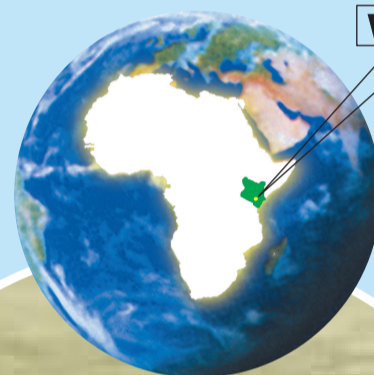


Scoping Study of Urban and Peri-Urban Poor Livestock Keepers in Nairobi



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May 2002

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1 OVERVIEW AND SYNTHESIS

1.1 Intents of the Study

The aim of the study, according to the terms of reference provided by Natural Resources International Ltd is to determine the issues facing poor livestock keepers in the urban and peri-urban environs of Nairobi through provision of information on the following areas: Introduction to the city of Nairobi; Institutions representing the needs of poor livestock keepers; Characteristics of livestock keepers; Livestock species and constraints; Knowledge deficiencies and research opportunities of both reactive and predictive nature; Policies associated with livestock keeping and; Environment, public health and animal welfare.

The methodology provided for sourcing the required information comprises: Information from a limited survey of representative communities, through case studies, using a questionnaire; Information from stakeholders through interviews; using checklists; and through stakeholders brainstorming, using SWOT analysis; and Information from official and grey literature.

Information from a limited survey of communities was gathered through fieldwork, using a questionnaire, from 56 respondents keeping livestock in the poor urban and peri-urban areas of the city. The eight areas selected included Soweto-Kahawa, Kibera, Kangemi, Maili Saba - Silanga, Kawangware, Bulbul - Ngong, Kinyago and Sinai (see Map).

The fieldwork was carried out between 22nd March and 4th April by two senior researchers, Zarina Ishani and Patterson Kuria Gathuru.

Information from stakeholders through brainstorming, using SWOT framework was generated at a workshop held at Mazingira Institute on 17th April. The stakeholders represented at the workshop included six men and five women livestock keepers, four government livestock production and extension officers, a researcher from the Kenya Agricultural Research Institute (KARI). International Livestock Research Institute (ILRI) and SIUPA were represented by SIUPA's research and development coordinator for sub-Saharan Africa, Dr. Diana Lee-Smith.

Other stakeholders who were invited for the workshop but were unable to attend included the Town Clerk of Nairobi City Council, Mr. Andrew Mugambe, the Provincial Director of Agriculture, The local administration officer (the Chief of the area), the Kenya Veterinary Association and Farmers Choice Company.

Mazingira Institute, comprising Zarina Ishani, Kuria Gathuru and Davinder Lamba who facilitated the application of the SWOT framework, conducted the workshop (in Kiswahili with interpretation in English).

Information from official and grey literature was compiled from several documents, which were reviewed by Zarina Ishani. They included government publications, other publications, research reports, workshop proceedings and newspapers.

Annex 1 of the report provides the Mazingira Institute (consultant) interpretation of the terms of Reference of the study. It contains an Intent Map showing the means-ends of the study, checklists for the survey of representative communities and stakeholder interviews,

application of the SWOT framework, in its reverse form as TOWS, thereby placing emphasis on the surrounding environment of the livestock keepers.

Annex 2 is a map of Nairobi showing areas selected for the study. Annex 3 has photographs of livestock keeping by the poor in Nairobi. Annex 4 has the profiles of respondents from a limited survey of communities. Annex 5 is the list of participants who attended the Stakeholders Brainstorming workshop.

1.2 The Poverty Situation¹

The major challenge facing Kenyans is how to deal with poverty. Demographic factors such as high population growth (3.7 % between 1979-1989 and 3.5 % between 1989-1999), rapid urbanization, poor economic performance, leading to high unemployment and poor governance, are the dominant causes of widespread poverty. Kenya's population is 28.7 Mi (RoK 2001). In 1962, the urban population was 7.8 percent of the total population, whereas in 1999 it was 34.8 percent (RoK 2001). Nairobi's population has grown by 48 percent since the last census taken in 1989 (Daily Nation, March 1, 2000). However, Kenya's GDP growth rate has declined from 5 percent in the 1970s to 1 percent in the 1990s (Kenya Economic Survey 2000). In the year 2000, Kenya's growth was negative 0.3 percent.

The government of Kenya has made poverty eradication as a national challenge. A National Poverty Eradication Plan (NPEP) 1999-2015 has been developed. The Plan (NPEP 1999) states:

"..the 'poor' are not a single group with only a single problem of lack of money. People experience and view poverty in different ways. Poverty also has many dimensions - shortened lives, illiteracy and social exclusion, and the lack of material means to improve family circumstances - and these dimensions can overlap in different combinations. For example, men and women view poverty differently. Women have much weaker access to, and control over, capital assets such as land. Priorities for public sector intervention are therefore different for men and women".

The Welfare Monitoring Survey II, defined poverty in terms of total household consumption expenditure i.e. how much a household spends. This includes expenditure on food and non-food items as well as the value of non-food produced and consumed at home (see Table 1.1). A member of the household is considered to be poor if he/she cannot afford some recommended minimum expenditure on food plus a minimum allowance for non-food items. The minimum food expenditure, which then forms the Food Poverty Line, is determined on the basis of a recommended minimum nutritional requirement (calories) for the maintenance of human body and healthy growth. The analysis gave the food poverty line a minimum of Kshs. 875 per month for urban areas (GoK, 1999).

The socio-economic indicators used in the Welfare Monitoring Survey II (1994) were: demography, education, health and child nutrition, water and sanitation, cooking fuel, agriculture, employment sector, income and expenditure. Table 5 provides some relevant information on these indicators.

¹ Information Source; grey literature

Table 1.2 shows that the poor had larger family sizes, especially in the rural areas. The scoping survey showed the same trend. The larger sizes put a strain on family resources, as more needs to be spent on food, education, health and other necessities.

More than ninety percent of both poor and non-poor had managed to complete primary education. Fewer poor had made it to secondary level. Education figures showed that acquiring even a post secondary education did not guarantee escaping poverty. It was the non poor who managed to go through post secondary and university education.

Table 1.2 shows that almost all households in urban areas in Kenya had access to safe water in 1994. Safe water sources included treated and untreated surface water. However, access depended on where the household was located and not whether it was poor or non-poor.

Safe sanitation was defined as a pit latrine, ventilated improved latrine, water closet, and pour flush. More than three-quarters of the population had access to safe sanitation. However, those living in urban areas were better off than those residing in the rural areas, with an urban non-poor being significantly better off than a rural non-poor.

The scoping study of poor livestock keepers showed that access to basic amenities has deteriorated in the slum areas of Nairobi since 1994. Out of the eight areas surveyed, only two had access to adequate water supplies. In the other areas, water had to be purchased from private vendors. The poor could not afford to buy the required amounts and only bought the absolute minimum. Sanitation was very poor in all areas, with Kibera being the worst one. Demographic changes and rural-urban migration have contributed greatly to the worsening of the infrastructure situation. The government does not have enough resources to supply even the most basic services to the slum areas.

Table 1.1 Urban poverty

	The poor below respective poverty lines		
	Adult equivalent	Household members	Households
	Percent	Percent	Percent
Food Poverty line (Kshs. 874.72)			
Total	29.2	29.3	6.9
Nairobi	27.3	27.8	7.0
Mombasa	33.1	31.8	6.1
Kisumu	44.1	44.0	8.9
Nakuru	37.2	37.6	9.4
Other Urban	27.1	29.9	6.4
Overall Poverty line (Kshs. 1,489.63)			
Total	29.0	29.3	7.1
Nairobi	25.0	26.6	6.8
Mombasa	33.1	31.9	6.7
Kisumu	47.8	48.2	10.3
Nakuru	30.0	31.3	7.3
Other Urban	28.7	29.0	7.1
*Hard-core Poverty line (Kshs. 874.72)			
Total	10.1	10.4	2.2
Nairobi	9.3	9.7	2.0
Mombasa	7.6	8.0	1.6
Kisumu	19.6	19.7	3.9
Nakuru	8.6	9.4	2.1
Other Urban	11.0	11.2	2.4

Adult equivalent: consumption per adult equivalent (0-4 years consumption weight of 0.24; 5-14 years - of 0.65; 15 years and above - 1.0)

* Hard-core poverty line: same as food poverty line except that the total household consumption expenditure is used instead of food expenditure.

Source: Extracted from CBS, 1999

Table 1.2 Some socio-economic indicators

	Rural Non-poor	Rural Poor	Urban Poor	Urban Non-Poor
Average household size	4.9	6.5	3.7	5.1
Household Members who ever attended School	80%	70%	89%	91%
Highest level of education reached by Region and Poverty	Primary (90%) Sec. (21%) Post Sec. (3%) Univ. (2%)	Primary (90%) Sec. (11%) Post Sec. (1%) Univ. (0%)	Primary (90%) Sec. (29%) Post Sec. (0.5%) Univ. (0%)	Primary (90%) Sec. (45%) Post Sec. (10%) Univ. (3%)
Distribution of households with access to safe water	35%	25%	85%	92%
Distribution of households by access to safe sanitation	80%	70%	90%	99%

Source: Extracted from CBS, 1999

1.2.1 Livestock keeping

The urban poor began to emerge as a vulnerable group in nutritional terms in the nineteen seventies but the phenomenon of urban agriculture was not noticed until the nineteen eighties. There have been few research studies undertaken on urban agriculture in Kenya. The most comprehensive one, covering six cities was carried out by Mazingira Institute in 1985 (Lee-Smith *et al*, 1987).

The study showed that more than half kept livestock in the six towns in which the research was undertaken, although only seventeen percent kept them in the urban areas. The figure for Nairobi was seven percent. Most of the urban farmers were women.

Livestock was kept mainly for subsistence purposes. It was found that chickens and rabbits were the most common forms of livestock kept in the city, although there were many goats and stall-fed cattle as well. There were 23,000 head of cattle in Nairobi at the time of one survey in 1985.

Livestock products, however, were kept for sale and for subsistence. The survey showed that around 50 percent of the milk and about 25 percent of the eggs were consumed. Livestock was also kept as a source of protein. Access to protein is a particular problem, as most people cannot afford to buy meat.

The Welfare Monitoring Survey (1994) showed that in Nairobi region, non-poor own 0.1 cattle and the poor own 0.0 cattle. The same was the case with owning goats and sheep. In urban areas of Kenya, the non-poor owned 1.1 cattle and the poor own 0.5. In rural areas the non-poor owned less cattle than the poor (4.1 compared to 5.0). Sheep and goats by both the poor and non-poor in rural areas were 4.7. In the urban areas, the non-poor owned more cattle (1.1) than the poor (0.5) but the opposite was the case in the ownership of goats and sheep (0.7 and 1.5 respectively). Taking the country as a whole, the non-poor owned 3.3 and 3.7 cattle and sheep and goats respectively whilst the poor owned 4.5 cattle and 4.3 goats and

sheep. Thus, on average, the poor owned more head of cattle, sheep and goats than the non-poor households and the number of livestock was greater in rural areas than in urban areas.

A study of cattle raising in Tanzania (Njuki and Nindi 2000) showed that 54% of the cattle are raised in the urban areas and the rest in the peri-urban areas of the city of Dar es Salaam. Nineteen and 38 per cent are kept in high and medium density areas respectively and 42 per cent in the low-density areas. Thus it is not only the poor who practise urban agriculture in both Kenya and Tanzania.

Trends in food consumption show that urban expansion in many countries has implications not only for urban food security but also for strategic urban planning. The FAO estimates that food consumption in 2000 for Nairobi was 4,805,000 tons and in 2001 this was expected to rise to 7,984,000 - a 66% increase. This means that the demand for land, housing, industry and infrastructure will compete with agricultural production. Significant food production through urban and peri-urban agriculture takes place in a number of cities; particularly in Kenya and urban producers often lack suitable land, safe water and adequate inputs.

The incidence of poverty of the national population was 43 percent, out of which females comprised 56 percent in 2000. Nairobi's poverty stood at 25 percent. This means that almost one in two Kenyans and one quarter of Nairobians are living below the poverty line (Kenya Economic Survey 2000). Keeping livestock has been one of the avenues sought by the poor in Nairobi in trying to alleviate poverty.

Based on the several discussions and visits the study team identified the “poor” areas of Nairobi and came up with eight study sites (see table 1.3).

1.3 The City of Nairobi²

1.3.1 City Location

Nairobi is situated in the south east of Kenya. Its altitude is 1700 m above sea level. It was established in 1895 when Britain decided to colonize Africa. The British, in their quest for constructing the Uganda railway (linking up Mombasa with Lake Victoria), set up a small camp in 1896 to serve as a depot for trade between the coast and Uganda. Thus Nairobi grew from a caravan-trading depot to Kenya's largest city.

The white settler population developed a pattern of racially segregated urban development through zoning and social pressures. Africans were not allowed to own freehold property within the city. They could only settle on the eastern boundary or outside. There was very little planning in the early years and by 1920s the settlers and the native Africans had set up residential areas without a proper plan having been put in place (Lee-Smith and Lamba 1998). Thus a number of settlements grew haphazardly on the outskirts of the city.

² Information source: grey literature

1 3.2 Population and population density

Nairobi was designated the capital of the British government in 1905. In 1906 it had a population of 11,000 and by 1926 it had grown to 30,000, reaching 109,000 by 1944. In 1962 its population was 267,000 and by 1999, it had grown to 2.137 million.

In 1963, the city area was 90 square kilometres (the old city) and was extended to 690 square kilometres in 1973 as part of the Nairobi Strategic Plan, 1973-2000 (Mbiba 2001). In the year 2000, Nairobi covered an area of 941 square kilometres due to boundary changes. With a population of 2.137 million people in 1999, the average density of the city is 2,270 per square kilometres. If 114 square kilometres are deducted for Nairobi National Park, which is located in the city boundary, the average density is 2,939 per square kilometres.

Densities, however, vary widely within the city. The high-income areas have average densities as low as 300-2,100 people per square kilometres, while low-income areas have 33,000-43,000 (Development Solutions for Africa, 1993). Table 1.3 gives the densities of ten sub-locations having one third of the population (1.3 million in total in Nairobi according to the 1989 census).

These are mainly slum areas and are informal settlements. Currently, fifty five percent of Nairobi's population of 2.1 million lives in about 78 slums or informal settlements, comprising 5 percent of the total land area of Nairobi.

The rise of informal settlements in Nairobi dates back to 1927 and to 1948 when master plans were prepared based on European interests. Strict land use planning codes were introduced for development over a twenty-year period. However, land speculation and a land market thrived among the settler community. The peri-urban lands were thus sub-divided by the settlers and land invasions were common, as housing problems became acute. The "illegal" invasion and growth of informal settlements began before independence in 1963.

Economic and demographic factors have been the major causes for the growth of informal settlements (Table 1.3). With the country facing severe economic hardship in the last two decades, the move to informal settlements has been continuous. Persistent unemployment, poor economic growth leading to frequent retrenchments and high population growth are some factors. Rural–urban migration has been on the rise as well. High rental costs in the city have exacerbated the problem, with even some middle-income earners moving to these settlements. The economic, spatial and demographic growth has posed serious challenges for housing, employment creation and general service delivery by the government. Market liberalization, through structural adjustment programmes, have added an extra burden on to poor people, particularly on women.

Economic growth and urbanization have led to an increased demand for land for built development. Land has been converted from agricultural (coffee) growing to residential and out of town shopping centres, especially to the southwest, north and north east of Nairobi. In the north, the coffee growing areas, which have been converted, are Runda, Muthaiga and Gigiri.

Changes in government land policy have also played a role in real estate developments. Before 1990, for instance, minimum sub-division in southwest (stretching from Karen Langata Road and Ngong Road) was 5 acres. After 1990, this was reduced to half an acre. Another important factor is that corruption at all levels in the government has led to land

grabbing, even those areas meant for utilities and road reserves being traded for monetary gain.

Table 1.3 Informal settlements and study areas

Administration area	Poor area/Slum	Population	Area covered by informal settlements ¹ Hectares
Dagoretti		186,250	373
	Dagoretti Kangemi Karandini Kawangare Muslim Mutuini Ngando Riruta Waithaka		
Embakasi		31,890	73
	Gitari marigu Maili Saba/ Silanga Mwengenye Ruai Soweto		
		158,115	227
Kasarani			
	Garba Githurai Kahawa Soweto Kamae Kinyago Korogocho Mathare Njathini Thome		
Langata		251,040	229
	Bomas Kibera Mitumba		
Makadara	Express Mariguini Mukuru		
Parklands/Westlands		7326	24
	Runda Kitisuru Spring valley		
Pumwani		11,890	14
	Buruburu carton Kinyago/kanuku Kitui Majengo Mashimoni Kiambiu Digo Ndagoroni		
Total		748,991	1,025

Administration area	Poor area/Slum	Population	Area covered by informal settlements ¹ Hectares
Peri-Urban Athi river	Sinai		
Peri-urban Ngong	Bulbul		
Peri-urban Kahawa	Kahawa –Soweto		

Source: Matrix Development Consultants, 1994
Areas underlined – study sites

1.4 Findings and Conclusions

1.4.1 Findings

1.4.1.1 Concerning institutions representing needs of the poor livestock keepers

Only one association of poor livestock keepers was found in the study.

In the survey, none of the respondents was found to be a member of an association or knew of any current association. However, the provincial livestock extension team informed the researchers of the Baraka Self-Help Group. During the stakeholders brainstorming workshop, the association member informed the participants that the association has eight members (all men). They jointly run a pig project.

The study shows that the government institutions that work with poor livestock keepers exist in theory. In practice they are non-existent. According to the Nairobi provincial livestock extension officers, they used to go out to the livestock keepers but now do not, due to resource constraints. The study revealed that the poor livestock keepers did not know of these services and how to access them. They relied on informal means of getting information and advice.

1.4.1.2 Concerning characteristics of poor livestock keeper

The households were extended families, with married sons and daughters staying together with the parents. Family sizes were therefore large with a mean of about five members.

In male-headed households, the ownership and control of livestock products was a joint one. In female-headed households the females owned the livestock.

One quarter of the poor livestock keepers were female-headed households. A very high proportion of female headed households were in old slums of Kinyago (9 out of 11), Kibera (6 out of 7) and Kawangware (4 out of 7)

Mean age of poor livestock keepers was about 39 years. The data showed that a large proportion of young people below 35 years were involved in lived in livestock.

The length of stay by poor livestock keepers in the slums ranged from 2 to 88 years. Some said that they were born in the slums, especially in Kibera and Kawangware. Such a response may be prompted by the fact that according to Kenyan law, any person residing for more than 12 years in an area can claim ownership of the land.

The livestock keepers were mainly educated up to secondary school level and none had gone to university or other tertiary institutions. One third of the livestock keepers had no formal education.

Livestock keeping was not the main occupation of the poor livestock keepers. One third of the livestock keepers were working in the informal sector. Most livestock keepers did not indicate livestock keeping as their main occupation and from the case studies, it was found that they were making their ends meet in more than one way.

1.4.1.2.1 Concerning gender aspects of (urban/peri-urban) livestock keepers

Slightly more than half of the livestock keepers were married with 10 being single and 8 widowed.

In terms of roles and responsibilities, there was joint responsibility between women and men. However, women did most of the work. They rise early and the livestock responsibility was in addition to their normal household responsibilities such as caring for the children, cooking and fetching water. Women were mostly involved in day to day care of the livestock, such as feeding. Collecting/ purchasing of the feed and drugs for the livestock was the work of the men in the house. Waste disposal was the work of the children.

- Where large livestock, such as cattle and pigs were kept, men performed most of the tasks. In cases where the men were reemployed in formal or casual jobs, the work of looking after the livestock was left to women.
- In female- headed households the women did all the work and not the children, especially male children. Most of the time, the sons were employed or looking for casual work.
- As for control and ownership of livestock, there was joint ownership and control in male-headed households. Decisions regarding sale and use of livestock/products were jointly made in the male-headed households.

1.4.1.2.2 Concerning reasons for keeping livestock

The respondents had more than one source of income. All of them were carrying out other activities besides keeping of livestock. Not a single household was completely dependent on livestock. The households could not clearly identify the main and other sources of income. Common sources of income were from rental, retail shops, selling of vegetables, water vending, local brew, hawking, hairdressing, urban farming, and working as casual labourers and sale of cooked foods. Eight did not disclose their sources of income.

- The reasons for keeping different types livestock varied depending on the type of livestock kept. The livestock keepers indicated that they keep different livestock for different reasons. In the case of goats, sheep and ducks, the animals were sold. In the case of cattle and chickens, the products were important. Goats and sheep were not sold on a regular basis but when there was a need.
- The livestock keepers seemed to rank education as very important and said that they sold the goats and sheep when they did not have enough school fees. Thus more goats and

sheep were sold at the beginning of the year when parents had to pay tuition, admission fee, levies etc.

- Income derived from the sale of livestock was mainly for emergency or insurance purposes, as security. It was found that in general, a livestock keeper would sell one goat or sheep every three months if there was need of money. Chickens were mainly for eggs and breeding. The eggs were consumed and very few respondents said that they sold the eggs. Money from the ducks and sale of eggs was used for daily food expenses. However, the quantity of ducks and chickens kept were not large enough to bring in a substantial income.
- Most of the pig keepers said the pigs breed fast and thus money could be put for improvements of the house, education and for daily expenditures

There were only 5 pig keepers out of 56 respondents. It was difficult to find out exactly what the money from the sale of pigs was used for.

1.4.1.2.3 Concerning commercial versus subsistence livestock keeping

- No commercial livestock farming per se was found. Only milk was for commercial purposes. However, there were only 41 cattle found, kept by poor livestock keepers.
- About half (27 out of 56) livestock keepers kept livestock for subsistence and for sale. The sale of livestock was not on regular basis.
- Small livestock was for subsistence and for sale. Only one respondent kept livestock for subsistence.

1.4.1.2.4 Concerning contribution to household economy and family food security (goods or services obtained)

It was difficult to find out the exact contribution to the household food security from the study, as the livestock keepers could not quantify the contribution of livestock to the household. Majority of them said that they depended more on other sources of income, other than livestock keeping.

The only products that contributed to the family food security were milk and eggs. No by-products from livestock products were produced.

1.4.1.2.5 Concerning linkages with relatives/friends in the peri-urban and rural environments

- The livestock keepers who had small plots in open spaces for crop production used the livestock waste as manure or given free to whoever wanted it. About 20 out of 56 farmers indicated that they grow crops on small urban gardens in the city. These sites are along riverbanks, sewer lines, roadsides; open spaces and some have rented gardens in the city.
- There were exchanges of fodder (napier grass) for waste. However, these were very few.
- Only six livestock keepers had rural farms but there were no transfers of livestock/products to and from urban to rural areas. The livestock keepers said that they were too poor to own any land, whether in urban or in rural areas. The younger keepers were mostly born in Nairobi and did not have a rural home.

-

1.4.1.3 Concerning livestock species and constraints

The most common types of livestock were goats, followed by chickens, ducks, cattle and then sheep. Pigs, rabbits, geese and turkeys were fewer in number. This trend was different from the earlier Mazingira study in which the preference was for small livestock.

- Slightly more than half (31) of the livestock keepers kept only one type of livestock. The livestock keepers found it is more profitable to build rooms for rental purposes than to keep livestock, if there was space available.
- Those with more adult members in the family had more livestock than those with young children. This was because there was not enough space for living quarters and for keeping livestock.

Preference for large livestock was in areas where space was available. Livestock keepers who had started to keep livestock recently had only small livestock. Local chickens (roadrunners) rather than the hybrid ones were kept, as the cost of keeping layers and broilers was high. Rabbits were fewer in number. The reason for not keeping rabbits was that there was no market for rabbits as rabbit meat is not preferred in the slum areas. They were not sure of the risks entailed in keeping livestock, did not have money to purchase larger livestock and had not built up their stock.

Livestock keepers, who had started livestock keeping in the early 1990s, had more medium to large livestock, most of them having developed the numbers through breeding.

- The longest time livestock has been kept was found in the stable environments of peri-urban areas. The word stable means where there was security of land tenure and there was no fear of eviction. .
- Slightly more than half wished to increase livestock in the future. One-quarter (14) were undecided. Only 2 livestock keepers did not want to increase the livestock because of lack of space. The ones who wanted to increase the livestock preferred to keep more goats as the workload was less and inputs were not expensive.
- One sixth of the farmers mentioned that they would prefer to increase cattle. Very few wanted to increase the smaller type of livestock because the smaller type of livestock are prone to diseases and consequently are unreliable as a stable source of income, especially when compared to keeping of goats. Only five livestock keepers indicated that they would like to keep pigs because they were “dirty” and a lot of work was involved in keeping of pigs.

The products mentioned were milk from cows (not from goats) and eggs from chickens and ducks. Meat by-products did not feature prominently in the discussion since they do not slaughter the animals except on special occasions like celebrations and payment of dowry.

Chicken and duck eggs were mainly for breeding. Extra eggs were consumed.

1.4.1.3.2 Rearing Systems

- There were two types of rearing practices. One was free range and the other was zero grazing. At night all the animals were locked in sheds. All cattle were zero grazed except for one. This was because theft was not a problem in his area.

The rearing practice (free range or zero grazing) was dependent on the availability of space for zero grazing and theft of livestock. Free-range animals were not herded and found their own way home. Thus the livestock keeper did not have to look for feed for the livestock. This allowed the livestock keeper to do other things.

- One third of the livestock keepers had built structures for the livestock keepers inside the main house, especially for small livestock. The others had built the shelter outside the dwelling unit.

1.4.1.3.3 Inputs (land, labour and capital)

Various types of feeds such as grass, domestic waste, ready-made animal feeds, farm residue, and other waste from dumpsites were given to zero-grazed animals. Grass and domestic waste formed the main feed. The type of feed depended on the type of livestock kept and rearing system. For example, grass was fed to the cows and farm residues to pigs.

- The livestock keepers also purchased feeds. These were grass, maize bran and maize germ for the cattle, growers/layers mash for chicken. The cost of feeds for dairy meal for cattle ranged between KShs. 800 to 860 per 90kg bag. The livestock keepers, who zero fed the goats and sheep, could not afford to buy ready-made feed. All the respondents gave the goats and sheep kale stalks. Vegetable sellers or neighbours gave the vegetable residues at no charge.

The goats and sheep and small livestock were either allowed to roam freely or zero fed. The rearing system and the feed depended on whether there was space available (Kangemi, Bulbul) or whether theft was a problem (Kangemi). Pigs were fed on foodstuffs scavenged from garbage dumps or food leftovers from hotels, ready-made feed from factories, local grass (using sewage water) and waste from local brew.

Small livestock such as ducks and chickens, when kept in sheds were given chicken mash. Where the chickens roam freely, the livestock keepers could not identify the type of feed given. In all cases the rabbits were fed on vegetables and were being kept in a hutch.

- The livestock keepers, being squatters, were illegally residing on the land in six settlements. Due to insecurity of tenure, the livestock keepers were afraid of losing their livestock in case of evictions.
- Own or immediate family labour and hired labour was used in looking after the livestock. The livestock farmers found pig keeping too labour intensive compared to keeping of other livestock. However, only 5 respondents used hired labour.
- Women's schedule was tighter with some waking up at four am, going to the wholesale market in the city centre and sleeping at around 10 p.m.

- The livestock keepers did not receive any assistance from government extension workers or veterinary officers on animal husbandry. The livestock keepers depended on private veterinary services. All the cattle owners used artificial insemination when required. Private, not government, services were used.
- The livestock keepers did not have adequate information on feeds and drugs available. The livestock keepers were not sure of the use of drugs and expected the research team to help them sort out problems such as what to do for wounds, pests and diseases.

Poor livestock keepers could not afford to purchase the necessary feed, drugs and employ labour. The other necessary services were deworming, artificial insemination, spraying and extension. Traditional drugs were also used.

Money or financial means was the most frequently cited reason for not keeping large livestock, especially cattle.

1.4.1.3.4 Constraints

- Thirty-two out of the 56 respondents indicated they have problems, 6 indicated that they had no problems.

A major constraint was that of lack of space for waste disposal. The constraints were mainly inadequate space, theft, diseases, start-up capital, predators and parasites. 22 livestock keepers gave space for expansion as a constraint. Four mentioned thefts while 6 mentioned health related problems like pests, diseases and predators

- The livestock keepers did not perceive the issue of harassment by the Nairobi City Council as a constraint.
- Long distances during the dry season and inadequate feed for the livestock was cited as a problem by those who kept cattle and pigs. The cost of transport for purchase of inputs and for services was also an inhibiting factor.

Flooding during the rainy season was cited as a problem as the floods took animals away, particularly in Kibera.

1.4.1.4 Concerning knowledge deficiencies and research opportunities of both reactive and predictive nature

- Knowledge on animal husbandry was very little. About 18 livestock keepers indicated that they came to know of livestock keeping from relatives while another 25 learnt of livestock keeping from neighbours.
- One third of the respondents said that they do get information on current practices.

This was mainly from peer groups, books/magazines, other farmers, private vets and friends.

- The livestock keepers felt lack of information as an important issue in learning more about livestock keeping. Almost all the livestock keepers (50) mentioned that they would be interested in getting more information on better animal husbandry.

- The researchers' observation was that all the livestock keepers appeared to lack adequate information on current practices and access to it. From the researchers' point of view, the lack of information and communication was critical, as even neighbours did not know what the other one was using.
- Twenty-two livestock keepers said that they did not seek out any information on current practices because they felt that they had adequate skills to handle livestock farming.
- Corruption was cited in information sharing. One livestock keeper had to bribe the government veterinary officer for his services. If no bribe was forthcoming, then wrong information was given.

The informal (reja reja) shop keepers and veterinary quacks, which were the only sources of information, were ill-equipped to give correct information and advice on drugs and feed. Almost all livestock keepers and veterinary officers mentioned this problem.

The Provincial Livestock Officers said that the Ministry did not have resources to produce brochures or pamphlets for livestock keepers.

1.4.1.5 Concerning policy, associated with livestock keeping

- Slightly more than half of the respondents said that they were aware of government rules and regulations on livestock keeping. One quarter did not know of any legislation, while only the rest gave no answer to the question.

From the Ministry of Agriculture's viewpoint, keeping of livestock in urban areas is illegal in theory. In practice, the Ministry supports the livestock keepers. The Ministry's concern is the insecurity of tenure as the livestock keepers are squatters. The Ministry is in the process of drafting a policy to make urban agriculture legal.

The livestock keepers said that as far as they were concerned, the keeping of livestock is legal. Legislation did not seem to be an issue of concern to the livestock keepers. Only 6 respondents indicated harassment by the city council and another 4 by the local chief.

- One-fifth (12.) respondents said they should be some regulation in keeping of livestock. These keepers indicated that regulations for controlling nuisance, noise and to some extent, number of livestock kept, were necessary.
- Complaints by neighbours on livestock were few.

1.4.1.6 Concerning environment, public health and animal welfare

1.4.1.6.1 Environment

- Waste disposal especially, random waste disposal was a major issue from the researchers' point of view but not from the viewpoint of the livestock keepers. The waste is either disposed of in the dumping areas or in rivers. The random disposal of animal dung poses a health risk to the residents.

Where the livestock owners had urban farms, the waste was used as manure, otherwise it was thrown or given away.

Time was not enough to carry out any in-depth study of pollution of the rivers where waste was dumped.

- In the past three years, there has been eutrophication of the Nairobi Dam due to waste being dumped in the dam.

Animals being a nuisance to neighbours was not cited as a problem. .

Livestock keeping affected infrastructure such as roads, water, sewerage and electricity. In one area, Maili Saba, livestock keepers have tampered with sewerage lines to grow fodder crops for feeding their livestock (maize). Time was not enough to find out the impact of use of sewage water on quality of fodder produced.

1.4.1.6.2 *Animal Health and Welfare*

In all the areas surveyed, the people felt that the animals do not bring any health problems.

In the highly congested areas of Kibera, Kwangware, the animals were kept close to the sleeping quarters. The researchers' viewpoint was that this would cause a health risk to the residents.

The sanitation was poor in most areas. The open sewer drains served as sewer systems. The livestock drank the sewer water and the polluted dam/river water. The livestock drank water from polluted wells and springs. Wells and springs in Kangemi were polluted with waste material from the pit latrines due to underground seepage.

Deaths of animals, especially small livestock was common due to lack of space or not enough land, unaffordability of drugs, access to information on services and drugs and drinking contaminated water.

A veterinarian felt the practice of zero grazing was seen as a key constraint to better animal husbandry in urban areas. The reason given was that the animals were confined and did not have room to move about.

The stakeholders' brainstorming, using SWOT analysis came up with the findings given in Table 1.4 (ranked in order of importance and severity).

Table 1.4 Findings of the SWOT workshop

Threats	Opportunities	Weaknesses	Strengths
1. Health (diseases) and environmental hazards	1. Livestock for obtaining cash/subsistence.	1. Lack enough knowledge and skills for livestock keeping	1. Have of cash coming in from livestock keeping
2. Competition in selling of livestock/products	2. Forming networks	2. Lack enough time and own labour to tend livestock	2. Have a place, enough for livestock keeping
3. Worry about loss or theft of livestock	3. Suitable environmental conditions for diverse types of livestock	3. Lack a place, enough for livestock keeping	3. Get food from livestock
	4. Outlets for selling of livestock/products	4. Lack outlets for selling livestock/products	4. Have enough time and own labour to tend livestock.

	5. No interference from the administration	5. Lack capacity to expand livestock keeping	5. Have some knowledge and skills for livestock keeping
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1.4.2. Conclusions

1.4.2.1 Concerning institutions representing needs of poor livestock keepers

There are hardly any institutions representing the needs of the poor livestock keepers or the poor themselves. Nairobi, being one of the eight provinces of the country, has provincial livestock extension services, which are out of the reach of the livestock keepers. They are not aware of the existence of the services and do not know how to access them. The provincial livestock officers do not reach the livestock keepers because they are constrained by the lack of resources needed to do so.

Exploring the possibility with the livestock keepers of forming “a network association” in the city and its environs thus exists. This will promote awareness of provincial livestock extension services and how to access them. This apparent opportunity to bridge the gap can be brought to the attention of interested NGOs and other parties.

Interested parties could encourage formations of cooperatives of poor livestock keepers, which could deal with marketing of livestock/products, purchasing of inputs, accessing and sharing of information among others.

1.4.2.2 Concerning characteristics of poor livestock keepers

Livestock keeping supplements the well being of the poor although it does not appear to be their main occupation. They meet their ends in more than one way.

Unlike the 1985 Mazingira study, the scoping study showed that livestock keeping did not feature as a very important income earner. In the previous study, livestock was for subsistence and for sale. This latter study shows that livestock for subsistence was almost non-existent and the livestock were sold only when there was an emergency or a crisis situation such as when school fees were due and when they had health problems.

A third of the livestock keepers were also informal workers. They lived in extended families, average age being just below forty, a third with no formal education and secondary school being the limit. Female-headed households were about a third with women owning the livestock and many were in the older poor areas.

Livestock is jointly owned and controlled in male-headed households and there is great variation in the length of stay of livestock keepers.

The livestock keepers were young in age and this implies that they have few choices in terms of earning incomes, as the formal economy is unable to absorb the youth that have completed secondary school and even tertiary education.

The livestock keepers felt that there were more lucrative means of earning incomes such as building rooms for rental. Given space constraints, instead of building a shed for livestock, the livestock keepers thought that that space could be better utilized to build a room for rental, which had fewer risks than livestock keeping and gave a steady source of income.

It seemed that the traditional gender roles and responsibilities were not practised in the communities researched. There was joint responsibility in the care of livestock, although women tended to have a larger burden relative to that of men. Decisions also seemed to be jointly made. This fact could also have been due to the ethnic groups visited. Most of them were from the Kikuyu ethnic group in which the woman is expected to be “the keeper of the home”. The men would say “Ongea na Mama, ndiye ana husika na hiyo mambo”. This means that

“talk to the wife as she is the one involved in household matters”.

In female-headed households, the women would be responsible for the care of livestock. They were reluctant to involve their children, especially male children. Even in cases of unemployed adult male children, the women did all the work. This could mean that the women are more protective of their male than their female children.

There is a need of further research on the exact contribution of livestock and its importance on the welfare of the poor livestock keepers, desegregated by gender.

The unemployment rate is high in Kenya and the economic indicators for the next few years do not seem to indicate a quick recovery. Thus it would be in the government’s interest to promote livestock keeping as the interest in livestock keeping already exists.

The significance of livestock keeping in terms of income was not quite clear especially the question of rental income versus income from livestock. More research in this area is required. The scoping study shows that in future, the poor livestock keepers may try to optimize the space available by building rooms. This would lead to a decrease in livestock keeping in the future. But only an in-depth study would be able to draw firm conclusions.

Although there was joint responsibility and decision-making in the keeping of livestock, more information would be useful as the researchers did not have time to conduct focus group discussions and did not have enough time to interview the spouses separately.

Since ethnicity plays an important role in gender aspects, it would be good to survey an area with a different ethnic group (difficult to get but possible) in order to validate the conclusion of joint responsibility.

In order to understand why the female-headed households did not assign responsibilities to their male children, a better understanding of the female-headed livestock keeper is necessary. In the Kikuyu culture, the men look after the livestock in the rural areas. Rural-urban migration has led to women taking over the roles and responsibilities of men as the men look for formal employment in the city. Thus the traditional roles are reversed in the urban areas.

1.4.2.3 Concerning livestock species and constraints

Goats and sheep featured prominently amongst the livestock preferred by the livestock keepers. The reasons given were that there was less work involved in keeping goats and sheep, the initial investment was low or affordable, there was no problem in finding a market and the returns were good.

The Mazingira study (1987) showed that at the time there were more small livestock than large livestock. The new study shows that small livestock, especially chickens, are not

preferred due to the problems of theft and diseases. The returns, compared to the work involved were not worthwhile. Even the poorest livestock keepers said that if they had money, they would keep goats and sheep. Thus, interested parties have an opportunity to provide extension services specifically geared towards goats and sheep.

Pigs were very few in numbers as they were considered to be 'dirty animals' and the work involved was considerable. It seems that this is a new activity. In the Mazingira study (1987) there were no pig keepers. Concerning pig keeping, it would be an advantage to the poor livestock keepers to have more knowledge about the costs and benefits of doing so.

The poor livestock keepers were not keeping livestock for commercial purposes. Only milk, as a product was for sale. This was because the number of livestock kept was small and space for keeping large number of livestock was inadequate.

Those who engaged in urban farming, often in open spaces, used the waste from their own livestock, as manure.

The type of rearing practices, zero-grazing or free range was dependent on the availability of space and security of the animals. In Kibera and in Kawangware, the animals were not herded and roamed freely to and from their homes. They found their own way home. At night they were locked up in sheds. Where theft was a problem, the animals were zero-grazed, for example in Kangemi.

The insecurity of land tenure in most poor areas inhibits the expansion of many activities, including livestock keeping. Major constraints cited were inadequate space for keeping livestock and lack of money. Others mentioned theft, parasites and predators. It seems that in the future space for livestock will decrease as the areas become more congested. Disease was a factor among pigs, chickens and ducks.

In the stakeholders brainstorming, using SWOT analysis, the livestock keepers ranked health (diseases) and environmental hazard as the number one threat to livestock. Second was competition in selling of livestock/products and the third one was worry about loss or theft of livestock. In addition, a weakness mentioned was lack of enough time and own labour to tend livestock.

Knowledge on animal husbandry and health was poor. The little information the livestock keepers had was obtained from neighbours and friends. The researchers noticed that the information they had was very basic.

There is an opportunity to promote livestock keeping as an activity which can be enhanced if the livestock keepers were to cooperate by forming groups to access relevant knowledge and information on marketing, inputs, animal welfare and on appropriate technologies.

There is the opportunity for improving the knowledge, information, and skills of livestock keepers who are eager to learn and enhance their capacity, including building capacity in para-veterinary services.

It appears that there is a possibility for marketing livestock manure – taking from the city to the rural farming areas of the country. This requires further investigation, working with interested parties, such as the recently formed Waste Network. There is an opportunity to

convert animal waste into manure and renewable energy as a commodity for marketing in both urban and rural areas.

There is opportunity to disseminate knowledge and information on technologies for rearing livestock in small-congested spaces.

Policy makers need to address the uncertainty of security of tenure in poor areas as it inhibits most activities, including livestock keeping by the poor.

Regarding the public health concerns, resulting from livestock keeping by free roaming animals - consuming harmful garbage to unsafe waste disposal must be addressed in a constructive way.

The possibility of creating common pool land in poor areas for livestock keeping as an alternative to solving physical space problems can be explored.

There is need of identifying specific sites by the government where livestock can be kept in the settlements to ensure that this activity can benefit both the livestock keepers and the government, particularly the Nairobi City Council.

1.4.2.4 Concerning policy associated with livestock keeping

The respondents did not know that livestock keeping was illegal and did not seem to be concerned about legislation. The Nairobi City Council had not harassed them since 1998.

Livestock keeping falls under five government ministries: the Ministry of Agriculture and Rural Development, Ministry of Local Government (by-laws), Ministry of Lands and Settlements (land tenure) and Ministry of Environment and Natural Resources and Ministry of Public Health (sanitation and health). The study found that there was the usual lack of policy coherence and coordination. The recent position of Ministry of Agriculture is that it supports livestock keeping and it taking steps to carry out the necessary regulatory and policy revisions.

There is a promise of an enabling policy environment for urban agriculture including livestock keeping. Livestock keepers and interested parties need to be made aware of this probable shift and encouraged to be proactive in shaping the policy direction and safe minimum standards.

1.4.2.5 Concerning knowledge deficiencies and research opportunities of both reactive and predictive nature

The livestock keepers seem not to express any serious knowledge deficiencies regarding livestock keeping practices. They acquire information from printed materials and orally from the other livestock keepers, relatives and friends. Some feel that they have adequate skills for livestock keeping. Some livestock keepers do not have constraints getting relevant information whilst others do. Most livestock keepers expressed the view that they would be interested in getting more information on better animal husbandry. A closer examination of the livestock keeping practices shows that there is much scope for improving the knowledge of livestock keepers concerning animal health and husbandry.

The livestock keepers did express the need for new knowledge on productive uses of animal wastes like manure and biogas for cooking and lighting. They are open to receiving more and diverse information on livestock health, husbandry and productivity.

There are diverse opportunities for research, of a reactive nature and the findings in the various areas of the scoping study are a useful starting point towards formulating and research agenda. Research opportunities of a predictive nature are a matter that needs to be addressed at the local authority and provincial levels. Livestock keeping, including urban farming by the poor and the better-off in the urban and peri-urban environs of the city have been established by several studies. Therefore, relevant information must be acquired continuously to keep track of the trends and to formulate appropriate responses.

There are knowledge deficiencies with regard to livestock keeping by the poor and opportunities for research of reactive and predictive nature. Concerning research of reactive nature, the topics that emerge from the study are like: health and environmental risks of livestock keeping in congested spaces and unsafe animal feeding and waste disposal; improving livestock productivity within the prevailing constraints such as space and no skills and the actual contribution of livestock keeping by the poor to their household income and nourishment.

Regarding research of predictive nature, what is required is policy relevant information. The enforcement and regulatory practices that were inhibiting livestock keeping by the poor appear to be relaxed. There is the opportunity to promote policy to enhance it. Therefore knowledge of past and future trends regarding livestock keeping by the poor is important as well as the share of the livestock keeping by the poor in the volume of livestock keeping in the city in general. Is livestock keeping experiencing progression or is it remaining standstill or is it undergoing regression? This means that it will require establishing citywide baseline information. An important question from a policy standpoint would be whether to create an enabling environment for the stabilization and the specialization of livestock keeping by the poor.

1.4.2.6 Concerning environment, public health and animal welfare

Although the livestock keepers did not cite any health problems pertaining to themselves or their animals, they are vulnerable because of sharing congested spaces.

Random disposal of waste in the rivers, open drains and dumping grounds is also a critical factor. There is water pollution due to unsafe sanitation. Animal diseases in the small livestock were common.

The link between livestock keeping, environment, public health and animal welfare needs further investigation and examination.

There is a need to provide relevant information and knowledge on making urban livestock safe for both humans and animals and avoiding harmful environmental pollution.

1.4.2.7 Differences between urban and peri-urban livestock keeping

Urban and peri-urban livestock keeping in the context of the scoping study is taken as the activity of rearing all forms of livestock and animal husbandry, within the confines of a

municipality and its immediate periphery. The peri-urban areas in the study were Kahawa West, Soweto and Bulbul, Ngong and Sinai in Athi River (see Annex 2).

There were no associations representing the interests of the livestock keepers in either the urban or peri-urban areas. There was no significant difference in the social characteristics of the livestock keepers between the two areas. In the peri-urban areas, livestock keeping was widespread than in the urban areas. This was because more space was available for livestock keeping. For example, in Kahawa West, a peri-urban area, 75 percent of the households kept livestock. The 25 percent who did not keep livestock were bachelors.

More large livestock, that is, cattle and pigs were kept in peri-urban than in urban areas. Two reasons can be given for this trend. Again, the livestock keepers had more land. Where the people were squatters, larger livestock were fewer in number. The same species of livestock were kept in both areas.

In the peri-urban areas, the livestock numbers were larger. The share of total household income from livestock keeping seemed to be proportionately greater in the peri-urban than in the urban areas. However, it was difficult to determine the actual share of the livestock income, compared to earnings from other activities.

One finding was that the available space in the densely populated urban areas such as that of Kibera, Kangemi and Kawangware, was utilized for building of rooms for rental purposes rather than for keeping of livestock. The livestock keepers said that income obtained from rent was higher than from livestock keeping, more consistent, less demanding in terms of labour and with fewer risks attached. Whereas the peri-urban areas, the rental factor was not important. This could be due to the fact that most people prefer to live closer to the city centre and thus there was not a high demand for rental housing in the peri-urban areas.

Rearing practices were dependent on two factors: adequate space and the problem of theft. Where space was available and theft was not an issue, livestock were allowed to roam around such as in Kibera. In Kangemi, there was space available, but theft was a problem. Thus even though the livestock keepers could have practised the free-range system in Kangemi, the livestock were zero grazed. In the peri-urban area of Bulbul, the animals roamed around freely but in another peri-urban area (Sinai) they were confined. The type of rearing system also affected the costs of inputs. Where there was zero grazing the cost of feed was negligible. Thus the differences did not arise due to the location of the area.

In terms of gender roles and responsibilities, there were more women livestock keepers in the urban areas than in peri-urban areas but responsibility in male-headed households was shared in both the areas. This is a shift from the traditional norm in which the woman is expected to take total responsibility for livestock and urban farming in general. However, the workload of the women was greater than that of the men as they were also expected to carry out their normal household duties. In both the areas, there was joint ownership of livestock and also joint decision-making on matters pertaining to livestock.

The reasons for keeping livestock were not significantly different in the two areas – mainly as a supplement to other income. The livestock keepers kept livestock for contingency purposes -such as for payment of fees, medical expenses among others.

In general, livestock keeping for commercial purposes was not at all common. For any commercial activity to be viable there would be a need for regular supplies and quality

consistency. The poor livestock keepers were not in a position, financially and otherwise, to make livestock keeping a commercial activity. The most glaring deficiency was that of access to and lack of information. The livestock keepers did not have the means to obtain the necessary information to successfully venture into the highly competitive livestock market, which currently exists in Nairobi.

The peri-urban areas of Nairobi have some very sophisticated livestock systems. In the areas surveyed, only milk was sold on a regular basis especially in the peri-urban areas. This was also due to more cattle being kept in these areas. Although this activity was greater in the peri-urban areas compared to urban areas, as a proportion of total household income, it did not seem to contribute much. Poor livestock keepers did not have the necessary means to buy the livestock for commercial purposes. The numbers of livestock kept were therefore few and there was dependence on natural breeding. Small livestock were not favoured due to outbreak of diseases.

Inputs in both areas were the same. Besides lack of space, lack of money, theft and diseases amongst the livestock (particularly affecting small livestock) featured prominently in both areas. But no significant differences in constraints amongst the two areas can be cited.

In both areas knowledge deficiencies were apparent. Thus location did not have anything to do with information and skills. In one area (Kahawa West), there were some very rich livestock keepers, living close to the slum areas. They were using high-tech equipment and methods of rearing livestock but the poor livestock keepers had no idea on what was going on in their neighbourhood. Even within the slums, there was lack of knowledge and information.

Government support services such as veterinary and extension services were non-existent in the urban areas but in one peri-urban area (Bulbul), there was some support as the area is opposite the livestock research centre.

From the livestock keepers' perception, the impact of the regulations had less impact on the peri-urban areas than in the urban areas. However, in all the areas surveyed, the local authority and the central government did not seem to be enforcing the existing laws.

As for environmental issues, random waste disposal was common in both areas. There was little recycling of waste. The only difference noticed was in the general environment. The peri-urban areas were in general more cleaner and had better sanitation facilities than the urban areas. This was probably due to the fact that they were less congested than the urban areas. One urban area, Kangemi, was cleaner than the rest as the Nairobi City Council is supplying the area with water.

In general, none of the respondents cited health problems. In one peri-urban area, Sinai, the health of the residents and the animals were very poor. Jiggers were a common sight in both animals and humans in this area. The main reason could be lack of water. The residents could not afford to buy food, *let alone* water.

2 INSTITUTIONS REPRESENTING NEEDS OF POOR LIVESTOCK KEEPERS³

The first comprehensive study carried of urban agriculture in Kenya in 1985 (Lee-Smith, Lamba and Kuria, 1987) covered six towns, namely Nairobi, Mombasa, Kisumu, Kitui, Kakamega and Isiolo. In this study the authors write:

"The 1987 Mazingira study found that at the macro level there was no organization representing the interests of urban farmers, either in any town or at the national level. Nevertheless, urban farmers represent a substantial interest group among the urban population (29%) whereas hawkers and vendors, who are represented by a Nairobi Association which has recently become national in scope, represent only 6 % of the population in all towns and only 5% in Nairobi".

The reasons they give for the formation of the hawkers association is to represent the views of the hawkers, as the hawkers face considerable harassment from the City Council. However, the interests of the urban farmers are not threatened in the same way.

The figure of 29 percent given above included all income groups and also included crop producers as well as livestock keepers. Thus for livestock keepers there was no separate information. At the micro level, the authors found informal groups and only 7 percent were members of formal associations. Informal cooperation was highest in the small towns and lowest in Nairobi. The commonest form of cooperation was sharing of tools (41%) followed by exchange of seeds (26%), cultivation (12%), crop protection (6%) and a variety of other activities.

2.1 Findings

2.1.1 Survey

In the survey, no one was found to be a member of an association or knew of any current association.

2.1.2 Case studies

Almost all those interviewed said that they did not know of any farmers associations. Only two people mentioned that there was a farmers group, which was formed in Kangemi about two years ago but did not last. They were, however, aware of government institutions such as veterinary officers and extension officers but as far as they were concerned, these institutions were as good as non-existent. Some members from Silanga, Maili Saba did express the view that they would like to belong to an association.

³ Information source: limited survey of communities using questionnaire, stakeholders brainstorming, using SWOT analysis; information from stakeholders through interviews, using checklists; and official and grey literature.

2.1.3 Stakeholders brainstorming

One member from the Baraka Self-Help group attended the workshop. He was from Soweto, Kayole location. The group was formed in the year 2000. It has eight members (all men). They received the training from the Soweto Urban Development Association who has 10 members in their self-help groups.

The Baraka group bought 10 piglets from a village nearby. Two piglets died from the cold weather at the time. A member gave land for keeping the pigs. He agreed not to charge rent for a year. Six pigs have been sold so far and 2 sows are remaining. These two sows have produced 16 piglets. Four out of these have been sold.

The members do all the work (not their spouses). There is a duty roster. Two workers have been employed to get food for the pigs from the dumping ground. The members meet every Friday to discuss the progress of the project. Waste is not recycled or given away as there are no takers. It is thrown quite a distance away from where they reside. This is because of the offensive odour of the waste.

They find that keeping of the pigs very profitable, as the gestation period is short - three months and three weeks, the litter is large and either piglets or the pigs can be sold once the pigs reach farrow stage. Food is free (from the dumping ground), labour cost is Kshs. 600 per month. But the work involved in looking after the pigs is considerable.

Profits are shared amongst the members but the members also keep a certain amount aside (in the bank) for emergency situations.

The farmers who heard about the Baraka got very interested and said that they would try and form such groups. They also thought of forming a network of diverse stakeholders and suggested that Mazingira Institute should play a facilitative role.

The extension officers have been reaching out to farmers, particularly in Kangemi and Silanga, Maili Saba. All the extension officers present at the workshop said this. However, they do not go out to "poor" farmers as they are too many, not easy to locate and it is easier for them to go and see a group rather than individuals. They mostly see the middle-income or rich farmers who have big ranches or 'contact' farmers – the ones they have been working with for a long time.

In the workshop, the officers said that they were willing to help the poor farmers if the farmers came to them rather than the other way round. The government policy is that the farmers should go and see the extension offices due to lack of resources. The livestock keepers were advised to go as a group to get advice/training.

The survey found that all the livestock keepers were not getting any help from the government extension officers but were relying on 'reja reja' (informal) means of information and advice. After the workshop, the livestock keepers got the contacts of the officers and said that they would now seek formal assistance.

2.1.4 Stakeholder interviews

The researchers approached some relevant stakeholders to get additional information. One association was the Nairobi and Environs Poultry Farmers Association (NEPFA). This

association is in Ngong, a peri-urban area of Nairobi. It is close to Bulbul, one of the areas surveyed.

The Nairobi and Environs Poultry Farmers Association was formed in 2001 with an objective of forming a network of poultry farmers and to identify marketing opportunities. The association has a membership of 100 farmers. Members are free to join, irrespective of the number of birds a farmer keeps. NEFPA covers Kiambu, Thika, Maragwa and Machakos districts. Thus it encloses peri-urban Nairobi. All the farmers had the same problems – that of marketing and lack of land on which to keep livestock. Another problem was the issue of middlemen who were exploiting them.

The main aim now is now to phase out the middlemen who were giving them low prices for their livestock products. An illustrative case was given by a Kangemi livestock keeper , respondent 26 (Annex 4) of the egg farmers from Wangige (Kangemi and Wangige are close to each other), some 8 kilometres north of the city centre. The middlemen buy a tray of eggs at Kshs. 100 and cross the road to a waiting pick-up van where they sell at Kshs. 120 to 150 per tray.

NEPFA has opened a feeds supply shop in Ngong town and has employed a clerk who now sells the eggs on their behalf.

In developing partnerships, the Unga Feeds company here in Nairobi, has agreed to give the association discounts on feeds purchased and plans to take the farmers on an exchange visit to a livestock farm in Machakos. The company has also agreed to train the salesgirl at the Ngong shop in extension work.

At another level the Kenchic Ltd., which is a major supplier of day-old chicks, has agreed to form a partnership with them so that the farmers can buy the chicks from them and sell their broilers to the company as outreach farmers.

Future plans of NEPFA are for members to be shareholders in the association with one member holding a minimum number of 20 shares and a maximum being 200. Each share price was to be Kshs.200 each.

They also plan to lobby and petition the government through the Ministry of Agriculture and Rural Development to stop the importation of eggs from neighbouring countries and South Africa. The contradiction is that they would also like to enter the COMESA market.

The association also plans to start similar NEPFA initiatives in other small towns in Kenya.

On the future of livestock keeping, the farmers indicated that there is hope in livestock keeping because the market is there.

3 CHARACTERISTICS OF POOR LIVESTOCK KEEPERS⁴

3.1 Findings

3.1.1 Ownership of Animals

According to the authors of the earlier Mazingira study (Lee-Smith, Lamba and Kuria, 1987):

"It is clear that there were less very low-income households keeping livestock, and more from other income groups, than in the population as a whole".

3.1.1.1 Survey

Since the survey did not cover all income groups, it was not possible to find out whether the low-income groups keep more or less livestock than the other income groups.

3.1.1.2 Case studies

The scoping study did not cover all income groups and the sample was not representative enough to find out whether all poor people keep livestock. However, in one area, Kahawa West, Soweto, the researchers were told that out of the 4,000 residents, 75 percent keep some form of livestock. The 25 percent who did not keep livestock were bachelors, the implication being that there being no women, livestock could not be kept, as the work was being done by the women. The individual interviews however, did not give the same impression. It was found that the work was done jointly in that area.

In the other areas studied, the sample size was too small compared to the population, to find out the proportion of people keeping livestock. In Sinai, a peri-urban area of 400 residents, only two interviews were carried out due to security reasons.

3.1.2 Numbers and Characteristics of Livestock Keepers

3.1.2.1 Survey

During the survey, 38 of those interviewed were head of households, while the rest were either children or spouses to the head of household. The main problem in getting all heads of households was that they always go the wholesale market in the morning and this was the time the researchers conducted the interviews. All others interviewed were immediate family members and had adequate information about livestock keeping.

During the survey, over half of those interviewed were female while the rest were male. The female-headed households were about 16 out of 56 respondents or slightly more than one-quarter of the total number of livestock keepers. A very high proportion of female-headed households were found in Kinyago (9 out of 11), Kibera (6 out of 7), Kawangware (4 out of 7).

⁴ Information source: limited survey of communities using questionnaire, stakeholders brainstorming, using SWOT analysis; information from stakeholders through interviews, using checklists; and official and grey literature.

The age of the respondent farmers varied between 12 years in Kangemi to over 88 years in Kinyago (Table 3.1). The mean age was about 39.1 years. During the survey the data showed that a large proportion of young people below 35 years were involved in livestock keeping. The reason was that they were either unemployed or retrenched from formal employment when they were still active. Some had resigned on their own to venture into the informal sectors but realized that the informal sector did not provide adequate income and therefore were keeping livestock.

Table 3.1 Age of respondents

Age	Kangemi	Maili Saba	Kawangware	Kibera	Kinyago	Sinai	Bulbul	Soweto	Total
< 15 years	0	0	0	0	1	0	0	0	1
15-25	2	0	1	2	0	1	1	0	7
26-35	3	0	1	2	2	0	0	1	9
36-45	3	1	2	4	3	0		3	16
46-55	1	3	2	1	1	0	1	0	9
56-75	3	0	1	0	2	0	1	0	7
> 75	1	3	0	0	2	1	0	0	7
Total	13	7	7	9	11	2	3	4	56

As shown above 16 out of 56 were aged between 36-45 years while another 9 were aged between 26-35. And between 46-55 years there were nine and above the retirement age of 55, there were 14 livestock keepers.

Only respondent number 47 in Annex 4. Was aged below 15 years. He was a student. He had been given a rabbit by his grandfather. He had bought one and intended to sell them after breeding.

All farmers had lived in the areas for over 4 years. An assumption from the study is that there is a certain length of residency in the slums for one to venture into livestock farming.

Table 3.2 No of years lived in the area

Response	Kangemi	Maili Saba	Kawangware	Kibera	Kinyago	Sinai	Bulbul	Soweto	Total
< 3 years	0	0	0	0	0	0	0	0	0
3-6 years	0	0	0	0	0	0	0	0	0
>7 years	13	3	6	8	8	2	3	4	47
Not indicated	0	4	1	1	3	0	0	0	9
Total	13	7	7	9	11	2	3	4	56

In Kangemi, North of Nairobi, a former agricultural area in Kiambu District, almost all those interviewed were born there. Kangemi is not a squatter area, unlike the other areas.

In the squatter settlements of Kibera and Kawangware, the people indicated that they were born there. The people's perception is that by saying they were born there, they stand a better

chance of being allocated land. One old man, aged 88 years said that he was born in that area. From our research, we know that, that particular area was forested at the time.

Table 3.3 shows that the livestock keepers were mainly educated up to secondary school level and none had gone to university or other tertiary institutions.

As shown above 13 out of 56 farmers had no formal education while another 18 had reached up to primary school and only 12 had gone up to high school.

Table 3.3 Level of Education of respondents

Type	Kang emi	Mali Saba	Kawan gware	Kibera	Kinyago	Sinai	Bulbul	Soweto	Total
None	2	0	4	2	3	0	1	1	13
Primary 1-4	1	2	0	1	1	0	0	0	5
Primary 5-8	5	1	1	4	4	1	1	1	18
Form 1-2	2	1	0	1	1	0	1	0	6
Form 3-4	1	1	0	1	2	0	0	1	6
Not indicated	2	2	2	0	0	1	0	1	8
Total	13	7	7	9	11	2	3	4	56

When asked about their main occupation, 18 indicated that they were in the informal sector while another 14 indicated that they had no main occupation.

Table 3.4 Main Occupation

Response	Kange mi	Mali Saba	Kawan gware	Kibera	Kinyago	Sinai	Bulbul	Soweto	Total
None	2	1	4	0	5	0	2	0	14
Unemp.	2	0	0	2	0	0	0	1	5
HW/husband	1	0	0	0	1	0	0	1	3
Self Jua Kali	6	1	2	5	2	0	0	2	18
Part time	0	2	0	1	1	1	0	0	5
Farmer	0	1	0	0	0	0	0	0	1
Other	0	0	0	0	0	1	0	0	1
Not indicated	2	3	1	1	2	0	0	0	9
Total	13	7	7	9	11	2	2	4	56

HW – Housewife

Jua Kali – Informal work

One interesting observation is that most farmers did not indicate livestock keeping as their main occupation but when asked their main source of income and mentioned several sources of income.

3.1.2.2 Case studies

The researchers observed that most of the households were extended families, with married children staying together. For example, respondent number 15 (Annex 4) stays with the husband, who is unemployed. They have ten children aged between 9 and 32 years. Another lady, respondent number 14 (Annex 4) has seven children. Her husband died in 1992. Six are living with her and two stay separately. She has two married sons and five grandchildren staying with her.

It was also noticed that family sizes are large, with a mean of about five children. The other fact noticed was that most of the daughters who had completed school were single mothers, living with their parents.

3.1.3 Gender aspects of urban/peri-urban livestock keeping

The 1987 Mazingira study revealed that 56 percent of the farmers were women, with the proportion of women being higher in the larger towns. This figure included those engaged in both food and livestock production.

In most cases in Nakuru it was the household head (38%) or the spouse (56%) who was responsible for the rearing of the animals. For large livestock, the spouses shared the responsibility.

3.1.3.1 Survey

Table 3.5 shows that almost all the livestock keepers were married with 10 being single and 8 widowed. Compared to other areas, a large proportion of the livestock keepers in Kangemi were young men and single.

Table 3.5 Marital status

Response	Kangemi	Mailsaba	Kawangware	Kibera	Kinyago	Sinai	Bulbul	Soweto	Total
Single	4	1	1	1	2	1	0	0	10
Married	7	3	4	6	4	1	2	3	30
Widowed	1	2	1	2	2	0	0	0	8
Other	0	0	0	0	3	0	0	0	3
Not indicated	1	4	1	0	0	0	0	0	6
Total	13	7	7	9	11	2	3	4	56

However, 6 livestock keepers did not indicate their marital status while the three in Kinyago were cohabiting within the partners.

3.1.3.2 Case studies

As mentioned before, over half of those interviewed were female while the rest were male. The female-headed households were about 16 out of 56 respondents or slightly more than one-quarter of the total number of livestock keepers. A very high proportion of female-headed households was found in Kinyago (9 out of 11), Kibera (6 out of 7), Kawangware (4 out of 7).

In terms of roles and responsibilities, women do most of the work. Women were mostly involved in day to day care of the livestock, such as feeding the livestock. Collecting/purchasing of the feed and drugs from outside was the task of the men in the house. Waste disposal was the work of children.

Thus men also shared some other responsibilities. Where cattle and pigs were kept, the husband would go and get the grass as in the cases of respondents 1, 3, and 39 (Annex 4). Thus there was joint responsibility in those cases. The researchers were told that cattle and pigs entail a lot of work and sometimes grass is not available close by and thus the men go out and look for the grass. The men in a number of cases said that the work should be shared and not left to women alone.

Respondent number 18 (Annex 4), a widow without children, said that she could not keep goats because she had no time to collect grass. She has a small farm that takes up most of her time. Thus she preferred to keep geese which did not involve much work and the geese fetched a relatively high price (almost the same as goats and sheep).

Another lady, respondent number 3, in Annex 4 from Kahawa West, Soweto (Annex 4) wakes up at 4 am, prepares children for school, and leaves for the dumping ground to collect garbage for her pigs. She only goes to the dumping ground on Fridays when the City Council dumps the garbage. On other days she goes to Githurai, about two kilometres away. This lady appeared to do all the work. She was well organized and said that “she loves animals”.

In one case, that of respondent 46 (Annex 4), the husband was unemployed but did not look after the livestock. Just two days before the interview she had delivered her fifth child. Her main source of income came from selling fried fish. She would go to Gikomba market (quite far away) and get the fish in the morning and then dry it. In the evening she would fry the fish at the roadside.

Whilst she was recovering, nobody was helping her. Her husband did not bother to go and get the fish. Thus she said that she had no income coming in during her convalescent period. She stays in two rooms and rents out four rooms. Her eldest daughter was 14 years old and had dropped out of school because of lack of money for fees. However, the researchers observed that settees occupied three-quarters of the space in one room and there was a T.V. – battery operated (a rare sight in the slums). Her four children were poorly dressed and it seemed that keeping appearances was important to the family. In almost all the places visited, settees were a common sight.

In other cases where the husband was employed, the women and children carry out all the livestock tasks. This was the case of respondents 35 and 36 in Annex 4. Respondent 35 wakes up at 5 am, works till 12 Noon at his casual job while respondent 36 wakes up at 7 am and works at a quarry till 5 pm.

It is difficult to say whether women do all the work or not as men seem to be involved as well. The role of men also depends on whether they are employed or not. The roles can be reversed as well. One lady in Kangemi is a secretary and her son (respondent 16), was looking after her cattle.

In female-headed households, the woman did all the work and not the children, especially male children. Most of the time the sons were employed, or looking for, casual work.

As for control and ownership of animals, the researchers found that in general, there was joint ownership and control in male-headed households. Even women were very forceful when saying this. The joint ownership could also be attributed to the ethnic group. Kikuyus normally consider the woman as the “keeper of the home”. When asked whether the wife could sell the livestock in the husband’s absence, the husband usually said that she could, since the money would be for family use.

In another instance, respondent number 28 from Kawangware (Annex 4) had her older brothers and sisters living with her. She came out strongly in saying that the livestock were her property.

Decisions were jointly made in the male-headed households. There was one extreme case, that of respondent number 56 from Bulbul (Annex 4). He said, “He is the key decision-maker because of his experience and values”. He also made reference to the bible and said “he does not believe in cooperation”.

3.1.4 Reasons for keeping livestock

The Mazingira Institute study (1987) showed that 91 percent kept livestock in Kenya for subsistence purposes. Only 2 percent kept them for sale. The rest gave other reasons such as wealth, dowry and others. In Nairobi, the figures were 54 percent, 6 percent and 0 percent respectively. Forty percent kept the livestock both for sale and subsistence.

Eggs produced were mostly sold (52%) by the households in Nairobi. Twenty five percent were consumed and the rest unaccounted for. Seventy-five percent of the milk produced was consumed and the rest given away. None of it was sold.

The literature review suggests that for women, livestock was one of the possible few options that were available. Njuki and Nindi (2000) surmise from their study carried out in Dar es Salaam, Tanzania, that:

"Female headed households had less diversified options, with none of them combining employment, business and cattle raising. About 35 percent of the female-headed households had cattle raising as their only source of income, while 11.5 percent combined it with farming".

3.1.4.1 Survey and Case studies

The respondents did not have only one source of income. All of them were carrying out other activities besides keeping of livestock. Not a single household was completely dependent on livestock. The households could not clearly identify the main and other sources of income. Common sources of income were from rental, retail shops, selling of vegetables, water vending, local brew, hawking, hairdressing, urban farming, and working as casual labourers and sale of cooked foods. Eight did not disclose their sources of income.

Respondent number 18 lives in Kangemi and is very poor. She has two geese (had 25 but were stolen) and has rented a small urban farm, some distance away from where she stays. She grows arrowroots, cassava and bananas for home consumption and for sale. Another example is that of respondent number 41 (Annex 4), in Sinai keeps goats for sale and does casual work in farms around the area.

The reasons for keeping different livestock varied depending on the type of livestock kept. The livestock keepers indicated that they keep different livestock for different reasons - for example a livestock keeper would keep ducks for sale and for breeding purposes. The same livestock keeper would keep a cow for milk, which would be used for subsistence and sale.

The livestock and the products sold depended on the urgency of income and the amount required. In the case of goats, sheep, the animals were sold when payment for fees was due. The livestock keepers seemed to rank education as very important and said that they sold the goats and sheep when they did not have enough school fees. Thus more goats and sheep were sold at the beginning of the year when parents had to pay tuition, admission fee, levies etc.

It was found that in general a livestock keeper would sell one goat or sheep every three months. Therefore, the income derived was mainly for emergency or insurance purposes, as security. Again, goats and sheep had a ready market and were not demanding in terms of work.

In the case of cattle and chickens, the products were important. Chickens eggs were mainly for breeding and the extra ones were consumed. Ducks were sold for income and again the eggs were kept for breeding and only extra ones were eaten. Money from the ducks and sale of eggs was used for daily food expenses. However, the number of ducks and chickens kept were not large enough to bring in a substantial income.

In the Nakuru research (Foeken and Owour 2000), small livestock were basically for home consumption (60% of households). The rest consumed part of the livestock and sold the rest. As for large livestock, almost three- quarters sold the livestock.

Pigs were sold for meat. There were only 5 pig keepers out of 56 respondents. It was difficult to find out exactly what the money from the sale of pigs was used for. Most of the pig keepers said the pigs breed fast and thus money could be put for improvements of the house, education and for daily expenditures.

3.1.5 Commercial versus subsistence livestock keeping

3.1.5.1 Survey and Case studies

About half (27 out of 56) livestock keepers kept livestock for subsistence and sale. The survey showed that there was no commercial livestock farming per se, except the ones who kept pigs, which were sold but not consumed. Some ducks were also sold. Only one lady, respondent number 40 (Annex 4), from Maili Saba, Silanga, kept Boran (local) cattle for sale. However, according to the researchers, she does not fit into the “poor” livestock keeper category.

Small livestock was for subsistence and for sale. Only respondent number 21 (Annex 4) kept livestock purely for subsistence.

Milk was the only item produced for commercial purposes. However, there were only 41 cattle found and this number excludes those kept by ‘rich’ livestock keepers.

The 1987 Mazingira study showed that 54 percent of the respondents kept livestock for subsistence only, 6 percent for sale and 40 percent for both subsistence and sale. This included all income groups.

3.1.6 Contribution to household economy and family food security (goods or services obtained)

Mazingira Institute's 1987 study showed that 16 percent of the livestock in Kenya were eaten, 8 percent sold, 5 percent stolen and 4 percent given away, 47 percent were retained whilst 20 percent died. This showed that livestock did play a part in food security, with income from the sale of livestock also being used to buy food and other services. These figures are for Kenya and not for Nairobi. There was also no separation by income groups. Thus valid comparisons cannot be made.

It was difficult to find out the exact contribution to the household food security from the scoping study as the livestock keepers could not quantify the contribution of livestock to the household. Majority of them said that they depended more on other sources of income, other than livestock keeping. About 50 percent had started keeping livestock less than three years ago. Reasons given were lack of capital/money to purchase the livestock. Some of the livestock keepers were too poor to even to purchase ducks (the cheapest). A typical example is that of respondent number 20 (Annex 4) who bought a cow for Kshs. 25,000 and he said, "I used to sacrifice and starve to save money to buy the cow".

In the scoping study, majority of the farmers said that they did not use the livestock for food. This was because they all had other sources of income - casual employment, kiosks, renting of rooms or water vending. For example, in Kinyago, the researchers found a very poor family, headed by a 60-year-old woman (respondent number 43, Annex 4) keeping livestock who had two grandchildren staying with her and two great grandchildren. They were all staying in one small room and renting three rooms. She said that she only sells her livestock when there is a need for money but depends on rental income for her daily food. She only slaughters one sheep at Christmas time. This reply was echoed everywhere. Sheep and goats, in particular, were kept as insurance or for emergencies, especially for payment of school fees.

In the 1991 Tanzanian study, 54 percent of the respondents said that they use the livestock products at home and sell the extra. The Tanzanian study also showed that 92 percent of the revenue is used to supplement the salaries of the farmers. Seventy-two percent said that the revenue from livestock is equal or bigger than the salary. This shows that without livestock, the families would have a difficult time surviving. Valid conclusions, however, for this research, cannot be drawn since the Tanzanian research was not specific to poor livestock keepers and the question of importance of livestock vis a vis other employment was not asked.

3.1.7 Linkages with Relatives/Friends in the Peri-Urban and Rural Environments

3.1.7.1 Survey and Case studies

Table 3.6 Whether livestock keeper grows crops

Response	Kangemi	Maili Saba	Kawangware	Kibera	Kinyago	Sinai	Bulbul	Soweto	Total
Yes	9	4	1	1	0	0	1	4	20
No	1	1	1	2	3	0	0	0	8
No answer	3	2	5	6	9	2	2	0	29
Total	13	7	7	9	11	2	3	4	56

About 20 out of 56 farmers indicated that they grow crops on small urban gardens in the city. These sites are along riverbanks, sewer lines, roadsides; open spaces and some have rented gardens in the city.

Respondent number 13 (Annex 4) has a farm in her rural area and she occasionally brings maize stalks (for feeding her cattle) to Kibera after harvesting the maize. Another livestock keeper, respondent 56, has a farm outside the area where he grows maize and tomatoes. Residents of Kahawa West, Soweto, Kangemi (rental farms), Maili Saba all had farms outside their area.

The ones who had urban farms used the waste as manure for their farms. Only six livestock keepers had rural farms. Two livestock keepers, respondents 8 and 10 in Annex 4, used the manure for the rural farms. However, these livestock keepers do not really fit into the “poor” category. The other four owned the farms in the rural areas, but did not bring any produce to town or take any manure/products to the rural areas (respondent 47 in Annex 4)

About five livestock keepers said that they exchanged the waste for fodder. Thus urban-rural linkages were poor or non-existent. The livestock keepers said that they were too poor to own any land, whether in urban or in rural areas. The younger keepers were mostly born in Nairobi and did not have a rural home.

4 LIVESTOCK SPECIES AND CONSTRAINTS⁵

4.1 Findings

4.1.1 Livestock types and species

The 1985 Mazingira study showed that 17 percent of all urban households kept livestock in urban areas. In Nairobi, 7 percent kept livestock and also in Nairobi, the number of cattle per household was 0.08 on average, goats - 0.09, sheep - 0.03, pigs - 0.30, rabbits - 0.40 and poultry - 0.4.

Seventy-one percent of the households in Nairobi kept poultry at the time. Second were poultry and goats together (9%). These figures include all income groups. Thus, although there was a preference for small livestock, one cannot make deductions for the poor livestock keepers.

⁵Information source: limited survey of communities using questionnaire, stakeholders brainstorming, using SWOT analysis; information from stakeholders through interviews, using checklists; and official and grey literature.

The Nairobi respondents of this earlier study who did not keep livestock gave the most important reason as lack of access to land. Eleven percent said that they were not allowed to keep livestock, ten percent said that it was expensive to keep livestock and the rest gave various reasons such as lack of time, interest, amongst others.

A study carried out on urban agriculture (food and animal production) Nakuru of 594 households (Foeken and Owour 2000, classified 80 percent as 'poor' and 53 percent as 'very poor'. They found that small livestock, namely chickens, doves, turkeys and rabbits are by far the most common type of livestock kept. Larger animals such as cattle, sheep, goats do not exceed 5 percent.

Most of the livestock keepers in the Nakuru livestock study (Foeken and Owour 2000) kept goats and sheep. The study did not reveal any goats kept for milk.

4.1.1.1 Survey and Case studies

Table 4.1 Number of livestock kept

Type of livestock	Kangemi	Maili Saba	Kawangware	Kibera	Kinyago	Sinai	Bulbul	Soweto	Total
Cattle	18	37	4	10	0	0	0	4	73
Sheep	5	4	36	5	0	0	0	9	59
Pigs	0	5	7	4	0	0	0	13	18
Goats	29	0	2	79	57	4	64	0	235
Chicken	39	5	50	11	30	1	23	26	185

⁵ Information source: limited survey of communities using questionnaire, stakeholders brainstorming, using SWOT analysis; information from stakeholders through interviews, using checklists; and official and grey literature.

Type of livestock	Kangemi	Mali Saba	Kawangware	Kibera	Kinyago	Sinai	Bulbul	Soweto	Total
Ducks	4		15	32	25	0	0	18	90
Rabbits	20	2	0	0	0	0	0	0	22
Geese	2		0	5	0	0	0	10	12
Turkey	13	0	0	4	0	0	0	0	17
Others	0	0	2	0	0	0	0	0	2

The survey showed that the most common type of livestock were goats, followed by chickens, ducks, cattle and then sheep. Pigs, rabbits, geese and turkeys were fewer in number. Others were pigeons.

In the scoping study, the preference was for medium livestock, such as goats and sheep. The livestock farmers did not differentiate between goats and sheep (the word goat was used synonymously for sheep and the researchers had to physically verify each type).

It appeared that the livestock keepers who had started to keep the livestock recently were not sure of the risks entailed in keeping livestock and therefore had only small livestock (Table 4.2). The ones, who had started livestock keeping in the early 1990s, had more medium to large livestock, most of them having developed the numbers through breeding.

Table 4.2 Number of years the livestock keeper has kept livestock

Type	Response					
	< 1 year	1-3 years	4-6 years	> 6 years	Not indicated	Total
Cattle	0	4	4	3	3	14
Sheep	0	1	0	3	1	5
Pigs	1	2	0	1	1	5
Rabbits	1	1	0	0	2	4
Goats	0	4	3	13	9	29
Chicken	3	6	0	3	15	27
Ducks	0	2	0	1	7	11
Other	0	3	0	1	4	8

The longest time livestock has been kept was found in the stable environments of peri-urban areas. The word stable means where there was security of land tenure and there is no fear of eviction. This is especially in the peri-urban areas of Kawangware and Kangemi. Some residents have relocated in places such as Mali Saba and Sinai and the people fear keeping livestock for long, due to uncertainty of tenure.

Table 4.3 shows the number of livestock keepers keeping one or more types of livestock.

Table 4.3 No. of livestock keepers keeping one or more types of livestock

Area	I type of livestock	2 Types of livestock	3 Types of livestock	More than 3 Types	Total
Kahawa Soweto	1	0	2	1	4
Kangemi	5	4	4	0	13
Kinyago	9	1	1	0	11
Kibera	5	2	1	1	9
Maili Saba	2	1	4	0	7
Sinai	2	0	0	0	2
Bulbul	2	1	0	0	3
Kawangware	5	2	0	0	7
Total	31	11	12	2	56

As indicated in the above table, slightly more than half (31) of the livestock keepers kept only one type of livestock. Almost all in Kinyago and Kawangware slums kept one type of livestock. This is because these two slum areas are closer to the city centre than the others and therefore space for keeping more than one type is not enough. Also it is more profitable to build rooms for rental purposes rather than keeping livestock.

Table 4.4 Number of livestock keepers in each area keeping different types of livestock

Type	Response								
	Kangemi	Maili Saba	Kawangware	Kibera	Kinyago	Sinai	Bulbul	Soweto	Total
Cattle	6	2	1	2	0	0	0	3	14
Sheep	1	1	0	2	0	0	0	2	6
Pigs	0	2	1	1	0	0	0	1	5
Rabbits	2	1	1	0	0	0	0	0	4
Goats	6	2	4	7	5	1	2	1	28
Chicken	7	2	4	3	1	1	3	3	27
Ducks	1	1	2	3	2	0	0	2	11
Other	2	0	1	2	1	0	1	1	8

Table 4.4 above shows the preference of the livestock farmers in terms of livestock type in the various areas. For example six farmers kept cattle, six keep goats and seven kept chickens in Kangemi. The larger type of livestock was preferred in Kangemi and Soweto because of availability of space.

However, respondent number 1 (Annex 4) from Soweto Kahawa said that she preferred to keep pigs because they give quick income. She did not want to increase the number of goats because they were more expensive to keep. In this village, goats were fed on grass in the dry season, which had to be bought from Githurai, a shopping centre two kilometres away whereas pigs were fed on vegetable waste from the market nearby (Annex 4, page 3). Anastasia was one of the few farmers keeping pigs.

Another livestock keeper, respondent number 4 (Annex 4) also kept pigs but preferred to keep cows rather than pigs. The reason she gave was that she had to go to the dumping ground everyday to get the food and to cook it. There was no cooking fuel and she had to look for old shoes and tyres as fuel.

The scoping study revealed that the animals kept in order of preference and quantity is goats, chickens, sheep, cattle, ducks, pigs and rabbits.

One would have assumed that since investment for small livestock is low, poor livestock keepers would have more of these livestock. However, small livestock keeping did not seem to be a significant activity. There were more goats kept as the small livestock was not very profitable and the incidence of diseases and theft was high. Amongst the small livestock, ducks were more popular than chickens as the cost was low (Kshs. 50 for a duckling). Chicks were never bought – only cocks and hens, which cost Kshs. 200 to 300 Kshs. Local chickens, all layers, were kept for eggs and for breeding.

Goats and sheep were preferred as the initial investment required was not too high (Kshs. 1,000 depending on age and weight), low maintenance cost (feed is almost free) and the fact that they fetch a high price after rearing them for three to four years.

Cows were not that common as the cost of one cow is very high (KShs. 30,000 to 45,000). This can be compared to the minimum wage of a worker being Kshs. 3,352 per month. Rent in these slums can range from Kshs. 500 to 1,500 for one room per month (8 feet by 8 feet). Since most of the households have at least 6 members, food would consume about Kshs. 3,000 per month (minimum). Transport, medical, education, clothes would consume the rest. Education is very expensive in Kenya, especially secondary education. Fees per month for one secondary child, attending a government school, are about Kshs. 1,800 per month. Examination fees, levies would be additional. This therefore leaves very little for any savings or purchase of livestock.

All the livestock keepers interviewed started with one livestock and then bred them.

Pigs were cited as being "dirty" and requiring a lot of work. The pig keepers stated that they started with a sow and so as to get piglets. Then either the piglets would be sold or the pigs to slaughter weight.

Rabbits were fewer in number. The reason for not keeping rabbits was that there was no market for rabbits as rabbit meat is not preferred.

As for plans for increasing livestock, Table 4.5 shows that the only two (in Sinai) of the poor livestock keepers out of the all those interviewed said that they would not prefer to increase the livestock. Fourteen respondents were undecided. This was because of lack of space and the fact they were squatters and could be asked to move out any time. The ones who do want to increase the livestock would like to keep more goats as the workload was less and inputs were not expensive.

Table 4.5 Whether respondent intends to increase livestock or not

Response	Kangemi	Maili Saba	Kawangware	Kibera	Kinyago	Sinai	Bulbul	Soweto	Total
Yes	13	3	4	7	6	0	3	4	40
No	0	0	0	0	0	2	0	0	2
No answer	0	4	3	2	5	0	0	0	14
Total	3	7	7	9	11	2	3	4	56

Table 4.6 shows the type of livestock the livestock keeper would like to increase. One fifth of the livestock keepers said that they would like to keep more goats. One sixth of the farmers mentioned that they would prefer to keep cattle. Very few wanted to increase the smaller type of livestock and amongst the smaller types of livestock, the keepers wanted to increase ducks as chickens are prone to diseases and consequently are unreliable as a stable source of income, especially when compared to keeping of goats. Five livestock keepers indicated that they would like to keep pigs.

Table 4.6 Type of livestock keeper plans to increase

Type	Kangemi	Maili Saba	Kawangware	Kibera	Kinyago	Sinai	Bulbul	Soweto	Total
Cattle	5	2	1	1	0	0	0	1	9
Sheep	1	0	1	1	0	0	0	1	4
Pigs	1	1	0	2	0	0	0	1	5
Rabbits	1	0	0	0	0	0	0	0	1
Goats	5	1	1	2	2	0	1	0	12
Chicken	1	0	1	1	2	0	1	0	6
Ducks	0	0	1	1	0	0	0	0	2
Other	0	0	0	1	0	0	0	0	40

4.1.2 Livestock products

4.1.2.1 Survey and Case studies

The products mentioned were milk from cows (not from goats) and eggs from chickens and ducks. Meat by-products did not feature prominently in the discussion since they do not slaughter the animals except on special occasions like celebrations and payment of dowry.

In terms of eggs, the farmers indicated that the consumption ranged from 2 eggs to 10 per week. The number consumed depended upon the size of the family. However they rarely consume eggs but keep them for breeding.

No by-products being produced from the livestock products such as butter from milk were observed.

4.1.3 Rearing Systems

The earlier Mazingira study found that two-thirds of the livestock keepers let their animals range freely, most eating grass or whatever they could find. Only a quarter of the households purchased any feed in the dry season.

The study carried out by Foeken and Owour (2000) found that one-third of the households in Nakuru allowed the large livestock to graze freely and 54.2 percent of the households kept them within their compounds. The rest was a combination of both. There were no distinct differences between households of different income groups.

A 1991 study carried out in Tanzania of six towns (Mvena, Lupanga and Mlozi) of 1800 households in both high density and low-density areas, showed that livestock keeping is a common practice - the types being dairy cattle, sheep, goats and poultry. According to the authors:

"Dairy farming is a common feature in many urban areas in Tanzania. It is fairly common to find livestock herds grazing in open spaces in urban areas such as playgrounds, golf courses, roadsides, river valleys, plots which are not yet developed and other similar areas".

They go on to say:

"One of the most irritating tasks of the urban motorists is to avoid roaming goats in the streets. Goats are found in all the towns that were included in the study and to the casual observer, they appear to belong to no-one".

Thus in Tanzania, at the time of the study, it appeared that the animals are allowed to roam freely.

4.1.3.1 Survey

The livestock keepers had to keep the livestock at night in their areas. Table 4.7 shows the place where the livestock were kept.

As shown in Table 4.7, about 22 farmers had makeshift sheds for keeping livestock while 10 kept livestock in the bedrooms. These were mainly chicken and ducks but in Kinyago one owner, respondent number 50 (Annex 4), aged 88 years, had constructed a makeshift high bed. His goats stayed under and he slept on top. In Silanga respondent number 39 (Annex 4) was using his kitchen as a cowshed.

Table 4.7 Place where livestock kept

Type	Kange mi	Mali Saba	Kawan gware	Kibera	Kinyago	Sinai	Bulbul	Soweto	Total
Pigsty	0	3	0	1	0	0	1	1	6
Shed	5	1	3	4	6	1	1	1	22
Bedroom	0	0	1	2	4	1	1	1	10
Chicken coop	2	0	2	1	0	0	0	0	5
Other	2		1	1	0	0	0	0	3
Not indicated	4	3	0	0	1	0	0	1	9
Total	13	7	7	9	11	2	2	4	56

About 18 farmers had their structures inside the main house, especially for small livestock. These structures were mainly chicken coops. Another 37 had their structures outside of their dwelling unit.

4.1.3.2 Case studies

The scoping study showed that the rearing system (free range or zero grazing) depended on the availability of space for zero grazing and theft of livestock. In Kibera Soweto Kahawa, Kawangware, and Kinyago and in Bulbul, space is a problem but not theft and thus all the livestock keepers let the animals (except cows) to graze freely. The researchers found that in some areas goats and sheep look for anything edible in the dumping areas. These areas were full of polythene bags (Annex 3, photo No. 14).

At night, the animals are required to be in the home area. Those goats and sheep that roam freely find their own way home. In Kangemi, the animals are not let out but confined in a shed, as there is a huge problem of theft. However, space is available. The cows were kept a short distance from the main dwelling unit while in Kawangware the cows were immediately next to the house. The farmers indicated that theft is a factor in the type of shelter and its location.

Discussions held with the farmers showed that shelter for the livestock was a constraint in keeping of livestock. In the densely populated areas of Kinyago and Kibera, there was very little space and the livestock keepers had to keep the animals in their bedrooms.

4 1.4 Inputs

The inputs considered in this study are the factors of production, namely, land, labour, and capital. Land includes all natural resources.

In the earlier Mazingira study, grass was the main feed in the wet season (33 %) compared to 28 percent in the dry season. More households used garbage in the dry season (20%). The other feeds were leaves, vines and twigs from bushes.

Feeds

Survey

The livestock keepers indicated that they give various types of feeds such as grass, kitchen waste, ready-made animal feeds, farm residue, and other waste from dumpsites.

Table 4.8 shows that grass and domestic waste formed the main feed. However, the feed depended on the type of livestock kept. For example, grass was fed to the cows and farm residues to pigs.

Table 4.8 Type of feed given

Type of livestock	Grass No. of L.K	Domestic waste No. of L.K	Concentrates No. of LK	Farm residues No. of LK	Other waste No. of LK	Not indicated No. of L.K
Cattle	8	4	6	9	1	7
Sheep	0	0	0	0	0	4
Pigs	0	4	0	1	2	2
Rabbits	0	0	1	0	0	0
Goats	5	6	2	4	0	0
Chicken	0	0	25	0	0	0
Ducks	0	0	11	0	0	11
Other	0	0	0	0	0	0
Total	13	14	45	14	3	31

LK – Livestock Keepers

4.1.4.1 Case studies

In the scoping study, all cattle were zero fed except for one livestock keeper, respondent number 38 from Silanga in Maili Saba. He used the free-range method. Cattle owners fetched the grass from neighbouring areas three times in a day. The cattle were also fed on maize bran and maize germ bought from one of the flour millers. The ones who gave maize germ to their cows got 10 litres of milk per day per cow, compared to 6 litres per day obtained from cows which were not fed with maize germ. The ones who did not give maize germ did not know that it improved milk quantity.

The goats and sheep and small livestock were either allowed to roam freely or zero fed. The rearing system and the feed depended on whether there was space available (Kangemi, Bulbul) or whether theft was a problem (Kangemi). The livestock keepers, who zero fed the goats and sheep, could not afford to buy ready-made feed. All the respondents gave the goats and sheep kale stalks. Vegetable sellers or neighbours gave the vegetable residues at no charge.

The researchers noticed that the goats and sheep also fed on garbage dumps (Kangemi and Kawangware – see Annex 3, No. 14) and also residue from the local brew being sold in the area. We asked whether the animals "get drunk" when feeding on the brew waste, as the local brew is more potent than industrial beer in content and is mixed with all types of ingredients, including certain harmful chemicals. We were told that animals become healthier when fed on this brew waste and also the brew waste supplements the vegetable matter. The 1987 Mazingira study showed that 2 percent of the households (out of 272 households surveyed) purchased brewery waste.

An illustrative case was that all goat and poultry keepers in Kibera let their stock wander around in the area until evening. Despite the area being a high density one, the animals managed to find their way home. In Kibera the farmers informed us that the pigs were left to scavenge along sewer lines and open spaces. During the interview with the chief, the researchers were told that he had forbidden pig farmers to let the pigs loose as the pigs were a nuisance and would even bite people, especially drunkards lying on the roads.

A livestock keeper, from Kibera indicated that her goats did not like eating grass and preferred cooked food and vegetables (respondent number 6, Annex 4). The cost of feeds for dairy meal for cattle ranged between Kshs 800 to 860 per 90kg bag

Pigs were fed on foodstuffs scavenged from garbage dumps or food leftovers from hotels and factories. The owners or hired labour collected the feed from dumpsites. Middlemen delivered food leftovers from factories and the livestock keepers purchased them in small quantities such as using a 2-kilogram container.

One lady from Soweto Kahawa (respondent number 4, Annex 4) said that every morning she went to look for feed for her 6 pigs and she cooked this food using old shoes and tyres, as there was no cooking fuel around.

Feed for pigs in Maili Saba was either waste from dumpsites or food leftovers from hotels and food processing factories. A pig keeper in Maili Saba bought waste from brokers who collected it from the Jomo Kenyatta International airport. Another livestock keeper in the same area (number 37, Annex 4) bought Napier grass, which was grown using sewage, water.

Small livestock such as ducks and chickens, when kept in sheds, were given chicken mash, bought in 1-kilogram packs. The concentrates are usually a mixture of wheat and maize, minerals and vitamins.

In the areas where the chickens wander out, the farmers could not identify the type of feed as they did not know what the livestock fed on.. Where the chickens are confined, they are fed on chicken mash and kitchen waste. In all cases the rabbits were fed on vegetables and were being kept in a hutch.

The livestock keepers could not quantify the amount of feed given due to different unit measures used. They mentioned kilograms, sacks, buckets, loads and other such measures.

4.1.5 Ownership of land

The issue of land ownership was always raised during the discussions with farmers saying, “If I had more land I would keep this kind of livestock or I would keep more livestock”.

Table 4.9 Ownership of premises

Type	Kangemi	Maili Saba	Kawan gware	Kibera	Kinyago	Sinai	Bulbul	Soweto	Total
Own	5	0	2	2	0	0	0	0	9
Rented	1	0	1	1	1		0	0	4
Squatter	3	6	1	6	9	2	3	2	32
Other	1	0	0	0	0	0	0	1	2
Not indicated	3	1	3	0	1	0	0	1	9
Total	13	7	7	9	11	2	3	4	56

The table shows that almost two thirds (32) were squatters while 9 indicated that they owned the land. However, observations indicated that the squatters utilized the available space in a better way than those who had more land

4.1.6 Labour

The farmers indicated that they rely on immediate family labour, hired labour or relatives. Almost all (51) indicated that they depend solely on immediate family labour while 5 indicated that they depend on both family and hired labour. When interviewed further about the workload almost all of them indicated that they wake up between 5 a.m. and 6 a.m., prepare the children for school and feed the animals by 8am.

Own labour was most frequently cited as being used and very few said that children help as most of the children were attending schools and the ones not in school, were employed as casual labourers. One old lady, (respondent number 14, Annex 4) said that she is the one who looks after her sheep and her children help only when she is not around. It appeared that her children did not take an interest in the livestock even though none of her children were employed.

The women's schedule was even tighter with some waking up at four am, going to the wholesale market in the city centre and sleeping at around 10 p.m.

Some farmers like respondent number 22 (Annex 4) in Kangemi and respondent 35 from Silanga said that having livestock keeps them busy but other farmers indicated that they could not keep some types of livestock like pigs due to too much work. This may explain the high frequency of goat and poultry keeping since those two require less attention when compared to cattle or pigs.

4.1.7 Support services

Mazingira Institute's study (1987) showed that veterinary services provided by the government are neglected in Kenya. The proportion of deaths of livestock was unacceptably high. An estimated 278,000 animals died in the six towns surveyed. This was almost double the value sold and more than the number sold.

Only 20 percent of the livestock farmers vaccinated their livestock against diseases. Lack of veterinary services was the main problem mentioned by the livestock farmers (42%). Only 16 percent said that received any extension service.

The Nakuru study (Foeken and Owour 1999) found that only thirty-six of the low-income households used veterinary drugs (compared to 81 percent of the high-income group). Technical assistance by the Ministry of Agriculture was given to only 16 percent or 19 households.

In Nakuru, there appeared to be no correlation between receiving technical assistance and occurrence of deaths of animals. The researchers found this to be the case because technical assistance was not used as a preventive measure but as a curative tool.

In Tanzania, (Mvena *et al*, 1991) 97 percent depended on themselves to get the technical know-how or advice.

In the Tanzanian study, the number of livestock kept depended on how economies of scale favoured the livestock keepers in terms of labour, feed and veterinary drugs. For example, for poultry farmers to obtain maximum returns, the minimum number of poultry for least cost was 200 day-old chicks. Labour would become cost effective only if the poultry size was 200. Buying small quantity of feed was expensive because of transport costs to the city were high.

In the study, there were enterprising people in the area who had small shops (commonly known as kiosks) who sold the feed in one-kilogram packs. Thus for the Nairobi livestock keepers, economies of scale did not come into play at all. Since they also lived in high-density slum areas, land or space for keeping large numbers was a problem as well.

Veterinary drugs also came in large packs. For instance, the researchers mention that various vaccines such as Newcastle Disease Vaccine B1 type, LaSota Strain Live Virus cannot be administered to less than 500 live birds. Thus two families could share the vaccine. The Tanzanian study did not differentiate between the different income groups and thus economies of scale were more pertinent to the high-income groups than the low-income ones.

4.1.7.1 Survey and Case studies

The study shows that the situation is worse now in Kenya than it was in 1985 in terms of support services. All the livestock keepers said that they had not received any extension or husbandry advice. The perception was that veterinary services are only available through private services as the government officers were not bothered about the livestock keepers.

The provision of veterinary services was observed to be poor in all areas and the farmers did not know what to do with sick animals except slaughter them before they die and sell the meat to the local butchery.

It was found that the poor farmers could not afford to purchase the necessary feed, drugs and employ labour. They also did not have adequate information on feeds and drugs available. They had not even heard of vaccinations for prevention purposes.

The other services which the farmers said were necessary were, deworming, artificial insemination, spraying and extension. The government vet services were rare and all, except for a goat farmer in Bulbul, indicated that they do not get government services. Perhaps this is due to the proximity of the bulbul livestock keepers to the government owned Ngong farmers Centre about 2 kilometres away.

All the cattle owners used artificial insemination when required. Private, not government, services were used. The respondents did not even know where to get hold of the livestock officers. The stakeholders brainstorming workshop enabled the farmers to get some information from the extension officers present.

They all depended on what they call “Jua kali/reja reja” (informal) vets who come and treat their animals at a fee. For artificial insemination the fee ranged from Kshs.500 (plus Kshs. 300 transport) to Kshs. 1200. The livestock farmers purchased drugs for deworming from chemists in town and nearby trading centres.

In some cases they used snuff (in Kinyago) for treatment of African Screwworm in goats and sheep. The farmers were not sure of the use of drugs and expected the research team to help them sort out problems such as what to do for wounds, pests and diseases.

4.1.7.2 Stakeholder interviews (Henchem Company)

The Henchem Company is located at NACICO Plaza near the main country bus station, which is a hub of activity for people going in and out of Nairobi. It is located in a poor neighbourhood and attracts a lot of customers. The proprietor indicated that he was freelancing but decided to get permanent premises early this year. He sells to poor farmers going out of Nairobi and large-scale farmers in the Central and Nairobi provinces.

The major constraints he faces are the need to package drugs in small quantities and lack of transport. The livestock keepers did not express any problems in getting the drugs in the small quantities required. Although he is aware of the by-laws regulating keeping of livestock in the city, he was optimistic that the practice will continue in the future with improved technologies. He indicated that generic drugs, which are now cheaper, are in the market and this will lower production costs.

4.1.8 Capital

Capital or financial means was the most frequently cited reason for not keeping large livestock, especially cattle. The cost of one Friesian cow ranges from Kshs. 30,000 to 45,000 depending on age of the cattle. This amount is equivalent to one year's salary. A local cow (Boran) would be Kshs. 10,000 but most of the livestock keepers do not favour keeping these types of cattle. In the whole survey, we found one woman keeping Boran cattle and her purpose was to sell the cattle rather than use the milk.

The cost of keeping layers and broilers is also expensive. All the respondents in our survey kept local chickens (road runners) rather than the high grade ones and bought the chickens from amongst themselves.

4.1.9 Constraints

The main constraint in the 1987 Mazingira study lack of veterinary services (11 respondents), a small number (3) mentioned theft and lack of space (3), lack of capital (2) and the others either did not indicate the constraints.

In Nakuru (Foeken and Owour 2000), the three most commonly problems cited by both the higher and lower income groups were animal health (72%) followed by theft (21.5%) and lack of feed (14.9%).

Again in Nakuru the main constraint was given as high death rates (two-thirds of the 121 households surveyed), especially among the smaller livestock. Most of those who kept small livestock cited disease as the main problem.

4.1.9.1 Survey and case studies

In almost all the areas surveyed, the poor livestock keepers highlighted problems of space, theft, diseases, predators and pests. Out of the 56 respondents, 32 indicated they have problems, 6 indicated no problems and these were mainly from Soweto, Kibera,

Kawangware, Kinyago and Kangemi. The constraints were mainly lack of space and start-up capital. The livestock keepers did not see the issue of harassment as a constraint.

The problems mentioned were lack of space for expansion by 22 farmers, another 4 mentioned theft while 6 mentioned health related problems like pests, diseases and predators. In Kinyago village, the researchers were shown a shed whereby dogs had gnawed the timber to gain entry into the goat shed. The dogs had eaten 2 kids belonging to the same livestock keeper (respondent number 52, Annex 4). He had, in retaliation, put poison so as to deter the dogs. In Kibera, drunkards used to steal ducks from a livestock keeper after a drinking spree.

The problems cited in terms of feeds were the problem of supply, the time taken to go long distances during dry season and inadequate feed for the livestock.

The cost of transport for purchase of inputs and for services is also an inhibiting factor. The study, however, did not obtain specific information but the study showed that farmers could not afford the bus fare to the city centre and to look for veterinary doctors.

Another constraint was a lack of space for waste disposal or no information on reuse of waste. Flooding during the rainy season was cited as a problem as the floods, particularly in Kibera, took animals away. Kibera lies close to Nairobi Dam.

The researchers found that the respondents did not have marketing problems. Buyers from the same area would come looking for the animals. This was probably due to the fact that the animals were not sold on a regular basis. None of the livestock keepers sold their livestock to the butcheries except for one (who was not “poor”). The question of harassment by the local Authority or the City Council was not cited currently as a problem.

5 KNOWLEDGE DEFICIENCIES AND RESEARCH OPPORTUNITIES OF BOTH REACTIVE AND PREDICTIVE NATURE⁶

5.1 Findings

5.1.1 Survey

One third of the respondents said that they do get information on current practices. This was mainly from peer groups, books/magazines, other farmers, private vets and friends. Twenty-two livestock keepers said that they did not seek out any information on current practices because they felt that they had adequate skills to handle livestock farming.

About 18 farmers indicated that they came to know of livestock keeping from relatives while another 25 learnt of livestock keeping from neighbours. One farmer indicated learning from a local radio station Kameme 101.1 FM

A large number of the livestock keepers (49) indicated that there are no government veterinary support services in their slums. Only one case from Bulbul, in Ngong, respondent number 55 (Annex 4) indicated that a veterinary officer had visited him some time back.

One interesting observation is that 16 poor livestock keepers indicated that they have constraints in getting information keeping livestock while almost a similar proportion (17) indicated that they have no constraints in accessing information in livestock keeping. Almost all the livestock keepers (50) mentioned that they would be interested in getting more information on better animal husbandry.

5.1.2 Case studies

The study found that knowledge on animal husbandry was very little. This was probably due to lack of support services. In Kangemi and Kahawa West, Soweto, where large livestock are kept, access to information was very poor. This can be shown by respondent number 23 (Annex 4) who depended on the radio for information pertaining to animal welfare. Another livestock keeper, respondent number 32 (Annex 4) said they have to give bribes to the government veterinary officers and if they do not bribe them, then they are given wrong information. In all the cases, the livestock keepers depended on private veterinary officers and chemists to provide the necessary information.

5.1.3 Stakeholders' brainstorming, using SWOT analysis

The livestock keepers acknowledged that they lacked information and access to it. They felt lack of information as important issues. One instance was that of biogas production – none of those present knew about it. This was despite the fact that there was no electricity in most of the slums and there is clearly a dearth of firewood in Nairobi.

⁶ Information source: limited survey of communities using questionnaire, stakeholders brainstorming, using SWOT analysis; information from stakeholders through interviews, using checklists; and official and grey literature.

From the researchers point of view, the lack of information and communication was crucial, as even neighbours did not know what the other one was using. One instance is that of respondent number 45 living in Kinyago (Annex 4) who had four chickens. Her sister, respondent number 44 also kept chickens and resided in the same neighbourhood. Respondent number 44 used a medicine called S-Dime for her chickens for prevention of certain diseases but her sister did not give anything, as she had no idea about it.

The livestock keepers were extremely pleased to receive Mazingira's brochures on livestock. They said that they would like to know more about livestock keeping but did not know where to get the information.

The Provincial Livestock Officer said that the Ministry did not have resources to produce brochures or pamphlets for livestock keepers.

6 POLICY, ASSOCIATED WITH LIVESTOCK KEEPING⁷⁷

6.1 Findings

6.1.1 Survey

Slightly more than half of the respondents said that they were aware of government rules and regulations on livestock keeping. One quarter did not know of any legislation, while only the rest gave no answer to the question.

The livestock keepers were asked whether the authorities (Nairobi city council and the local chief) have ever harassed them. Only 6 indicated harassment by the city council and another 4 by the local chief. The harassment by the City Council arose when the livestock wandered into streets and school compounds. The local chief was involved when pigs in Kibera had become a nuisance to the people during the day. The chief consequently threatened to dispose of all pigs found loitering in the area.

Those livestock keepers who knew about the legislation, indicated that the city council used to harass them till 1998, but after 1998, the Council was not bothered and thus they felt this was a good opportunity for them to continue keeping of livestock.

Twelve respondents said that there should be some regulation in keeping of livestock. These keepers indicated that regulations that were necessary were to control nuisance, noise and to some extent, number of livestock kept.

As for neighbours complaining about keeping of livestock almost half (28) said no, 3 said yes and 25 gave no answer to the question. For those who said no, the indication was that “we initially complained but when we realized that he was doing a good job, we joined him and here we are.” In most cases during the interviews the feeling was that “we are all in the same boat and we eventually forget about the smell and the noise and think about the money we will get”.

The livestock keepers were then asked what they would do if the government were to ban keeping of livestock in urban areas. Majority of the livestock keepers (two-thirds) said that they would relocate rather than sell or eat the livestock.

6.1.2 Case studies

Legislation did not seem to be an issue of concern to the livestock keepers. They said that they even when they were being harassed by the City Council, they did not stop keeping livestock. One keeper, respondent number 52 (Annex 4) from Kinyago, said:

“The Nairobi City Council used to visit and harass us. Last year they took four goats. I argued with them and even went to the Legal Aid Centre (known as Kituo Cha Sheria) but nothing happened. I finally gave up and left them with my goats”.

⁷ Information source: limited survey of communities using questionnaire, stakeholders brainstorming, using SWOT analysis; information from stakeholders through interviews, using checklists; and official and grey literature

As for the local administration, called the Chief, did not harass the keepers in most of the areas as they were also keeping the livestock, such as in Maili Saba, Silanga. In other areas, the Kibera Chief used to regulate the keeping of livestock, especially pigs. An interview with the Parklands Chief indicated that he does not allow the keeping of livestock because “they spoil people’s flowers”.

In areas, which were previously rural, and now peri-urban, such as Kangemi, the people were aware that the regulations existed, but the livestock keepers felt their areas were not close to the city and so the administration would not be bothered with them.

6.1.3 Stakeholder brainstorming workshop (SWOT analysis)

The livestock keepers said that as far as they are concerned, the keeping of livestock is legal. In the past (up to 1998) the Local Authority, that is, Nairobi City Council, was harassing them but now there was no problem. Unfortunately, nobody from the City Council (Local Authority) bothered to turn up for the workshop. Invitations were delivered personally, but there was a "do not care" attitude and there was no interest shown by the officials on urban agriculture.

The Provincial Livestock Production Officer (central government) said that from the Ministry of Agriculture's viewpoint, keeping of livestock in urban areas is illegal. However, the Ministry has turned a blind eye as the officials see that there is a need for keeping of livestock, particularly by the poor. The Ministry is drafting a policy to make livestock keeping legal. But it will take time before the policy measures are put in place.

The concern from the Ministry is that the land on which the squatters reside is illegal, and thus the Local Authority can demolish the structures (housing and livestock) at any time. Thus even if livestock keeping is made legal, the farmers may not be able to carry out their activities due to the unstable tenure. The question of land tenure also needs to be resolved together with that of legality of livestock keeping.

City by-laws of 1961 (Annex 6) are not clear as to how many animals one can keep, unlike in Tanzania, where only 4 cows per household are permitted. In Tanzania, there is also a by-law that says that animals are to be zero grazed.

7 ENVIRONMENT, PUBLIC HEALTH AND ANIMAL WELFARE⁸⁸

7.1 Findings

7.1.1 Environment

The major issue arising from livestock keeping is that of waste disposal. Information extracted by Njuki and Nindi (2000) shows that a cow produces an average of 20 kilograms and a maximum of 45 kilograms of dung per day. The figures for other livestock are unavailable. According to the same authors, the foul smell emanating from the animal excreta are due to 60 volatile compounds, the main ones being carboxylic acids, phenol, aliphatic and nitrogen and sulphur containing compounds.

Waste from the large livestock in Nakuru was used in their own farms (78.8%) or given to neighbours (18.2%) and the rest being dumped in the street. The waste from small livestock was mainly thrown (49%). The poorest households (49%) usually threw away the waste.

Mvena *et al* (1991), in their report cite Laram Rongo who had observed that random disposal of animal waste in Dar es Salaam, pollutes ground water, posing a health risk to residents. Where the ground water table is high, animal manure pollutes water by releasing a lot of the nitrates. Over 23 milligrams of nitrates per litre is said to cause cyanosis in bottle fed children

7.1.2 Survey and Case studies

In the areas surveyed, the respondents said that when nobody wants the waste, they throw it away. The waste is either disposed of in the dumping areas or in rivers. In Kibera, all the livestock keepers interviewed said that they throw the waste in the dam adjoining the slum. Even in another area, Kinyago, the respondents throw the waste in the river. When asked whether this is legal, the respondents said that if the government people do it, why shouldn't they? The livestock keepers said that the Nairobi City Council people come to dump human waste into the Nairobi River near their village.

Only in Kahawa West and Kangemi, the livestock keepers use the waste as manure for their farms. Only one livestock keeper, in Kibera (respondent number 13, Annex 4) takes the waste generated by her 8 cows to a rural farm in Kabete, every two months. However, this livestock keeper is not "poor" according to the researchers as she had a shop, her husband was employed and there were other indications of not being poor.

Respondent number 56 (Annex 4) uses goat manure as bedding for brooding chicks. He indicated that this speeds up the process of incubation. He also takes the waste to his urban farm nearby.

The above were few cases of waste use. In general waste disposal was a real issue (photos in Annex 3)

⁸ Information source: limited survey of communities using questionnaire, stakeholders brainstorming, using SWOT analysis; information from stakeholders through interviews, using checklists; and official and grey literature.

There seems to be lack of innovations/product development aspect in livestock farming because even when asked whether they could use the waste products for composting or biogas the livestock keepers were not aware of such technological options.

As for pollution due to waste dumping in the rivers, there was not enough time to carry out any in-depth analysis of the dam water such as in the case of Kibera where animal waste is disposed of in the dam.

7.1.3 Stakeholders brainstorming, using SWOT analysis

All the livestock keepers agreed that waste produced is a problem and they dispose of it either in rivers, dumping grounds or piling it up in their backyards. One woman, Monica has her backyard, 50 feet by 30 feet with a height of 2 feet, piled high with cattle waste. Again, this farmer was “rich” compared to the others.

The random disposal of animal dung also poses a health risk to the residents. In Kibera, where the livestock wander around freely, the risk is great as the waste blocks open sewer drains, leading to overflow of the sewerage. The researchers observed that there were many houseflies in that area although the residents did not seem to be concerned about them.

7.1.1.1 Nuisance Factor

7.1.1.1.1 Survey and Case studies

One would assume that animals are a nuisance to neighbours in high-density areas due to smell, noise and the odour of wastes. In the study very few respondents said that they had received complaints. These complaints ranged from goats eating flowers and “stealing” vegetables. In most cases, the livestock keepers said that the neighbours did not complain about animals being a nuisance as they were used to them. The research team did observe that the smell was offensive, especially where pigs and cattle were raised.

7.1.1.2 Infrastructure

Mvena *et al* (1991) in the Tanzanian study write:

"Often due to heat absorption by tarmac road, cattle and goats prefer to 'relax' in the middle of the road, where it is warmer while ignoring on-coming traffic. Road accidents involving cattle, and especially goats, are on the increase".

7.1.1.2.1 Survey and Case studies

Livestock keeping affect infrastructure such as roads, water, sewerage and electricity. In Kibera, goats and sheep are found on the roads, and as mentioned by the livestock keepers, can result in losses if accidents occur. The owners also said that they are expected to pay the car owners for the damage in case of accidents.

Respondent number 32 (Annex 4) informed the researchers that in the year 2001, three of his goats were hit and killed by vehicles.

Water is an important resource in urban areas. In the slum areas, water supplies are often tampered with and illegal connections made. In Nairobi, water demand far outstrips supply.

Although most of those interviewed (except in Kangemi) buy the water from water vendors in their areas, they cannot afford to buy the required amount.

In Maili Saba, farmers have tampered with sewerage lines to grow crops - for themselves and for feeding their livestock (maize). Thus, there needs to be studies done to find out the impact of using such maize feed on the cattle and the damage being done to sewerage lines.

Interference with electricity was a problem in Tanzania where farmers needed to have lighting and heating for chicks who are a few weeks old. The researchers did not notice this problem in Nairobi as most of those interviewed did not have electricity (two had solar power) and had only a few chickens and were not keeping them for commercial use.

7.1.1.3 Aesthetics

The environment is also affected in other ways. In Tanzania (Mvena *et al* 1991), write that "playgrounds for children, golf courses and undeveloped plots are studded with dry cow dung and other animal wastes". Thus beautiful gardens are no more. In the study, since the visits were to slum areas only, where there is no systematic planning of settlements and no recreation areas, the question of aesthetics did not arise.

7.1.2 Health

7.1.2.1 Survey and case studies

The Tanzanian study showed that animal wastes are a major cause of some diseases, especially tetanus. Animal dung is a rich source of the rod-shaped spore forming bacteria. In Tanzania, tetanus is one of the six diseases killing children. The time available for the scoping study was too short for the researchers to look into this aspect.

In all the areas surveyed, the people felt that the animals do not bring any health problems. Only one person (respondent number 10, Annex 4) in Kibera said that waste and sewerage can be a source of health problems such as 'respiratory problems and diarrhoea.

In Kangemi, another high-density area, the situation was different. Animals were kept in the compound, mainly because of theft. There is water supplied by Nairobi City Council. The area was much cleaner than Kibera and no houseflies were noticed.

In the highly congested areas of Kibera, Kawangware, the animals are kept close to the sleeping quarters. This is because of lack of space. One person (respondent number 50, Annex 4) in Kinyago had improvised his sleeping arrangements such that the animals were kept in his room. He did not see any harm in sharing the room with the animals. In traditional Kikuyu culture, the man sleeps with his animals. The space was not enough for the goats, so the goats slept on top of each other. This was the only such case the researchers came across. It was assumed that the man, being 88 years old, still clung to tradition.

7.1.2.1 Sanitation

7.1.2.1.1 Survey and Case studies

The sanitation was poor in most areas because the Local Authority had not put in any sewage system in these slum areas. They depended on haphazardly built pit latrines, which were shared by 10 families. In Kibera, one of the most highly populated areas, toilets were few or

non-existent. The normal method is of “flying toilets” which is putting human waste in a plastic bag and throwing it anywhere. Thus in Kibera, grey water (sewerage) outflow is common, with human and animal waste mixed together.

The sewerage system becomes overloaded in these areas. There were open sewer drains everywhere in Kibera, as the area does not have a sewerage system provided by the City Council. These were very close to the residential areas. The situation is exacerbated by the fact that the residents have to purchase water and therefore there is never enough water to keep the area clean.

All the grey water, plastics go into the Nairobi Dam and the Dam is a source of drinking water for the livestock. The Dam is now full of water hyacinths. Three years ago the problem of hyacinth was not so severe. This shows that there is eutrophication in the dam.

In Kinyago, some of the pit latrines are located on the lower slopes and during the rainy season, the latrines get flooded and the waste matter flows out into the adjoining houses. The researchers were doing the research during this period and noticed this phenomenon.

7.1.4 Animal Welfare

7.1.4.1 Survey and Case studies

Lack of space or enough land, unaffordability of drugs, access to information on services and drugs available, drinking contaminated water, has led to numerous deaths in animals.

Last year, in November 2001, swine fever resulted in almost all the pigs being wiped out in the slum areas. Chickens also died because of disease and one person mentioned that her ducks were dying because of lice. Fleas and jiggers were mentioned as a common problem affecting both animals and humans in Kinyago and Sinai. The researchers observed that jiggers were a real problem in Sinai – all the people were affected with not only the limbs being infested but also the mouth.

Extension workers (see Annex 3) who attended the workshop said that they are unable to visit all the areas as they have constraints of transport and also lack information on where the poor livestock keepers reside. However, they informed the livestock keepers that they were willing to help anytime if the livestock farmers approached them.

In Kangemi, there is a problem of contamination of spring water and wells. Kangemi is a highly congested area. The springs and wells are in the valley. The latrines have outlets leading to the wells and therefore, these wells are highly polluted. The people no longer use the spring and well water, but the animals drink this water.

7.1.4.2 Stakeholder interviews

A stakeholder interviewed was the Kenya Veterinary Association on issues relating to animal welfare.

The Kenya Veterinary Association (KVA) was formed in 1966. It is an association of people in the veterinary profession (from all sectors – public and private) and aims at educating the farmers and other stakeholders on better animal husbandry.

In a discussion with a veterinarian, the practice of zero grazing was seen as a key constraint to better animal husbandry in urban areas. The reason given was that the animals were confined and did not have room to move about. The other challenge is that unqualified persons engaging in veterinary practice give wrong advice and it is the livestock keepers who suffer.

The other issue was that of unfair trade agreements, which allow dumping of livestock products such as milk powder, meat and eggs from countries such as South Africa and Brazil. This affects the livelihoods of the livestock keepers, as the livestock keepers are not able to sell their products. The livestock keepers, however, did not mention this issue.

He also indicated that they aim at providing services to marginalized livestock keepers in Kenya. Recently they went to Laikipia District, a semi arid area about 300 km north of Nairobi, and vaccinated livestock in those areas.

7.1.4.3 Stakeholders' Brainstorming, using SWOT analysis

The objective of the stakeholder-brainstorming workshop held on 17th April, was to establish the strategic baseline for the urban and peri-urban livestock keeping. The methodology used TOWS rather than SWOT. This was to simplify the process for the participants since threats come to mind more easily than strengths. There were two sessions in the workshop.

a) Session One

The first session comprised of asking the non-livestock keepers their roles and responsibilities.

The Provincial Director of Livestock said that the Ministry's work is to provide assistance when required but the poor areas are many and the Ministry does not target the poor livestock keepers, as "we do not know where they are". She also mentioned the fact that the farmers are not willing to approach the Ministry as they feel that once the Ministry knows about their illegal tenure (squatter settlements), they might be evicted. But the Ministry has nothing to do with land issues.

The Divisional (lower than provincial) Crops Extension Coordinator, from Embakasi Division, said that they are willing to go to Maili Saba to help the livestock keepers but the political situation there is life threatening. There is a group called 'Mungiki', which has political backing. This group is an 'extortionist' or 'finance' group (in their own words) and do not allow anybody to come into the area. They attack anybody who does not give onto their demands.

The livestock keepers also expressed their fear of this group. They have been unable to sell their products outside because nobody is allowed in or the livestock keepers are not allowed to go out with their livestock/products. For example, before 2002, the livestock keepers were able to sell waste outside but cannot do so now.

The researchers also had a problem with this group when they went to interview the livestock keepers. They had to take refuge in a house of a resident when the Mungiki came after them.

The Divisional Livestock Officer, Embakasi Division, said that Embakasi is a very big area and they have not gone to all the areas. They have found that both dairy and beef cattle are to be found in the Embakasi area. However, the farmers in that area are not strictly 'poor'. All

types of livestock are kept but very few rabbits. The officers are encouraging the farmers to keep rabbits as the cost of keeping them is low and breeding period is short.

The Embakasi division has been divided into 5 workable units. In each unit there are 1-2 staff. Seventy percent of the farmers are being reached in Embakasi. The extension officers' job is to go out to the farmers to teach/train them in good practices. They also invite groups of farmers to see how others look after their livestock, arrange exchange visits to government research farms and hold seminars. Their constraint is resources and therefore cannot reach out to all the farmers.

The Divisional Crops Officer mentioned that water was a problem in Embakasi. The Ministry does not have the resources to produce any publications, materials of interest to farmers.

The representative from Kenya Agriculture Research Institute (KARI) said that the institute worked closely with NGOs, farmers, scientists and Extension officers. However, the Ministry of Agriculture was not involved and usually the farmers they work with are not poor farmers. But after attending this workshop, the representative said that he can see the problems facing poor livestock keepers and would now involve them, as there is a need. At the moment KARI is looking at the problem of animal waste disposal.

The Westland's Extension Officer said that they work in the Kangemi area. Again the problem is the conflict between land ownership and practicing urban agriculture. Some time last year the Westlands extension officers had a vaccination programme for all the villages. In one village, Kibagare, the vaccination exercise was completed. But after their visit, a piece of land was grabbed, that is, given by the City Council to a private developer. The residents of the other villages felt that the information on the land was leaked out by the extension officers and therefore refused to take part in the exercise.

b) Session Two

In order to simplify the SWOT or TOWS exercise, the livestock keepers were asked to answer two questions:

1. What good is livestock keeping to your family?
2. Would you recommend other poor people to keep livestock?

Each farmer then gave a brief of their activities, citing the constraints. Respondent number 3 (Annex 4) gave a demonstration on his area and where he keeps his cow. His major income is from the cow.

To contrast poor and non-poor livestock keepers, a 'non-poor' livestock keeper (respondent number 40, Annex 4) was invited.

She had no information on how to use the waste and when we mentioned the use of waste for biogas, she was very interested. In fact the other livestock keepers thought they would also like to know more about it.

The facilitator, Davinder Lamba, began the TOWS exercise by explaining what the internal and the external environment mean and what TOWS was all about (Annex 3). He further explained that TOWS would look at both the environments. The Mazingira team had prepared a TOWS menu, focussing on the main issues arising from the survey and case

studies. As the SWOT workshop progressed, additional ones were added to the menu. The TOWS menu derived by the team and from the participants during the workshop is given on the next page.

The livestock keepers who were present in the workshop were then asked to identify and rank (1 being most important) the most serious threats, the best opportunities, the strengths and severe weaknesses.

Table 7.1 TOWS Menu

Threats	Opportunities	Weaknesses	Strengths
1. Health and environmental hazards	1. Livestock for obtaining cash/subsistence.	1. Lack enough time and own labour to tend livestock	1. Have enough time and own labour to tend livestock.
2. Neighbours see livestock as a nuisance.	2. No interference from the administration	2. Lack outlets for selling livestock/products	2. Have outlets for sale of livestock/products
3. Interference by administration- Central, Provincial, Local	3. Outlets for selling of livestock/products	3. Lack access to inputs or services for livestock keeping	3. Have access to inputs or services for livestock keeping
4. Worry about loss or theft of livestock	4. Access to services, inputs for livestock keeping	4. Lack enough knowledge and skills for livestock keeping	4. Have some knowledge and skills for livestock keeping
5. Competition in selling of livestock/products	5. Availability of knowledge and skills for livestock keeping	5. Lack a place, enough for livestock keeping	5. Have a place, enough for livestock keeping
6. Dissatisfaction from owners/consumers of livestock	6. Suitable environmental conditions for diverse types of livestock	6. Lack capacity to expand livestock keeping	6. Have capacity to expand livestock keeping
7. Uncertainty of risks of livestock keeping	7. Enabling social conditions for livestock keeping	7. Lack of cash coming in from livestock keeping	7. Have cash coming in from livestock keeping

There was a lively discussion amongst the farmers on TOWS and the outcome was as shown in Table 7.2.

Table 7.2 Findings of the SWOT workshop

Threats	Opportunities	Weaknesses	Strengths
1. Health and environmental hazards	1. Livestock for obtaining cash/subsistence.	1. Lack enough knowledge and skills for livestock keeping	1. Have of cash coming in from livestock keeping
2. Competition in selling of livestock/products	2. Forming networks	2. Lack enough time and own labour to tend livestock	2. Have a place, enough for livestock keeping
3. Worry about loss or theft of livestock	3. Suitable environmental conditions for diverse types of livestock	3. Lack a place, enough for livestock keeping	3. Get food from livestock
	4. Outlets for selling of livestock/products	Lack outlets for selling livestock/products	4. Have enough time and own labour to tend livestock.
	5. No interference from the administration	Lack capacity to expand livestock keeping	5. Have some knowledge and skills for livestock keeping

At the end, in order to determine the baseline, the facilitator, Davinder Lamba, explained that the threats and weaknesses when added together give the external and internal difficulties faced by the livestock keepers and the strengths and opportunities give rise to the solutions.

The livestock keepers seemed to be very excited at the ideas generated in the workshop. Immediately after the workshop, the farmers decided that there was a need for a network to be formed of all the stakeholders and they requested Mazingira Institute to take a lead in facilitating the process. The other things which they were interested in were formation of associations, learning more about reuse of waste, particularly production of biogas, linking up with the agricultural extension officers and exchange visits between the different slum areas.

7.2 Network Formation

The livestock keepers were so enthusiastic that an association called the Silanga Ya Ngombe (Silanga is the place and ngombe means cattle in Kiswahili) was immediately formed. KARI has indicated that they would like to work with the livestock keepers in waste disposal methods in collaboration with SIUPA.

The livestock keepers have been making inquiries from the Mazingira team on biogas production. Mazingira Institute has already linked the livestock keepers with the relevant people. Kahawa West, Soweto and Kangemi will be the pilot projects for biogas production.

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Annex 1: Interpretation of the Terms of Reference (TORs) of the study

The intent—means and ends, of the study is to acquire information on the issues facing the poor livestock keepers in the urban and peri-urban environments of Nairobi, by identifying and sourcing appropriate information from official and grey literature; and undertaking a limited survey of representative communities. Further, to compile the information in the following types:

1. Introduction to the city.
2. Institutions representing the needs of poor livestock keepers.
3. Characteristics of livestock keepers.
4. Livestock species and constraints.
5. Knowledge deficiencies and research opportunities of both reactive and predictive nature.
6. Issues concerning policy, associated with livestock keeping.
7. Issues – existing and potential – concerning environment, public health and animal welfare.

The methodological considerations comprise: secondary information and field data – case studies; stakeholder interviews and brainstorming and SWOT analysis. An “Intent Map” has been derived from the TORs of the study to guide the work. It shows how the various elements of the study listed above are related. The intent map is attached.

Data sets are elaborated for the various sources of information, which include: information from a limited survey of representative communities; information from stakeholders; information from official and grey literature.

Source A. Information from a limited survey of representative communities.

Methodology: questionnaire/case studies

Representative Community

About 50 case studies are envisaged from the urban and peri-urban communities drawn from the poor areas of Nairobi and its environs. They are as follows:

Administrative Area	Selected Communities	Number of Case Studies
<i>Urban</i>		
Dagoretti	Kangemi	13
Embakasi	Mali Saba/Silanga	5
Kasarani	Kamae	5
Kasarani	Mathare	5
Langata	Kibera	10
Pumwani	Kinyango/Kanuku	5
Total urban		43

<i>Peri-urban</i>		
Mavoko	Mlolongo	2
Ngong	Bulbul	2
Kasarani	Soweto Kahawa	4
Total peri-urban		8
TOTAL		51

Types of information and corresponding data sets from the representative communities are as follows:

1. Institutions representing the needs of poor livestock keepers

- Are you affiliated to any organization of livestock keepers?
- If not, would you like to be a member of such an organization?
- Do you know of any such organizations – government, private, community?
- Do you think there are any gains from becoming a member?

2. Characteristics of livestock keepers

2.1 *Ownership of animals*

- Number of animals/type/species
- Who owns what?
- Capital required, obtained from, constraints
- Use of products – who owns /controls?
- When did you start keeping livestock?
- What made you to keep livestock?
- For how many years have you kept livestock?

2.2 *Numbers and characteristics of livestock keepers*

- Name of respondent
- Number of persons in the household
- Head of household/others
- Age, sex, marital status, education level, training of respondent
- Main occupation of respondent
- No.of years living in the area
- No. of household members by sex, age, education, occupation, sources of income
- Number of household members involved

2.3 *Gender aspects of urban/ peri-urban livestock keeping*

- Name of respondent
- Number of persons in the household
- Head of household/others
- Age, sex, marital status, education level, training of respondent
- Main occupation of respondent

- No. of years living in the area
- No. of household members by sex, age, education, occupation
- Sources of income other than livestock keeping
- What made you to keep livestock initially?
- Who decides on inputs to be used, how to use the products?
- Who looks after the livestock? How is the work distributed?
- Workload – typical day
- Constraints to livestock keeping

2.4 Reasons for keeping livestock

- Reasons for keeping livestock (income/savings, subsistence/cultural)
- Other means of income
- Benefits of livestock keeping?
- Products and use

Products	Sold (qty/value)	Cons. (qty/value)	Given away (qty/value)	Onward use
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From pigs
 From cows
 From geese
 From ducks
 From chickens
 From sheep
 From goats
 Others

- Any other impacts of livestock keeping (negative/positive)?

2.5 Commercial versus subsistence livestock keeping

- Do you sell your products/livestock? How often?
- Marketing of livestock and their products - who decides?
- Marketing of livestock and their respective products

Where Sold	Qty/value	Frequency	Use of income
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Pigs
 Meat
 Piglets
 Manure
 Others

Cows
Meat
Milk
Manure
Skin
Others

Geese
Meat
Eggs
Feathers
Other

Ducks
Ducklings
Meat
Eggs
Feathers
Other

Chickens
Meat
Eggs
Feathers
Other

Sheep
Meat
Other

Goats
Meat
Other

Others

2.6 *Contribution to household economy and family food security (goods or services obtained)*

- How important is livestock keeping in terms of contribution to total household income? What would be the approximate contribution to your household income?
- Do you intend to expand the quantity of livestock? If yes, why? If not, why not? Which types would you want to keep?

2.7 Linkages with relatives/friends in the peri-urban and rural environments.

- Urban/rural linkages – livestock/products taken to/from rural areas, how much, frequency
- Do you cultivate food crops? Where?
- Do you have any livestock outside this area? In rural areas?
- Urban/rural linkages

Urban use (qty/value)	Rural use (qty/value)	From rural (qty/value)
--------------------------	--------------------------	---------------------------

Pigs
Meat
Piglets
Manure
Others

Cows
Meat
Milk
Manure
Skin
Others

Geese
Meat
Eggs
Feathers
Other

Ducks
Ducklings
Meat
Eggs
Feathers
Other

Chickens
Meat
Eggs
Feathers
Other

Sheep
Meat
Other

Goats
Meat
Other

Others

3. Livestock species and constraints.

- Types of livestock kept
- Species in each type
- Number in each species
- Why this particular type and species kept
- Method of grazing
- Inputs: feed – where obtained, how much and cost

- Inputs required (raw materials), from where obtained and cost

1 2 3 4

Pigs
Cows
Geese
Ducks
Chickens
Sheep
Goats
Others

- Purchase of inputs -- who decides?
- Water: availability, distance
- Labour and other inputs
- Shelter for the livestock — adequacy, indoor/outdoor, constraints
- Land – owned/rented/free
- Preferences as to location of livestock
- Constraints
- Recommendations

4. Knowledge deficiencies and research opportunities.

- How did you know about livestock keeping (what to use as inputs, species to keep).
- How do you get information on suppliers of inputs?
- Do you get any information on current practices?
- Do you try to get information on current trends from books?

- Is there any government agency (such as the veterinary department) or agriculture extension workers who assist you in providing relevant information?
- Would you be interested in getting relevant information?
- Any constraints to obtaining and making use of information if you did have access to it?

5. Issues concerning policy, associated with livestock keeping

- Do you know of any legislation pertaining to livestock keeping -- whether you are allowed to keep livestock and in a particular area?
- If the government were to ban livestock keeping, what would you do? Has the government/City Council ever harassed you for keeping livestock? What about the chief in your area?
- Do you see any problems associated with livestock keeping – health, environmental and animal welfare?
- Do you think there will be any problems in five, ten years time – in urban areas and in peri-urban areas?
- Do you see any problems associated with livestock keeping – health, environmental and animal welfare?
- What about in five, ten years time – in urban areas and in peri-urban areas?
- Should the government, in your opinion, have certain rules and regulations concerning livestock keeping/? If yes, which ones? Why?
- What in your opinion are the advantages of keeping livestock (now and in the future)? What about the constraints (now and in the future)?
- Do you think that the prospects for keeping livestock are good (now and in the future)?

6. Issues – existing and potential, concerning environment, public health and animal welfare

- How much waste is generated from the livestock? How do you dispose of the waste?
- Do you have an urban plot for urban agriculture where you grow crops? What about a rural farm?
- Do you have any health problems because of keeping livestock? What about the livestock themselves?
- Has there been any complaint from anybody regarding livestock keeping – on health, smell? From neighbours?
- Do you think that by putting all the livestock in such a small place, there is any problem? If the animals had a bigger place, would that be good? If yes, why?
- Common animal diseases – any effect on profit?

Source B: Information from Stakeholders

B1. Methodology: Stakeholder interviews /checklists

Stakeholders are individuals and groups who affect and are affected by urban and peri-urban livestock keeping by the poor. They are grouped as follows:

1. Municipal and government officials
2. Associations of livestock keepers
3. Livestock keepers (see questionnaire under Information source 1 above).
4. Service providers.

1. *Checklist for Municipal and government officials*

1. Date of interview
2. Name of respondent
3. Level of operation-1. Headquarters 2. Division 3.city council 4. other
4. Interest/stake in livestock keeping
5. Role of the government agency in livestock keeping
6. Policy /bylaws on livestock keeping in residential areas (please provide copies)
7. Policy /bylaws on livestock keeping in peri-urban areas (please provide copies)
8. What can you tell us about livestock keeping in the city in terms of the spread of the activity?
9. Constraints faced by the government/your department with regard to livestock keeping. Constraints in five /ten years time?
10. What will be the situation in five/ten year's time with regard to livestock keeping?
11. What are the policy issues now and which ones do you anticipate in five/ten years' time?

3. *Checklist for Associations of Livestock Keepers*

1. Name of Association
2. Date of interview
3. Name of respondent
4. Legal status and date of initiation
5. Reasons for forming the association
6. No of members and type of membership (provide details)
7. Objectives
8. Areas of operation
9. Target group
10. The key activities
11. Collaboration /support from other sources (please list them)
12. Benefits of being a member
12. Achievements so far
13. Constraints
14. Recommendations to make the association work more effectively
15. Future of livestock keeping in five/ten years time
16. Issues arising from livestock keeping now/ five/ten years
17. Future prospects of livestock keeping in Nairobi (specify peri-urban or urban)

3. Checklist for Service Providers

1. Name of service provider
2. Type of service (*treatment, control, movement, training, vaccinations, other*)
3. Name of respondent
4. Legal status and date of initiation (please provide details)
5. Areas of operation
6. Frequency of operation
7. Constraints in the provision of services
8. Issues arising from livestock keeping now/five years/ten years
9. Who benefits from your expertise?
10. Are you aware of any act/by-law inhibiting keeping of livestock in Nairobi?
11. What are the plans for the future?
12. Are you willing to cooperate in future research on livestock keeping in urban and peri-urban areas?

Source B: Information from stakeholders

B2. Methodology: Stakeholder brainstorming/SWOT analysis

The focus of attention of the workshop being to identify and elaborate the types of threats and opportunities (external factors), in relation to urban and the peri-urban poor livestock keepers; and the corresponding types of strengths and weaknesses (internal factors) of the livestock keepers. The idea being that the stakeholders engage in strategic thinking from their respective vantage points, but bearing in mind the stake of poor urban livestock keepers. In other words, apply the SWOT in reverse: from threats and opportunities, to strengths and weaknesses (TOWS). After mapping of TOWS, elaborate relevant knowledge deficiencies and research opportunities by both reactive and predictive nature. Also synthesize the interventions of the external factors and the internal factors, using the TOWS quadrant matrix for the livestock keepers. The matrix can be constructed for the various stakeholders (see attachment – TOWS quadrant).

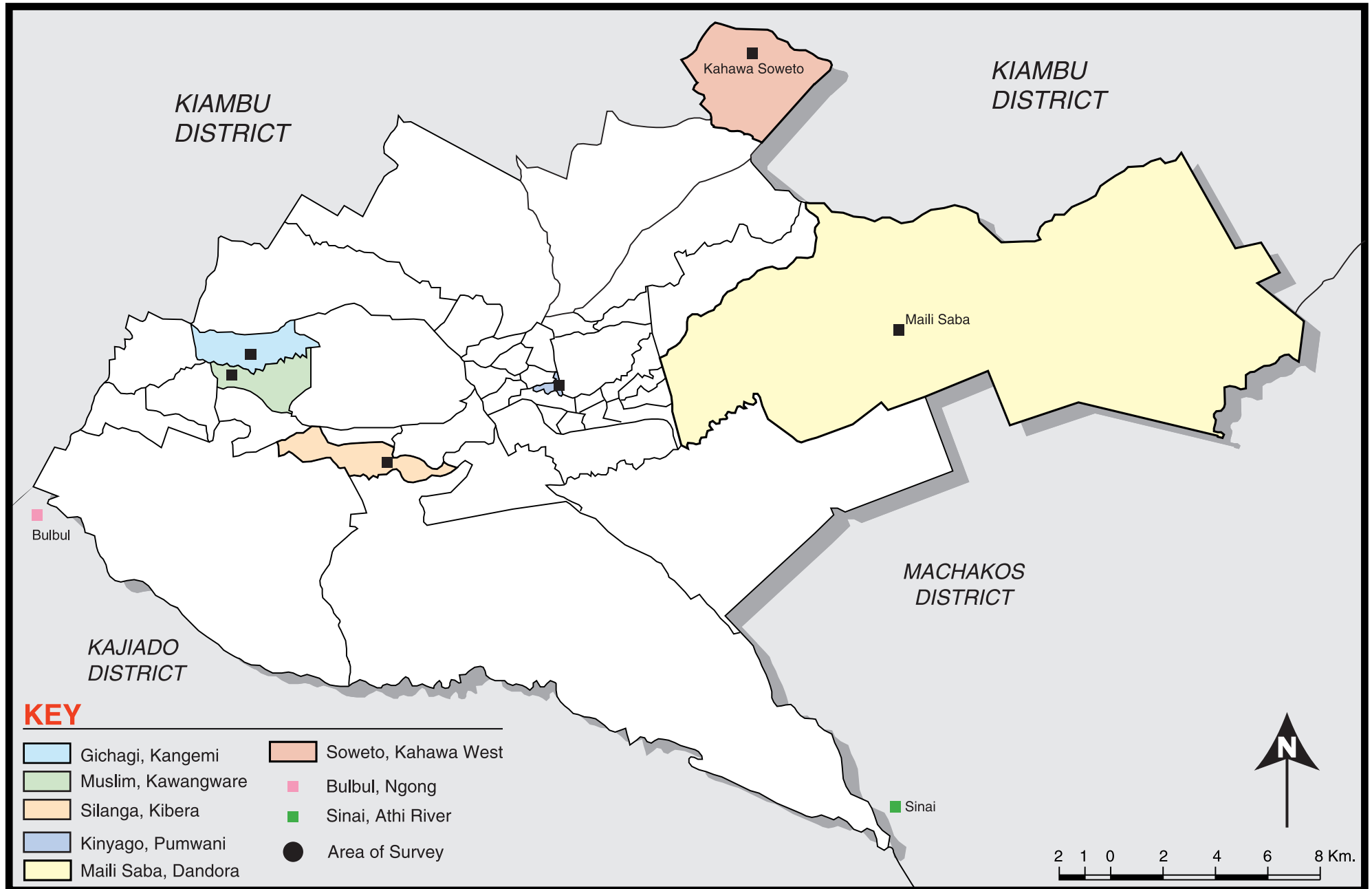
Source D: Information from official and grey literature

Methodology: Literature review/Intent analysis

The review of relevant documents for secondary data for the following types of information:

1. Introduction to the city.
2. Institutions representing the needs of poor livestock keepers.
4. Characteristics of livestock keepers.
5. Livestock species and constraints.
6. Knowledge deficiencies and research opportunities of both reactive and predictive nature
7. Issues concerning policy associated with livestock keeping.
8. Issues – existing and potential – concerning environment, public health and animal welfare.

Annex 2: Map of poor areas of Nairobi selected for the study



Annex 4: Profiles of respondents

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Kahawa West, Soweto

Respondent 1

Age -- 42 years.

Husband's is 42 years old. 10 members in the household.

Husband is self-employed -- as a battery charger.

No training in livestock keeping. Previously a nursery school teacher.

Education: Form 4 (sec). Husband reached Std. 7.

Said that life was better now than when employed. Sells Mitumba (second hand clothes).

Has a small shop selling a few sundry items like sugar, flour, soap etc.

Has 1 cow, which she started keeping in 2001; 2 pigs -- started keeping in 2001; 10 ducks -- started keeping in 1999.

Was staying in Githurai in 1977. Moved here in 1980. She is a squatter

Husband looks for food for pigs from the market. Daughter helps in looking after pigs

Cost of one cow is Kshs.10, 000¹. Cows are zero grazed. Pigs cost Kshs. 1,500 each, while the ducks cost Kshs. 350 each. Husband bought the livestock.

Daughter cuts grass for the cow after school, near the sewage treatment works.

The feed for pigs lasts 1 month and costs Kshs. 860. The shed cost Kshs. 10,000.

Income goes to wife and they both own the livestock.

Uses 50 liters of water per month for the livestock at a cost of Kshs. 4 per 20 litre bucket

Has no piped water in the house. Labour: Have 4 children who help.

Has built a raised pigsty due to foot rot and the ducks stay underneath. Pigs sold in nearby butchery. The butchers come looking for the pig farmers.

The ducks are mostly for home use but chickens die due to diseases.

She spends whole day at shop and husband feeds the pigs in morning and evening.

Family eats 2 eggs per day. Livestock keeping helps in nutrition improvement.

Has urban garden near the railway line grows maize, beans and potatoes. Uses 2 bags per week of manure in her urban plot. Recommendation is that livestock keeping is better than crop farming. Has no land outside the town but would like land outside.

¹(1 Pound Sterling = Kshs. 114.7)

The livestock are sold in case of emergencies. Income from pigs is used to pay for her children's fees and to buy other pigs.

Problem of feeds in the dry season due to longer distances in looking for feeds.
Has no cultural barrier to keeping of livestock.

Reason for keeping livestock -- saw what others were doing plus the added income.
Goats are expensive to keep.

Constraints: The space is small and feeds are expensive.

There is no harassment by askaris (police).

Is positive about livestock keeping in the future.

Income -- sells 20 eggs worth Kshs. 200 per month. Sold duck last month for Kshs. 350.

Respondent 2

Age -- 70yrs. Has 2 daughters, and one grandchild staying with her. Has one daughter in-law, 2 sons are married and all stay with her.

Came from Runda slums. House has 3 bedrooms. She is head of household and sells mangoes.

Has trained as a traditional birth attendant at African Medical Research Foundation (AMREF).

Has boys in high school and grandchildren in primary school. All adult family members are casual employees.

She started by buying one sheep. Has 5 sheep, 2 lambs, 2 ducklings, 2 chickens and 11 chicks. Sheep and chickens stay in one place. Has been keeping sheep for 10 years. Bought ducklings for Kshs. 30 each but her 6 sheep were stolen. People do not like sheep meat. Owns all livestock.

The house looked very dirty and the house had iron sheets as walls.

Daughter sells bones. Married son aged 30 years looks after livestock and has been trained as carpenter. When she goes out she authorizes the other members to look after the sheep.

She lets them wander around, uses domestic waste. No drugs are given to the livestock. Buys water at Kshs. 1.80 per 20 liters bucket. Does not feed chickens. Uses herbal medicine.

Has an urban garden near the railway line and grows crops such as maize, kale and beans. She hinted that crops are better than livestock keeping because of the various livestock diseases.

In 2001, she sold 5 sheep worth Kshs. 15,000. She divides the money from sale of livestock among sons.

She slaughtered one sheep during the Christmas festivities. Gave one sheep to her son.

Does not concentrate on crops due to insecurity of land tenure. She only sells livestock when she has problems.

She is a squatter and has not been harassed by city council.

Would like to keep pigs but they are difficult to keep due to expensive feeds and lack of space.

Takes manure to shamba (garden).

The dumpsite of the Farmers Choice (pig factory) caused an outbreak of pig sickness (African Swine Fever) in the area last year.

Respondent 3

Age -- 43 years. Educated up to Standard 7. Wife is aged 42 years and also reached Std. 7. They have 4 children and first daughter's age is 11 years.

He used to work at Kenyatta University but was retrenched two years ago. Came from Kamae village in 1994.

Started livestock keeping in 2001. He has one Friesian dairy cow and two chickens. The cost of the cow was Kshs. 30,000. It produces 6 bottles of milk for sale at Kshs. 20 per bottle.

Only depends on his cow as the sole source of income. Has a small plot along railway line for maize and beans.

Wife and husband feed the cow. Takes 2-3 hours to get adequate animal feed. Buys dairy meal at Kshs. 880 and this lasts for 3 weeks. Getting adequate grass is major problem

Cow does not drink water during the day but only at night.

Has a black and white TV, uses solar panel.

Waste is taken to farm but has dug a pit for grey water. Does not like keeping pigs because they have too many problems.

Ticks are a problem and uses drugs worth Kshs. 170. Artificial insemination costs Kshs. 800 per dose. Has not observed any diseases. But private vet can be called. The animal salt costs Kshs. 130, molasses Kshs. 300.

Respondent 4

Age -- 35 years. Not educated and lives with husband and 2 children.

Every Friday she goes to the waste dumping ground to collect waste feed for pigs. On other days goes to Githurai, 2 kilometers south of the village for feeds. Has sold a male pig and has now only 2 females with 9 piglets

Cow feed cost Kshs.1, 230 per bag of 90 kilograms. Uses pineapple peelings as animal feed.

Has 11 chickens, 6 ducks, 1 goat, 2 sheep, 2 dairy cows and 11 pigs. Started with goats in 1994 but sold them. Gave 4 goats in exchange for half pure breed cow. Gave another 6 goats in exchange for 1 Friesian cow. Later exchanged the Friesian with 2 other Friesian cows, which produces 13 bottles of milk. Bought another 2 Friesian and Ayeshire.

Bought piglets at Kshs.1500 and sold 5 at Kshs. 1,000 each. She sold the mother sow at Kshs. 7,000. Ducks bought at Kshs. 100 each and are for home use only. 8 Ducks were stolen. Recently started keeping chickens for eggs and uses waste to feed them.

Wakes up at 4 am, prepares children to school, leaves for dumping ground before 9am. Looks for shoes for fuel and sleeps at 11 pm .

Boils waste foods from dumpsite using a half cut oil drum. The fuel is mainly old shoes and tyres collected from the area.

Daughter helps to sell milk.
The wife and husband jointly own livestock.

Friesian gave birth to calf but she sold the calf. Loves animals and would like to have more cows. Recently bought sheep because they breed fast.

No complaints from neighbours. No health problems observed. None of her pigs died during November 2001 outbreak whereas a neighbour lost 30 pigs. There are no government vet services but private ones from Githurai are called.

Would like to separate cows from pigs unlike now, whereby all her livestock stay in the same area.

Waste taken to small shamba.

Kibera

Respondent 5

Husband is head of household and his age is 48 years. Reached form 4 (secondary school) and is employed as a driver. Has 7 dependants in the same house including 1 grand child. Has lived in the area since 1980. They are squatters.

She is a member of a group but not for livestock keeping. Would like to be member of an association because she would know more about markets and vet services.

Has 6 goats, sold 2 and ate 1. Has 4 sheep. Gave away 2. Had 15 ducks which were all stolen by drunkards from nearby bar.

Started with one goat in the year 2000 in a small room. Keeps goats because goats give quick money for school fees.

She also sells vegetables in an open space.

She takes care of livestock herself. Wakes at 5 a.m. and at 5.30 am goes to Wakulima wholesale market in the city center to buy vegetables for her shop, some 5 kilometers or so. Collects domestic waste from green grocers along the road to feed her goats. At 8 a.m. she opens her open-air green grocery. Sleeps at 9 p.m.

She has not yet got any products from goats. The goats are an insurance against debts. Would like to keep cows but space is limiting.

Has no linkage with rural areas. Owns a small garden in Silanga village in the same area. She grows *sukuma*' (kale). Animal waste is taken to the farm and is about 5 kg. per week.

She sells water amounting to Kshs.9,000 per month and pays a bill of Kshs. 2,000 per month to the City Council. Has divided her room in the house for the livestock.

Has interest in goats. Her father used to keep livestock. Buys drugs from a chemist in the city centre. No government vet comes to the areas and they do not know them.

Would like more information on livestock keeping.

Knows there is a law prohibiting keeping of livestock in urban areas but if threatened they would sell the livestock.

In five years time livestock keeping will be no more due to ethnic clashes and lack of space in the area.

Compared to rural area one can sell livestock faster in an urban area.

No complaint from neighbours.

Has to sacrifice some space for livestock but would like more space. Diseases are mainly due to worms. These have no effect on profit.

Respondent 6

She is a widower aged 40 years and has 5 children depending on her. Has lived in the area for 20 years.

Thought about keeping livestock as she was keeping them in rural areas. Started keeping livestock in 1998 with one goat (at Kshs. 1000), which then produced more. The third goat gave birth to 3 kids. The mother goat died and dogs ate another. She has sold 2 goats and now has now 7 goats.

Shelter cost was Kshs 1,200 to construct.

Keeps goats for security, in case of school fees. Gets milk from goats. Son in school. Helps look after the goats.

Has an urban garden in Madaraka Estate $\frac{3}{4}$ acre where she grows maize, beans. Last season, she harvested about 20kg of beans and 50kg of maize. Problem is theft of crops.

Wakes up at 6 a.m., goes to Wakulima wholesale market in the city Centre Returns home at 10 a.m. Sells vegetables and arrowroots until 8 p.m.

Gets 2 cups of milk from goats. Livestock is good to supplement income and insurance against debt. She has sold 2 goats and given away 2. She decides on what to sell. On a daily basis livestock will not help.

Would like to keep pigs but they require a lot of feed from dumpsite.

Says no rural goat would survive in an urban area since urban goats eat cooked foods and meat.

Since she sells sukuma she gives the wastes to goats, as they do not like grass and other greens. She has no rural linkages.

Constraints are small space and lack of vet services. Shelter is small and rents from the owner.

Has used caustic soda to treat goats since there is no vet around. No government officials around.

Would like more information on livestock keeping.

He thinks there is legislation on urban livestock keeping but does not know exactly what. No harassment by the City Council. The chief had warned pig keepers against letting them loose because they were biting drunkards. When the goats are found on the railway line, they are rounded up and confined.

Respondent 7

Age -- 42 years. Reached form 2 in secondary school. Husband's name is Gicheru. He is 49 years old. Has 5 children -- 2 in secondary and 3 at home. Has lived in the area since 1960s. They are squatters. Has 18 rooms and they use 5 of these and she rents the rest.

Goat keeping is an occupation of both husband and wife.

Has 22 goats and 2 chickens. Has kept livestock for 20 years. She recently added sheep for breeding. She keeps them indoors.

They make joint decisions on selling and any other matters relating to keeping livestock.

The goats roam around and some drown in the nearby Nairobi dam. Everyday she collects sukuma (kale) and feeds to the goats. This is given free in wheelbarrow. Private vet brought in occasionally (maybe once in a year).

One goat is slaughtered twice in a year. Waste produced -- a bag of manure every 2 days. Waste is thrown into river. Has no farm in rural areas

Livestock not main source of income. Besides rental income, also has a water kiosk. Reasons for keeping livestock – mainly for prestige.

For deworming – drugs bought every 3 months from town. She spends about Kshs. 3,000 for drugs per year. Water cost Kshs. 2 per bucket. Spends less than Kshs.100 per day.

One sheep or goat sells for 700-1,000. Has sold more than 3 goats -- for savings only. Goat milk not used for consumption.

Nairobi City Council does not harass them. No health problems for animals but houseflies are common.

In 5-10 years there will probably be more livestock. Pigs are dirty and involve too much work.

Government should legalize livestock keeping by allowing 5-10 per family.

Respondent 8

Age -- 42 and reached standard seven in primary school. Has 2- children who are married. Has been a resident since 1988.

Livestock -5 goats (started in 2002). Began with 1 goat now has 5. Has sold 2 @ Kshs.1, 700. Keeps livestock for school fees. Livestock keeping is advantageous in December -- slaughters one. Would like to keep more since space is not a problem.

Water bought ½ container of water per day. Feeds them on waste from changaa (local maize and millet brew). No health problems identified so far. No milk used.

No harassment from the city council. Policy-should allow people to keep livestock. No problem in selling goats.

Reasons for keeping livestock - for income and paying education cost per year. Has no farm here and the waste thrown in dam. No problem in disposing waste.

Also has a small shop – sells vegetables.

Respondent 9

Age -- 23 years. Is a casual worker. His parents stay in Limuru, some 35 kilometers north of Nairobi where they grow maize and beans.

Has 30 ducks, which he keeps outside. Initially bought one in 1996.

In one month can sell about 10 ducks @ Kshs.450. Stealing not a problem, except at Christmas time. Would not like to keep more ducks -- 30 maximum so that he can take care of them.

They lay 4 eggs per day. Uses one every month for home consumption. Has taken 10 ducks to Limuru. No diseases observed. Feeds them on omena, ugali, sukuma (fish, cooked maize meal, kale). Uses Kshs. 600 per month on feed.

Would like to keep goats, sheep. Owns 10 sheep in Limuru, while the rest are owned by his parents.

Has no specific reason for keeping livestock. Chickens lay 5 eggs per week, which are not sold. Kept for breeding. Is positive that livestock keeping will improve.

Waste not used. ½ container water bought per day

City council no problem.

Respondent 10

Age - 45 years. Stays with 4 children and wife.

Wife and husband own kiosk for selling of water. Has a small business and also rents out 8 rooms. Has a ¼ acre in Athi River some 12 kilometers south of Nairobi. Owns land and house in Athi River -- 4 rooms. At Athi River he has 4 goats. In another slum in Nairobi, has 17 rooms. Stays here due to the higher income from rent.

Has a small piece of land and 3 goats in rural area. Maize and potatoes brought here from rural areas.

Has 2 chickens and 7 chicks in Kibera --1 day old. Chickens for home use was given as gifts. Had 8 goats all stolen. This was 10 years ago when Nairobi city council took his goats. 1 kg chicken feed cost Kshs.10. uses 3 kgs. in a week.

Livestock helps-- for savings. Rental income enough for his needs. Has lived in the area for 20 years and has electricity.

Water vendor -- sells 150 containers @ 2 Kshs. 2 per day. There is a sewage problem

Ducks have leg problems. No vet services available. Needs advice on medicine and harmful effects. Pigs really not allowed by District Officer.

Respondent 11

Age —35, reached Form 4. Born in Kibera. Husband's age 40. Educated up to 'O' levels and is self employed. Has 4 children aged 15,13, 9 years respectively and the last one is 18 months old.

Does not know of any organization.

Keeps 4 turkeys. Bought from a friend at Kshs. 500 per turkey. Started keeping in 2001. She has not had any products yet.

She is fully involved in looking after the livestock and the other family members sometimes help. Other sources of income are a retail shop and water vending. She likes turkeys and she likes studying their behaviour.

She wakes up at 6 a.m. and prepares breakfast for the children and goes to the shop. She stays there till 12.30 p.m. when she goes home to prepare lunch. Sometimes a relative helps. At 4 p.m. she feeds the turkeys and at 6-6.30 p.m. goes home to prepare supper.

Does not have any constraints yet but has to be careful because cats and dogs can eat the chicks.

Throws away waste.

There is no significant change in her income.

She would like to increase to 10 turkeys and would also like to keep ducks. The ducks multiply faster and are resistant to disease and are not like chickens. She buys chicken feed and uses left over food from her house.

She uses Kshs.150 per week on feeds. The shed cost her Kshs. 200, which is inside the house. The neighbours do not complain because she maintains cleanliness. She needs extra space for the animals so that they are not a nuisance to the neighbours. She mentioned that there is no advantage in keeping livestock and it is just an extra expense.

She came to know about turkeys after she ate some meat given by a neighbour. The person who sold the turkeys gave her more information.

She has no source of information on livestock keeping and she does not read books or magazines

But she would like to get more information on feeding, environmental aspects, health and faster growing breeds.

She indicated that there are no vet services in the area.

She is also aware of the by law and if the government forbids people from keeping livestock, she would just dispose them.

There is no harassment by the city or chief. The government should have rules. They should restrict the quantity of livestock kept because if there are many then they will be a nuisance.

The problems related to livestock are that ducks are allowed to scavenge and maybe they can get infected. 5 years from now there will be dirt and no grass and so livestock will continue feeding on garbage. They will all die. In 10 years, if environment deteriorates there will be no livestock

She has not bought any drugs for the turkeys.

She mentioned the space she keeps her turkeys is congested and there is no free movement for the turkeys. She has to separate the chicks from the bigger turkeys.

Respondent 12

His age is 26 years and he reached up to Std.. 8. He has no formal training and works as a barber in the informal sector. His wife's age is 21 years. Reached Std.. 8 and has no formal employment. They have 2 children -- one 3 and a half years old and another who is one and a half years. They were both born in Kibera.

There is no organization representing farmers in Kibera but he would like to have such an association to help him.

He started keeping pigs last year and now has 4 pigs. He has spent Kshs. 5,000 on the pigsty and Kshs. 2,000 on each pig. He had to seek the chief's authority to build the shed.

He also has 19 goats, which he started keeping 3 years ago. These are housed in a room built at a cost of Kshs. 15,000. The cost of a goat is Kshs. 3,000. He also has 5 geese and 2 ducks, which he started keeping 3 years ago. He initially started keeping chickens but they all died.

He is the one who decides on what is to be done and the wife takes care of the pigs. He wakes up at 6 a.m. and opens the barbershop and later feeds the pigs.

The constraints in keeping livestock are diseases and one of his pigs has swollen legs. Dogs bite the geese while goats die due to consuming polythene bags and they do not drink water.

When the business is not doing well he sells one of the livestock. He has sold 1 pig (Kshs. 1,800) and they ate one last year. Seven pigs died last one year. He sold one goose at Kshs, 2,500 but the eggs were washed away in December last year during the rainy season. He saves 5 eggs for breeding.

He has no chickens now but he used to keep cockerels. He sold 6 goats but another 6 died while the family ate one.

They get 3 tons of waste from pigs in a year, which they throw into the river because people complain that it has a bad smell. They also get a sack of waste from the goats.

Income from the livestock is an emergency fund and he uses it as security when he has a problem. He sells livestock after every three months. He would like to keep more local sheep and Friesian cows.

For feeds he uses brewery waste, which costs him Kshs.150-200. He mixes the brewery waste with Kale and boils it. The feed lasts for a week

He uses a drum for boiling the mixture. Uses plastic and shoes as fuel.
The livestock consume about 25 liters of water daily, which costs Kshs.3. He uses family labour to take care of the livestock. The shelter for pigs and sheep is outdoors.

A friend explained to him on how to keep livestock. He learnt about inputs from other
He purchases drugs from a chemist in the city center but the vets also come and give him advice
There is no government extension service in the area.

He has adequate space. He lacks access to information but he is interested in learning more on pigs and chickens.

He is aware of the law and if the government were to say no to livestock, he would sell all.
'The government regulation cannot help us unless they relate to vet services'.

'Our chief came once due to the pigs that were roaming about and said all, should be locked because they were biting the drunkards'.

The main problem in the area is goats eating polythene bags.

According to him livestock will increase in the next five years but in 10 years from now there will be a decrease in livestock due to development. The people will build houses in all the areas.

He has no farm and has not received any complaint from neighbours.

Respondent 13

Her age is 27 years. Her husband has reached Form Four in secondary school. They have 2 children and she is managing a retail shop.

She has 8 cows -- all dairy (Friesian). She started keeping in the year 2000. She started with one cow. Now a cow costs around Kshs.30, 000-45,000.

From 1 cow she gets 20 liters of milk. She sells a glass @ 13 Kshs.

She also has 20 goats. Has sold 5 goats and eaten one. The livestock are zero grazed. Has 4 rooms, one for cows and goats and 3 rooms for the family.

She buys 15 bags of Napier grass per month. Uses wheat germ and maize meal worth a total Kshs. 480. The drugs cost her Kshs.500 (3 months dosage) while artificial insemination (AI) depends on quality of seed – costs Kshs.1,000. Two cows have already been inseminated.

Milk not competitive and they have a well-stocked shop. They own house in Kabete.

The waste is taken to their farm after every 2 months and it is enough to fill a pick-up.
They have a farm in their rural home (grows maize). Uses maize stalks to feed her cattle. She does not keep pigs because she cannot cope with the workload.

There is joint ownership of livestock.

They have stayed in the area for 6 years and the NCC has not bothered them for about 5 years.

The diseases at the moment are typhoid, cholera, and malaria. Human waste is worse than waste from animals because the smell from animal waste is not a problem.

Kangemi

Respondent 14

Age -- 60 years. Husband died in 1992. Has 7 children. 1st born daughter is 40 years -- married and lives separately. 2nd born is a son, 30 years old and lives in the same compound. He is married with one child and he is employed. 3rd born is also a son, 28 years old and married. Unemployed and has 2 children. 4th son is aged 26 years and is a casual worker. 5th child is a daughter 24 years, has a child and not married. She is doing short courses and is unemployed. 6th son did not complete school. He left school after finishing Std.. 8 in primary school due to lack of school fees. Does casual work. 7th is a daughter -- 20 years and has one has a daughter. She is unemployed. She has done computer courses.

There is no organization in the area but she would like to join one to learn about livestock keeping.

She has 5 sheep and this is her main occupation. She had 3 cows in 1980 but sold them because of foul smell from their waste, which affected neighbours. Before her husband died she used to keep goats and chickens but the chickens died. She started with one goat, which reproduced twice a year.

She sells 2 sheep in a year @ Kshs 3,000 to 4,000.

She was born in the area and has no rural link. She was given the land and has owned the 2-roomed house since 1964.

She has electricity, television, and water. She has rented a farm for Kshs.500 per annum where she grows kale, arrowroots, beans and maize. There is more income from goats than from crops.

There is no problem of theft in the area.

The goats fed on sukuma (Kale), peels of potatoes and bananas. Every morning she goes to look for food and pays between Kshs.20 to 50 per week for feeds. Although the goats stay in the compound the household never uses their milk.

She calls the vet called twice in a year (uses Kshs. 500 per visit).

The constraint is lack of space and she would like to keep more goats and add cows.

She would not like to keep pigs because they are very dirty. She keeps the goats as a source of income although culturally goat keeping is the tradition.

She indicated that marketing is not a problem and every year she slaughters one goat at Christmas.

The waste is used on farm not sold and she takes to her small plot, twice a week. She has a shed for goats and cleans it everyday. The children do not help in the farm.

The NCC disconnected her water for defaulting on her payment but it does not harass her. In 5 to 10 years there will be more livestock, but grass will be a problem.

Respondent 15

Age -- 49 years. Born in Kinoo, and reached Std. 6 in primary school. Her husband's name is John Kamau, 57 years, reached Std. 8, is unemployed and works as a casual labourer. They own the house in which they live in.

They have 10-children. The 1st born son is aged 32 years does casual jobs and stays with parents

The 2nd born is a daughter; 30 years married, and reached form 4. The third born is a daughter aged 28 years, unemployed and reached Std. 7. The 4th child is a son 26 years old and reached Four 4 and is unemployed. The 5th is a daughter aged 24 years reached form 4 and unemployed.

The 6th is a daughter, 22 years, reached Std. 8. The 7th is a daughter, 19 years, reached form 4

The 8th is a son, 18 years, in Form 4. The 9th is a son, 16 years now in Form 1. The last born and 10th child is a daughter 9 years, is in Std. 3

“All the girls are married but two of them are still depending on me and live with me”.

They have one Friesian cow, which they bought in 2001 for Kshs.13, 000. Had one dairy cow which died

She buys water at Kshs. 3 a container. Buys 6 in a day for one cow. There is no electricity in the house. They have not got any products yet from the cow. The artificial insemination costs them Kshs.500.

They have 3 chickens and 4 ducks. She sold 4 ducks this year at between Kshs.200 to 500 Last year they sold 3 ducks. They get 10 eggs every week

The duck feed costs 1kg 20, and they use 2kgs per week. The feeds are mixed with ugali (maize flour meal).The shed for ducks is inside the hop use. She uses hired labour to take care of the livestock.

The cows are fed on grass, maize and Napier grass. The children help in fetching the grass The animal salt cost Kshs. 30 per month while rock salt costs Kshs. 180 per piece Deworming costs Kshs.500 and plus an injection

Her father in-law owns a small piece of land in Kinoo some 5 Kms north of the city center

Their main problem is lack of money for school fees.

The animal waste is used as manure for the garden.

Constraints: has adequate space to keep another cow but there is no money to buy one.

Respondent 16

Aged 26 years and is the 3rd born son. His mother is a single parent aged 55 years-- works as a secretary. They are 4 children in the family. The 1st is a son -- 32 years old, unemployed and staying with the mother. The 2nd born is a daughter aged 28 years. She is married and has her own place. The 3rd born son was the interviewee. The 4th born is a 13 year old student and in Std. 8

They also have 24 rooms. 20 area rented @ Kshs. 800 per room per month.

They have 3 chickens (1 cock and 2 hens).

They have one cow -- bought in 1996. Anthony is the one who looks after the cow (Friesian). He gives it cabbages and banana peels. He collects grass for the cow.

The milk yield is about 6 bottles (750ml) in the morning and 4 litres in the evening. He sells the milk and use about half liter for household consumption. He sells a bottle or 2 cups at Kshs.25. He does not keep records but the milk supplement their budget by 25%

They keep chickens for fun and have not eaten any since 2000.

Has no farm. Waste given away

The grandfather has lots of cattle and the mother has a farm in Ngong.

He indicated that there are no diseases, and water is not a problem. However space is a problem

He inseminates the cow A.I at a cost of Kshs. 500 while salt and deworming costs Kshs. 600 every 3 months.

He mentioned that there are no environment effects since there is no smell. Every 3 days he cleans the shed

In 5-10 years there will be more livestock but does not see a problem.

There are no rules governing keeping of livestock

Respondent 17

Aged 67 years and reached Std. 7. His wife is 64 years old. They are 8 members in the in household. 1st 20 years daughter reached Form 4 and is unemployed. 2nd born is a girl, 18-years old, reached Form 4 and is unemployed. 3rd is a 16 year old son just finished Form 4. Going abroad for hairdressing. They own the land and their house has 3 rooms. 4th child is a 12-year daughter in primary school.

Their father used to keep livestock (since 1962) and he had 5 local cows.

Livestock includes 3 cows, 4 chickens and 3 goats. They bought a cow for Kshs.13, 000 (young) and would like to keep more but they do not have money. The bull costs Kshs. 10,000 and can be used for insemination. They feed the cows on grass, which is brought by the children

They have an urban plot outside Kangemi. Maize, beans are grown and water is available on the plot. His wife and children look after the farm.

Milk is for home use. Production is 6 bottles in the morning and 6 in the evening. Eggs for home use once in a while.

They make joint decisions and they jointly own the livestock.

Their main income is from rental of 12 rooms (brick building). The rent is @ Kshs.1, 300. All the rooms have water and electricity.

Respondent 18

63 Years of age and is single. Had 3 children who all died at childbirth. Has lived in the area ere since 1975. She had ducks, which were stolen.

She owns 2 geese. She had a lot of geese in 1987 but they were all stolen. Does not want to sell the geese as she wants them to reproduce. She has space but has no money to build shed.

Has rented a small plot and grows arrowroots, cassava, bananas – (Matoke) for home use. Sells a little bit of the produce. To her farming is better as there is theft of livestock. No other farm as she was born in the area.

Buys water and has no electricity.

The waste is used in her plot.

Uses millet to feed the geese at a cost of Kshs.50 per week. The geese are also fed on 1kg of growers mash bought at Kshs.45. She uses wood ash to clean the shed

Decided again to keep geese-six months ago because she can recover money quickly and geese fetch a good price (Kshs. 2,500). Cannot keep goats because she has no time to collect grass. Half her day goes in looking after her plot.

Has called the vet 4 times to check on the livestock. She does the deworming drugs and dipping (once a week). She used to work with Wellcome Kenya Ltd. (a livestock drugs company) and so she knows what to give to her livestock.

Respondent 19

Age 84 years and his wife is 78 years old. All their children were born in that area. They are 5 staying here and he has 8 children; David 30 years old and has one child; George, 38 years old, married and has 1 child, James 32 years and married. Others are 3 daughters -- all married.

They have 8 rooms rented out and this gives them some income.

The son who has been looking after the livestock said that he has been keeping livestock since 1990. His parents also kept goats, cows and had a big farm in Eldoret (some 300km north of Nairobi). They were victims of the 1992 ethnic clashes in Eldoret where they lost all their property and the farm.

He bought local goats in 1990 and crossbred them with an improved goat. The goats do not roam about as dogs eat them. Now has 2 goats but sold 10 goats. Every year he sells 3 goats @ Kshs. 3000. He uses goat milk (about one liter) but not all the time. He keeps goats for cultural and income reasons. He sells some of the goats when he has problems.

His siblings, James and Elizabeth have vegetable kiosks. Vegetable leftovers are given to goats. Gives maize if vegetables are not enough. When greens are not available, he spends about Kshs 500 per month on feeds. His brother James also looks after the goats.

The drugs for (worms) cost Kshs. 150 every 3 months, while salt costs Kshs.50 (bought every 2 months).

They have no urban farm and the animal waste is given away. There is electricity and water in the compound.

The main constraint is space. He would like to increase his livestock. He has money problems.

There is no harassment by NCC and no legal problem.

To him keeping livestock is better than running a kiosk. There is more work in keeping chickens than in keeping goats.

They used to sell milk to KCC (Kenya Cooperative Creameries- now almost defunct) but does not do so as he does not have any cattle.

Respondent 20

His age is 29 years. He reached Form Four. His wife's age is 26 years. She also reached Form Four. They have a four year old child. They are all unemployed and were born in the area.

Although there is no association representing the livestock keepers, the respondent indicated that he would like to be a member because ‘we could be meeting and doing marketing’.

He has Friesian cow which he has been keeping for 4 years. He spent about Kshs. 25,000 to buy the cow while the shed cost him Kshs. 7,000. His other two cows died last year. He has 13 turkeys, which he started keeping 2 years ago but safari ants ate 6 chicks. Said that “I used to sacrifice and starve in order to save the money”.

He started keeping rabbits 9 months ago. Now has 15 rabbits. Had earlier sold 50 of them @ Kshs. 100 each while 5 were eaten by dogs.

The feeds consist of dairy meal, which he buys at Kshs. 900 per sack. This lasts for one month.

The chick mash costs Kshs. 600 and lasts 2 months. The rabbits eat weeds that he collects from the wild and it takes him 30 minutes to fetch the weeds. The cow takes about 40 liters of water per day and he gets a bill of Kshs. 300- 500 per month from NCC.

He usually spends about 6 hours taking care of the livestock. He is the only one involved in taking care of the cow. He sometimes hires labour @ Kshs. 200 per day.

The main products are 3 liters of milk -- which he sells to local residents @ Kshs. 24 per liter. They consume half a liter. The sales from milk give him 65% of total income.

He keeps the eggs for breeding but his main source of income is cattle, plus the urban plot he has planted with sukuma, maize, spinach, and bananas.

His reason for keeping livestock was that he was unemployed and the cow gave him money. He gets about 1 ton of waste per month, which he takes to his plot and throws the rest.

He plans to add 2 more Friesians and keep them under zero grazing.

He gets information from neighbours. For new practices he listens to the radio since he has no training in livestock keeping. He would, however, like more information on livestock keeping.

There are no government vets nearby and he has to go look for private vets.

On constraints -- nobody has ever come to explain to him about the keeping of livestock. He has no materials to expand but would like to put up better shelter so that the livestock are more comfortable. Chickens have fever and get worms.

He does not know about any laws on livestock keeping. If they ban the activity the government has to give him an alternative. There is no harassment here but the problem is when the cows get sick. “The regulations on livestock keeping should help us improve and should not be oppressive”.

In 5-10 years time livestock keeping will improve because people would have returned to farming while others would have started keeping livestock.

Respondent 21

She is 45 years old and reached Std.. 7. She stays with her husband who is 55 years old. He has a restaurant and reached Std..4. They have 5 boys the youngest is aged 10 and in Std.. 4. The eldest is 22 years old. He reached Std.. 8 and is jobless. Her house is rented.

She initially started keeping in 1985 and sold all of them. The ones she has now (4) , were given to her by her grandmother, when she went to the rural area to visit her in August 2001. She also loves chickens.

She uses food remains and waste from the local maize miller as chicken feed. The chicken coop is outside She wakes up at 5 a.m. and does housework up to 9 p.m. All the children help me look after the chickens.

The major constraint is animal diseases.

The chicken lay about 20 eggs in a month. Out of these, they eat 10 eggs. They would like to add more chickens.

She also grows maize and beans in the rural area.

She indicated that chickens are good to keep since one can slaughter them for visitors.

The chicken waste is thrown away.

There is no organization in the area but would like to be member.

They have no information on regulations and have no problems with the city council.

In 5 years time she will have more chickens if there were no diseases.

Her neighbours do not complain about the livestock.

Respondent 22

He is 23 years old reached Form 4. He has been trained as a barber. He was born in the area and is a casual labourer

He has 4 chickens. Three died and 4 were stolen when thieves broke into his house. He also started keeping rabbits last year and now has 4 mature and 7 young ones. Thieves stole two rabbits.

He put up a structure and buys the feeds. His brother helps with feeding the rabbits. The rabbits are fed with weeds collected from farms nearby. He wakes up at 6 a.m. and feeds the rabbits and chickens. At 1 p.m. he feeds them and lets the chicken roam about. He feeds the rabbits at 7 p.m. in the evening. His brother helps him after school

The chicken feed cost Kshs. 200 per 10kg, which lasts for one week. He buys rabbit pellets at Kshs. 160 per 25 kg bag. He also buys poltricin @ Kshs. 90 for anti-stress and Bikosolven for salmonella and E. coli at Kshs.120.

He has an interest in chickens and started keeping them because of eggs and the meat. He plans to sell rabbits because people are asking for rabbit meat.

The main problems with the chickens are that they quickly develop diseases. He never buys eggs for home use but gets them from the chickens. He gets 4 eggs per day and they eat one every day. They had also eaten one rabbit and given away 2.

He plans to expand rabbits and chickens. He also plans to keep local goats. He came to know about livestock from his brother and from friends.

He gets information from a private vet nearby who is a friend of his since there is no government agency around. He needs more information.

The major constraint there is no information and does not know about any legislation. If government were to say no he would sell his livestock but the laws should not be oppressive.

There is no harassment and there are no problems associated with keeping of livestock. Only problem is if livestock are kept far away from the house they are eaten or stolen.

The advantages of keeping livestock are that he is now busy, gets eggs and 2 wheelbarrows of animal waste per week.

In 5 years time and if he has good information he will be more knowledgeable about diseases. He has an urban plot where he grows maize, kale and gets an income of Kshs.70 per day from Kale and 120 per day when he harvests green maize.

The neighbours do not complain but he needs more space since the rabbits are overcrowded.

Respondent 23

He is 31 years old. He reached Std. 8 and his wife is 29 years old. She trained as a tailor and also reached Std. 8. He takes care of his children aged 6 months plus two others from his sister who passed away (aged 10 and in Std.. 1 and another aged 17 years). He was born here and has a rural home. He owns the land in this area.

He started keeping livestock 5 years ago and now has one goat, one cow plus a calf. He sold 2 bulls since he does not have adequate space. He started keeping chickens in August last year. He ate 4 and now has six remaining.

The cow cost him Kshs. 20,000 but he sold a bull calf at Kshs. 7,000-8,000. At the time of interview he had one bull calf, which he would have liked to keep but it was very expensive to feed. He sells the calves to those who want to improve their herds.

He wakes up at 6 a.m., and at 7 a.m. He distributes the milk and then goes to look for leaves in the open spaces and road reserves. At 12 noon he uses the pick up and to collect the leaves and then takes a rest.

He buys dairy meal for the cow @ Kshs. 900 per bag, which lasts one and half months. Salt costs Kshs. 180 for a 2kg and lasts 3 months. He spends Kshs.300 for drugs on deworming (lasts 3 months). He gets a private vet to inseminate the cow at a cost of Kshs. 800 plus transport of Kshs.300. He gets the vitamins from a private vet at Uthiru some 5 Kms away.

The cow drinks about 24 liters of water per day. The shelter for cattle cost him Kshs.5, 000 and the shelter for rabbits cost him Kshs. 2,500. The cow produces 11 liter of milk daily 6 in the morning and 5 in the evening

He sells 6 liters of milk; consumes 3 liters gives away 2 to his sisters while the calf takes 3 liters. He sells one bottle for Kshs.24

Reason for keeping livestock is that he was a driver mechanic but was laid off. His sister advised him to keep livestock since she keeps pigs, and other livestock in Wangige (some 5 km away).

He has no farm but he inherited this plot from his parents. He has 4 semi-permanent houses for rent but he gets 75% of his income from milk.

His only problems are that his cow had developed complications when giving birth and the feeds are expensive. Sometimes the customers refuse to pay for milk delivered.

He sometimes slaughters the rabbits or gives away. He would like to increase cows and goats because a cow gives him more than rent from the houses.

When his cow reduces milk production he alerts the customers. He quoted an incidence whereby he had treated his cow and so he could not milk it. He therefore went and bought milk from another farmer for one of his customers but the customer complained that the farmer had added water and that he should never do that again.

His sister gives him information on livestock keeping. He also listens to the radio since there is no government agency here. He would like more information on zero grazing. There are no livestock diseases that he has observed in the area.

In 5- 10 years he would like to own 5 cows and earn Kshs.500, 000 instead of Kshs.6, 000. He would like to set a corner for cows only.

He would welcome government regulations but these should not be oppressive.

The advantages of keeping livestock are the fast returns as there are no secure jobs now and he has a big family.

The animal waste is given to women who take about 4 bags per month.

There are no complaints from neighbours but he complains about the neighbours' chickens

Respondent 24

Age 15 years. Dropped out of school in Std.. 3. His grandfather has bought a plot for his sons in Ngong.

His grandfather is the owner of the livestock. They now have 15 goats but had sold 3, eaten 1, while 2 died. The chickens all died due to diseases.

He stays with his grand parents and looks after the goats for them.

Other relatives also live with them - Kimani, Kariuki and their son Kim who is in Std.. 4.

His grandfather looks for forage from 6 a.m. and at 10 a.m. they open the shed and release the goats to wander about. He takes the goats to Mountain View (a high-income residential area) and at 6 p.m. he lock them in the pen.

The only drugs they give are for worms since there are no government vets around.

The city council does not harass them but they do not like the goats going to Mountain View estate.

They own the land and would like to keep dairy cattle for milk and for sale. The differences between the livestock keepers and those without are that those with livestock can use them as insurance.

The animal waste is taken to the shamba -- almost 2 bags per month.

The main problem with goats is foot rot and diarrhea.

Respondent 25

Age 39 years and reached Std. 7. Her children are: a 21 year old daughter -- reached Std. 8, an 8 year old son - in Std. 2, 2 grandchildren aged 7 and two and half years, a relative aged 13 years and one worker.

She indicated that there is no association in the area.

She had a business as a vegetable seller in a market but she got tired of running it and the profits were low. Then she decided to buy a cow so that she could get milk.

She started keeping chickens 2 years ago now has 7 chickens because 20 were stolen sometime back. She started keeping cattle 10 years ago now has 2 dairy cattle. She started keeping goats 10 years ago but at present has 3.

The worker and herself look after the cows. She wakes up at 5.30 a.m. and at 6 a.m. milks the cows and prepares children for school. She works with the livestock from 9 a.m. to 2.p.m. and rests at 2 p.m. From 4 p.m. she prepares the house and milks the cows again and goes to bed at 9.30 p.m. She pays the worker Kshs.1, 500 and he has worked for one month.

She gives the cows dairy meal -- 2kgs morning and evening. The injections cost Kshs. 200 per 3 months and artificial insemination costs Kshs. 900 per dose.

The chickens give her 6 eggs per day. She eats about 4 eggs per day, and leaves 2 eggs for breeding. She gets 4 bottles of milk in the morning and evening. She sells 2 bottles in the

morning and 3 in the evening @ Kshs 24 per bottle. Consumes 2 bottles in the morning and 1 in the evening.

She takes about 6 bags of animal waste per every 3 months to her plot.

The reason for keeping livestock is that she wanted to be home with her children. The benefits are that the cows keep her busy and she gets money and milk. She sells milk to neighbours She gets forage from neighbours and in return she gives them animal waste.

She uses the income to pay school fees and for savings (merry- go -rounds).

The constraints are theft and grass is inadequate. In case of diseases they call the vet.

She plans to expand cows -- one Jersey and Friesian. She has enough space. In five years time if she keeps more livestock she will be in a better economic position.

She gets information on drugs from a private chemist since there is no government agency. She would like to have more information on poultry and dairy cattle. She also gets advice from the radio.

She is not ware of any legislation and if livestock keeping is banned she would sell

There is no health problem. There are no complaints from neighbours.

The government should not put any regulation since they are unemployed.

Respondent 26

Age -- 38 years. He was born in the area. He is trained as a driver and reached form 4 but now runs a shop. His wife is a secretary aged 30 years.

There is no organization here but he would like to join one. The benefits are that when goats fall sick he would be able to seek advice. At the moment his goats have foot rot and dislocations.

The main source of income is the retail shop and rent from plots.

Has 4 goats and one kid but had earlier sold one goat. He has one chicken because the rest (21) died. The money he spent was Kshs.20, 000. He wakes up at 6 a.m. Opens shop at 10 a.m. and goes to Zambezi (some 10 km north of Nairobi) where he has his urban plot.

He started keeping livestock 10 years ago as there was more space then and there was a lot of domestic waste which could be fed to the goats. Now cannot add livestock due to problem of space and the goats destroy crops.

“If you live with animals you have a good life”.

The constraint is space and lack of private vet. He sometimes treats the animals himself.

The major environmental problem is polythene bags and each year 1 goat dies from eating these bags.

The manure is taken to his plot (about 4 bags) per week.

His goats gave birth to twins but he would prefer to expand chickens and keep about 200 in Zambezi. He would prefer to stay in Zambezi where he grows sukuma, carrots, onions, and maize

He got knowledge about livestock from his grandfather who had 200 goats. He gets drugs from a private vet since there are no agricultural officers in the area. The problem with vets is that time is wasted in moving from one place to another

Other sources are old people who give advice. He needs information on how to keep chickens from day one.

He is aware of legislation but it does not apply to the area. If government were to ban livestock keeping he would move out of Nairobi. "The government should not have rules-the rules will not give me food."

There is no harassment here.

In 5 years time and if the economy improves the people would build rooms for rent and there would be no space for livestock but there is still hope.

Kawangware

Respondent 27

Age -- 40 years. They have 4 sons and 2 daughters. The children and husband are all jua kali (informal laborers). She has lived in the area over 20 years but originally came from Ndeiya some 30 km north of Nairobi. The children paint and draw pictures for sale.

Rents a room and has to build a house for the ducks to lay eggs. Ducks breed fast (20 eggs at once and the gestation period is short – three months and three weeks).

Has been keeping ducks (5) for the last 3 months. She choose ducks because chicken die very fast. She wakes up at 6.00 a.m., does house work, attends to ducks all day. She ties them outside so that they do not go into the neighbours' area and eat dirt. One duck cost 500 shillings. Livestock keeping is no better than crop farming

There is no organization to take care of livestock keepers. 'We are all on the move (because of increasing rent)'. There is no profit in becoming a member

She would like to keep more ducks.

They get no advise on how to keep ducks from friends.

No city council harasses them and their landlord does not allow them to keep livestock.

There are no diseases.

No complaints from neighbors because her ducks are tethered.

Respondent 28

Age -- 65 years and has 3 sons and 5 daughters. All her grand children are in school - one in class 8. She was born in the area

There is no organization for livestock. If here is a group, then with unity and solidarity in the group there will be good results in sales. She is a member of a merry-go-round. In merry go-rounds women save a certain amount every month. The benefit is buying of feeds together.

She has kept goat for many years. She has 10 goats. She wakes up at 6.00, makes tea, and checks on her 10 goats. She collects vegetable waste from market and also gives them tap water

She sells them to pay school fees. She does not give away and there is no theft. They do not eat the meat. The shelter is behind the house. Since she has no land she was not able to keep cattle. She can add more if she had more money plus cows and would like to build a separate house

She gives the animal waste away

She would like more information. She gets information from the chemist from whom she buys drugs. There is no government veterinary support here and so she pays for vet services.

The City Council - no harassment but local chiefs used to collect goats.

There are many plastic papers bags and this is a health hazard. "There is no future for goat keeping and the Government should help".

Why the neighbours do not complain of dirty compounds is because of poverty. The space is small.

Diseases – she does not know but water diseases and allergies are common.

Respondent 29

Age -- 25 years. Educated up to class 8. Her husband's age is 30 years. She was born in the area and lives with her husband, brothers and children. Her children are in class two, one and nursery

She is trained in catering and computer applications. Her husband is a computer technician

There is no organization otherwise she would be in one. Groups are good they provide finance -- they would be able to keep more poultry and buy feeds.

She has been keeping chickens for the last two years. She has sold 50, given away 5, eaten 10 and had 5 at the time of interview. The price is Kshs. 250 per chicken but this depends on size.

She buys the feed -- layers mash, approximately Kshs. 1500 and this lasts less than a month. She also gives drugs for stress and heat, which costs Kshs. 200 shillings.

She wakes up 6.00 a.m. on weekdays, does housework and at 8.00 a.m. feeds the chickens

The chickens lay 10 eggs a day. She also gets meat. She gets 'a lot of profit'. The family consumes 3 eggs in a week.

There is no problem in marketing- sells 3 trays per week @ Kshs.130 0 per tray. She gets 10% profit from chickens.

She wants to add broilers. The advantage of keeping broilers is that they take 8 weeks to mature.

She has a small plot in which she grows maize and beans.

She gets one sack of animal waste per week. She gives out most of the manure, but uses the rest in her garden.

Her sister taught her how to keep livestock.

For information and medicine she goes to a pharmacy. There is no government vet. She would like to know more about broilers.

There are no by laws and the chief, City Council does not harass them. There are no diseases that affect her chickens.

In 5 years time the status of the economy will determine the fate of livestock keeping. She pays land fee.

Respondent 30

He is aged 68 years. He is retired. He has no formal education but I went to adult education classes to learn how to read and write. Has 4 daughters and 1 son and all their grand children are in school. The daughter and sons sell second hand clothes.

There is no group in the area to help livestock keepers but in Wangige they have associations for selling farm products, mainly eggs.

He has kept livestock for 32 years (1969) and sells them when the sheep increase to unmanageable levels. Initially had one sheep, which gave birth to others. Has 20 sheep including the kids.

There is no place to collect Napier grass and so they leave the sheep to roam around. At times they illegally collect from other people's land in the Riruta Satellite zone (some 2 kilometers

away) especially from unutilized land full of bush and other vegetation. The sheep use one gallon of water a day or even less. He buys medicine for ticks, salt (red), caustic soda. These are added to water to stop and prevent disease - colds

If he had a big farm he would keep more sheep and then sell sheep to buy cattle.

The reason for keeping sheep “ Kikuyus cannot stay without keeping goats, just like Masai with cattle”. This year he sold 6 sheep and he also slaughters for his children when they visit him. The sheep support his children since he sells them to pay school fees. The good thing about sheep is they give birth fast and even twins

He does not grow crops due to insecurity and land fees.

Does not sell waste but exchanges for fodder.

A private veterinary officer does the vaccination since there is no government veterinary service in the area.

He gets information from church and radio.

There are accidents occur along the road when vehicles hit goats.

The city council is against keeping of livestock but does not harass them.

In the next 5 years there will be no sheep because of lack of grazing area and they involve too much work. They dirty the compounds. He was thinking of disposing off the sheep and building rental houses. He said that the government should give them big farms.

Some people have proper planning whereby goats and cattle are separated from human settlements. He would like to be like them but there is no land.

Respondent 31

Age -- 50 years. Self-employed Has a 7 children between 2 – 22 years.

Does not know of any organization dealing with livestock.

Keeps cows - 3 and 1 calf, goats - 5 and 5 kids, chicken – 30. The feed is mainly Napier grass from the farms plus dairy meal 4 kgs daily. He practices zero grazing. The whole family helps in taking care of the livestock.

Has sold 2 cows, and sells 15 liters of milk per day to neighbors at Kshs. 30 per liter.

The goats are for special occasions but sells when in need of money at around Kshs. 2,000each

The chickens are for domestic use when need arises. He sells at Kshs. 200 per chicken.

The eggs are for family consumption around 21-27 eggs per month. The livestock provides 50% of household needs.

Lymphatic infections are the main problem. Veterinary Officers from the government inspection come to vaccinate livestock but he has to hire a car to pick them.

He has no rural linkages.

On government policies -- he welcomes any supportive policy.

Respondent 32

Age -- 25 years. He is a mechanic.

No groups exist in his area. He would join if there were one.

He keeps goats - 8, ducks – 15. He started keeping goats in 1963 and their family has been keeping livestock for generations. Method of feeding is free-range system. The problem is that they are attacked by predators e.g. dogs.

He keeps them as a source of income, security and for breeding.

He sells 3 goats per year @ Kshs. 3,000 to 3,500 to a butcher in the area and to individuals. No money is used in buying feeds since he feeds them on kitchen leftovers e.g. ugali, meat, cabbage, chips from kiosks. According to him this type of food provides healthier balanced food unlike grass.

He sells the ducklings at Kshs. 100 while the mature ones go for Kshs. 500. Duck eggs are source of food and he sells 30 eggs in a month. He sells 4 ducks every year at Kshs. 80. Most of them die when they are chicks. Livestock contributes 86% of his household needs.

Goats die due to eating plastic bags.

He has not observed any diseases but accidents -- by passing vehicles e.g. last year 3 goats were knocked by passing motorists.

Their mother is the decision-maker.

He has no rural linkage.

Veterinary officers ask for bribes to attend to the sick goats. If bribes are not given then they are given wrong medication.

The animal waste is sold to farmers and thrown away on daily basis.
Government policies -- any policies should be a change for the better.

Respondent 33

Age: 35 years.

Has 5 chickens and doves which she keeps as a source of income. She collects about 32 eggs per day. She keeps the chicken for income and sells one chicken @ at Kshs.250 to 300. She uses pepper as medicine of fever.

She uses the manure in her garden in which she grows cabbages.

The feeds consist of growers' mash - 5kgs that lasts 7 days.

Respondent 34 (*did not want to reveal a lot of information*)

Age: 42 years and has 7 pigs. She sells the pigs to Farmer's Choice Ltd.

She uses food left overs, which are cooked and used for feeding the pigs.

The animal waste is used in the farm.

She treats pig diseases using caustic soda and charcoal.

Mali Saba, Silanga

Respondent 35

Age -- 40 years. Reached Form 2. His wife reached Std. 7. His family consists of 9 children.

There is no group around but he is willing to be member. The benefits of membership are information in times of diseases.

He started in the 1990s with 2 piglets worth kshs.1, 000 each. He started keeping pigs because a friend's pig impressed him. He keeps cows, pigs, ducks and chickens. He has 10 chickens for consumption and 15 for rearing. He has 4 ducks, and so far has produced 10 eggs. The shelter is outdoors and consists of a makeshift shed. The children look after the livestock.

The feeds consist of waste food from dumpsite and in addition, every Saturday they buy 10 buckets @ Kshs.15 each. He also uses weeds from the garden as feed for the pigs. Water costs Kshs. 3 for every 25 liters and lasts 3 days.

He buys drugs from the chemist at Kayole for Kshs. 200 -- for the piglets. He spends Kshs. 300 on vitamins and Kshs. 100 for deworming every 6 months. One of his pigs died after being given an injection.

He is self-employed at Kayole. He leaves his house at 5 a.m. and comes back at 12 p.m. The pigs bring more income than other livestock but in the last three months he has not sold anything. He keeps livestock as a source of savings.

They take the animal waste to a farm in the same area.

He would like to add more pigs and one cow as a source of milk

For information they visit the chemist.

Their main problem is lack of training yet they are willing to learn more.

He is not aware if the city council allows keeping of livestock or not. The local Chief supports keeping of livestock.

The future of livestock keeping is bleak since his 30'x 60' plot is small and he will be unable to keep livestock.

Constraints -- there is scratching disease which affects the animals. He buys used motor oil to treat the problem as drugs are expensive. He had to sell a cow due to sicknesses since he did not know where to get a vet. Theft -- 200 people came into his house and carried away everything in November last year.

He requires more information on pig diseases and how to improve ducks.

Respondent 36

Age --50 years. Reached Std. 2. His children are Joseph, 15 years old and in Std. 8; Njuguna aged 17 years and Std. 8; Ciku aged 10 years and in Std. 6. His wife, Njoki is aged 47 years.

Although there is no organization of livestock keepers he would like to be a member of such organization.

He bought 2 pigs five years ago and sold them. He bought another 2 and got 8 piglets. He sold 3 pigs and 5 are remaining. He has one cow given by his in-laws in 1996.

He buys waste food from the Airport and from hotels brought in by brokers. They sell a bucket for Kshs. 40. In a week he buys 3 buckets.. His wife looks after the pigs. The pigs often fall sick but he gives drugs to them. The deworming costs Kshs. 60 per month. Buys 20 litres of water a day at Kshs.3 per bucket. Shelter is outside. Cost of shelter was Kshs 5,000-6,000).

He is employed as a casual worker in quarrying. From 7 a.m. to 5pm he is at the quarry and comes home late His income is about Kshs.2, 000 per week from quarrying.

Reason for keeping pigs - cannot be stolen. His wife and children help in pigs

They have a small plot where they grow spinach, sukuma, arrow roots, and bananas.

They get about 5 buckets of animal waste, which they take to the shamba.

He sells two pigs in a year. He sells a pig @ Kshs.9, 600 and last year he sold one adult pig but 11 piglets died due to lack of milk. The income from pigs was used to pay school fees for his children.

He would like to add pigs and cows. They are squatters but if they had their own place he would clean the pigsty and plaster the walls it but he has no money.

He has no rural link since he left his elder brother to look after their small shamba.

He gets information on pigs when one man advised him that since cows are stolen pigs are better. But he tries to seek information from people.

There is no government agency in the area but he would like more information on livestock keeping.

Constraints are lack of information as he would like to know about better animal husbandry. He does not do not know how to inject drugs. Diseases such as fever affecting the pigs affect his profits.

He has no information on whether keeping of livestock is illegal or not but if the government were to ban livestock keeping he would move them to another area. The government has not prevented them but he indicated that they need protection.

In 5-10 years to come he will wait and see what happens but they should have rules on how to keep livestock

Respondent 37

Age 56 years. Wife passed away 2 months ago. Family consists of Lucy Wanjiku age 23 -- trained in dressmaking but unemployed.

Miriam – 20 years. She reached Form 4 and is now an untrained primary school teacher. Muthoni aged 17 years in Form 3, Nyaguthii aged 15 years and in Std..8, Wanjiru aged 13 and in Std.. 6, Muturi is 9 years old in Std..3. Youngest is aged 5 years and in nursery school.

Started keeping cows in 2000. Goats started 1998. They have 2 cows, 13 goats. Gave away 5 goats and 1 died. Goats roam freely. Had 50 chickens but all died in December 2001. Has one duck -- lays 15 eggs in two months. Eggs are for breeding and home use.

He wakes up at 5 a.m. and goes to Kayole. Comes back and. prepares the children for school and at 6 am milks the cow and feeds the cow.

There is no organization there. He would like training in livestock keeping.

He gives Napier grass, which he buys, from the sewage farms at Kshs. 200 per load. This amount is sufficient for 4 weeks. Also feeds the cow on stale cabbages, which he collects from green grocers. Cow drinks 3 buckets of water per day. The cost of one bucket is kshs. 3. Drugs used are for wounds and deworming.

He is an electrician. His main source of income is from electrical work. Also sells paraffin. The livestock supplements the income. The milk from the cow is sold and consumed. 6 liters of milk are sold and 2 litres consumed daily. Goats – are for sale. Intends to increase cows

but does not money. Goats and sheep sleep in corrugated house, built at a cost of Kshs.15,000.

Diseases: mastitis. When the cow is sick, milk production reduces to 3 liters.

Problems in keeping livestock are that the cow does not come on heat and there is no bull nearby.

No problem in marketing.

Waste -- 20 kgs produced every 2 months. Waste – throws away. Rural link -- his grandfather has cows.

Does not know about proper livestock keeping. Would like to information on better feeding.

No government vets.

No information on legislation as he thought this was a rural area. He thought there should not be any rules and regulations.

Problems: No problems yet. In 5-10 years, cows will increase and activity will be more.

Respondent 38

Age 55 years. She is the head of household but not educated. Children: daughter 32 years – collects and sells food leftovers from the dumpsite to pig farmers, Kibui - form (2) doing a secretarial course. Another daughter finished Std.. 8. Has been jobless for 6 months. Has 2 grand children -- Wangu in Std. 5 and another in Class 2.

No affiliation but would like to be a member of such an organisation.

Had bought one pig for Kshs. 1,000, which she kept for 2 years. Produced 8 piglets but 7 died. Second time the sow had 12 piglets - sold 9 @ Kshs. 1,000. Remained with 3. Sold a mature pig for 7,000. She looks after the livestock.

Pigs are fed with food leftovers from the dumpsite. She uses 4 buckets per week.

Butchers from Mwiki and Dandora buy the pigs @ Kshs. 5,000 - 7,000 (6-7 months old)

She prefers keeping pigs because cows and goats can be stolen but pigs resist interference.

Waste is thrown away.

The income from pigs is not supporting the family. Main income is from selling leftover food to pig farmers. A bucket of waste food collected from the dump at Dandora and sold @ Kshs.30. The cost of the shed –was Kshs. 2,500. Water: she buys 5 liters for Kshs. 2. Medication: Anti worm medicine, which she buys from chemist at Kenya farmers Association (KFA)

She can tell that the pigs are not well by looking at the skin of the pig. She is would like to add more pigs.

Originally from Gatundu but has no rural link. Her mother moved here long time ago and thus lived here.

Land was given to him by politicians.

She learnt about pig keeping from experience. Livestock situation in 5 years time: does not know about the future.

Problems: Lack of money. No neighborhood interference they e are all on different plots but her house is on a road reserve and she is supposed to shift. She does not have money to resettle.

Respondent 39

Age - 52 years. Education -- Form 4. No training – but has learnt carpentry and masonry through experience. Wife's age 35 years. Children are: Wambui aged 16 years and Std.. 7, Simon aged 11years and in Std.. 4, Njeri aged years 10 Std. 3, Wanjohi born in 1996 and in Pre-Unit, Wangai 2 years and Nyambura aged 2 months.

Started keeping livestock in 1999 with 3 goats worth Kshs. 5,200, 2 rabbits Kshs. 70 each. Has 12 chickens. Added 3 goats. Has one Billy goat 6 nannies. Roam freely. Construction of shed cost (built in the kitchen area) Kshs. 1,000.

Has sold 2 chickens @ Kshs. 300, eaten one and give away one. Eggs - for consumption. Farming gives him 65% of his total income. He spends 20 minutes (between 6 a.m. to 5 p.m.) feeding livestock or putting them in the shed. Drugs: spends Kshs.250 for goats for worm prevention.

Buys from a local chemist. Water –uses 20 liters daily 3 per bucket.

His main income is from carpentry. Livestock gives him some income, independence, security, and can use the money for emergency purposes.

He does not know of any association. Would be willing to join one.

Piles up the waste outside. Wants to increase livestock: German goat for milk for his children. He saw this type of goat with a Pastor.

He has a rural home in Nyeri and has livestock there. He practices zero grazing in the rural area.

Constraints are theft and limited space. Problems in the future – space allocation and when his sons become adults, they will demand land and so there will be no space for goats.

No government vets but there is a private vet officer

No legislation because they are not near the city centre. Can be a big blow in case they are stopped from keeping livestock. The Chief intervenes in case of problems.

He gets information from neighbours, friends and relatives.

Respondent 40*

Age 50 years. She is a widow and the head of the household. Has 5 children. Some in university. Stays with her son and houseboy.

Livestock: Has beef cattle (local Boran) – 24 (had 35 but 11 stolen). Sheep – 4; Goats – 10. Free range. The cattle go to drink the water from a river nearby. Two years ago when there was a drought, the cows had to be taken to Dandora for grazing. 7 cows died because of consuming polythene bags.

Livestock is her only source of income. She educates her children from the money she gets from livestock. She slaughters 1 goat per year.

She started keeping livestock in 1972. People come asking for animals for slaughter, especially butchers. Sells each cow @Kshs. 10,000 since it is the local variety. Sells one cow per month. Has large space – one acre.

Milk is for consumption and at times she sells to neighbours.

Her interest – she is an animal lover. Started with 2 cows worth 800; 1 goat and 1 sheep - She sells 4 in a year 2,500 each.

Diseases: Cows - fever, Anthrax; goats – ants and worms due to lack of sanitation. Drugs: buys from Agro shops. There is a government vet who visits the area to treat foot and mouth disease. Charges by the vet are Kshs. 20 per cow. She gives anti-worm medication to her goats every 3 months.

Has a friend in the veterinary department who comes from Limuru. She pays him Kshs. 1,150 every 3 months.

Waste: Does not sell because of a gang, which is terrorizing the residents calling themselves Mungiki or “Finance”. They demand money from the residents and whoever comes to the village. Previously she used to sell manure to farmers who live in Kiambu. One ton of manure used to fetch Kshs. 500.

No association but was willing to join one. Said that there are no regulations but she would support any regulations. The Chief did not have power to stop or forbid livestock keeping.

Expansion: Not willing because of insecurity. In fact would like to reduce the number of livestock. She was interested in getting information on livestock keeping. No rural links.

* Non-poor livestock keeper?

Sinai

Respondent 41

She reached class five. Eight in family -- 2 sons and 4 daughters.

There is no organization and but would like to join if there is one.

She has 4 goats. Has kept them since 1999. Bought one initially. Sold 2 for Kshs. 2000 each. Had chickens but they died due to disease. Wakes up at 6.00 a.m. -- washes, sweeps and then tethers the goats near her neighbour's house.

During the dry season, takes the goats to the field the whole day. She works as a casual labourer when work is available.

She no rural linkages.

Respondent 42

She is a single mother. Reached Class 3 and dropped out because of lack of school fees.

Lives in Sinai village, which has a population of 400 people. Land is rented, and the rent for the house – Kshs. 50 shillings per month

She depends on “Vibarua” (casual job) or sells mangoes and charcoal and earns Kshs.70 shillings per day.

There is no organisation to represent farmers. She keeps chickens but 60 died. Only one chicken left. She lets the chicken to roam about. She uses local medicine: silt - for diseases in chicken

Would prefer dairy goats for milk and meat. Gets information from church on livestock.

Kinyago

Respondent 43

Age 60 years.

No formal schooling. She is a single mother. 2 children – one passed away. 1 daughter married. 3 grandchildren staying here – unemployed. City Council worker. Retired in 1999. Worked for 10 years.

Main income from rental of 3 rooms @ Kshs.1,000. She has 2 rooms for own use.

Has 10 goats. After retiring, started with 1 @ Kshs. 1000. Rest bred. 5-10 sold in a year @ Kshs. 2,000 - 2,500. 1 goat eaten at Christmas. 1 duck kept. Chickens all died last year .

Goats roam around. Kale stalks collected from vendors free. Medicine for worms twice a year Kshs. 500 per annum. Grandchild collects sukuma (kale). Cleaning of shed by granddaughter everyday.

No farm. Waste thrown in garbage dump. No goats stolen so far. No space to keep other animals.

Purpose of keeping livestock was to get income. Goat milk not used. People come to ask for goats. Buys water Kshs. 2 per container per week. 2 containers of water used. Chickens wander around.

NCC no harassment, but before used to be harassed till 1998. No legal problem. No problem of waste. In 5 -10 years’ possibility of increasing livestock. Does not like pigs – too much work

Constraints –Space, no electricity.

Respondent 44

Age --37 years, Std.. 7. Attends college. 2 Children - 21 years F4 and Std.. 6, 14 years

No husband. Has shop (kiosk) and also sells water (Kshs. 100 per day).

1 room rented. 2 rooms used.

Chickens 12 but died. 2001 started again and bought 5 this year @ Kshs. 100 – 50. Child likes chickens. Not kept for income. 4-5 eggs used per week. Not sold -- only for breeding. Can sell chickens if she had more. Cock (Jogoo) can be Kshs. 300. Depends on size.

Inputs –chicken mash 1 kg Kshs.20. 2 kgs per week used. Rest for breeding.

Disease a problem, medicine for chickens put in.5 litres of water.4 tsp. Every 5 months 1 bottle used. Cost of the medicine is Kshs. 80. Does not know any government vets who can help.

Space a problem. Intends to shift to a bigger place. Would like to keep broilers, cows, goats, and sheep.

No health problems. Waste thrown in dumping ground. Cleans shed twice in a week.

Chickens roam around. There is no theft.

She looks after the chickens. Cannot keep goats here due to space. People come to buy the chickens.

She has a plot in Ruai.(peri-urban). She has no farm. Gets information from egg sellers on how to keep livestock.

No legal problem. Does not see any problems concerning livestock.

Respondent 45

Age 37 years reached Form 4. Originally home was of her parents. But parents died. Has resided here since 1985.

Husband -- Form 4, age 40 years – unemployed, used to work at Kenya Bus Services. Worked as a casual worker. Has 6 children: 1st daughter 16 years F2 boarding school, 2nd son 14 years Std.. 6 special school (Ukambani), 3rd son 11 years Std.. 5 stays here, 4th son 9 years Std.. 3, 5th daughter 5 years old in nursery school, 6th son 2 months old. Has 3 rooms (including 1 room for shop).

Has small shop. Does tailoring. Has no farm in rural area. Does not get any products.

Ducks – started in 2000 with 6 but died due to sickness. Again started in 2001 with 4 chickens. Has 4 ducks. Initially got ducks from her father.

Vet not called. Worm medicine given only.

Chicken mash – needs 2 kgs per week. Ducks – ugali and vegetables. Livestock kept in cage. She gives one water per day.

Constraints: Foot and mouth disease and ticks. Cannot keep goats due to lack of space.

Reasons for keeping: emergency purposes: Duck sold @ Kshs.400

She was part of a compost group before but no longer. Would like to keep goats.

Is a water vendor and earns Kshs. 50 per day. Also looks after the chickens.

It is legal to keep livestock – government should note “squeeze” poor people.

Marketing no problem. People come looking for livestock.

Eats 1 chicken every 3 months. Uses chicken eggs -- 10 per month

Duck broods over 15 eggs, which take 30 days and for chickens it is 21 days.

In 5-10 years there will be possibly more livestock. No health problems

Respondent 46

Husband is 34 years and reached Std. 7. They have 4 children.

1st daughter 14 years Std.. 6 and at home. 2nd son 11 years Std. 5. 3rd son 10 years Std.. 4
4th daughter -- 2 days old. Stays in 2 rooms and rents out 4 rooms. House owned by mother in law. Now theirs.

Owns 3 chickens, 6 ducks, 5 ducklings and 7 goats (local ones). 1989 got married stayed with in laws Mother in law used to keep livestock. She gave her 2 goats.

Every year sold 1 @ 3000. Not used ducks at home. Every 4 months sold one @ 300.

Duck eggs – not eaten since December as ducks has not laid any.

Constraints--neighbours complain of dirtying houses.

Inputs: kale, ugali and rice. Does not buy chicken mash. No medicine given. Last year had many chickens. No vet services used. She looks after them. Goats roam around.

Husband is not working. She is a fish seller – brought from Gikomba. She buys mbuta (Nile perch) dries and then fries them. Fries 10 kg of fish everyday. She does all the housework, looks after the livestock and sells fish. Husband does not help.

No legal problem regarding livestock. Would not like to rear any pigs. Would not like to keep more due to lack of time.

Constraints – none. Waste – thrown out. Used to compost but no market.

In 5 – 10 years does not know if there will be enough space to keep animals.

Respondent 47

Husband: Samuel Kabiru 36 years, Form 4. Businessman and radio repairer. Wife 32 years old. Reached Std. 8. Son 12 years old. Educated up to Std.. 6. One room (owned).

Son is keeping the rabbits. He received one as a gift from grandfather in December 2001. Bought 3 rabbits @ Kshs. 30 – 40. Would like to breed and sell. Selling price of 1 adult rabbit Kshs. 100 – 150.

Rabbits eat cabbage, Kale, potatoes, mangoes, ugali, rice. Spends Kshs. 40 for vegetables for per week. Has a shed for the rabbits.

Wife has 1 chicken. Given by her father-in-law. Brought from his rural home
Space a problem. No medicine used. Would like to keep goats sheep. Does not like ducks as they are dirty.

Farm in rural area – Muranga. But it is her in-laws farm. No crops brought here. Waste is thrown away. Hutch cleaned everyday.

Respondent 48

Age-- 38 years

Has four children: Zebeda - 12 years, Wanjiru - 18 years, Nyoike - 20 years
Wangui - 8 years. Has stayed in the area since 1985. They are squatters. Has rented two rooms.

He started keeping livestock in 2000. Has 5 chickens, 3 died, 3 eaten, 2 sold. Eggs are for hatching. Extra eaten. He gives chicken mash at 18 Kshs. per kilo, which lasts for 2 weeks
Shelter – indoors, under the bed.

No affiliation to any organization. Wife is involved in livestock keeping.

Money for the shed given by his aunt – Kshs. 300

Benefits - Sells and gets money to help the family. Can eat eggs.

He would like to keep more chickens, around 20.

No rural linkage. Has no urban plot.

Constraints - no space, diseases when they are many chickens. Information on chicken - learnt from aunt. He would like to know about disease control.

No government vets. Regulations - NCC sometimes takes away the livestock. Regulations - he would not want regulations. He would sell the livestock if there is a ban on livestock.

Problems - fleas in the house.

In five years - no hope of keeping livestock.

Waste –thrown away. During the rain the chickens have diseases that kill them or they get leg problems or suffer from diarrhea.

Respondent 49

Reached Form 4. Came here in 1985. Wife's name is Mary - 50 years. Reached Form 2.
Looking after 2 orphans -- Std. 5 & 3 respectively. Carol Waithaka - Std. 8. Alice Njoki.
Reached Form 2.

They are squatters. He started keeping livestock in 1988. Has 6 ducks, 1 eaten, 7 died due to drowning. Eggs - lays 14 eggs per week -- up to 20. Mostly for breeding and eat rest.

Occupation - sells chips. He looks after the livestock himself. He wakes up at 5.00 a.m. He peels potatoes for chips. At 8.30 a.m. lets the ducks out. Gives them domestic waste. Then starts frying chip sup to 8.30 p.m.

Constraints - he sleeps in the same room as the livestock. Problems are of fleas and waste disposal. Products - sells eggs. Gets 10 - 50 eggs per month.

Contribution of livestock - he sells in the market. Chicks @ 50 Kshs. Chicken - 200 Kshs - 250

Has no loss because it eats waste and roams around. He feeds them with domestic waste, ugali (maize meal) and Kale stalks from neighbours.

He would like to add 4 goats.

No rural connections. He used to cultivate urban gardens but the government took them.

Shelter is indoors under the bed. Space not adequate. They are affected by the smell of livestock.

Recommendation - he would like to build a bigger house in Ruai.

He saw people keeping livestock and thus started keeping himself. Got information from an NGO called Undugu. No government vets. He would like information on ducks and goats He has no contact but would like to know more about duck keeping.

Legislation is there and they collect goats. If government bans livestock keeping then he would move them or eat them. 5 year - 10 years- shrinking livestock, space due to grabbing. Government regulation - if you have space yes. Advantages - there is manure, meat.

Waste - they used to put in urban gardens - composting but now he gives it to his brother who takes it to his rural farm. Has a small urban plot. Neighbours - no complaints

Respondent 50

Started keeping goats in 1980. he came from Majengo. He has 30 goats. Sold 20, died 25 - big ones. His father had goats.

His reason for livestock keeping was that he felt empty so he kept goats. His only job is looking after his livestock. They roam around and he looks after them. He wakes up at 9.00 a.m. – comes back at 6.00 p.m. Uses water from taps.

The goats stay in his room. He sleeps on a raised bed. The goats sleep under the bed. Shelter - not adequate because of overcrowding and so the goats sleep on each other.

He throws waste in to Airforce field.. All his income comes from goats. He would like to add more but has no funds. He lets them breed.

No rural linkage.

Drugs - he buys in town @ Kshs. 120 a bottle. he was shown how to use the drench gun by his neighbours. No government vets. Diseases – goats become lethargic.

No complaints from neighbours except one person told me that sharing a room with livestock is bad.

Respondent 51

Age -- around 88 years. Stays with grandchildren

He cannot recall when he started keeping goats.

Has no affiliation to any group.

Has 4 goats. Ate one goat during Christmas.

One kid died of lung infection. He keeps goats, as it is an activity, which he can do at his age. He watches over the goats when they feed in the Airforce area but his granddaughter helps him. He wakes up at 6 a.m. and sits down all day since he is old. He sells the goats locally especially during Muslim holidays.

He has no farm and he throws the waste. He gives Nilzan, which costs him Kshs. 120. From the vet shop in Eastleigh. There is no government vet here He buys water from a vendor, one bucket (20 litres) every day.

He would like more information on livestock. His major problem is the Airforce barbed (razor wire) fence that cuts the udder of his goats.

He does not know whether the city council harasses people. There are very few goat keepers here and in 5 to 10 year's time goat keeping will only be happening in the rural areas.

He does not complain because all the livestock keepers keep the livestock in their own houses.

Respondent 52

Age -- 59 years. He is a part-time watchman.

He has 4 goats and 2 kids remaining. Has sold 30 goats. Gave away 7 as part of dowry. 2 kids died. 2 were stolen from the shed by dogs. The dogs are a nuisance as they keep on biting his goats.

If he had space he would keep more goats. He keeps goats because he knows they can help in times of trouble. He keeps goats so as to sell them and pay rent at around 500 per month and for other home expenses. He watches over the goats as they roam around and his granddaughter helps him.

He arrives from work at 6 a.m. and spends the day with the goats.

He sells the goats locally to people who come to him.

Waste: throws away. Uses a wheelbarrow to carry it to a dumping ground.

He has a half-acre farm in Muranga where he grows coffee, maize and keeps one cow.

His cow gives him 2 bottles of milk but can give 9 bottles if given enough feed.

He buys Nilzan for deworming at Kshs. 120 per every six months. Water: he buys a bucket from water tap and lasts 2 days. There is no government vet here.

The NCC used to visit and harass him. Last year they took his 4 goats. He quarreled with them, went to Kituo cha Sheria (provides legal advice) but nothing happened. He finally gave up and left them with his goats.

The major problems he faces are dogs eating his goats, disease and cutting of hooves and teats by the Airforce fence. His constraint is space keep livestock. There is no complaint from neighbours.

In 5 years time keeping of livestock will decrease. He has very few now and the number is decreasing.

Respondent 53

Age -- 33 years, reached Std... 7 Children: Wanjiru is 13 years and in Std... 7; Catherine Gachege aged 17 is out of school; Muthoni aged 12 years and in Std. 6; John aged 14 years and reached Std. 6 ; Murithi aged 8 and in Std. 3. Is a widow and unemployed. Has lived in the area since 1988.

Has no affiliation any organization and there is none for livestock here. Yes, there are benefits like information on chickens.

She owns 3 chickens and she gets 7 eggs per week. Started keeping 3 years ago.

Reason: Did not want to buy eggs and chickens. Around 10 chickens were consumed during last year. She usually spends Kshs. 200-300 per day. She would like to have more chicken

Feeds: mainly maize, rice and domestic waste. The chickens roam about. The shelter is indoor but she has problems of fleas, which bite them. She would like a cage for the chickens.

Most of the information she gets from neighbours and the radio Kameme FM (a local radio station).

There are not vets here. She would like more information and if she did not have radio she would not know anything.

There is no legislation on livestock keeping

In 5-10 years she would like to keep cattle. She throws away the waste but there are no complaints from neighbours.

Bulbul

Respondent 54

7 family members. 2 sons, 1 daughter and 11 grandchildren.

No group, would like to join one, benefit - finance

Has 50 goats. Has kept them for 15 years now. He does not like cows due to feeds, housing. Manure thrown on roadside

Started with 2 goats and bred the rest. 2 sold, 2 given, 10 were involved in an accident, none stolen.

He works at the market - selling tomatoes, carrots, onions, eggs.

Diseases: eyes problem – costs Kshs 300. Stomach swollen – Kshs 200

No Government vet. Retired Agricultural officers help them but they have pay them for their services. Go to the chemist for medicine. Tape worm Kshs. 20 per tablet x 50 goats = Kshs. 1000. Liquid medicine @ Ksh. 120. Salt @ 50 per 2 kgs. After every 2 months we give tape worm medicine. Water is bought @ 2 per gallon and uses 20 litres per day.

Problems: Goats invade the neighboring garden and are taken by the police. Kshs. 500 paid to get them back.

Information from other farmers. Keeps livestock due to our culture as “Warias (pastoralist Somalis). Would like more training and information.

Problems are dogs and accidents. Feeds from market waste on market days

In five years there will be more goats if land is there, and if security is tight.

Respondent 55

Born in Bulbul in 1947. Reached Form 2. Did a Jua Kali (informal) course as a tinsmith. Worked as guard in security firm. Not married. 9 in their family -- 6 sons, 3 daughters, 2 grandchildren.

Not in any organization, would like to have an organization but there is no land to benefit.

Has goats and sheep -- currently 10. Sold 10 @ Kshs. 1,450 as source of income. Gave away 2. Family ate 1. Found his father keeping livestock in 1960s. Takes care of the parents' goats.

Due to lack of land for pasture and labour they chose goats. A goat died due to eating plastic bags.

Products: milk for home use. Sells milk to pay school fees for the brothers.

Groups may not work due to jealousy. Some residents kill the goats. Stolen 2 -- found slaughtered in the neighbours' garden and hidden and buried. Hungry dogs eat some at night.

Problems -- no fodder. Therefore they eat flowers and they are beaten.

- Gives tapeworm medicine and salt. The salt prevents goats from eating plastics and helps digests the already eaten one.
- Wormicide @ 150 for 120 ml.
- Salt @ 200 1 sack of red salt which lasts for 6 months.
- Water from tap – goats do not like water but he makes sure that they have half a gallon a day.
- Diseases: diarrhoea (due to fresh green grass) and boils.

Would like more information about goat keeping. Got some knowledge from his father and Radio. But he is not able to keep up with the current information.

25% profit from goats. No future for goats due to building of houses and there will be no grazing pastures. They are squatters from Dagoretti. No Council harassment on goats. There are vets from Government but we pay them Kshs. 50 per goat.

No other help from Government but we need them. I would like to add more livestock but more goats from milk (dairy goats).

Respondent 56

Occupation: Farmer and businessman. Family: 3 sons and 2 daughters.

Livestock: 23 chickens and 4 goats.

There is no organization here and he has no interest in organizations. He does not believe in cooperation.

Has a rural home (Karindi near source of Mbagathi River).

Food for chickens is mainly maize from rural home. He gets water from a borehole.

Eggs are for breeding and consumption. Gets 8 or 10 eggs a day.

He uses a truck wheel rim as a brooder. Uses goat manure as a cushion to generate heat and the eggs hatch within 15 days.

He sends his son to Ngong town to sell the chickens @ Kshs. 250. Sells only when necessary. Not on a regular basis.

Goats are free range from 8 a.m. – 8 p.m. Sells goats and sheep to butcheries @ Kshs. 2,000 to 7,000. Demand for goat meat was low. Does not keep them for commercial reasons.

Diseases -- mainly from eating weeds and worms. Anti-worm drugs after 3 months, 1 tablet costs Kshs. 35. Buys from Agro Vets from Kiserian town. Does not rely on vets because they are corrupt.

Manure -- takes to rural home for farming where he grows maize and tomatoes

He is the key decision-maker due to his experience. His wife lives in Nairobi and has a niece at staying with him.

Annex 5: List of participants, Stakeholders Brainstorming Workshop

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