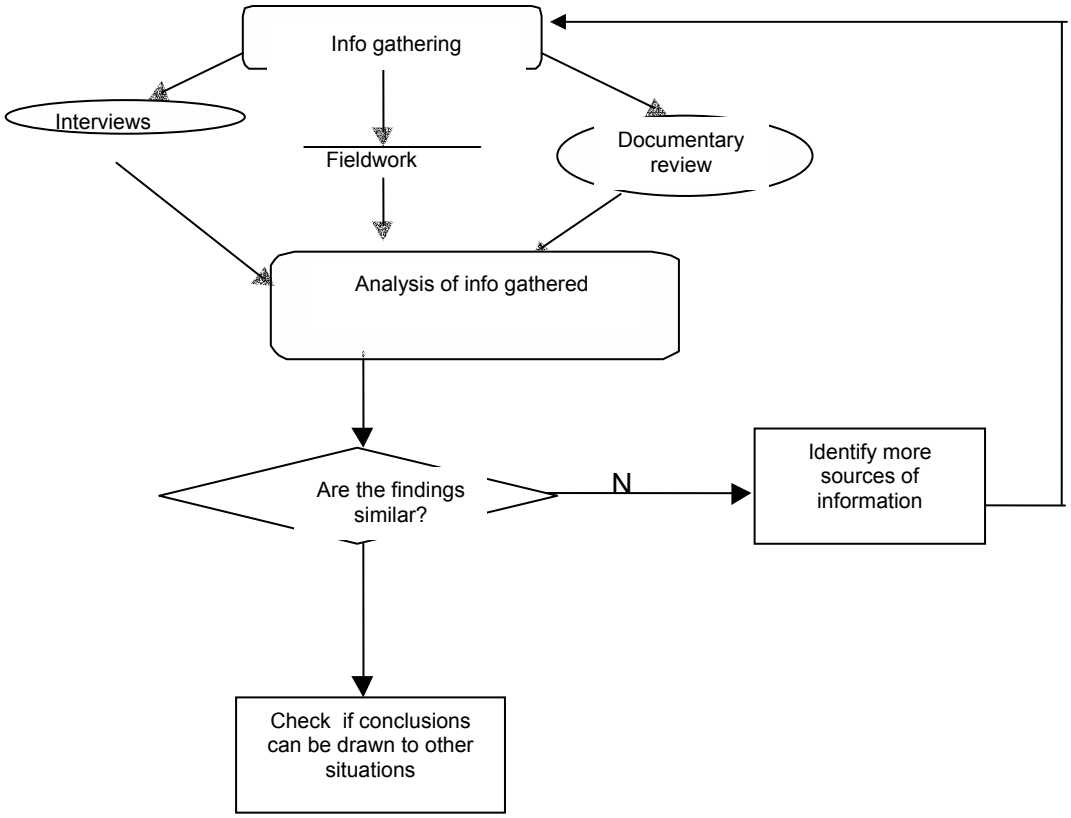
S/N	Data type	Methods	Tools	Source
	Co-ordination	Interviews, Documentary Review		
5	Policy Issues Associated with livestock keeping in urban and peri-urban areas Livestock Policy Legislations Land Tenure Systems Land Use Public Health Policy/legislations Environmental and animal welfare issues	Documentary Review	Checklists	Ministry of Water and Livestock Development, The Planning Commission, Ministry of Lands of Human Settlements, Dar es Salaam Regional environmental Profile
6	Current Constraints and future perspectives for the development of urban livestock keeping (Success/Weakness/Opportunity/Threat- SWOT – Analysis Knowledge deficiencies of livestock keepers Research opportunities of both current and future problems	SWOT - Analysis	Checklists	Households Institutions (Public, Private and Civil)

SWOT analysis on institutions

S/No.	Type of institution	SWOT on
1	Individual or groups of individual livestock keepers as an institution	List of activities SWOT on e.g. Access and use of medicines Feed meal procurement Zero grazing or free range practices Premises (vis environment) Information networks on prices, security, knowledge, etc.
2	Extension offices e.g. veterinary and pharmacies	Responsibilities – range of services offered (list)

	both public and private	SWOT on each of the responsibility mentioned
3	Supply groups as an institution e.g. groups of roadside fodder sellers, fodder growing institutions e.g. Segerea Mission, fodder transportation to the selling points and consumers including cart pushers, etc.	List of activities SWOT on e.g. Selling points (premises) Land tenure security Storage facilities Means of transport etc.
4	Environmental health offices as institutions	List of responsibilities SWOT on e.g. Environmental control aspects Monitoring of environment Indicators of environmental degradation Specific legal or policy clauses Enforcement Integration and networking issues etc.

Figure 3.2: A conceptual framework for data collection and Analysis



3.3 Case selection criteria

Some principles of case selection as propounded by Flyvbjerg`s (1998) and Patton (1978) influenced the selection of case studies. This was so in situations when different areas portrayed similar characteristics (qualifications) but the resources did not allow the researcher to pick all of them for case analysis. These principles include:

- *Cases that are information rich.* This study is about livestock in urban and peri-urban zones. After reconnaissance surveys, the extent of livestock keeping was found to vary significantly from one place to another. Thus, cases like Nyantira and Mabibo that show diversity in types of livestock and levels of engagement were selected.

- *Cases that are reasonably accessible*. The cases that could be managed or reached by the research team at a reasonable time, cost and convenience were more likely to be selected. However, great caution was taken to make sure that information-rich cases were not left out under the pretext of being remote.

- *Pragmatic cases*. These are cases that depict features that relate to the phenomenon being addressed. Communities such as Kariakoo and Mchikichini that have insignificant number of livestock were not selected because they lacked characteristic features that were relevant to the case study.

Ultimately, two study areas namely Nyantira (peri-urban) and Mabibo (urban) were selected because of the significance each one bears in relation to the study.

4.0 Livestock Keeping in Dar es Salaam

Livestock keeping in the city of Dar es Salaam has existed in many forms and places. It is gaining momentum due to increasing urban poverty as indicated in the National Poverty Eradication Strategy (NPES, 1998). Over 50 per cent of all Tanzanians are poor, while over 30 per cent of the poor live in very poor conditions *(ibid*). Poverty in urban, peri-urban and rural areas is illustrated by illiteracy, inadequate clean and safe water, poor health services, high mortality rate, malnutrition, environmental degradation, unemployment, low income and poor housing conditions. Livestock keeping plays a significant role in poverty reduction. However, it is often accompanied by a negative impact on the general environmental and social relations (Table 4.1).

Table 4.1: Positive and negative aspects of livestock keeping and coping strategies

S/No.[4]	Positive	Negative	Coping strategies
	Animals are a major source of food protein	Public health problems (diseases such as parasites and tuberculosis)	Good health services and better packaging of products and treatment of livestock and creation of awareness
	Fresh livestock produce for inhabitants, often, with little or no packaging/processing required	Competition for space and conflicts among competing livestock owners	Reduce numbers, use small animals, involve local people to solve problems
	Income for the poor people	Stray animals/traffic problems	Traffic rules: limit speed of cars, animals kept off main roads
	Investment for the rich	Health and welfare problems of animals due to high densities	Redesign housing and/or awareness raising and/or change management. Go for small scale
	Animals as waste cleaners: garbage, hotel waste, agro-industrial wastes, sewage-utilization	Air pollution through stench from livestock waste; also dust and noise pollution	Use of drains, straw bedding, sheds, tree hedges,
	Resilience of a city in times of civil unrest	Pollution (due to manufacture effluent and wastes e.g. Slaughterhouses)	Biogas, small scale enterprises, dung cakes, integration with vegetables
	Educational importance e.g. establishing a link between the urban people and “nature”	Low output per animal, not “modern”, advanced or productive form of production	Work on perception.

Source: Adapted from Urban Agriculture Magazine, No.2 October 2000.

[4] The numbering is in accordance to how related the positive aspects are.

Livestock keeping in the city of Dar es Salaam is undertaken either in the backyard, near homes or in vacant lots around the city and peri-urban areas (DCC, 2001). Despite substantial growth, livestock keeping receives insignificant attention from the city authorities, policy makers, politicians and city planners (Mosha, 1991). Furthermore, they have little knowledge about the industry and what income the livestock keepers generate.

According to the city council of Dar es Salaam (1997), the livestock sector in the city is expanding considerably. In 1997 for instance, the dairy cattle population was over 23,000 head; there was also a turnover of 4.7 million one day old chicks per annum from the large scale incubator (3.7 m table birds and 0,5 m layers). Milk production amounted to about 95,000 litres per day, eggs about 6,000 trays per day and poultry meat about 11,000kg per day. Table 1 below shows the pattern of livestock growth in the city of Dar es Salaam.

4.1 Characteristic of livestock keepers

Livestock keepers in the City of Dar es Salaam are not homogenous. They differ in many aspects including landholding, gender, labour input, number of animals, distance to urban centre and grazing facilities, animal health services, resource flow such as source of grass, knowledge of livestock husbandry and flow of money to the rural areas (rural-urban linkages).

About 80 per cent of the respondents (that is, the livestock keepers) in the city are plot owners. These are landowners who acquired land largely through buying or inheriting. This is a high proportion showing that livestock keeping requires land ownership and possibly, acceptable livestock keeping environment. It also shows that tenants can barely afford to keep livestock in urban areas. There are, however, cases where some tenants have utilised spaces between houses by erecting makeshift structures to contain livestock. This is more applicable in cases where the houses, particularly block of flats, are under state ownership such as National Housing Corporation. Animals kept under this environment include cows, poultry and goats. Livestock keeping under this situation appears to give more flexibility to the livestock keepers to decide on the type and number of livestock as opposed to livestock keepers renting rooms or houses which are privately owned. In addition, it was observed that low density plots, up to a half hectare, in Kivukoni area are also used for livestock keeping and fodder production.

Nyantira is an area of peri-urban immigrants who are predominantly poor. Land is a crucial factor of production for one to engage in commercial livestock keeping. It is a case of a relatively remote peri-urban zone where despite lack of basic community services, commercial livestock keeping continues.

Plate 1: Typical poultry shed in Nyantira

All landowners in Nyantira explained that the high demand for big plots of land was for agricultural use (Plate 1). This finding was also supported by physical observation on the type of economic activities going on in the area and the size of plots they own. They are all seeking land in less-accessible areas where land prices are relatively low and, therefore, affordable. The immigrants are buying land in Nyantira for livestock production and as a means of poverty alleviation.

Mabibo is an urban case where land holding covers relatively small plots and it has high density areas like Manzese, Mwananyamala, and Keko[5]. The majority of poor livestock keepers rent open air spaces for livestock keeping. This implies that more stringent livestock keeping practices are to be applied in the urban setting than in the peri-urban areas. The consequences of such high densities include, among others, limiting poor households from engaging in urban agriculture such as livestock keeping. The emerging question is, how practical can the poor livestock keepers cope with this dichotomy?

Important linkages

City-wide interviews showed that 57 per cent of livestock keepers had links with peri-urban areas, 19 per cent were linked to the city and 14 per cent of the respondents, to both urban and peri-urban area. Only 10 per cent said that they had no links with either of the two areas. Different forms of links are apparent between urban and peri-urban areas:

[5] The houses in some of these areas are close to one another to the extent that only one person can pass between them at a time (Lupala, 1995; Kombe and Kreibich; 1999).

When the numbers of dairy cattle per livestock keeper in both urban and peri-urban areas multiply to unmanageable numbers e.g. 6 cows/keeper, the surplus is often transferred to a farm in the peri-urban area.

When all livestock are kept in the peri-urban area while the owner is residing in the urban area, arrangements are usually made by neighbours in the peri-urban areas to assist a labourer in taking care of the animals. The owner visits the farm, at least, once a week regularly.

When urban livestock keepers collect fodder from the peri-urban zone especially in the dry seasons.

These are among the most important relationships/links between the urban and peri-urban centre farmers and the peri-urban/ city dwellers.

One case, however, was identified whereby livestock were kept far away in the rural upcountry district of Moshi, as far as 500 Km from Dar es Salaam. The parents of the livestock owner would be taking care of the livestock. Out of the proceeds of livestock production, the owner's parents depend on a certain portion and then save the rest in the owner's savings account in Moshi.

The relationship between urban livestock keepers and local institutions include:

Easy access to livestock and cheaper prices in urban than in peri-urban area. Peri-urban livestock keepers come to urban locations to buy maize cereals.

Trade links with the owners of informal small markets locally known as *magenge* in the city with livestock keepers who supply livestock produce under informal agreements.

Trade links with the urban-based hoteliers supplying livestock keepers with readily and reliable market of the produce.

Trade links with a good number of local brewers; majority of who supply husks for feeding livestock especially pigs.

The relationship between urban and peri-urban areas was noted in the following areas:

Peri-urban households take care of the animals kept by urbanites who also provide them with free accommodation and kindness when they fall sick and have to attend medical services in the urban areas. This informal arrangement, in a way, saves commuter transport costs to peri-urban households.

Peri-urban households supplying maize stover to relatives keeping livestock in urban areas after harvesting, usually free of charge.

Urban livestock keepers owning farms in the peri-urban area and keeping livestock in the urban setting. The benefits include collection of manure from the peri-urban area for gardening in the urban areas.

In some peri-urban settlements, livestock keepers obtain feed meals and animal health services from within their wards without any contact with their counterparts in urban areas. In general, the economic cooperation could be more optimised if there was institutional co-ordination among livestock keepers.

In the case of Nyantira, like any other peri-urban settlement in Dar es Salaam, there exists social cooperation among the households[6], largely with the urban egg customers and relatives back "home". The relations with their rural setting (Tarime) are largely in terms of extending regular financial support and taking care of the sick people admitted in Dar es Salaam from Tarime. These are deep-rooted linkages that make these immigrants still consider Tarime as their "home" and not Nyantira. Locally, they share information about egg prices in the city.

Ironically, in the urban Mabibo, livestock keeping practice has not shown the existence of such relations. Only 25 cent of the respondents showed an existence of such relations. These relations were limited to collection of grass and fodder from the peri-urban zone.

Resource flow

The flow of resources into peri-urban areas from the urban setting and vice versa is in various complex ways. This is because the dependent variables differ from one type of livestock to another, and whether the flow is from the urban to the peri-urban settings or vice versa. As far as Dar es Salaam is concerned, the major resources established through interviews with the livestock keepers were categorised into four. These are livestock feeds, cash, medicine and human labour (skilled and unskilled). About 33 per cent of the respondents noted that they have benefited from the supply of fodder from the peri-urban zone, whereas the same proportion cited medicine and extension services from the city as major items the livestock keepers in the peri-urban area need and receive most. About 11 per cent of the respondents cited human resource (labour and extension services) as a major factor of interaction between urban and peri-urban zone. Others, that is, 22 per cent of the respondents, mentioned cash and feeds to be the major component of resource flow from either side, urban and peri-urban zone.

In the Nyantira case, the resource flow is from peri-urban and beyond it (rural) to urban areas as the area is endowed with youthful household labour and relies heavily upon the urban areas for supply of resources for selling eggs (Plate 2).

[6] Also see Moser Caroline (1996) on how vulnerability in poor urban communities is socially and locally dealt with.

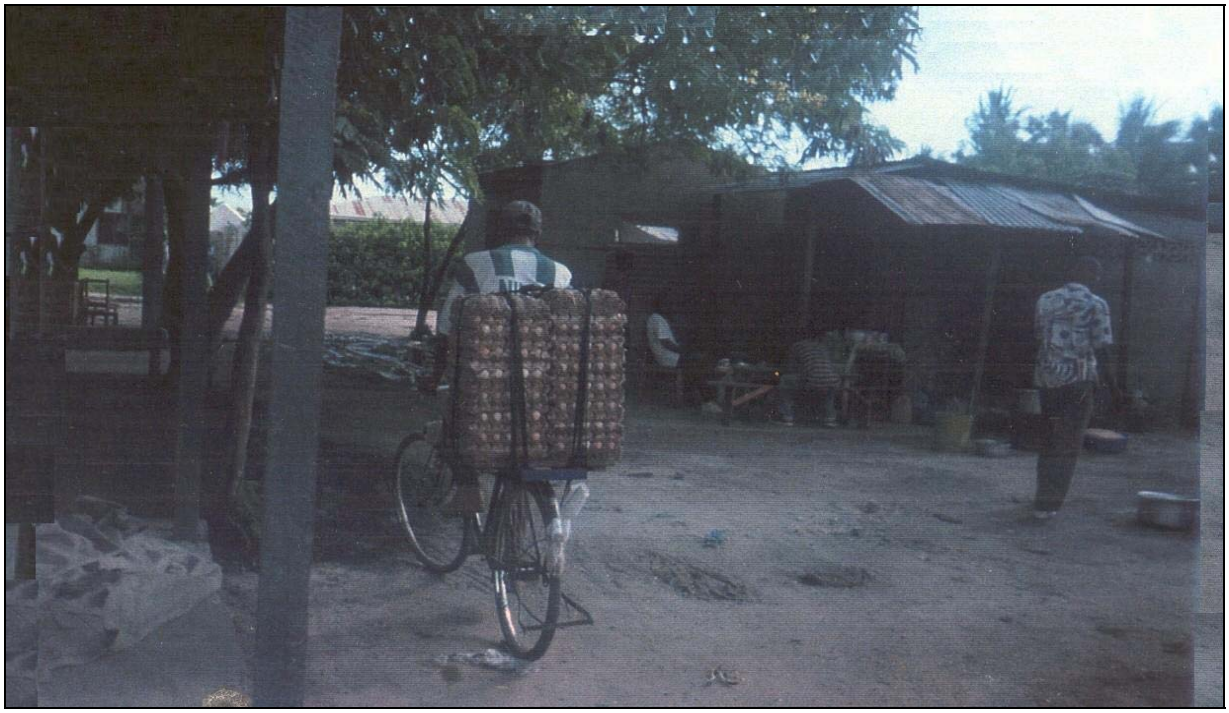


Plate 2: Transportation of eggs to the city centre

In fact, even extension services and feed meals are supplied from the urban areas. The commodity flow provides a good network for poor householders economy and the city economy. It is not yet clear, why the householders economy has not been adequately diversified to protect themselves in the event of a significant fall in egg prices in the city.

In the case of Mabibo, resource flow is directed to rural areas where most animals and grass (fodder) for feeding them usually come from. This area is within the built up city areas where there are N4Os such as PRIDE[7] who supply livestock keepers with information on husbandry practices and offer them loans. About 60 per cent of the respondents obtain start up capital from PRIDE. Therefore, flow of money into peri-urban areas is insignificant. Manure from animal dung is used for gardening in the areas.

Access to veterinary services and feed

It was important to investigate the support inputs particularly in drugs and feed which are crucial in keeping animals. City-wide, 82 per cent of the respondents showed that they have no problems with the location of these services but they were unable to benefit from them because they are too expensive (Table 4.2).

Feeding livestock in the city involves collection of livestock feed. The main feeds are grasses, husks and molasses. Each locality has an area[8] where livestock keepers collect feed for their livestock; especially cattle. For people residing in Ilala municipality, the majority of them collect grasses from the Msimbazi valley and those in Kinondoni Municipal

[7] PRIDE is an NGO which is, among others, supporting CBOs with Credit Facility Schemes largely in Tanzania.

[8] This is usually a by-product of grain milling. Milling machines are available in almost every neighbourhood in reasonably adequate quantities. However, feeding cattle with these by-products is more costly than feeding cattle with widely grown fodder.

Council from Sinza valley and around University Area along Sam Nujoma Road. Grasses are abundantly available during the wet season and during the dry season maize husks *(Pumba)* can be obtained from Tandale market. In peri-urban areas, grasses are readily available within their surroundings.

The respondents complained of high costs of fodder sold along the roads by private individuals. This problem was reported to be more acute during dry seasons. Only 12 per cent of the respondents said that they were comfortable with the prices. The reason is that fodder for cows and goats could be easily collected from the river valleys throughout the year. However, the fodder slashed and collected from the river valleys was said to be prone to chemical pollution (See Kinabo *et al* 1994; Kiango *et al* 1996). This study also confirmed that there were cases of animals dying because of feeding on poisoned grass. This observation raises public concern on the security of the food provided to animals which may have far reaching consequences to the consumers of the animal products in the city. Future research should try to answer this question by relating the feed supplies with the coping strategies of the poor livestock keepers and the security of products consumed. A small portion, 6 per cent seem to be comfortable with the access to the medical and feed supplies. These could be the relatively wealthier population that can transport hay or fodder from the peri-urban to the city centre using own cars.

Table 4.2: Access to veterinary services

S/N	Degree of accessibility	Per cent (%), N=71
1	Located nearby but cannot afford	82
2	Partly accessible	12
3	Accessible	6
	Total	100

Source: Field surveys, 2002

In most cases, boys who take care of livestock do foraging (Plate 3). For species like pigs, livestock keepers collect forage from the Kariakoo market to feed their pigs.

Plate 3: Slashing fodder from large open space in the river valley

Surprisingly, in the peri-urban settlement of Nyantira the private sector has not provided the livestock keepers with a wide choice of food supply kiosks and medical services. Under this monopoly of business, it is not surprising that the prices are relatively higher than those in the urban built area. This is simply a question of market forces, supply and demand. Mabibo, however, seems to experience the same situation with the entire city. That is, food and medicine are available from reasonable distances; but access to these inputs is limited by high prices.

Acceptability of animals by the local communities in urban areas

The preliminary surveys show a sharp division among the local communities as to whether livestock keeping in urban areas is acceptable (Table 4.3). About 55 per cent of the respondents (all of them being livestock keepers) expressed satisfaction of their neighbours with regards to their practice. The main reason for having no problems with their neighbours was that the neighbours of the livestock keepers are the main customers of their products. This however does not apply to those keeping pigs and free range poultry practice. On the contrary, 45 per cent of the respondents were bitterly opposed to livestock keeping in their urban communities. The reasons given are that:

Keeping pigs was against their religious belief. This applies to Muslim communities.

The management of animal waste by the livestock keepers is poor and threatens public health which leads to environmental pollution.

Free range poultry keeping leads to destruction of green vegetables in the neighbourhood.

Sharp divergence of ideas among respondents on livestock in urban areas is largely, a reflection of weak government institutions to mediate the situation in a participatory manner. In fact, the population which dislikes urban livestock, especially pigs, could even be higher if a reasonable number of non-livestock keepers in the city were also interviewed. A more robust study should try to explore this issue.

Table 4.3: Acceptability of keeping livestock by neighbours of livestock keepers

S/N	Acceptability	Per cent (%), N=71
1	Acceptable	55
2	Not acceptable	45
	Total	100

Source: Field surveys, 2002

This question was not relevant in the peri-urban case of Nyantira because nearly all households are livestock keepers and the plots which belong to the livestock keepers are large enough to accommodate livestock keeping. Besides, the manure from animals is used in the gardens. In Mabibo, there were some isolated cases of animal dislike. Overall, 55 per cent indicated that there was none, whereas 45 per cent pointed out that pigs were the most disliked animals especially in the majority Muslim communities.

Adjustment to the markets: Coping strategies

There is diversity in the strategies and techniques employed by livestock keepers to cope with the market challenges (Table 4.4). The surveys revealed that 27 per cent of the respondents have no problems with the market. These are mostly livestock keepers keeping a few goats to be sold especially during seasonal functions such as weddings or ceremonies such as Christmas and Idd el Fitr. About 16 per cent of the respondents expand the number of customers through transportation of produce on longer distances. This has additional cost implications, thus, significantly reducing the profit margin. The same percentage (16%) sells the produce on credit because they are either lacking or do not have enough storage facilities for “delicate produce” such as milk. However, 15 per cent of the livestock keepers reduce the price of produce in order to maintain their economic activities. This applies largely to poultry products. Interestingly, 12 per cent of the respondents sell their produce to larger producers who seem not to lose so much than small and poor producers because of the size of economic activities. Other livestock keepers respond to unfavourable market conditions by either scaling down the number of livestock or selling the produce through an union or simply by doing nothing (also see Table). A future study should look at the information flow on markets in order to optimise the number of customers of the livestock products.

Table 4.4: Adjustment to markets

S/N	Adjustment strategies to markets	Per cent (%), N=71
1	No problem (largely, keeping goats)	27
2	Selling on credit	16
3	Expanding the number of customers by increasing the distance to reach new markets (customers)	16
4	Reducing the price	15
5	Selling produce to relatively large scale livestock keepers	12
6	Scaling down production esp. for broilers	6

S/N	Adjustment strategies to markets	Per cent (%), N=71
7	Selling through livestock union	4
8	Doing nothing	4
	Total	100

Source: Field surveys, 2002

Similar observations were made in Nyantira community. However, unlike the situation in the whole city, where information flow on the potential markets is missing, the local networks in Nyantira seem to work efficiently in informing the egg-ferrying agents to the city centre. It was however, not easy for the livestock keepers in the urban area of Mabibo, where livestock keeping is very varied, to communicate prices for different produce. Nonetheless, 75 per cent of the respondents said that they had their markets around their living places. Their customers are mostly neighbours, restaurants, grocery shops and vending kiosks. Although 50 per cent of the respondents acknowledged facing competition (especially in poultry keeping), they could not see it as a threat because the market was reported as not saturated.

Gender Issues

Household interviews revealed some important issues concerning gender (Table 4.5). It was found that 51 per cent of the livestock keepers were aged over 50 years. One interpretation of this is that livestock keeping requires long experience and long time for capital accumulation.

Table 4.5: Age of livestock keeping respondents

S/No.	Age (Years)	Per cent (%), N=71
1	18-26	5
2	27-34	14
3	35-42	10
4	43-50	20
5	Above 50	51
	Total	100

Source: Field surveys, 2002

Further analysis also shows that both male and female are engaged in livestock keeping indicating that there is an equal opportunity between women and men in not only accessing this economic activity, but also providing labour to it (Table 4.6). One of the advantages of home-based economics, such as urban and peri-urban livestock keeping activity, is its practicability to involve all sexes and age groups in the activity without additional time and travel expenses.

Table 4.6: Sex of livestock Keeping respondents

S/No.	Sex	Per cent (%), N=71
1	Female	48
2	Male	52
	Total	100

Source: Field surveys, 2002

Section 4.3 tackles, among other issues, who in the household looks after different components of livestock keeping. Issues such as the type of husbandry practice and when the livestock should be sold are also discussed.

City wide, 78 per cent of the respondents showed that the income generated from livestock keeping is directly contributing to household income. In general, this implies that both genders have a share in benefits realised from livestock keeping activities in the city. This conclusion will, however, be more concretised if an in-depth study on how the proportions of the household incomes are used to benefit individual members.

All households in Nyantira keep livestock. The situation was found to be completely different in this peri-urban settlement where men who are regarded as heads of households and livestock owners make most decisions concerning livestock activities. It is, therefore, unlikely that women benefit from the revenue generated from livestock keeping.

Ironically, it was revealed that women in the urban settlement of Mabibo undertake 90 per cent of the actual up-keep of livestock. Also, in the case of dairy cattle, women are mostly involved in milking. On the other hand, the labourers and children help to bring in cattle feed. Men are more involved in cases where the households have no children or the children attend school. Surplus income from livestock, which range from TShs 80,000 – 200,000 per household per month, is used to maintain the livestock and part of it is used for other household expenditures.

Although it was established in this study that the revenue from selling livestock produce ultimately benefits the households, further research on gender issues should focus on who decides the share of each member of the household.

4.2 Reasons for keeping livestock

Reasons for keeping livestock

It was established that the residents of Dar es Salaam keep livestock for various reasons (Table 4.7). The major ones include:

In order to supplement households' incomes and reduce poverty of the unemployed members of the households; in most cases, women had to open up economic activities including livestock keeping. This category constitutes 39 per cent of the respondents.

About 20 per cent of the respondents started livestock keeping activities as the only way of coping and sustaining their urban life. That is, they consider livestock keeping as a way of being employed especially during this time of liberalization of the economy and increasing

scarcity of urban-based employment. Most of the retrenched civil servants and retired officers have adapted livestock keeping as a full employment for subsistence life. This category of urban livestock keepers had no alternative jobs to livestock keeping. This was mainly observed in densely populated wards of Manzese, Tandale, Magomeni Mzimuni and Kigogo. They, expect this activity to meet expenses on social services such as health, school fees and shelter.

Some 13 per cent of the respondents opened livestock projects in order to serve as a hedge against risks as a bank in order to help them in case of household problems and cash needs for e.g. illness, school fees, deaths, etc.

About 12 per cent started livestock project specifically in order to improve nutritional supplies particularly milk for their children. Out of these livestock keepers, 4 per cent had enough space within their homesteads. A livestock enterprise, therefore, was a way of optimising the use of prime land that could not be built because of lack of money.

Also, 6 per cent of the respondents engaged in this activity in order to reduce household expenses and therefore increase savings, and the same percentage simply regard it as a village style of life they could not afford to part with. It is the culture of some tribes in the city to keep livestock such as cattle. For them, it is less comforting to stay away from animals. This category of livestock keepers are, in fact, not in the urban poor category. The remaining 4 per cent keep livestock in the urban areas in order to have readily available meat during special holidays they value most in a year such as Christmas and Idd el Fitri. The type of animals often kept under this motive includes chickens and goats.

Table 4.7: Reasons for keeping livestock

Reason	Percentage (%), N=71
Supplementing household income	39
The only economic activity to engage	20
As a security against household problems	13
To reduce domestic expenditure by consuming part of it (products)	8
Commercial and meet some cash requirements	6
As a cultural heritage (village lifestyle in the urban)	6
Best way of optimising prime land uses	4
Readily available meat during special holidays and ceremonies	4
Total	100

Source: household surveys, 2002

In the Nyantira case, the reasons for keeping livestock were rather peculiar when compared to reasons from other parts of the city. The reasons for keeping livestock, particularly poultry are varied. The major ones include:

- Possibility of home-based economic activity where household labour can be easily optimised.
- Influenced of the neighbours who are also poultry keepers.
- It is the only affordable economic activity with clear benefits and profits.
- Advice from relatives on the benefits of keeping poultry against other animal species.

Poultry keeping is the major economic activity in the area which is less competitive and the capital can be suited to one's financial affordability.

- Specific benefits accruing specifically from keeping poultry basically comprise:
- Supplementing household incomes
- Obtaining eggs for household nutrition, thus saving expenditure
- Providing self employment because it is less competitive
- Earning cash in order to meet household's income
- Realising more economic benefits because poultry keeping is less competitive from the same sector in the up-country regions.

In Mabibo, it was revealed that 95 per cent of the livestock keepers maintain livestock in order to increase their income. Only 4 per cent mentioned that they keep livestock in order to supplement their diet. And only one per cent said that they keep livestock as a hobby after having retired.

The husbandry practices mentioned above have been initiated by women in 70 per cent of all cases. This is because they are the ones who start to feel the pinch of financial inadequacy. Whereas 20 per cent of the cases were initiated by female head of households. five per cent of the respondents got the advice from private veterinary officers and the same per cent got the idea from their children.

The decision on who decides on the buying and selling of livestock was mixed. It was found out that in 30 per cent of the cases, both the husband and wife discussed the matter before taking a decision. In 35 per cent of the cases the decision was made by the husband and 35 per cent case by the wife.

From the city-wide case studies and the two specific cases, it is clear that livestock keeping from the poor households` point of view is mainly for income generation and rarely for hobby. This entails that livestock is largely kept under poverty. A more robust study is needed to explore the process of keeping livestock in the urban area under poverty. In this case, analysing livestock keeping as an industry.

Contribution of livestock keeping to one's economy and food security

This question was asked in order to gauge the extent to which urban livestock keeping contributes to the household incomes of the urban poor. In view of time limitations, no specific figures about household incomes were derived at the city level. However, a general

scale was drawn based on whether the contributions were very little, little, moderate, high or very high. Thereafter, these levels were defined to give a general calibration (Table 4.8).

According to the surveys, 78 per cent of the respondents acknowledged that livestock keeping contributed moderately to household incomes. This is a significant proportion of livestock keepers showing that urban livestock keeping is central to many poor urban dwellers. Very few find this activity to contribute very low or very high to their household incomes (also see Table 4.8).

Table 4.8: Contribution of livestock keeping to household incomes

Contribution to household income	Percentage (%): N=71
Very little	6
Little	13
Moderate	78
High	3
Very high	0
Total	**100**

Note:

Very little=livestock keeping activity does not break even, i.e. no loses and no profits are realised.

Little=marginal profit is realised to keep the project running and occasionally supplement food to household.

Moderate=a profit is realised to meet only the basic needs. The basic needs include food, clothing, house rent, and regular transport within the city, and school fees. Financial demands for major medical services such as admission to private hospitals can not be met. Also, entertainments and long-distance transport costs, say to upcountry regions are not affordable. Judging from the crude figures, the profit is around TShs 4,000 per day per household[9].

High=Reasonable profit is realised for, among others, investment in other projects. In most cases, around TShs 12,000 per household per day.

Very high=Very high profits are realised.

Source: Household surveys, 2002

In terms of food security, it was revealed that there is a significant improvement in food security as poor livestock keepers sell livestock products and buy food for their household members. This has a noticeable nutritional gain in some communities. However, in most cases livestock are kept for commercial purpose and very rarely are they slaughtered for home consumption. The prices for livestock products in Dar es Salaam is as follows: milk is sold at a range of TShs.400 to 500 per litre; the price of pork or bacon is TShs.1,400 - 1,500 per kg; broilers sell at TShs.1,500 - 1,800; and eggs at TShs.1,500 – 1,000 per tray.

In the case of Nyantira, poultry keeping contributes an average of 90 per cent of the household cash income. Establishing household incomes is one of the challenging tasks to

[9] 1 USD =TShs 980 (February 2002, average *bureau de change* exchange rates).

the researchers in the South because of the informal nature of the income generating activities. Often, incomes are never recorded because earnings are erratic and it is not a common practice to do so in the informal sector. Even when incomes are recorded, the confidential feature of the incomes complicates the survey. In view of this problem, the International Labour Organisation (ILO) studies on household incomes have been centred on household expenditure patterns taking cognisance of the fact that households can spend what they earn10. This approach has been adopted by this study. However, for the case of Nyantira, where households are engaged in tangible projects (poultry and gardening) that could be substantively quantified, household incomes were directly worked out on the basis of the earnings per product by projects.

Monthly household incomes range between TShs 92,000 and TShs 920,000[11]. This variation largely depends on whether one keeps poultry or not, the size of the poultry enterprise, and the size of household and age structure. The average monthly income in Nyantira is TShs 314,158 per household. This income is ten times higher than the minimum monthly salary of a government employee in Tanzania of TShs 30,000.

In Mabibo, the income which is realised from livestock keeping has been used to:

- meet family requirements fully in 30% of cases while at the same time sustaining the business.
- In all cases, it was directly supplementing food requirements.
- meet 50% of family requirements in 70% of the cases interviewed.

To conclude from the foregoing, livestock keeping contributes substantially to food security through extra nutrition for children and households (15%) and increased income for purchasing food (75%). However, it is important to note that, city-wide, the proportions of how much livestock products are utilised directly by the household and how much is sold in order to contribute to the household income varies from one type of livestock to another. For instance, the majority of poor households keep goats and pigs largely for selling, whereas those engaged in keeping dairy cows and chickens use part of the products for domestic consumption.

[10] The ILO, A Working Paper No. IDF/INF/WP-P, Informal Sector Statistics: Dar es Salaam Case, 1996, Geneva.

[11] One US $ buys TShs about 680 (Bureau de changes,1998). Today a Dollar buys TShs 980.

4.3 Livestock husbandry practices

Livestock keeping by the poor is primarily an activity for raising income. For instance, in the survey, it was discovered that among the poor households[1] in Dar es Salaam, livestock meant an additional source of food.

Number of Livestock

The number of livestock kept depends on the species and it varies from one ward to another. Table 4.9 below indicates number of livestock in each ward with respective species. The table shows that livestock keeping in Dar es Salaam depends on species; some species, for example, are not reared in the area. For instance cattle for beef are not kept at all and very few indigenous cattle are kept in peri-urban environments. The most dominant type of livestock kept in Dar es Salaam are chickens especially, broilers and layers.

The analysis indicates that, in the city centre per se people do not keep livestock. In peri-urban parts of Dar es Salaam like Pugu, Kinyerezi and Bunju indigenous chickens are kept in large quantities compared to hybrid species (broilers and layers). Other animals like buffaloes are only found in peri-urban environments.

Unlike Mabibo, all households interviewed in Nyantira keep poultry and only two households out of 240 households keep cows and goats in addition to poultry (Table 4.10).

In the case of Mabibo, zero grazing was found to be dominant especially for cows. Scavenging is also practiced by less than 10 per cent of the respondents. In all, there is adequate evidence of a continuing increase in the number of livestock kept in the study area.

The poverty lines are based on income, according to standard measure of poverty, poor household put into be those having income below the equivalent of US$ 1 per day and the hard core poverty level is at US$ 0.75 per day (World Bank, 1993).

Table 4.9: Number and Species of Livestock in Some Wards in Dar es Salaam

Municipalities	Wards	Cattle			Chicken			Goats	Sheep	Pigs	Ducks	Geese	Turkeys	Donkeys	Rabbits	Buffalo	Horse	Dogs	Cats	Pigeons
		Dairy	Beef	Local	Broilers	Layers	Local													
Temeke	Mtoni	78	-	-	5,800	3,000	-	60	24	112	-	-	-	-	-	-	-	-	-	
	Temeke 14	1	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	
	Kurasini	368	-	-	15,000	2,000	-	155	-	-	-	-	-	-	-	-	-	-	-	
	Keko	103	-	-	2,500	1,500	3,500	75	6	194	-	-	-	-	-	-	-	-	-	
Kinondoni	Bunju	367	-	-	2,500	2,000	6,255	629	-	4,509	1,050	16	-	4	30	1	360-	-	-	
	Msasani	770	-	-	1,600	13,480	384	-	-	128	68	40	-	5	140	-	4	-	-	
	Kinondoni	106	-	23	4,000	5,600	1850	-	-	152	-	-	-	-	-	-	-	-	-	
	Mwananyamala	192	-	-	2,000	1,600	-	34	-	-	-	-	-	-	-					
Ilala	Kinyerezi	166	-	26	2,000	1,550	2,116	46	-	17	304	-	9	-	-					
	Pugu	434	-	-	5,954	4,000	6,000	122	66	186	512	-	271	-	-					
	Jangwani	-	-	-	-	-	33	20	2	-	-	-	-	-	18					
	Ukonga	1208	-	-	8,000	26,500	3,500	360	-	950	2,606	-	51	-	-					
	Tabata	314	-	-	-	-	-	38	25	202	216	-	4	-	-					

Source: Field surveys, 2002

Table 4.10: Origin of settlers, plot sizes and number of livestock (poultry)

Name	Place of origin	Plot size (Sq. metres)	Number of chicken		Remarks
			Year 1998	Year 2002	
Wambura Mwita (Mjumbe)	Tarime	4158	1200	900	He also keeps 2 cows, some goats and 25 pigs
Chacha Gasaya	Tarime	4550	800	700	
Nchore Msira	Tarime	1440	0	1000	
Matiku Mrange	Tarime	816	0	600	
Augustino James	Tarime	2400	400	700	
Augustino Mataro	Tarime	5040	200	1200	
Nchama Kiruka	Tarime	3700	300	800	
Chacha Mirima	Tarime	864	0	0	
Paulo Mwita	Tarime	480	0	0	
Laurent Mwita	Tarime	4116	600	1000	
Marwa Mwita	Tarime	396	0	600	
Amiri Manyera	Tarime	4466	600	400	
Marwa Nyansika	Tarime	5432	700	500	
Joshua Borogho	Tarime	3188	700	400	
Y. Mwera	City Centre	5092	300	0	
Chacha Mung`anyi	Tarime	2956	250	0	
Marwa Kisiri	Tarime	960	0	300	
Mwita Samwel	Tarime	1140	600	400	
Mrimi Marwa	Tarime	1408	200	0	
Wambura Chacha	Tarime	1920	400	500	
Ngosha	City Centre	1680	0	0	
Mbatare Chacha	Tarime	7440	1000	600	
Mwita Range	Tarime	2100	0	300	

Ayub Nyangi	Tarime	1420	300	300	
Mataro Nyamaiya	Tarime	7448	1500	1600	
Menganyi Mahali	Tarime	500	400	1400	
Jackson Sabayo	Tarime	4620	800	1200	
Ngosha	Tarime	2944	0	0	
Sereka Kichogo	Tarime	2300	300	400	
Gasae Serenya	Tarime	4780	0	1200	
Peter Rokomo	Tarime	770	400	800	
P`Cola employee	City Centre	6440	0	0	
Nchore Msira	Tarime	5270	800	1000	
Mwita Chacha	Tarime	1470	500	400	
Mnekamo (Mtoni)	City Centre	4600	0	0	
Sibora Wambura	Tarime	1000	200	700	
John (Yombo)	City Centre	700	0	0	
Patrice Lyoba	Tarime	3788	200	400	
Marwa John	Tarime	1176	0	300	
Yosho Mariba	Tarime	5520	600	600	
Mwita Marwa	Tarime	4575	0	600	
Msae Chacha	Tarime	1008	700	1500	
Mrange Chacha	Tarime	1216	0	400	
Anseti Range	Tarime	2650	1200	1800	
Maronya Kiroka	Tarime	1320	600	600	

Source: Household surveys, 1998 and 2002

Livestock keeping practices

Livestock are kept under both zero and free ranging systems. Therefore, under the confined system, livestock keepers have to collect feed and water, provide appropriate shelter against the elements and for security, provide adequate treatment/drugs (Plate 4). In the peri-urban areas of Dar es Salaam local chickens, goats and a few dairy cattle are kept but large livestock keeping is not very prominent. This is attributed to the style of living of the indigenous *Zaramos* who have relied more on crop farming than poultry keeping. Poultry (broilers, layers and local chickens) are the most important types of livestock in the city (birds per farm can amount to 5000 – 8,000). Additionally, dairy farming (on small scale), goats, pigs and turkeys are kept in small numbers in peri-urban fringes.

In the case of Nyantira, poultry keeping is primarily for commercial purposes and, therefore, relatively big numbers of chickens are kept. All households interviewed keep poultry indoors. Normally, a poultry shed measuring 9mx4m would accommodate about 300 chickens. All poultry keepers started by erecting simple poultry sheds made of mud and poles for walls and corrugated iron sheets for roofing. Within a range of 2 to 3 years most poultry keepers redevelop the poultry structures by replacing wooden poles with concrete sand cement blocks for the sub-structure but maintaining the Corrugated Iron Sheets for better structures.

Plate 4: Indoor poultry keeping

Poultry and other livestock feeds and vitamins are bought from the vending kiosks found in Nyantira. A bag of 50 kg sells at TShs. 7,500 in Nyantira as compared to TShs. 7,000 in the city centre. Price variation is largely due to additional transportation costs from the major feed-meal supply centre to small kiosks in Nyantira. For a few households keeping goats and cows, a combination of both zero and free-range practices are adopted. Free ranging is normally limited to the neighbouring plots that are undeveloped. This is practiced with high precaution in order to avoid conflicts with gardening in developed plots. This practice appears to be manageable, at least for the time being, when the population density is still low; that is 0.3 hectare per household size of 4 persons (Physical observation and households interview, 2002). The opening up of feed meal shops in Nyantira, which largely

took place in 2000 mars a major development in poultry industry in Nyantira because in the past, poultry feed meals were compounded in the city centre and transported to Nyantira by egg-ferrying cyclists on their way back home.

All respondents acknowledged that low productivity in poultry was largely due to poor animal health. Most common diseases include coccidiosis and typhoid. Although it was established that shared experience on poultry keeping has helped poultry keepers at least to break even. Better access to extension services could have improved animal health, increased productivity and subsequently hasten poverty elevation. It is, however, unclear why the private sector has not yet identified Nyantira as an attractive place for extension services. Until today, poultry keepers have to take sick chickens to the veterinary officer in the city, about 14 km distance, for diagnosis and advice.

Access to clean water was ranked as the most important problem in Nyantira not only for animals but also for human beings. In the absence of a piped water supply system, the residents rely upon a few hand-dug wells. Currently, there are 8 shallow wells to cater for over 240 households. With an average household size of 4 persons, 250 chickens and at least a quarter acre garden the yield point of 40 litres in 24 hrs per shallow well during dry season is well below the demand. This problem, among others, has significantly limited the expansion of the poultry industry in Nyantira. The major question there is, under what arrangements can safe and clean water be provided in Nyantira?

Decisions on husbandry practices and decision to sell livestock

Interestingly, a range of decision-makers are involved in initiating and managing livestock activities in poor households in urban areas, but with women dominating. Surveys show that 48 per cent of the respondents were women (Table 4.11). This can be explained by the fact that most women are not employed in the formal and public sector as compared with men. Therefore, one would expect that establishing an informal activity such as livestock keeping, should be a concern of the idle labour, that is, women. It was, however, reported that most women still had to forward ideas to their husbands for consensus or some form of approval. The large proportion of women was also contributed to by a number of young women who headed households. There was only one case where a veterinary officer offered the advice and in another case a long term serving labourer offered the idea to the household. Other decisions were made jointly, in different forms among household members as shown in the Table below.

Table 4.11: Decision-making on keeping livestock in the city

Decision makers	Percentage (%): N=71
Women	48
Men	19
Household members	16
Men and women	13
Extension officer	2
Friends and labourers	2
Total	100

Source: Household surveys, 2002

The Municipal Council by-laws (1990) prohibits free range animals in urban areas and does not condone keeping more than 4 cows even in the super low density plots in the city built landscape. These laws are, however, silent about the size of poultry in the peri-urban zone where plot sizes are relatively bigger. In the absence of clear and effective guidelines for livestock keeping in the peri-urban zone it has become entirely the decision of individual livestock keeping households to determine the number of animals, whether to keep livestock or not, and under what husbandry practices.

In Nyantira, out of 30 respondents, 14 respondents (each representing a household) said that it was the responsibility of both men and women to decide on buying and selling animals. However, in this part of the city, decision on opening livestock projects has been an entirely male responsibility. Although some cultural factors could have been the driving forces for this situation in Nyantira, the real factor is largely because most women joined their spouses after the projects were set in motion. Only 2 and 3 respondents said that it was the responsibility of women and entire household, respectively. These observations show a major departure from what one would expect for an enclosed local community in the peri-urban zone whose cultural values and traditional norms are brought forward from the rural settings. Normally, such decisions could only be the responsibility of heads of households who are traditionally men.

All poultry keepers in Nyantira prefer zero to free ranging system which is commonly practised in most rural settings of Tanzania.[12] Three cases out of thirty interviewed households complained of water scarcity. That is, the normal supply frequency of water was reduced from three to two buckets[13] per day with significant decline in productivity from e.g. 6 trays of eggs for about 250 chickens per day to 4 trays. Again, the husbandry practice here is a result of lack of adequate water supply.

All respondents explained that the household members consume part of the egg produce. Part of the cash generated from selling eggs is spent in buying foodstuffs up to some amount. Therefore, food security can be related to the performance of the poultry industry in the area; ie the more successful egg production is, the more secure a household is in terms of food. No signs of malnutrition were observed in the children below 5 years. Future investigations should focus on the proportions of egg produce spent in household food supply.

In Mabibo, the husbandry practices mentioned above have been initiated by women in 70 per cent of the cases. This is because they are the ones who start to feel the pinch of financial inadequacy, 20 per cent of the cases were initiated by female head of the households. Five per cent got the advice from private veterinary officers and 5 per cent by their children.

On the contrary, it was observed that **selling** household livestock is a sensitive issue that made a consensus from the entire household a prerequisite. This was recorded by the majority of 80 per cent of the respondents in the selected wards (Table 4.12). In cases

[12] Household interviews in Nyantira 18th March 2002. Also note that gender does not influence the decision on the choice of husbandry practices.

[13] A bucket is usually a water container whose capacity is 20 litres.

where men took the decision on their own it was largely because they either inherited the livestock from their parents or relatives or simply as heads of households. In fact, it was reported that even in some cases where the entire household was said to be involved in the decision making, men still had the upper hand in reaching the final decisions. This could be linked with traditional or cultural values on division of labour in households.

Table 4.12: Decision to sell livestock

Decision makers	Per cent (%), N=71
Men and women	80
Household members	8
Women	8
Men	4
Total	**100**

Source: Household surveys, 2002

In Mabibo, it was found out that in 30 per cent of cases both the husband and wife discuss issues before making a decision. In 35 per cent of the cases, the decisions were made by husbands and 35 per cent of the cases by wives.

Waste Management

Livestock pens etc are cleaned out everyday (morning and evening) and some livestock keepers have dug ditches in order to drain and direct wastes to their neighbours (Plate 6). Equipment used includes spades, wheelbarrows and garden forks. In most cases, they wait for some days before the wastes are used as farmyard manure for horticultural farming (Plate 7). In practice, it has been observed that in peri-urban areas where livestock keepers have enough space they don't collect waste daily but they wait for some two or three days. In the urban environment livestock keepers normally hire vehicles to transport waste to the city dumps at Vingunguti and Pugu. Other non-livestock keepers scavenge livestock wastes from dumping sites for their gardens.

Shelter

Most shelters for livestock in the city of Dar es Salaam are constructed by use of cement bricks, the floor covered with concrete slab and roofed with corrugated iron sheets. The quality of the sheds depends on the wealth status of the livestock owners. Some are poorly constructed depending on the species of livestock and sometimes, location elucidating cases of livestock keeping under poverty. For instance, most cattle keepers build temporary structures with simple super structures and wooden walls

In some cases. livestock are sheltered in buildings constructed behind the main dwelling of the keeper (Plate 11 and 12).

Plate 11: Zero grazing

Animal Health

There are very few public cattle dips. Normally, livestock keepers in the city use Private Veterinary specialists for health services provision. However, in some wards, livestock extension officers are available for advice and services such as artificial insemination, animal husbandry, castration, dehorning and foot trimming. Private institutions and the municipal authorities in general play a greater role in supplying medicine and livestock extension services. Abattoir and slaughterers are located in various settlements in the Municipality; five abattoirs out of six are owned by the private sector. Meat inspection and animal inspection are always carried out in the abattoir before and after slaughtering. However, there is only one registered chicken abattoir (slab) in the city with the capacity of slaughtering about 206 chickens per day located at the Tanzania Inter-Chick Company (Mbezi) while other chicken slaughtering slabs are located in various municipal settlements to meet the demand. There is also a haphazard location of pig slaughtering slabs in the municipalities.

Access to water, electricity, roads and telephone (infrastructure)

Access to water, electricity, roads and telephone (infrastructure) is a big problem in most wards visited. Most livestock keepers get water from DAWASA (Dar es Salaam Water Sanitation Authority), which is not reliable. A few wealthy individuals, however, have constructed water reservoirs or storage tanks in case of water cuts but poor livestock keepers have to walk several kilometres in search water for their animals. About 63 per cent of the respondents have direct access to water and the rest have to buy water from cart pushers (Table 4.13).

City-wide, electricity appears to be relatively accessible to the majority of the poor but it is limited for lighting. The surveys show that 66 per cent of the respondents have access to electricity. Electricity is an important service to livestock keepers, especially the poultry keepers in order to regulate environmental temperature. The same number of respondents said that they were accessible by vehicle throughout the year and only 4 per cent of the respondents have telephone services. This level of service is a reflection of the type of poverty level of the livestock keeping households.

Table 4.13: Livestock keepers with access to infrastructure

S/No.	Type of service	Percentage (%), N=71	Total (%)
1	Water	63	100
2	Electricity	66	100
3	Roads	66	100
4	Telephone	4	100

Source: Field surveys, 2002

Very few livestock keepers in peri-urban area have shallow wells. Most of them scoop or use streams as a source of water for livestock, which is not safe. Water problem was observed mostly in peri-urban areas of Pugu, Kinyerezi and Bunju where DAWASA pipes are either not connected at all or connected but there are irregular water flows. In the case study of Nyantira, water was mentioned as the biggest problem facing livestock development in the area (Focused Group Discussions, 2000). Vehicular access is only possible by four-wheel drive vehicles. Electricity is lacking, and access to telephones is inadequate[14].

Capital

It was revealed that 58 per cent of the respondents raised the capital for livestock keeping through long term savings from their earnings particularly salaries (Table 4.14). It took up to 4 years for some of them to raise the capital in order to buy a cow. This shows that poor households engaging in urban livestock need to be determined enough to reach their initial capital targets. About 17 per cent of the respondents converted their terminal benefits after retrenchment from civil services to capital for livestock projects; no wonder the majority of livestock keepers are adult people of retirement age[15]. This is an indication that starting

[14] There is no land line to the area. However, about 2 per cent of the households have mobile phones.

[15] The retirement age in Tanzania for civil servants ranges between 50 years to a compulsory 60 years.

livestock project in urban areas is a big challenge to the majority of the urban poor. Only 10 per cent of the respondents were able to raise their capital through revenue from other economic activities such as urban vegetable gardening, retail shops, petty trading and restaurants. About 7 per cent of the respondents said that they inherited their livestock activities. This applies largely to widowed women. Other livestock keepers, that is, about 4 per cent received a loan from Ilala Municipal Council's Women Funds for Development and another 4 per cent raised the capital through gifts. The limited number of livestock keepers accessing credit facility is possibly a reflection of the national policies most of which have not been explicit on how to break the "poverty cycle". On the other hand, raising capital through gifts is an indication of strong social ties within local communities which ought to be further researched. In one case, the gift was in the form of a soft loan where the borrower was offered one year to pay back the loan used to buy a cow. Obviously, this is raising capital under a painful sacrifice and in abject poverty. Indeed, even if the loans were accessible, the amount offered is usually small, between TShs. 50,000 and TShs. 200,000/=. This amount is not enough to fulfil most basic capital needs for urban livestock keeping coherent to the requirement of the municipal by laws on sanitation and public health.

Table 4.14: Sources of capital

S/No.	Source of capital	Per cent (%) N=71
1	Accumulation through monthly revenues	58
2	Terminal benefits	17
3	From other economic projects/activities	10
4	Inheriting	7
5	Credit facility	4
6	Gifts	4
	Total	**100**

Source: Household surveys, 2002

In Nyantira, capital mobilisation was, in over 95 per cent of the respondents, through hard work as an egg-ferrying agent to the city markets for about three months.

Outlined blow, are the established sources of capital for starting livestock projects in Mabibo area:

- 30% of the livestock keepers had their capital from retirement benefits, usually from the (men) husbands.
- 10% acquired capital from selling animals from the rural areas.
- 30% acquired capital from contributions by both, husbands and wives.
- 10% from husbands' incomes.
- 20% from loans (PRIDE and workplace).

The adequacy of capital was considered not to be a major problem if one is determined and plans to start the project in phases. This was attributed by 60 per cent of the respondents. However, 40 per cent of the respondents said that it was not enough; hence they had to close the gap by asking for loans from "PRIDE". On continuity of capital and adequacy, 60 per cent of the respondents said yes, indicating that:

- They do not expect to expand their business because the plot cannot accommodate more functions.
- The businesses are continuously growing, hence raising chances for the capital to increase internally.

40 per cent of the respondents said no because:

- Their households are growing hence they will need to expand it.
- Their livestock upkeep is poor leading to low productivity.

In their opinion, the measures could include asking for loans from NGOs and the Government. Future research should explore the opportunities of establishing credit facilities in order to support demand driven activities such as livestock keeping for the poor urban dwellers.

Manpower

It was revealed that when household labour is not enough for someone, young boys are often employed. These are hardworking boys who are also responsible for cutting grass in the river valleys and hauling them home especially during the dry season when fodder is scarce and a shortage is experienced. Often, they are standard seven drop-outs from up-country regions that normally migrate to the city of Dar es Salaam in search of employment. They are normally aged between 20-30 years (Plate 13). This was applicable to 56 per cent of the respondents (Table 4.15). However, labourers are seasonal depending on the period when standard seven results are released country-wide. To a great extent, the so called labourers enjoy most of the benefits associated with being a member of the household. Thus, in its strict sense, they are not labourers because their relationship with the employer goes beyond that of business. However, 44 per cent of the respondents do not hire or employ outside labourers to carry out livestock duties. This is largely because the household manpower is enough for the tasks or the livestock project is located within the homestead compound and household labour becomes domesticated and can be practically optimised to include children.

Table 4.15: Labour

S/No.	Type of labour	Per cent (%), N=71
1	Employing a labourer	56
2	Household labour is enough	44
	Total	**100**

Source: Field surveys, 2002

In the peri-urban case of Nyantira, supplementary labour is obtained from the guest immigrants seeking to establish their livelihood. This is a social arrangement which stems from cultural relations. At least two thirds of the respondents have this type of labour. This, however, is supplemented by household labour because it is taken to be a domestic activity. In Mabibo, 55 per cent of the respondents have 1-3 labourers whereas 45 per cent do not have them largely because the household labour is enough to attend both domestic as well as livestock activities.

Plate 13: A child feeding pigs

Marketing of livestock products

Actors engaged in livestock keeping in the municipality include individuals, groups, and institutions. The major market of the livestock products is within the municipality and the city at large. There is an effective market for the products. The price varies with the quantities available. For example, the price for milk is TShs. 400 per litre (retail price) but, for 10 litres it is at TShs. 350/= per litre. Competition is not intense as was indicated by most respondents.

However, market information is a crucial problem especially for livestock keepers in peri-urban areas. Most respondents indicated poor market information flow for marketing their products and also for availability of raw inputs for their livestock.

About access to information, livestock keepers said, “it is a problem but in some cases government extension officers and their co-livestock keepers and some customers do disseminate information”. Thus, small-scale livestock keepers do adjust their activities according to the market trends and most customers have accepted the existence and contribution made to local society by small livestock keepers.

4.4 Problems and constraints facing poor livestock keepers

From the foregoing analysis, the main problems and constraints facing most poor livestock keepers in Dar es Salaam can be summarised. These include:

Lack of space

This was revealed as a common problem especially in urban areas where livestock are kept in built up areas with high density/consolidated settlements.

High cost of livestock treatment

In most selected wards, there are a number of pharmacies dealing with medicines for livestock. It was established that the prices of the medicines were not affordable by most livestock keepers. In some cases, the livestock medicines are in large unit quantities, which is uneconomical for small livestock keepers to purchase and some have a short lifespan and an early expiry dates making the livestock keepers unable to keep them for long time.

Inadequate forage

Livestock keepers in urban areas, especially in unplanned settlements like Manzese, Mzimuni, and Keko are congested in small spaces. In some cases, livestock sheds are constructed in flood prone areas especially river valleys. Livestock keeping becomes a big problem, especially for cows. Livestock keepers are sometimes forced to hire vehicles or use their own means of transport to buy fodder (forage) from informal sellers along main roads – Mandela and Sam Nujoma. The price of one bundle of fodder ranges between TShs. 8,000 and 10,000 and this can be used only once in a week or twice depending on the number of cows one keeps. Most respondents claimed that this price is uneconomical compared with the price of milk, which ranges between TShs. 400 – 500 per litter. Moreover, the cost of treating livestock is equally high.

Unreliable market for animal products

Livestock keepers are faced with undefined market for their products. There is uncertainty about selling their livestock products. Due to unreliable markets, there is a problem of low price for these products. In some areas, the price of milk falls to TShs. 250/= per litre due to market fluctuations.

Inadequate knowledge of livestock keepers

Many livestock keepers lack the basic knowledge of livestock husbandry. According to extension officers in some wards e.g. Kurasini, Kawe and Kibamba it is the lack of training that makes the problem persist.

Diseases

There are several livestock diseases in most areas. Some of the common diseases are CBPP (*Homa ya Mapafu*), FMD (Foot and Mouth disease), Anthrax and Black Quarter (*Kimeta & Chambau*) – for cattle and East African Swine Fever for pigs.

For chickens there is Newcastle Disease (*Mdondo*) especially for indigenous species because they roam randomly, thus easily catching the virus. Others include Coryza and *Gumboro*.

Theft

Theft of livestock is common in most areas in Dar es Salaam especially in peri-urban areas. The reason could be due to scattered settlements and presence of bush or undeveloped farms where the thieves hide and attack easily. However, this is one of the fundamental consequences of urban unemployment.

Prejudice against certain livestock

In some settlements people do not keep certain livestock species due to religious beliefs. This is largely the case for Muslim communities in the inner city where house densities are high and adequate hedge and spaces cannot be secured for piggeries.

Needs of poor livestock keepers

The basic needs of livestock keepers in Dar es Salaam especially the poor are; -

- Veterinary drugs and feed for their livestock.
- Stable markets to sell their livestock products.

Basic education on livestock keeping. Poor livestock keepers need livestock education in order to enhance proper livestock management in terms of controlling some diseases, proper feeding and proper marketing/processing of livestock products.

Access to credit facilities

Some institutions, which provide credit, impose stiff repayment conditions on the loans. They charge between 20-30 percent interest rates, which for a poor livestock keeper is too high. Therefore, it is impossible for the poor livestock keeper to secure loans from these institutions. Institutions like PRIDE Africa, Finka and Municipal Councils provide loans but at high interest rates. The problem with council loans is the probability of getting loans due to existence of many groups who require loans at the same time. These poor livestock keepers need to have access to loans with reasonably affordable interest rates.

Environmental impacts of livestock keeping

Diverse problems were observed by the study in all wards in the city except Kariakoo where livestock keeping is not practiced due to high intensity of commercial activities, housing density and possibly high urban land values. The most common environmental problems itemised by the respondents are:

Destruction of trees

Free ranging system especially of goats and cattle in peri-urban areas is common. As a result, animals destroy planted trees in premises, open spaces and along major roads. The same problem was found in urban areas especially, Magomeni and Mchikichini where cases of conflict of land use between neighbours keeping livestock and those who do not were reported.

Pollution

Improper handling of livestock waste like pig dung pollutes the environment (land, water and air). Also, extension service officials pointed out that, pig keepers for instance are required

to use septic tanks for handling of dung but many of them crudely dump it thus causing a nuisance of bad smell to neighbours. Also, when it rains, the dung spreads haphazardly by rainwater thus causing pollution to land and nearby wells and streams. Furthermore, pollution is caused by poultry keeping especially layers. This is due to the nature of the environment where they live. There is a tendency to produce a lot of dust and this dust has a harmful effect on the surrounding residents. Some people suffer allergies from inhaling poultry dust. Asthma is common in some areas largely due to this. Also, the process of cleaning cowshed/poultry sheds tends to direct wastewater to the neighbouring drainage system. This threatens public health.

Eroding the river valley by using marginal lands

Some poor and small-scale livestock keepers especially those residing in river valleys (Msimbazi; Jangwani and Sinza) often seize the opportunity of cutting grass (forage) along the river banks. This leads to accelerated erosion on the river banks and an increase in the intensity of flash floods.

Mitigation measures

The mitigation measures taken in some settlements especially in urban areas are to reduce the number of cattle in the built environment and to remain with a number of livestock which are manageable. Other measures include:

- Fine for free-grazing in the city is TShs. 5,000/= per head. But enforcement of city by-laws is weak and corruption by some city officials is defeating the aim.

- Keeping poultry sheds clean has minimized the problem of air pollution. For cow dung, some livestock keepers construct disposal pits.

Table 4.16 below provides a summary of the main problems and coping strategies for livestock keepers in Dar es Salaam

Table 4.16: Problems and constraints of livestock keeping in Dar es Salaam

S/No.	Problems	Coping strategy	Action required
1.	Space restrictions	Use of zero grazing system	Change of land tenure system
2.	High cost of livestock treatment	Packaging of livestock medicine into smaller quantities	Establishment of more veterinary services
3.	Inadequate forage	Reduce number of livestock	Land allocation for forage production in peri-urban areas
4.	Unreliable market	Processing of livestock products such as seweraging	Availability of both local international market to sell their products
5.	Inadequate information flow	Formation of livestock keepers groups	Organisation of seminars and workshops on

S/No.	Problems	Coping strategy	Action required
			livestock keeping
6.	Out break of diseases	Good animal health services	Basic education on livestock keeping
7.	Theft	Organising security system "Sungusungu"	Police patrol to the respective areas
8.	Prejudice against certain livestock	Community-wide food systems education	Awareness campaign
9.	Inadequate capital	Saving from their salaries	Access to credit facilities
10.	Poor accessibility to clean and safe water	Dig wells	
11.	Inadequate knowledge and/or unsafe (or unsanitary) practices	Approaching NGOs such as PRIDE for information	Technical training workshops, community engagement in livestock
12.	Disparate and unco-ordinated legislation at municipal level on urban livestock		Local dialogue between practitioner and city authority

Source: Field surveys, 2002

Transport issues

In the case of Nyantira, the specific transport problems as presented by the households include:

Too time-consuming to reach the markets, mainly the city built landscape is largely reached by using bicycles. This is aggravated by rough and sandy path/road surfaces.

- Nyantira residents using public transport have to pay TShs 600 per passenger per return journey. Yet, they have to walk to and from Nyantira and either Kitunda or Buza for 1 hour or 30 minutes before they reach a bus stand.

It is cumbersome to cycle along with a load of 40 trays through occupied walkways by either pedestrians or street vending kiosks. For those who choose the shorter route via Buza have to put off their shoes and carry both, the bicycle and the egg-trays in order to cross River Sasamilunda.

Both egg and tray losses are common. This is attributed to potholes and sandy path/road surfaces and rainy weather[16] conditions respectively.

[16] Most egg trays are made of paper products.

- Regular incidents of robbery were reported on the way back to Nyantira after selling eggs in the city.

In order to cope with the problem of accessibility, especially ferrying eggs to the markets in the city, the local community introduced a system where only 9 percent of the workforce collect the eggs from the poultry-keeping households to the markets in the city centre. As a result, the average trip generated from Nyantira to the city centre by households is significantly reduced to 8 per month per average household size of 5.4. This rate is low when compared to at least 30 trips per household per month for the same purpose alone if each household was to ferry eggs to the markets on daily basis.

Public health and livestock welfare issues

Different types of livestock have different impacts on public health and welfare characteristics. Since it is practically impossible to demonstrate the public health and livestock welfare issues for each type of livestock, a case of poultry keeping in the peri-urban zone was picked to illustrate the situation. Unlike poultry keeping in the densely built-up housing clusters, poultry keeping in Nyantira does not appear to threaten public health, at least for the time being. Poultry shed cleaning is a routine activity usually carried out once a week. The amount of waste generated depends on the size of the poultry enterprise. For instance, a 300-chicken poultry shed generates, between 7 to 8 bags each weighing about 50 kg. This manure is either used in the garden of the poultry owner or sold to those who need it at Tshs.150 -200 per bag. It is due to this symbiotic practice that the environment is always kept clean and green. The major concern on public health is whether excessive generation and use of poultry waste will not affect the ground water quality. Already, there are cases of human health threats connected with poultry dust. At least 5 out of 30 respondents reported to suffer from allergy, flue, tuberculosis (TB) or typhoid because of their involvement in poultry keeping. This is a very serious problem that ought to be addressed.

The question is, therefore, for how long will these poor poultry keepers continue to suffer from this problem before appropriate intervention is effected?

The most common chicken diseases are Newcastle Disease, flue, typhoid, worms, "*utitiri*", "gomboro" and malex. Most respondents mentioned regular occurrence of these diseases as one of the major causes of poor productivity with direct implications on profit margin and animal welfare as well. Recurrence of these diseases could be an indication of poor husbandry and habits that require detailed studies.

4.5 Institutional issues

There are several institutions operating in the livestock sector in the city of Dar es Salaam. These institutions can be categorised as public, private and voluntary organisations. In some wards these institutions run projects that assist livestock keepers in information dissemination and acquiring new species. For instance, in Bunju ward, there is a project known as "*Kopa ng'ombe, lipa ng'ombe*" i.e. "Borrow a cow, pay a cow". Under this arrangement the first borrower gives the first calf to another borrower and the chain goes on.

Furthermore, in Bunju and Keko there are two Women Private Organisations engaged in livestock keeping. In Keko ward, there is a Women Group known as FURAHISHA GROUP, which keeps layers. It is composed of 10 members and it is based at Keko National Housing Corporation (NHC) quarters. This group started in 1995 and currently keeps about 2,000 layers. In the city centre such as Kariakoo, there is no organisation engaged in keeping or promoting livestock largely because the commercial use of land outweighs land uses for

livestock. However, there is free ranging of pigeons because these birds do not require substantive or competitive urban space.

In Ilala ward, there are two voluntary institutions dealing with livestock keeping. These are Huruma Women and Kambale.

Huruma Women Group

The group operates in Ilala Municipality, Ilala ward, Sharifu Shamba Street. It is composed of five members. Currently, there are about 36 pigs owned by the group.

The group operates at the site belonging to Ilala Anglican Mission and the pig shed belongs to the Women Christian Union. The shed contains seven rooms and a rental charge is 200 TShs. per room per month. This is relatively cheap and affordable land rent to the poor women, given the value of land in that area. At the moment the group is in the process of building its own animal shed. The group is motivated to do this because the mission leadership has offered them a space for construction of pig sheds.

The group initiated this project in order to earn money and meet basic household needs such as food, clothes, housing, medical services, urban commuter transport costs and school fees. According to the chairperson, livestock keeping was the only viable option to resort upon.

Meanwhile, every member owns the livestock and each one is obliged to pay TShs 5,000 to the organisation for every animal sold. The revenue generated will be used to construct more sheds for the group. The future plan is to have communal ownership of the animals. It is perhaps too premature to comment about the prospects of communally owned livestock as against those privately owned in an organisation.

Furthermore she said that they decided to form the group due to the fact that it is easier to get loans as a group rather than as individuals. They also wanted to share and utilise experiences gained, knowledge and other potential they posses, among themselves.

It was also pointed out that the activity does not contribute much because they do not have enough capital to break even. Normally, one pig farrows twice per annum and produces between 15-20 piglets. If they are properly cared for after six months one pig is sold for TShs. 40,000. Therefore, one pig potentially earns about TShs. 600,000 per annum. It was established that the production costs usually covers about half of the gross income. The group does not function optimally because the capital is simply too meagre to feed and at the same time meet health costs of the livestock. This implies that there is underproduction due to inadequate capital, as noted by the chairperson, *"two pigs produce what was to be produced by one pig if it is properly taken care of".* Huruma Women Group does not receive any support from anywhere. During the fieldwork (February 2002) it was reported that the group had only managed to receive promises for loans from the Municipal Council and one undisclosed NGO[17]. Already, the group had filled the application forms for loans.

The group interacts with livestock extension officers from Ilala Municipal Council and the Ward executive office on its routine activities, with subsequent learning benefits. The group rarely consults private veterinary officers for advice on livestock husbandry largely because it cannot regularly afford to pay consultation fees. In addition, Huruma Women Group interacts informally with other livestock keepers and shares knowledge on best practices of

[17] PRIDE could be one of them. This is an NGO involved in credit facility schemes for the urban poor.

livestock keeping, among others. The group is not aware of any regulation concerning urban livestock keeping. It is, however, informed about the need to pay tax for every livestock kept in the city.

Major problems facing the group include:

- Inadequate capital to run the project. This problem threatens their existence.
- Lack of basic knowledge on how to carry out livestock keeping activities.
- Lack of reliable markets.

The group is of the opinion that in order to improve livestock keeping in Dar es Salaam the following should be considered:

- Provision of loans to poor livestock keepers to enable them run the activity competitively and maximise profits.
- Frequent training and counselling in the field.
- Provision of designated areas for livestock keeping even in peri-urban/ rural areas.

The group stands a high chance of securing credits from a variety of sources. Its strength depends largely in the commitment of its members, an ability to utilise local “assets” and in actively promoting poverty reduction.

The Kambale Women Group is investing in poultry farming which is relatively insignificant at this juncture. The same applies to other groups. Most of them have no postal address but they can be reached through the Agricultural and Livestock Extension Officers at the ward level or the Ward Executive Officers.

Public institutions

These are Government Institutions namely Livestock and Agricultural Offices and Shaaban Robert Veterinary Clinic which started operations in early 2000. The main activities of these institutions are:

- To provide treatment to livestock
- To provide advise or consultation to livestock keepers
- To inspect hygienic conditions of livestock sheds
- To issue movement permit for livestock movement in and out of Dar es Salaam
- To inspect slaughter houses (abattoir).
- To inspect hygienic conditions under which butchers operate.

To supply medicines to livestock keepers. Robert Clinic buys veterinary drugs from wholesale companies such as Tan Veterinary Ltd and Farmers Centre. Respective Municipal Councils provide funds for drugs and sells them to livestock keepers.

The SWOT analysis revealed that the extension officers from the Municipal Councils appear to have accumulated experience in dealing with urban livestock issues especially on what

poor urban livestock keepers need and what public health control measures ought to be taken. Their efficiency is, however, hampered largely by a lack of reliable means of transport to reach livestock keepers and exercise effective control of livestock keeping in the Municipalities. Besides these constraints, lack of incentives contributes to a poor working environment.

Although the existence of city by-laws and relatively supportive government laws[18] provide an opportunity for collaborative urban livestock management, livestock keeping by the poor appears to create a barrier of cooperation with livestock extension officers. One livestock officer noted that since the poor urban livestock keepers cannot afford to keep livestock indoors and under proper hygienic conditions some of them have been repeatedly penalised so resulting in a bad relationship with the extension officers.

One major threat observed by the extension officers is that the efforts of the donor agencies, and in some cases the government, have been limited to devising ways for the urban poor to start urban livestock enterprises without enabling them to cope with the by-laws regarding urban livestock keeping.

Private institutions

There are several private institutions operating in Dar es Salaam. Among them, is Vemima Veterinary Centre (VVC)

Vemima Veterinary Centre (VVC)

The institution started in February 2001 and the major services offered by the Vemima Veterinary Centre include:

- Sale of veterinary medicines
- Provision of
- clinical services
- vaccination supplies
- artificial insemination
- surgery
- dehorning
- castration
- debeaking

disbudding

[18] Reviewed CAP 378 of 1992 recognising farming and livestock keeping as legitimate urban land use.

- Sale of animal feeds such as layers` and broilers` mash.

The main customers are from all over Dar es Salaam, especially from Mabibo, Tabata, Ubungo and Buguruni. The prices for some of the vet. drugs/services offered by the institution include:

- Samoni (vaccination) TShs. 1000 to 1,2000
- Taktic (deeming) - TShs. 1,800 to 2,500
- C+ C 20%- TShs. 1,800
- Colisultrix- TShs. 1,800 to 2,000
- Luomec supper- TShs. 5,000 to 25,000

Through SWOT analysis, various observations were made regarding the prospects of private institutions in interacting with the poor urban livestock keepers. It was noted that the strength of the VVC lies on its ability to identify and sell services that were in high demand by the market, especially the wealthier individuals keeping livestock in the urban area. This is because the poor farmers have small capital that make them unreliable in business.

However, the VVC is weak is establishing patterns of fluctuating demands that are largely caused by unstable capital of most poor urban livestock keepers. Both, livestock keepers and the VVC have opportunities to improve their operations because they are working under the liberalised national economic policy where state interference in the market is decreasing. Furthermore, the high rates of urban population growth and the increasing need to feed the urban masses provide potential room for a reliable and growing market in the city.

The major threat facing the operations of the VVC, and therefore its interaction with the poor livestock keepers in the city, is unchecked introduction of pirated medicines some of which have less authentic dates of expiry. Also, regular power cuts and prolonged black-outs threaten the efficiency of cold-storage facilities for livestock medicines. The result is, as would be expected, increased prices of drugs as VVC, other Clinics and pharmacies compensate the loses resulting from damaged medicines. As observed during the household interviews, the poor urban livestock keepers suffer most because they simply cannot afford to buy the medicines.

Segerea senior seminary school

It is a private institution run by the Catholic Church of Tanzania. It has been in the livestock keeping business for about two decades. It occupies an area of about seven (7) acres for fodder cultivation primarily in order to cater for its own livestock and for sale in case of surplus (Plate 15). The school keeps a wide range of livestock (see Table 4.17).

Plate 15: Fodder production by a religious institution

Table 4.17: Livestock keeping at Segerea Seminary

S/No.	Type of livestock	Quantity
1.	Dairy cattle	60
2.	Goats	6
3.	Rabbits	30
4.	Pigs	450
5.	Broilers	150
6.	Layers	300
7.	Geese	30

Source: Field surveys, 2002.

The institution has 12 permanent employees categorised according to their type of livestock. Pig (4), Dairy (3), Poultry (2), Farm Assistants (2) and a Driver (1). The institution gives employees temporary employment on contract basis. The main activities of the institution include:

Keeping livestock for commercial purposes.

Selling fodder- the prices depend on the type of transport- pick up, TShs. 2,500 while for Land Rover ranges between TShs.3,500 to TShs. 4,000 and for Wheelbarrow it is TShs1, 000.

The main problems encountered are:

- Long dry season affecting production of fodder
- Frequent outbreak of plant and animal diseases affecting fodder as well as livestock
- The storage system available is quite unreliable. This problem leads to rotting of grasses before the planned period for consumption begins.

Mitigation measures include:

- Slashing of wild fodder is done normally during rainy season and stored for use during the dry season
- Constructing Seminary's own cattle dip to reduce frequent outbreak of diseases.

Informal groups/NGOS

Pasture sellers along Mandela road at Tabata Relini – Ilala Municipality.

There are over 100 small groups of young people (between 3 to 12) in the city engaged in slashing wild fodder and transporting it to the selling centres along all major roads leading out of the city centre. These groups are totally independent and they operate on the market

basis, that is, supply and demand conditions. For the purpose of in-depth analysis, one group whose selling point is located at Tabata Relini was selected. Almost at any time during the day, there is a vehicle loading fodder from this station. Tabata Relini is a group of seven (7) young men which started this activity in 1991. Most of them started as workers for livestock keepers in the city of Dar es Salaam. They are now slashing, transporting and selling wild fodder (Plates 16 and 17). Their main customers come from Kimara, Mbezi, Kinondoni and part of the city centre. The price for a bundle of grass is TShs.5,000/= and the group sells an average of 10 bundles per day[19].

Daily activities include slashing fodder every morning, transporting it by pushcarts and occasionally hired vans in the afternoon and selling it in the following day. The areas that are rich in fodder are Luhanga, Kigogo, Mabibo and Kimanga river valleys and some neighbourhoods along Nelson Mandela road (Plates 16 and 17). This is about two to three kilometres from the selling point (Tabata Relini).

Plate 16: Informal groups of fodder supplies

Plate 17: Roadside informal group selling fodder

[19] 1 US Dollar buys about TShs 1,000 in the Bureau de Change, February 2002.

Problems

- During the rainy season, most lowland areas are flooded, therefore, become inaccessible
- There are few customers during the rainy season resulting in low prices.
- Workers suffer insects and snake bites

In order to understand how informal groups that are selling fodder along the major roads interact with poor livestock keepers particularly in the city, the SWOT analysis tool was used. The major strength of the selected group was the availability of wild grass (referred here as fodder) within one to three kilometres from the selling point. Therefore, the group does not commit any resource in the production of fodder. Indirectly, cheap access to wild fodder enables poor livestock keepers to access livestock keeping industry easily.

The group is, however, weak in storing the slashed and hauled grasses during the rainy season when most livestock keepers, especially the poor can feed their livestock through free ranging in the adjoining open spaces. Also, lack of knowledge on forage results in less profit maximisation and less optimal use of fodder.

The major opportunity for this group to excel its business is the growing market due to progressive increase of livestock keepers in the city and the abundance of unskilled labour in the city. This in turn, enhances the reliability of a relatively affordable fodder to the poor livestock keepers living in the built up areas.

On the other hand, the Tabata Relini group finds itself threatened by the city by-laws regarding environmental conservation. Excessive pasture harvesting has been blamed for accelerated soil erosion, especially in the riverbanks and steep slopes in the city. Also, lack of policy to promote the activities of these informal groups leaves them vulnerable to regular clashes and relocation of their selling points. This is a problem because, like in many other groups, the fodder selling point of Tabata Relini group is virtually on the non-motorised transport path (walkway) which is often conflicting with the intended users. Ultimately, it is the poor urban livestock keeper who suffers most because any disruption in the supplies of fodder in the city leads to increased prices for fodder.

4.6 Policies and legislation

In Tanzania, livestock keeping in urban and peri-urban areas falls under one umbrella namely urban agriculture. According to the sustainable Dar es Salaam Project (SDP) of the Dar es Salaam city council, urban agriculture is defined as carrying out farming activities in the built up areas where open spaces are available, as well as keeping livestock (dairy cattle, goats sheep, pigs and fowl) in the built-up areas (DCC, 1997)[2]. According to the Town and Country Ordinance (CAP.378), (Urban Farming) Regulations 1992, section 78, '' urban agriculture includes plant and animal husbandry and shall be recognised as a legal urban land-use[3], with respect to livestock keeping''; the regulation further stipulates that "No person shall, except where that person practices zero grazing, graze his animal in an urban area'' (Government Notice No. 10 of 5/2/1993, page 10) This law however, does not provide

[2] (1997): Proposition Paper: Managing Urban Agriculture in Dar es Salaam, Tanzania.

[3] Before this amendment came into force, crops grown in the urban areas especially the built up areas were slashed and animals found roaming around were confiscated by the urban authorities. Van Den Berg (1984) in Lusaka, Zambia, on his study about land development in rural-urban areas of Lusaka

special focus or reflections on the need of the poor urban livestock keepers' the majority of whom practice free ranging system in the urban areas.

Although the City Council of Dar es Salaam recognises urban livestock keeping, there are as yet no sound mechanisms in place to reflect and address the needs of the diverse group involved in livestock keeping in urban areas. However there seems to be agreement that livestock keeping contributes significantly to the socio-economic development of the city (Mlozi, 1995; Sawio, 1994; Mvena, 1991).

Some studies of Urban Agriculture, including livestock keeping (*Ibid*), have clearly shown that this activity serves as a survival strategy for the urban poor (the jobless, low income dwellers in unplanned congested areas, poor women, and youth). The major shortfall in the law is an inability to realistically reflect on urban poverty and an appreciation of the diverse groups that are keeping livestock in both the urban built up and peri-urban areas. Worse still, there is no policy to provide the framework for keeping livestock in urban areas. The 1983 Agriculture and Livestock Policy remains silent on the urban scene.

Furthermore, critical assessment of the Dar es Salaam City Council By-law 1989 (Animals in the City Area) show some ambiguities in its operation and, more importantly, in recognising the existence of poor urban livestock keepers. The by-law stipulates that "no person shall keep any animal within the city area unless he has obtained from the City Director a permit in the form of schedule A". The way in which all animal keepers must obtain permits from the City Director is not explained. Lack of clarity on the procedures to obtain permits and its associated red-tape could be one of the major reasons why small poor livestock keepers do not know or apply for such permits. Its implication is poor data base on numbers,

types and characteristics of livestock in the city council and lack of public institutional support to the poor urban and peri-urban livestock keepers. Preliminary surveys in this scoping study show that most livestock keepers are not even aware of these by-laws. For those who are aware, they do not see the benefits of applying for permits. This is a weakness on the part of the laws pertaining to livestock keeping in urban areas. Other identified weaknesses (which do not help the poor livestock keepers) include:

- Lack of explanation on the criteria for deciding on four animals.
- Lack of architectural model or standard shed suited for animals in urban built up areas.
- Free ranging system or open grazing goes on unchecked without adequate enforcement of the by-laws.

Government planned areas like Oysterbay and other high density and unplanned areas including the most densely populated wards of Keko and Kurasini are continuing to keep large numbers of livestock instead of four heads of cattle stipulated in the by-laws. This is a demand which in practice is almost impossible to maintain by the farmer or police by the authorities especially in high density and unplanned areas. Livestock keepers may start with 4 cattle but in the long run it becomes impossible for owners to maintain the number as reproduction continues. Some sections of the city by-laws require all livestock keepers to practice zero grazing, and construct proper sewerage for waste water and should keep their own and neighbouring environment clean. Most respondents do not even know any legislation pertaining to livestock keeping in urban and peri-urban areas. This shows ineffective enforcement of city by-laws, posing a major threat to public health, causing an increase of land use conflicts and in some cases conflicting with vehicular traffic.

Health hazard issues related to livestock keeping e.g. removal of dung which piles on alley ways between plots/houses causing environmental degradation and threatening public health are on the increase.

These are observed deficiencies and weaknesses on the part of the local government (Dar es Salaam City Council), which raises one major question whether the poor livestock keepers engaged in cattle rearing in densely populated areas for instance, should be encouraged to continue with the practice however sympathetic decision makers may be. Findings show that few livestock keepers prefer to move to peri-urban farms largely because of possible increases in costs of supervision and lack of money to buy peri-urban land which is reasonably accessible to the urban markets.

The Ministry of Agriculture and Cooperatives recognises the importance of urban agriculture because it supplies limited extension services and takes serious note of what is produced in urban areas, especially Dar es Salaam. This is an opportunity for a meaningful intervention in this sector. However, there is little attention to urban agriculture compared to rural agriculture and even less prioritised is the urban livestock keeping, particularly, the needs of the poor[4]. There is insensitivity about the diverse nature of groups, especially the needs of the poor urban livestock keepers.

Dar es Salaam City Council also has an opportunity to seize in supporting small and poor urban livestock keepers. This is connected with facilitating movement of livestock in high density residential areas to peri-urban areas where credit schemes to facilitate access to land for the poor owning livestock, could be arranged using livestock as collateral. For the urban poor engaged in informal grass/fodder cutting and selling along the road reserves, arrangements can be made to promote growing of fodder on peri-urban farms as emulated by Segerea Seminary. This activity together with generation of biogas from the animal waste could provide the urban poor with employment in the livestock industry.

Lack of capital has been regularly pointed out as the major constraint for improved living standards among the urban and rural poor (Rakodi, 1999; Mkinga, 1999); yet household socio-economic relations are rarely considered as capital for increasing purchasing power. In fact, socio-economic relations play an important part in the ability of households to adjust to changes in a foreign environment. This phenomenon, where low purchasing power appears to be the driving force to realise "the peri-urban promise," is elucidated by the local community of immigrants in Nyantira. Indeed, the primary capital of the households in Nyantira is the social ties and human energy of the young population[20]. This is further enhanced by the home-based nature of the employment generating activities that widens the scope to optimise the use of household labour, and reduce commuting costs.

Nyantira portrays an example of a neighbourhood where values and norms are largely shared, penalty mechanisms are enforced, and social ties are enhanced through regular meetings (also see Acheson 1995). The social cohesion is further bonded by the fact that they all speak a common language, have a kin relation and share a common goal. For instance, poultry keepers help one another through informal loans of which recovery is based on social trust.

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[4] In the Ministry of Agriculture there is a unit on horticulture, but few of the activities are linked with say urban livestock (Dec, 1999).

[20] Discussions with the committee of the Nyantira Development Association (NDA), on 8th October 1998.

These local arrangements have been protected by the local community because they hold strong implications on the effectiveness in the local economy. Between 1998 and 1999 two residents specialising in ferrying eggs to the city markets were repatriated back to Tarime by the committee of elders because they failed to pay back the money to the poultry keepers. The community supported this decision because they felt that this behaviour was putting into jeopardy the socio-economic relation that is central to the sustenance of poultry projects. More important are the economic relations between different actors that permit access to land, shared information on egg prices in the city markets, and knowledge in keeping poultry. The three to six months that the guest households spent with their hosts together may be considered as an on-the-job training period. Almost every four households are served by one egg-ferrying cyclist who transports eggs to the city markets and remits the sales to the poultry keepers upon coming back. Social trust, therefore, plays a big role in the economy of the households without which no one would allow eggs to be taken away without prompt payments. This arrangement scales down the number of trips that each poultry keeping household would otherwise make to the inner city. Nearly 90 per cent of the households went through this process before opening poultry farms.

5.0 Future Direction of Research

While studies on urban and peri-urban farming in Dar es Salaam are many, specific studies on livestock in urban and peri-urban Dar es Salaam are very scanty. The need for a robust study, therefore, as indicated by the scoping study is high. The future study should focus on investigating and understanding livestock keeping particularly for the urban poor as an industry. The investigation and analysis should be geared to a systematic understanding of the detailed processes through which the livestock industry, in both, urban and peri-urban areas exists. Table below (Table 5.1), provides some insights regarding major areas for future research.

Table 5.1: Future direction of the major research

Sector	Recommended areas for further studies
Animal husbandry practice	Searching for better husbandry practices under restricted space, poverty and land ownership Transferring lessons of experience in peri-urban on linkages to the urban setting (with modifications) Resource flow (technology, manpower and innovations) from urban to peri-urban zone Distribution of benefits accruing from livestock keeping Conditions of instituting credit facilities for the urban poor especially in the peri-urban zone Health and safety issues in foraging and waste management Relationship between livestock keeping under poverty and the environment Extent of child labour in livestock keeping particularly in animal feeding and foraging Efficiency in marketing livestock products with focus on information flow
Institutional framework	Whether existing by-laws that condoned or prohibited certain types of urban agriculture activities were adequate to handle problems caused by livestock keeping today and in a foreseeable future Whether livestock and poultry keeping could continue to be carried out soundly into very high density urban residential areas[1] Searching for ways through which networking among institutions involved in livestock keeping can either be established or enhanced and properly coordinated. Minimum standards of integrating informal groups in livestock keeping

[1] This applies to areas such as Keko and Manzese where roofs overhangs of adjacent houses are closely overlapping

6.0 Conclusions and Recommendations

The diversity and extent of livestock keeping in Dar es Salaam does not offer one the opportunity to come up with blanket conclusions and recommendations. This is a complex issue requiring specified studies investigating livestock keeping by the urban poor as an industry. However, several conclusions and recommendations based on the scoping study can be drawn.

Most urban poor in Dar es Salaam live in unplanned high density areas. One of the consequences of high densities include, among many other factors, limiting poor households from engaging in urban agriculture including livestock keeping. Thus, the practicality of poor livestock keepers to cope with this contradicting situation remains questionable.

Although cattle keeping appear to be a preference and most lucrative activity to some poor urban dwellers, most urban poor have very limited resources, particularly land and capital. This is a policy issue to be looked at, especially by exploring possibilities of introducing credit facilities for the urban poor.

The natural fodder (grass) slashed and collected from the river valleys was reported to be prone to chemical pollution. This study also confirmed that there were cases of animals dying because of feeding on poisoned grass. Future research should try to answer this question by linking the food supplies with the coping strategies of the poor livestock keepers and the security of products to consumers.

There are varied responses to unfavourable market conditions by different livestock keepers. Indeed, some of the responses seem unnecessarily costly due to possibly lack of effective information flow about the markets. A future study should look at the information flow on the markets in order to optimise the number of customers of the livestock products.

It was discernable that livestock are largely kept under abject conditions of poverty. A more robust study is needed to explore the process of keeping livestock in a poor urban area. In this case, the analysis will focus on livestock keeping as an industry.

Although cattle keeping appears to be a preference for many and the most lucrative activity to some poor urban dwellers, many urban poor are limited by the demand for space, ownership of plots and capital. This is a policy issue to be looked at especially by exploring possibilities of introducing credit facilities for the urban poor.

Raising capital through gifts for starting livestock keeping activities is an indication of strong social ties within local communities. In order to generate more knowledge, this relationship ought to be further researched preferably from the *social institution* point of view.

Small scale livestock rearing by the urban poor e.g. small poultry units or local fowl projects can be accommodated in small structures around houses. The structures must be temporary in nature; high density residential areas and livestock keeping should be limited to poultry whose size should not pose a problem to public health. Large scale poultry keeping above 500 chickens should be restricted or transferred to the peri-urban areas or super low density areas such as Oysterbay.

Although this study established that the revenue from selling livestock produce were ultimately benefiting the households, further research on gender issues should focus on who decides the share of each member of the household to the benefits.

It is difficult to conclude on and recommend the size of 4 dairy cattle because of lack of the basis used to arrive at the figure. Notwithstanding, it is strongly recommended that dairy cattle are kept on Zero-grazing.

Production and selling of fodder by the poor informal sector/groups should be encouraged especially in large undeveloped institutional sites surrounded by built-up landscapes. Furthermore, fodder cultivation in the peri-urban zone should be encouraged. Open grazing should only be condoned in peri-urban areas of e.g. Kigamboni, Nyantira and Kimbiji which are nearly of rural settings.

Finally, in view of the importance of livestock keeping in the city's economy, urban development planning and management should innovatively integrate livestock keeping with the view to accommodate some limited needs of the urban poor.

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Appendix: Checklists

A: Directed to the livestock keepers

General Information on the City:

Location: geographical, climate, population, population density, growth rate, size (ha) from secondary sources (one and half page max.)

Distribution: High-density and Low-density areas in terms of population and the location of low-income households within the city, city boundaries and delimitation of urban and peri-urban areas including, among others, land and land use characteristics.

Households

Street …… Ward …… Municipal ……

Gender Aspects of Livestock Keepers

Name	Sex	Age	Work Distribution	Distribution of Benefits

How many livestock do you have?

What species of livestock?

How do you practice husbandry i.e. feeding, scavenging, and foraging practices; shelter, animal health and have access to clean water?

Who decides on husbandry practices?

Who decides on buying/selling of animals?

Reason for keeping animals

Is it commercial or subsistence livestock keeping

What is the contribution of livestock keeping for your economy?

What is the contribution of livestock keeping for your family food security?

Are there any links with your relatives/friends in the peri-urban/urban and rural environment?

Do you have any link in terms of resources flows from urban/peri-urban or rural?

What is the source of your capital?

Are the sources adequate?

Will they continue to be adequate?

Are raw materials for animals available?

Do you have access to credit?

What physical assets do you have?

What kind of infrastructure and utilities are available in your area?

How many labourers do you have?

Is the manpower available in time?

Is it labour intensive or capital intensive?

Where is your market for products?

What is the price?

Who are your competitors in your area

Where do you get the information about new species, markets for your products, availability of raw materials?

Is there any particular prejudice, likes or dislikes for the particular livestock in the community?

How is the small – livestock keeper getting adjusted to the market?

How are the people accepting livestock?

B: Directed to the Institutions

Institutional questions meant to supplement information gathered from SWOT[21]

Inventory of institutions in terms of types:

Public

Private

Civil societies e.g. informal groups, CBOs, NGOs, etc

[21] Please, note that not all questions listed were relevant and, therefore, asked to every institution.

How many livestock keepers are there in your street/ward/municipality?

What type and species of livestock do you keep?

Location	Number	Type	Species
Street			
Ward			
Municipality			

Type of institution

What contact address, telephone, e-mail, website, etc.?

What are the main problems/constraints (or in your operations) facing livestock keepers in your area of jurisdiction?

What are the needs of poor livestock keepers?

Is there a policy on livestock keeping?

Is there legislation in place regarding livestock keeping in your area?

Do you have any regulations or by-laws regarding livestock keeping?

What is the land ownership arrangement?

Land use issues – e.g. how does one manage to keep livestock in high density residential areas? How is this received by neighbours? The formal institutions? etc.

What environmental problems can be related with livestock keeping in your area?

How do you mitigate them?

In all cases narratology is encouraged in order to justify some of the findings of some of pertinent issues discerned in the field. Thus, evidence on SWOT is central to the value of data collected.