Who Can Help the Peri-urban Poor? (Boafo Yε Na)

Participation of Vulnerable Groups in Natural Resource Management in the Kumasi Peri-Urban Interface

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LIST OF ACRONYMS

BAK	Bosomtwe Atwima Kwanwoma
BYN	"Boafo Ye Na"
BRRI	Building and Road Research Institute
CEDAR	Centre for Development Areas Research
CEDEP	Centre for the Development of People
CLF	Community Level Facilitator
CRI	Crop Research Institute
CSIR	Council for Scientific And Industrial Research
DA	District Assembly
DFID	Department for International Development
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organization
FORIG	Forestry Research Institute of Ghana
GPRS	Ghana Poverty Reduction Strategy
KMA	Kumasi Metropolitan Assembly
KNUST	Kwame Nkrumah University of Science and Technology
KPUI	Kumasi Peri Urban Interface
NGO	Non-Governmental Organization
NRSP	Natural Resource Systems Programme
NaRMSIP	Natural Resource Management Strategies Implementation Plan
PBPP	Participatory Business Plan Preparation
PRA	Participatory Rapid Appraisal
PU	Peri Urban
PUI	Peri Urban Interface
UK	United Kingdom

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EXECUTIVE SUMMARY

Years of research by teams from some research institutions in Ghana, India and the United Kingdom in the Kumasi Peri-Urban Interface (KPUI) have revealed a disturbing picture of degradation of the natural environment. In addition, there is glaring increase in the impoverishment and marginalisation of many residents in the KPUI. The problem is exacerbated by the influx of "new entrants" to the KPUI, which compounds the increasing human population problems and the associated natural resource utilisation and management in the peri-urban communities.

One can count a plethora of attempts by national government and some civil society organisations to deal with urban sprawl and the related natural resource management problems. These efforts have often resulted in little and sometimes no impact on environment, livelihoods and natural resources management mostly because they are not coordinated and properly targeted. Again, knowledge about the underlying dynamics of the peri-urban change has not been properly assembled to inform action to deal with the problems.

The Centre for the Development of People (CEDEP) in collaboration with researchers from the Kwame Nkrumah University of Science and Technology (KNUST) and the Centre for Development Areas Research (CEDAR), Royal Holloway, University of London is facilitating a research process whose central theme is to build on the knowledge of the peri-urban processes and the resultant changes to livelihoods, natural resources and the environment. Part of this effort has been the formulation of plans in 2001 to implement natural resource management strategies in a manner that benefit the poor in the KPUI. The Natural Resource Systems Programme (NRSP) of the UK's Department for International Development (DFID) sponsored the plan preparation process under the project NaRMSIP[1] for KPUI (DFID R7995). The NRSP is presently supporting the implementation of these plans in twelve pilot communities under DFID R8090 ("Boafo Ye Na" or BYN project), which participated in the plan formulation process.

The spate of human activities in communities have triggered concern in development circles and led to the sustainable livelihood discourse at global and local levels. Although 'natural resource management' has been practised since creation, the alarming concern for the environment has necessitated a new look, especially in urban and peri-urban setting, where natural resource capital is under threat from human activities. The common pool nature of renewable natural resources makes their management challenging, as individuals have the tendency of tapping as much as they can without thinking about their neighbour or what happens in future. These challenges are more difficult on the peri-urban and urban context, where cultural meanings, norms and regulations, which are important ingredients for natural resource management have been eroded or adulterated to the extent that natural resource management has become the preoccupation of a few powerful groups, with the vulnerable and marginalised groups who interact more with these resources pushed to the background.

During the past two and a quarter years, CEDEP and its collaborators have been observing the participation of the marginalised and the vulnerable, including women, youth and the poor in general, in natural resource management in KPUI, through a study in 12 peri-urban communities. The peri-urban changes may have the tendency to include or exclude the poor and vulnerable in natural resource management decisions and practices. This is because as the setting becomes more complex, new power relationships for instance are established, which may affect the utilisation of the natural resources on which the poor and vulnerable largely depend. The extent of their inclusion or exclusion among others is a matter, which this study seeks to address.

[1] Natural Resources Management Systems Implementation Plan

Key Issues in the Study

This theme identifies vulnerable peri-urban groups implementing livelihood activities in the communities and establishes their levels of participation in natural resource management at the community level. It also investigates the role of natural resources in the livelihoods of peri-urban inhabitants.

Key issues addressed under the theme include the following:

- The role of various vulnerable groups in natural resource management in the peri-urban interface (PUI)
- The role of natural resources in the livelihoods of peri-urban inhabitants
- The natural resource needs of peri-urban inhabitants and their strategies for accessing these resources

Methodology

The information included in this report is based on a combination of research methods. Baseline studies (using questionnaires) and needs assessment of the communities offered an opportunity to know the situations in the communities with respect to community mobilisation and development before the initiation of the pilot livelihood projects. 396 questionnaires for 12 communities participating in the research process were administered during the baseline survey. Averagely, 20 discussants were further engaged in each of the twelve communities (making a total of about 240 people spoken to) as part of the group discussions organised in the communities. The community group discussions were supported by interview of certain key informants in the communities to obtain further information on the poor and the vulnerable people. Frequent monitoring visits to the communities to observe livelihood activities and interactions with the project beneficiaries and other stakeholders provided information on the changes that have taken place. Some information were extracted by studying reports of stakeholder workshops, livelihood training programmes, quarterly, annual and mid-term reports of both R7995 and R8090. Recent visits to DAs by collaborators and project staff have also helped in obtaining some information for this report. Outputs from SPSS and Le Sphinx Survey tool were used in the analyses of the data from the baseline studies.

Key findings

Communities defined natural resources as all capital assets provided by nature. They easily recognised land, wildlife, water bodies, and sand and stone as natural resources. Solar energy, wind, rain, underground water and grasses were either overlooked or seen as fringing assets. Although these resources were not treated seriously, they remain key to their livelihoods. Sun drying of clothes and farm produce are common in the communities. Due to insufficient and unreliable supply of pipe-borne water, many households in the PUI resort to the use of well water and all farmers use rainwater. Some of the vulnerable groups have been harvesting straw for sale to supplement their sources of livelihoods.

The implication of overlooking such livelihood sources as the sun, underground water, rain, grasses and etc is that such livelihood sources are not properly managed. This is exemplified by a group in one of the communities, which said:

"We have five streams;
We manage the one from which we get our drinking water;

For the rest we just farm round them"

Vulnerable groups have temporary access to farmland or undeveloped building plots for farming. Sometimes, landowners do not wait for them to harvest their crops before they lease the land to the next developer. This temporary access does not augur well for practising soil improvement strategies. Thus, many farmers just use the land as much as they can, mining all the minerals, whilst they wait for the next developer to come and take over. Those mostly by this practice are teenage mothers, single mothers, school dropouts, and food crop farmers. Most of these people have no or at best low functional education so with increasing displacement from the land, they are further impoverished. With low or no education and reducing social safety net in the communities, the vulnerable also have least access to capital and therefore are unable to take advantage of the urban opportunities such trading.

Food crop farmers are further constrained by people's knowledge about the market. This is particularly worse among the urbanised peri-urban communities like Abrepo, Apatrapa where their traditional crops in vegetables have witnessed reduction in market size as a result of continuing pollution of water bodies on which these crops depend.

Aside limited access to farmland and capital to intensify production, food crop farmers (in particular) are constrained by limited access to market information that could enable them leverage for higher prices for their produce and also produce according to the demands of the market. The study discovered that in many of the communities, the woes of the poor farmer have been compounded by the supply of similar produce from a different production source that 'crushes' the market. This is very common among vegetable growers (Okra and tomato farmers in Swedru, pepper farmers in Ampabame II for e.g.) and as they do not have any means to process their produce, they are often compelled to sell them cheaply and sometimes leave most them to go bad.

The traditional free-range mode of animal rearing by all including the poor in the communities, particularly in fowl, shoats, pigs, etc., have gradually become a preserve of the middle and upper class people who have enough land to spare at their backyard and on rented land. Consequently, the protein needs of the vulnerable people whose incomes are also low are seriously affected. Without alternative protein sources, the children of the poor and vulnerable in the KPUI like the poor in even the remote north where poverty is highest (IMF, 2003) are impoverished and in many cases lethargic.

Conclusions

The research identified the vulnerable groups within the KPUI as the aged, women, single parents, unemployed, food crop farmers, apprentices, school drop outs and the sick and the physically challenged. Vulnerable groups are significantly excluded from natural resource management through organised institutions but are rather included in traditional belief and utilisation related systems of management. The study has indicated that the quantity and quality of natural resources in the KPUI have significantly been reduced by increasing pressure on the natural resources. The result indicates that generally, vulnerability will increase over the years in more rural KPUI communities than in the urbanised KPUI communities.

1 INTRODUCTION

People who have lived within Kumasi and its environs for the past ten years or so may be familiar with the dramatic transformations taking place in the Kumasi Peri-Urban Interface (KPUI). The increasing value of land, the reducing size of farmlands, the increase in conflicts among land uses, the attrition of culture, the increasing pollution and reducing sizes of water bodies, the transportation problems and the general natural resource depletion are living testimonies of the effect of urbanization of Kumasi. The Ghana Poverty Reduction Strategy document (GPRS, 2003) mentions the vulnerable groups who now are dotted around in the urban and peri-urban communities as severely affected by the urbanization of cities in Ghana. The implication of this is that the government's poverty reduction strategies have to target not only rural communities but also people in urban and peri-urban communities. Generally, livelihood choices affect the natural resource base in the KPUI. While certain of the events happening in the KPUI can be explained by intuition, several others can only be understood by a scientific study.

This document reports a study of the participation of vulnerable groups in the management of natural resources in the KPUI. The study is based on implementation of plans natural resource management strategies in a manner that benefits the poor in the KPUI. The Centre for the Development of People (CEDEP), a leading Ghanaian NGO, is implementing this project under the sponsorship of the Natural Resource Systems Programme (NRSP) of the UK's Department for International Development (DFID). DFID has since 1995 carried out research in the KPUI with the view of deepening understanding of the wider ramifications of the urbanisation of Kumasi, particularly the effects on the environment and livelihoods. CEDEP has for the past three years, been working with 12 KPUI communities to plan and implement livelihood improvement strategies. Central to this project is the observation and documentation of new lessons emerging from the implementation of the livelihood strategies.

CEDEP is carrying out this research in collaboration with researchers from the Kwame Nkrumah University of Science and Technology (KNUST), Ghana, and the Centre for Development Areas Research (CEDAR), Royal Holloway, University of London. The research began with the formulation of plans through extended interaction with principal stakeholders[2], commencing in 2001 under DFID R7995: Natural Resource Management Strategies Implementation Plans (NaRMSIP)[3] for the Kumasi Peri-Urban poor. The plan formulation culminated in the current the current DFID R8090, also known as the Boafo Yɛ Na (BYN) project, which aims to reduce poverty in the KPUI through the improvement of the livelihoods of people who have been affected by the urbanisation and expansion of Kumasi

This is the second of five research themes[4] being investigated under the project. It identifies the vulnerable groups and establishes their levels of participation in natural resource management at the community level. It also investigates the role of natural resources in the livelihoods of peri-urban inhabitants. In investigating the linkages between PUI livelihoods and natural resources, particular attention is paid to vulnerability on the basis of age, gender and well being. Therefore, the role of women, youth and poor groups (although not mutually exclusive) in natural resource management has been investigated.

Key issues addressed under this theme include the following:

- The role of various vulnerable groups in natural resource management in the PUI
- The role of natural resources in the livelihoods of peri-urban inhabitants

[2] The poor who were targeted to benefit from the planning and implementation of natural resource management strategies on the peri-urban interface

[3] Three plans prepared under the NaRMSIP project are (1) Non-farm natural resource based livelihood activities; (2) Farm-based livelihood activities; and (3) Processing of products from the first two.

[4] The other four themes are (i) Role of CLFs, District Assemblies and other stakeholders in the implementation of plans developed during R7995 (ii) Contribution of new entrants in the middle and upper income groups to building capital assets and influencing processes of peri-urban change (iii) Adoption and impact of livelihoods activities on PUI livelihoods (iv) Monitoring, sustainability and risk management in PUI livelihoods

- The natural resource needs of peri-urban inhabitants and their strategies for accessing these resources

The next section reviews the literature on vulnerability, participation and management as crosscutting issues affecting natural resource utilisation and management in the KPUI. Subsequent sections provide a background to communities and vulnerable groups in the communities, discuss livelihoods of the vulnerable and management of natural resources in the communities. Finally, lessons learnt and summary of conclusions are presented.

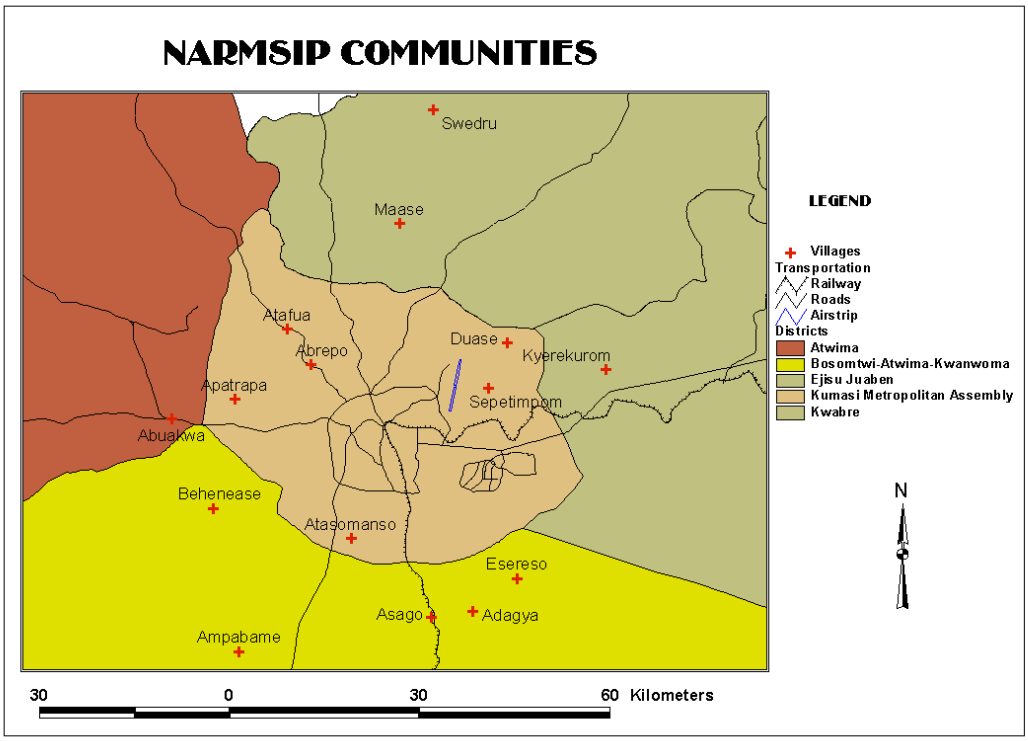
1.1 Methodology

This sub-section discusses the whole processes of data gathering and analysis for the baseline and the actual data collection for this report.

1.1.1 Selection of Communities and respondents

Twelve[5] of initial fifteen communities targeted in the KPUI of Ashanti Region of Ghana were selected to participate in this research project (see Map below). In a baseline survey conducted in August 2002, respondents were selected based on a random sampling technique after communities had been informed about the research. Data gathering for individual interviews for the assessment of the participation of the vulnerable in natural resource management in the KPUI (also conducted in June/July 2004) followed similar randomly sampled respondents, which was supported by group discussions in all the twelve communities.

Map of Project Communities



[5] Swedru, Asaago, Adagya, Ampabame II, Abrepo, Apatrapa, Esreso, Duase, Maase, Okyerekrom, Behenase, Atafoa. By continuously built-up and complexity of activities criteria, this research classifies Abrepo and Apatrapa as urbanised, Atafoa, Esreso, Okyerekrom and Duase as semi urban/rural and Swedru, Behenase, Ampabame II, Asaago, Adagya and Maase as rural.

1.1.2 Design of research instruments

A team of principal collaborators selected made up of five researchers from two institutions; the Kwame Nkrumah University of Science and Technology, Kumasi Ghana; and the Royal Holloway University of London joined CEDEP to design the research. These institutions were part of the previous peri-urban research projects, which were carried out on the Kumasi peri-urban interface and were given the role of facilitating access to knowledge generated and relationships developed in these research projects. The team designed a baseline questionnaire to look at the background information, livelihood system of the individual and the community, implication of livelihoods for natural resources and natural resource management, competency and risks, market potential and the structure and operation of Community Level Facilitators (CLFs). This questionnaire, which had 91 questions, was designed for two categories of respondents. The first category, which formed the bulk of respondents, was selected at random from the twelve participating communities. Key informants including chiefs and elders, queenmothers, unit committee chairpersons, assemblypersons, head teachers and pastors responded to additional set of questions, which were annexed to the general questionnaire. In all, 33 questionnaires were administered to randomly selected respondents in each of the communities. This yielded a total of 396 questionnaires for the 12 communities.

Each of five research leaders, including CEDEP, raised a team of three enumerators giving fifteen enumerators. These enumerators worked with nine competent CLFs, making a team of 25 enumerators. Each project collaborator had an assistant researcher who together supervised the data collection. The whole data collection was done under the leadership of one of the principal collaborators. Whilst the enumeration was going on, another team engaged some community members in discussions on peri-urban issues and natural resources management systems.

During the actual June/July 2004 assessment of the participation of the vulnerable in natural resource management, project staff and collaborators met to design a checklist of questions that were to guide group discussions in the communities and special workshops for stakeholders at the community level.

In the community group discussions, a team of students from KNUST facilitated the community discussions under the supervision of the project collaborators. An average of 20 discussants was engaged in each of the twelve communities, making a total of about 240 people. On a second level, project staff organised special workshops for project stakeholders at the community level to obtain additional information to support and triangulate data obtained from the field by the researchers. Details of data collections methods are given in the subsequent sections below.

1.1.3 Data Collection Methods

Data for this research theme were collected through a combination of both qualitative and quantitative research methods, which include the use of participatory approaches, interview guides and questionnaires, observations, focus and group discussions.

a. Interview Surveys

Baseline data was collected using structured and unstructured questionnaires. The questionnaire covered areas including;

- livelihood system of the individual and the community,
- implication of livelihoods for natural resources and natural resource management,
- competency and risks in livelihood activities management and implementation,
- market potential and
- structure, operation and performance of Community Level Facilitators (CLFs).

The research team was made up of the following:

- Team leader
- CLFs
- Collaborators from KNUST and Royal Holloway University of London
- Field assistants

b. Key Informant Interviews

Key informants including chiefs and elders, queenmothers, unit committee chairpersons, assemblypersons, head teachers and pastors responded to additional set of questions. Their part was to provide additional but detailed information about the social, economic, and political dynamics of the communities.

c. Focus Group Discussions

As part of the data gathering for the baseline studies in 2002 and the assessment in June/July 2004, there were few focus group discussions that were used to gather in-depth qualitative data, using PRA tools. Some of these tools include:

- Community resource mapping
- Wealth ranking
- Livelihood systems analysis
- Poverty analysis
- Social Mapping

d. Participatory Observation

Observing the project implementation over a period provided important information about the processes and impact the project is making on the community members. These 'silent' but important sources of information were relevant for the triangulation of data obtained from the baseline survey and from other sources in the community as well as informing the project team on relevant changes in the research design and implementation.

e. Case Studies

Detailed information was also collected from households of four vulnerable community members from two urbanised and two rural communities. Two field staff interviewed them with a checklist rather than a structured questionnaire, so they captured the stories and not the specific answers (see Appendices 1 and 2 for summary of field report and field guide). This was important for cross-referencing data obtained for rigorous analysis.

f. Project materials

Relevant information about project were collected and compiled into reports some of which were submitted as part of the projects progress reports. Important sources of these data came from workshop

proceedings and business plans prepared for support[6] under the project livelihoods improvement experiments. This data yielded information on various issues such as livelihood diversity, sources of income and expenditure, vulnerability analysis of households.

1.1.4 Data Analysis

The data gathered was analysed using the computer packages SPSS and Le Sphinx. The qualitative data was used as narratives to explain some of the quantitative information. Community members did some of the qualitative analyses, such as poverty analysis, on the field during the process of data gathering.

[6] About 465 individuals in more than 400 households have received support and thus contributed to this source of data

2 PARTICIPATION OF VULNERABLE GROUPS IN NATURAL RESOURCE MANAGEMENT

Natural resources management has become a major concern to governments, development partners and NGOs. Understanding the forces at play in natural resource management is key to the formulation of appropriate management strategies. Examination of current and historical local and global natural resource management options may lead to the best choices.

This section examines the global issues bothering on natural resource management, and in particular, the participation of vulnerable groups within the peri-urban context.

2.1 Vulnerability

Vulnerability generally lends itself to different interpretations. It can be seen as the probability for a person or a group of people to fall, break down, die or give up in times of trouble. Such a problem could be something that will lead one to fall sick, die, be incapacitated or be entirely dependant on another person for a long time. People may or may not recover from the effects of vulnerability. Rahman and Hossain (1995) see vulnerability as a central dimension of poverty, and could be examined via three indicators, namely, physical insecurity, crisis-proneness and coping capacities.

One's inability to be certain of events can bring about insecurity and stress. Stress imposes a psychological weight on one's mind and could lead to more proneness to sickness and disease. Insecurity can also be seen from the angle of not knowing what could happen to ones life and hard-won property. Insecurity relates to the level of violence and intimidation, which permeates social and institutional life and the constraints, which such an environment imposes on livelihood initiatives by the poor (Mikkelsen, 1995). In most cities of the world, the high incidence of violent crimes in the central business district has resulted in people preferring the suburban areas (referred to in this study as the PUI), where personal security in theory is better. In reality, however, more heinous crimes may be committed in the outskirts where security may be equally loose. People in such places are vulnerable to theft, robbery and burglary, and so on.

The parameters for defining vulnerability differ across time and space. In well-organised social systems like in rural India, a vulnerable person is a poor person. Such individuals lack income and assets, are physically weak, isolated and powerless (Chambers, 1987). Their livelihood base is often linked to the natural resources base, so anything that minimises access to these natural resources makes them vulnerable to hunger and destitution. In a more rural setting where people have access to more diversified sources of natural resource-based livelihoods, a gap in access to one source of livelihood is often filled by an alternative livelihood. Increased complexity and diversity in livelihood systems normally add to the number, size and spread of flows of food, income and other resources. Sometimes this is through addition to enterprises or activities, and sometimes (often in complex small farming systems) through synergies, which increase flows from existing enterprises. This is often lacking in the PUI and hence accentuates vulnerability (ibid).

Increased diversity also often spreads livelihood flows more evenly across the seasons. The poor 'vulnerable' choose enterprises and activities, which fit their seasonal slacks. In the PUI, the poor and vulnerable often lack diversity of livelihoods and hence engagement in slack season is almost non-existent (Brook and Davila, 2001). Urbanisation, in one sense helps another category of the vulnerable, the landless households, to cope with the seasonality of demand for agricultural work, though unevenly. It has been noted that increase in non-farm employment in the KPUI has been particularly marked for men (University of Birmingham, 1998). For instance, though royalty has been associated with wealth and well being in the KPUI, findings from Nkrumah *et al*, (1998) indicate that increasingly, women of royal families have lost farmland to property development and no longer own any land themselves. This is because when the royal dies within the matrilineal inheritance system, the nephew takes over the property

including land. The nephew can sell the land to property developers without regard to the female members of the royal family.

In a typical Ghanaian society, women's vulnerability is further exacerbated by the greater role they play in the management of homes and the larger community, which ironically is not acknowledged. They suffer a great deal in having greater responsibility to raise children in the ever-increasing breakdown of marriages, triggering a further cycle of vulnerability (Shah, 1998). Female-headed households do comprise a vulnerable category where they have little access to adult labour, many mouths to feed and few relatives to fall back on (*ibid*.).

Other categories of vulnerable people in the peri-urban setting are children, food crop farmers whose lands have been taken over by property developers, the aged, who have received the shocks of having their cash crop properties replaced by real estate properties, teenage mothers and school dropouts, among others. Many of the vulnerable children have become street vendors along the major streets of large urban towns in Ghana.

2.2 Participation

Another important dimension of vulnerability is knowledge about events and processes that are occurring. Often people are vulnerable to shocks of, for instance, seasons where they have little knowledge about weather patterns. An important aspect of knowledge in a communal setting is the level of involvement or participation by the people. The elites or 'haves' are often less vulnerable to such shocks because they participate in inter- and intra- community transactions and, therefore, have access to intra- and extra-community information.

Participation in community processes can be seen as one of the means by which the poor and vulnerable can extricate themselves from vulnerability. Lack of participation of the poor and vulnerable in development activities and programmes can be likened to non-participatory nature of projects undertaken by donor agencies. Projects of such agencies normally produce higher quality outcomes, yet lack the feeling of ownership by the target population. In the management of 'common pool resources' in a community, the exclusion of some users can have regressive implications on sustainability in the use of such resources. To a greater extent than the wealthy, the vulnerable and the poor depend significantly on the natural resource base for their survival (Oxfam, 1995). Their livelihoods are inextricably woven into the natural resource base and, therefore, their involvement is crucial. They are potential agents for protecting existing resources as well as identifying new resources for survival. Identification of such new resources is crucial for the protection or optimal utilisation of existing ones that are under threats of modernisation. In dry land regions of India, it has been estimated that landless labourers, who fall within the vulnerable bracket, derive up to 1/5 of their income, along with a significant proportion of their food, medicines, and building materials, by harvesting natural resources from common property resources (*ibid*, 19). During a drought in 1982/83, Ghana witnessed how villagers (mainly the poor and vulnerable) drew upon local knowledge of fruits, roots, leaves and other forest products, which has been handed down, from generations to survive. Without such knowledge, the human and environmental cost would have been more catastrophic.

The dramatic transformations occurring in the PUI, the uncertainties of land marketeering, the degradation of the natural environment, the influx of 'new entrants', the imbalance in resource utilisation and replacement, the weakening of traditional leaders' and government's ability to ensure rational use of the natural resources in the PUI- mean that a new management model, which focuses on the involvement of the poor and vulnerable is worth advocating. An understanding of the level of participation of these key users of the natural resources cannot be overemphasised. Participation by the people in the institutions and systems, which govern their lives, is a basic human right and essential for the realignment of political power in favour of the disadvantaged groups and for social and economic development (FAO, 1979).

2.3 Management of Natural Resources on the Peri-Urban Interface

Management means directing the affairs of business, government agencies, foundations, and many other organisations and activities. The central idea of management is to help achieve a carefully chosen goal. Wherever complex problems appear that can be controlled by human beings, the skills of management are called into play. In addition to branches of business like industrial, personnel, marketing, financial, production and etc, land, water and natural resources in general are also managed. The growth of management in business has, however, been greater than in other fields. This tends to make the work of management appear as the manager's business, and those who perceive themselves as non-managers passive.

In development terms, Amoako (2000) perceived managers as having the primary role of directing, leading, influencing and executing a country's development task. He saw two prominent challenges facing African managers:

a. deliberately choosing to eliminate poverty through the provision of education and health services; and
b. promoting policies that emphasise sustainable development.

The sustainable development challenge, which was described as providing for the needs of a growing population without destroying the natural resource base on which it depends, seems to be the biggest challenge. In a business setting, the carefully chosen goal is obviously profit, and most people who have a share in this profit, work hard towards this goal. The **incentives** for adhering to the principles of the business/organisation are palpably propelled by direct rewards and sanctions, which come in various forms as salaries, dividends, suspension or expulsion from the organisation. Yet other motivators like trust, respect and friendship from top management, become stronger inducers where rewards and sanctions seize to spur people on, as often happens with time.

Natural resource management is starkly different from business management when viewed in terms of sustainability. This is especially so because, the people who are considered, as the managers are few compared to those who interact with the natural resources. The incentives for adhering to the code of conduct for interacting with natural resources are considered remote and sometimes mystical by the end users. They will, therefore, in most cases violate norms if that will serve their immediate needs and if sanctions are not strong, immediate and clearly understood.

Cultural values, norms and meanings provide human patterns for the environment and livelihoods from which human beings derive access to a variety of resource flows (Tiia Riitta, 1999). For example in a typical, natural, unadulterated, African rural setting, a community may be governed by 'executives' including the chieftains (the chief, the linguist, the queen mother, the warlords) the medicine man and the priest. In the Asante culture, even the priest is a chieftain. These 'executives' (institutions) are responsible for making/observing the values, norms and meanings that guide the behaviour of themselves and their subjects. When there is a problem affecting the community, the appropriate executive is consulted. The priest, who is the spiritual leader of the community, is consulted on problems beyond human explanation. For instance, when there is an outbreak of a disease, which goes beyond the medicine men, when thunder strikes someone, when a person is drowned, or in case of sudden death, the priest is consulted. The priest may come out with the causes: a river, or forest or family god has been defiled. The people (including commoners) in fear investigate who is responsible and the culprit is given the deserved punishment. Thus, the customs and processes associated with the disaster become a means of awareness creation on the consequences of violating the norms and a deterrent for future users. Thus, the 'executives' facilitate the management of the natural resource in such a way that the commoners play a role, and the goal is common welfare of the community. Amoako (2000), therefore, asserts that management, concerned with human behaviour, as is the case in the development field is more an art than a science.

In the present day peri-urban interface, the economic, social and cultural conflicts: rural versus urban, agriculture versus built environment, traditional versus modern, subsistence versus commercial, informal versus formal (Tacoli 1998; Mbiba, 2001; Ashong and Smith, 2001; Rakodi and Lloyd, 2002) have

eroded the values, norms, and meanings guiding human behaviour (Tiia Rita 1999). This makes human behaviour significantly ungovernable; socially esteemed norms and taboos no longer matter as epidemics, floods, and accidents now have scientific interpretations, and western religion has also to a large extent made superstitions and traditional beliefs unpopular. With no impetus for commoners to report violators of natural resource regulations, which have been nicely legislated, people violate so long as they are careful enough, not to be caught by the relevant state agencies. Some of these state agencies in the KPUI e.g. the District Assemblies (DAs), Environmental Protection Agency (EPA), Department of Game and Wildlife, are far from the resources and fewer than the vulnerable who interact with the resources on day-to-day bases. Thus, the poor passively use the natural resources without any regard for their management.

3 PROFILE OF KPUI COMMUNITIES

The generalised idea about the peri-urban communities is that livelihood choices have significantly been altered by the burgeoning urban influence. These influences have been accompanied by several alternative livelihood choices, which have affected people on different scale. Some people have received or have identified and utilised the accompanying opportunities, while others have rather been affected negatively. The location, size, natural resource base, environmental conditions and population, etc of these communities provide some indications as to the response of the urban influence on the community. Though not mutually exclusive, these variables are crucial in understanding the effect of the urbanisation on people and natural resource base of the communities.

3.1 Population and Natural Resource in KPUI

The entire peri-urban interface has experienced a rapid rise in population. Growth has resulted from natural increase (more births than deaths) and migration (Nsiah-Gyabaah, 2000). There are, however, variations in the growth rate in different parts of the peri-urban interface. The more urbanised PU communities have higher population growth rate than the rural PU communities. The reason is linked with high in-migration, mainly from northern Ghana, either for farming or in the case of Abuakwa and Duase for easy commuting access to the city (Brook and Davila, 2000). Out-migration has in most cases been to the city (or perhaps one of the settlements closer to the city) to seek or engage in urban occupations if accommodation could be found there. Table 1 (adapted from Kassanga, 1998) indicates that a lower or a negative growth rate, as in the case of Behenase, is associated with the geographical location of the communities. These have implications on incidence of vulnerability in the communities.

Table 1: **Population growth in selected peri-urban villages around Kumasi, 1970-1996**

Village (approximate distance to Kumasi centre).	Resident Population			Native Population 1996		
	1970	1984	1996			
			Total population	Annual growth* (%)	Currently resident (%)	Out migrant (%)
Akokoamong (13km)	247	322	488	3.5	63	37
Asaago (12km)	273	527	847	4.0	82	18
Atasemanso (7km)	830	971	2,679	8.8	95	5
Behenase (24km)	207	274	258	-0.1	67	33
Emena (13km)	213	244	665	8.7	81	19
Esereso (13km)	441	673	1,711	8.1	90	10
Maase (13km)	269	522	829	3.9	69	31
Okyerekrom (15km)	497	589	734	1.9	68	32

**Annual growth of village population between 1984 and 1996.*

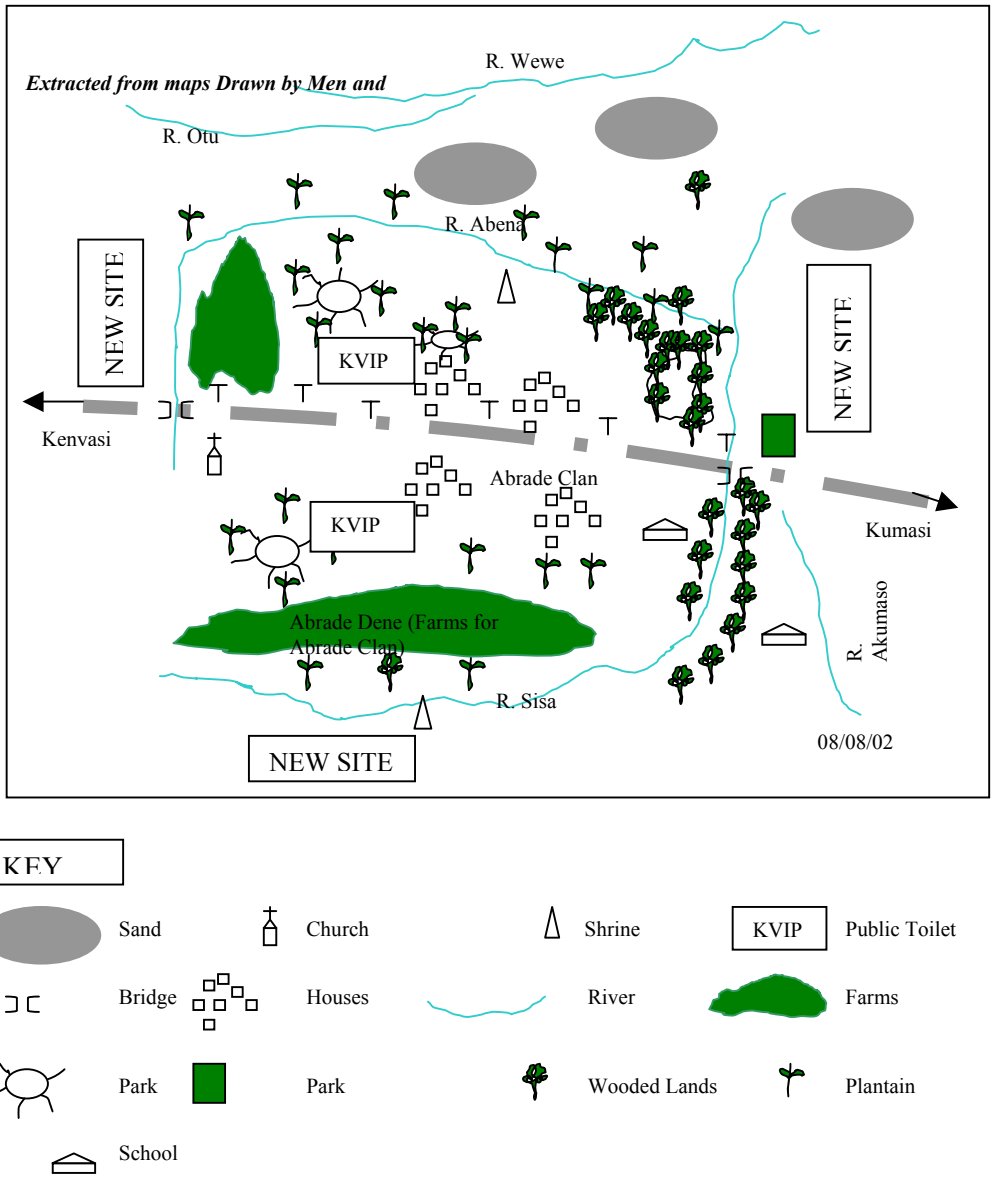
Source: Kasanga, 1998

Population experts have long predicted that rapid population growth will lead to shortages of resources, degradation of the environment, economic decline, population displacement and general poverty. In the PUI, the incidence of population displacement is particularly remarkable. Often, however, the most disadvantaged suffer a great deal because of this. The source of this problem is land marketeering. Land transactions have increased lately, for such reasons as speculations and competition between chiefs and family heads, and this has displaced the most disadvantaged groups such as women, migrants, and poor households (Nsiah Gyabaah, 2000; Edusah and Simon, 2001).

3.2 Natural resources and the environment in the KPUI

The relationship between land use and the environment produces feedback that can promote or negatively affect sustainable agriculture and the related activities. Benneh (United Nations University, 1997) has shown that the traditional methods of farming (bush fallowing, mixed cropping, intercropping with small implements) have self-renewing response on the land and soil fertility. Gyasi (ibid) has also identified the high potential for small farm settlements to promote soil fertility and other biophysical functions. In farming communities, the immediate occupancy of the farmer groups produce the most enriched soil (usually the 'bola', the household waste water terminal), which promote the growth of such crops as plantain, cocoyam, cassava, fruits and vegetables, etc (Gyasi, 1997; Russell and Mohammed, 2003). In the PU, however, the quest for block building, the transfer of household waste from the community, and the clearance of land for non-farm activities has aggravated the loss of natural resources.

Figure 1: A social and natural resource map of Duase



Source: Baseline survey, August, 2002

The research team's familiarity with the communities and the group discussions subsequently organised found a declining natural resources base in the more urbanised peri-urban communities (See Table 2). Though the listed natural resources were mentioned as available in the communities, observations by the research team and further probing during the group discussions indicated that the levels of these resources have fallen far below their sustainable capacities, and, therefore, do not make much contribution to the livelihoods of the poor and vulnerable anymore. Again, many of the resources mentioned (e.g. sand and stone, land, and forest) are either accessible to the privileged (who are sometimes outsiders) or are only gathered by outsiders, who may be vulnerable though. An example of the latter group is women who harvest guinea grass straws for mats and hats. At Behenase, statements made during group discussion included 'straw abounds in the community but we do not have a use for them'. Women are often seen harvesting and sometimes drying straw by the roadside. Sometimes they are also seen trekking/boarding vehicles that take them out of the communities to gather natural resources for their livelihoods.

The expectation of compensatory benefits to be derived from the replacement by urbanised industrial, service and commerce for the traditional farm-based livelihood activities has produced a lopsided effect. More and more, the upper and middle class groups have greater access to these novel opportunities; with the vulnerable losing their chances of even short-term land rents and the natural resources. Figure 1 is a representative natural resource map for a community (Duase), which was extracted from maps drawn by men and women groups during the baseline survey in the communities, using a participatory approach. Different natural resources e.g. farmland, rivers and sand and stone winning sites can be identified from the diagram. The new entrants in the middle and upper well-being categories normally settle in the outskirts (Places designated new sites). The vulnerable new entrants stay within the community since they cannot afford to acquire land for their own residences.

Table 2: **Natural resource base of communities**

Community	Natural Resources
Ampabame II	water bodies, wild live, farmland, sand and stone, secondary forest, bamboos, raffia palm, wild oil palm, straw, snails, mushrooms, fuel-wood
Apatrapa	highly polluted water bodies, straw, sand and stone (completely exhausted), Wildlife (squirrels found nearby)
Behenase	wildlife, forest reserves, medicinal plants, trees, straw, wild palm tree, water bodies, sand and gravel
Esreso	water bodies, gravel and sand, straw, wildlife, fish
Adagya	land, trees, water bodies, fuel woods, wild palm trees, wildlife, mushrooms, straws, sand
Asaago	sand and stone, farmland, rivers and streams, wildlife, bamboo, oil palm, straw, fuel wood, fish
Swedru	sand, land, rock, water bodies, forest
Abrepo	water bodies, land, sunlight, wind
Okyerekrom	forest, rivers, sand and stone, straw, farm land
Atafoa	bamboo, streams, land, sand and stone
Maase	rivers and streams, sand and stone, forest, farmland, sunlight
Duase	land, streams and rivers, forest, herbs, straw, sand and stone

Source: Survey data, 2004

3.3 Livelihoods

Livelihoods in the peri-urban communities have been affected by the dynamic transformation of land use. With increasing speculation in the value of land in the PUI communities, it is not surprising to see a marked replacement of traditional land based livelihoods by urban housing and industrial-based livelihoods. The change has been phenomenal and sometimes dramatic in the more urbanised PU communities. In such communities as Apatrapa (and nearby Tanoso and Abuakwa) for instance, the high demand for accommodation from students and workers of the newly upgraded Kumasi Campus of the University of Education Winneba, have led to a rush in demand and rise in the value of land for property development. The corollary of this, however, is that it is the nouveaux riches and not the indigenes of these communities who own the lands. This is pushing the vulnerable towards the edge rather than pushing them towards the centre of stability in livelihood.

In the community group discussions it was found that in all the communities, the traditional livelihoods in farming and related activities are only but traces of their former selves. Swedru, Behenase, Maase and Asaago, which are a bit remote, maintain some farm-based livelihood activities (See Table 3).

Common among the new livelihoods are 'by-day', which is used as a generic term for short-term and normally a day's paid job e.g. in construction, road works, farmhand, etc. Petty trading, selling of water,

Table 3: **Communities and sources of livelihood activities**

Community	**Livelihood activities**
Ampabame II	'By-day', selling of water, fuel wood, brooms and baskets, gathering of stones,
Apatrapa	Remittances, General support from extended families, By-day
Behenase	By-day, Making brooms, Family support
Esreso	Petty trading, selling of firewood and cooked food, Farming, Hairdressing,
Adagya	Petty trading, Selling of fuel wood, Picking Palm fruits, Digging sand and stone, By-day
Asaago	Petty trading, Selling of fuel wood, Craft making, Straw harvesting, Saw milling, Selling of fuel wood
Swedru	Construction works, Small-scale farming, Sand winning, Stone quarrying, Petty trading, Family support and remittances
Abrepo	Home gardening, Petty trading, constructional work
Okyerekrom	Remittances, Menial jobs, Family support, Constructional works, Sand winning, Petty trading, Farming, Selling of charcoal, Begging, Stone quarry
Atafua	Farming, Selling of charcoal, Begging, Stone quarry Construction work, Petty trading
Maase	Selling of water, Fuel wood selling, By day, Remittances, Construction
Duase	Petty trading, Sale of firewood, Farming, Hairdressing, Selling of cooked food

Source: Survey data, 2004

street food vending, sale of charcoal etc are important livelihood choices for people especially in the urbanised PU communities. An interesting finding about livelihoods of the rural PU communities is that though detrimental to the environment, the people continue to rely on unsustainable activities such as sand and stone winning, quarrying, selling of fuel wood, gathering of oil palm. Community members described how the quality and quantity of these natural resources have dwindled. Swedru and Adagya were the only communities where palm fruit gathering is still an activity for mainly the teenage mothers, single parents, and the unemployed.

4 THE VULNERABLE AND NATURAL RESOURCES

Vulnerability is a hypothetical and probability-related concept and an integral part of the sustainable livelihoods framework. Vulnerable groups can be seen literally as those who with the slightest push (a worsening of things to which they are vulnerable) will fall over the edge of a precipice (die, be completely incapacitated, or helpless). Things that reduce their vulnerability are things that push them toward a more stable position on the 'livelihood platform' and make them less marginalised. Reducing vulnerability in turn helps to reduce poverty and deprivation. In carrying out the analysis of the situation of the vulnerable, the research team was guided by the understanding of the assets and capabilities of the vulnerable and their ability to cope with stresses, shocks, and seasonality.

Table 4: **Vulnerable groups as identified and defined during project workshop and survey**

From a survey conducted in June 2004	***From workshop for CLFs and Project Networking groups in March 2004***
▪ Food crop farmers ▪ Diseased ▪ Aged ▪ Unemployed ▪ Women ▪ Artisan apprentices ▪ School drop outs ▪ Petty traders ▪ Handicapped ▪ Orphans ▪ Illiterates ▪ Divorcees ▪ Parent with large families ▪ Youth ▪ Single parent	▪ The unemployed ▪ Those that have no helpers ▪ Those who do not discriminate on the type of work they do ▪ Those whose activities depend on natural resources

Source: Survey Data, 2004

Acquiring credible data on the vulnerable always poses two problems: people are not willing to talk about their vulnerabilities or they produce a false picture about their situation. In the KPUI, the latter is quite the case. In order to circumvent these problems, two sets of group discussions were organised. First a workshop, which brought together beneficiaries, community level facilitators (CLFs) and network groups, was organised. This was followed later by a community group discussion. A combination of the report from the two gatherings (summarised in the Table 4) facilitated triangulation of data obtained about the vulnerable groups.

The research team relied on the extensive literature about the concept and also tried to steer discussions away from the narrow poverty assessments of the community groups. The discussions, therefore, brought a range of issues about vulnerable groups, which include: food crop farmers, petty traders, sick and feeble, aged, unemployed, artisan apprentices, single mothers, etc. The workshop and the survey yielded two different perspectives on the vulnerable groups. While the workshop produced more general information about the vulnerable, the survey went further to obtain specific information, which suggest that answers to the question of who the vulnerable are could hide important details about them. Even the survey description of the vulnerable in the Table 4 above lumped some details and therefore presented a somehow static picture. However, further interrogation based on the responses provided showed that the vulnerable could be just a minority few and in some instances and in other cases a whole population of the group in the communities. For instance, the study showed that single mothers are mostly people with less capabilities, assets, education and skill, which somehow explain why most of them are not in marriage unions. With reducing social safety nets, they are at best traders, farmers, operating under

difficult circumstances such as hawking by the roadside, operating as chop bar[7] assistants, or working as farmhands whilst carrying their babies. There are other single mothers who would not work at all, but depend on relations and friends (boys) thereby reducing their chances of moving out of their vulnerabilities. Most of these single mothers, dropped out of school in their teens due to pregnancy. Unprepared to have families, they lack certain basic necessities and become completely dependent on their parents. In many cases the men who put then in the family way do not accept responsibility for the pregnancy.

A related finding on the school drop outs is that the peri-urban processes have created a condition that attract child labour and blurs the future of most school going boys. Interactions in the communities revealed that many school boys are caught up in a roadside and city trading which they do by either running away from school or after school and therefore have no time to study. Some of these schoolboys have genuine reasons, as their parents are not able to meet their needs completely.

4.1 Causes, shocks, trends and seasonalities of vulnerabilities in KPUI

Across the communities, some common causes of vulnerability can be identified (See appendix 1). Land and land tenure was mentioned as the most common cause of vulnerability in line with La Anyane (1962). Presenting a counter case, Kasanga (1988) has observed other more serious limitations to agricultural development such as lack of inputs, unreliable rainfall, lack of a strong agricultural policy, etc. While landlessness and regressive tenure arrangements were mentioned in almost all the communities, other causes of vulnerabilities were mentioned as environmental pollution, lack of capital, sand-winning activities, lack of alternative economic activities. Chieftaincy disputes in some communities such as Duase were specifically mentioned as causes for vulnerability. The explanation was that for ages these disputes have raged on and have served to complicate the land acquisition processes. These disputes, however, have both positive and negative consequences. Disputes at Adagya, Asaago, Swedru and Behenase have stalled land transactions and delayed unplanned development. On the other hand, these disputes have also retarded progress in for instance social infrastructure development that are associated with new settlers who come to the communities. Vulnerability of women was specifically highlighted at Swedru. The cause of their vulnerability was linked with the lop-sided education provisions, which favour the boy child over the girl child, the belief in witchcraft and the weakening social safety net from the extended family. The influence of extended family support has weakened, leaving the aged, orphaned and women at greater disadvantage. At Ampabame II, the problem of post-harvest losses in cassava production was mentioned, while at Swedru mention was made of losses in Okra production. The reasons given were that markets for these agricultural products are unstable: there is glut mostly in times of good rainfall and shortage in periods of drought. Cassava producers in Ampabame II have experienced several incidences of rotten tubers of cassava, often coming out of speculations for good prices in the future. No effective preservation methods have been developed for most of the agriculture produce in the communities.

All the communities mentioned the 1982/83-drought shock, which, to most of the vulnerable started their woes. Most of the aged in the group discussions mentioned how their livelihood bases were destroyed by the bushfires that accompanied the drought. At Ampabame II, the burning of a whole poultry farm was recorded. To them it was difficult to cope. They mentioned the stress that was put on the existing and new resources that were discovered, many of which are being used even now. Food crop farmers were mentioned as experiencing seasonal slack in production mainly due to drought in the latter parts of the year. At Swedru, Asaago, Adagya, Behenase and Ampabame II, vegetable farmers (mainly in okra, tomato, garden eggs, onion) during the dry season have adapted to digging small wells in the river/stream beds. Groundwater collects in these wells and this water is collected in buckets to irrigate the fields. According to the people in the study communities, this practice has come under severe threat since these lands have increasingly been taken over by sand and stone winners and in some cases property developers.

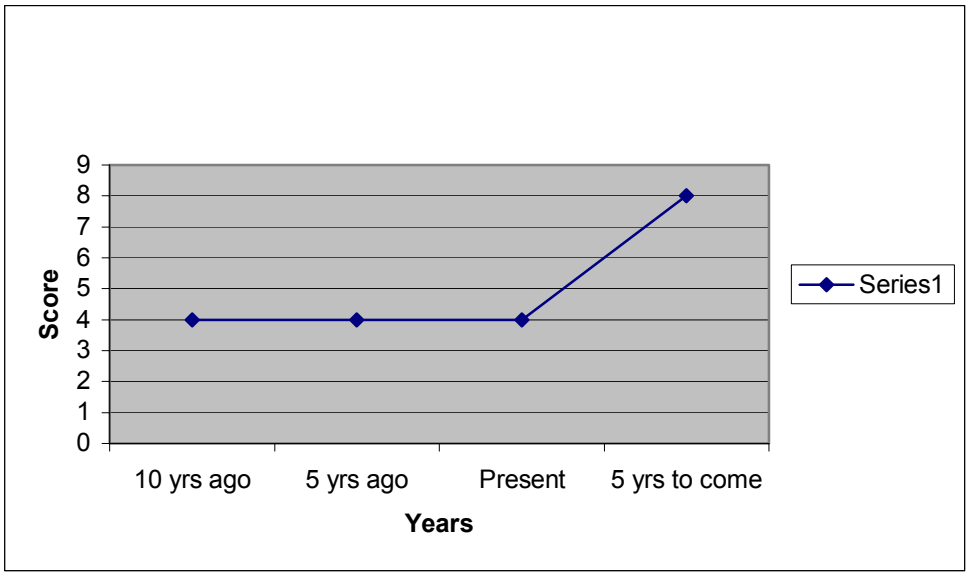
[7] A popular term used in referring to public eating places

Flooding was mentioned as another cause of vulnerability. At Abrepo, Esreso and Adagya, annual flooding affects certain parts of the communities. Although in all the communities the vestige of flood is the destruction of most people's personal property and farms, particularly of the vulnerable, who stay predominantly in un-walled and mud houses. There is, however, also a gain in the form of bumper fish harvest in communities like Esreso and Adagya.

In order to determine changes in vulnerabilities, historical trend analysis was carried out. In doing this, community members were asked to allocate stones across time to demonstrate high, medium, and low for each of the things they are vulnerable to, after which a composite trend chart was derived.

Figure 2 shows the community's perception about the trend of vulnerability at Asaago. They mentioned that things they are vulnerable to have only become serious in recent times. In a ranking and scoring exercise community members think that the number of vulnerable groups in the community has not changed significantly in the past 10 years. However, they foresee a rise in the number of vulnerable groups in the community as a result of increasing sale of farmland for property development.

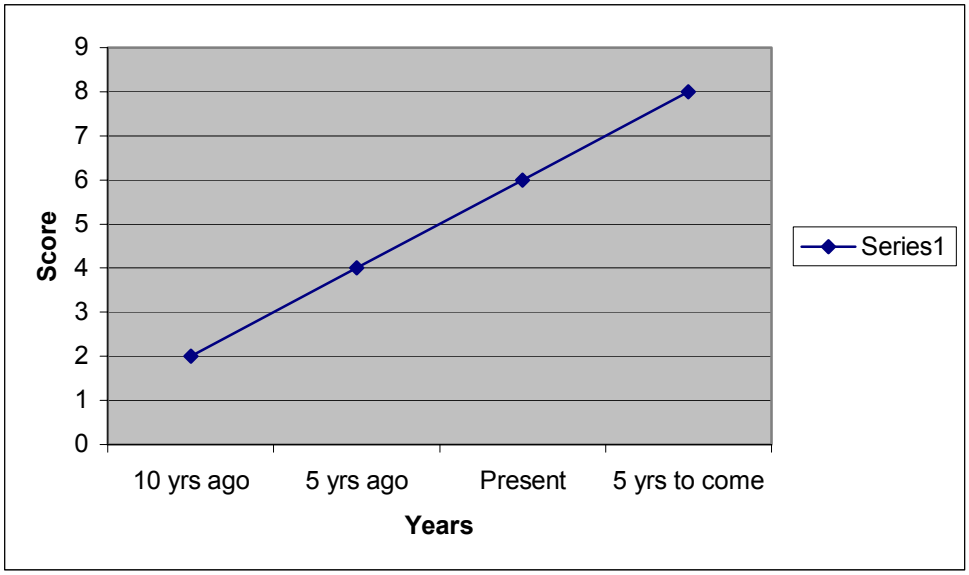
Figure 2: Community Perception about Historical Trend of Vulnerabilities at Asaago



Source: Survey Data, 2004

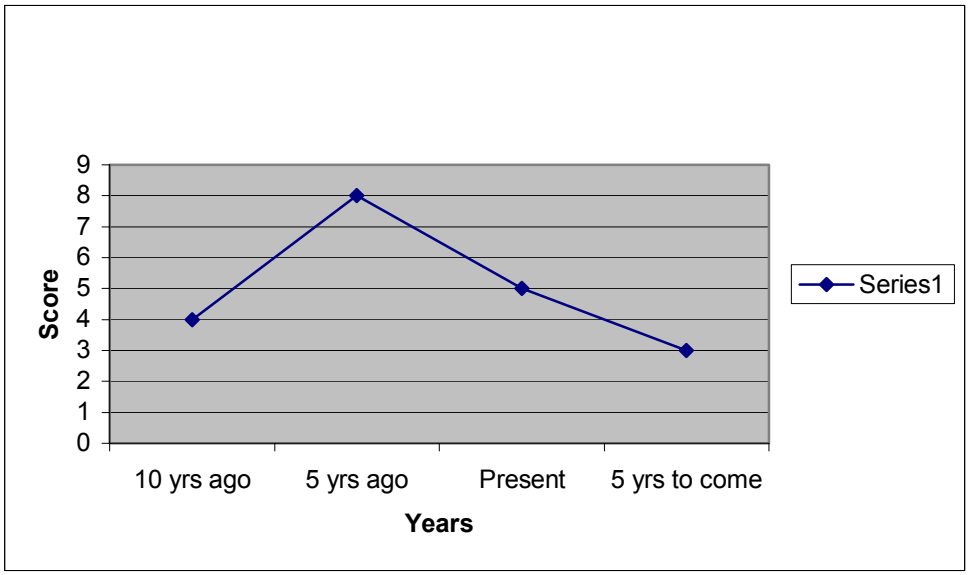
In ten of the communities, the trend indicates a worsening situation (See Figure 3). A community member in Esreso, for example has this to say 'More people are going to fall within the vulnerable group bracket as a result of increasing loss of farmlands and decreasing family support'. In most of the communities, women in general, single mothers and children were mentioned as those going to be affected gravely by the changing trends. Core to the reasons adduced to increasing vulnerability of women lay with reducing access to land based activity and their limited ability to tap opportunities created by the peri-urban change.

Figure 3: Community Perception about Historical Trend of Vulnerabilities at Ampabame II



Source: Survey Data, 2004

Figure 4: Community Perception about Historical Trend of Vulnerabilities at Abrepo



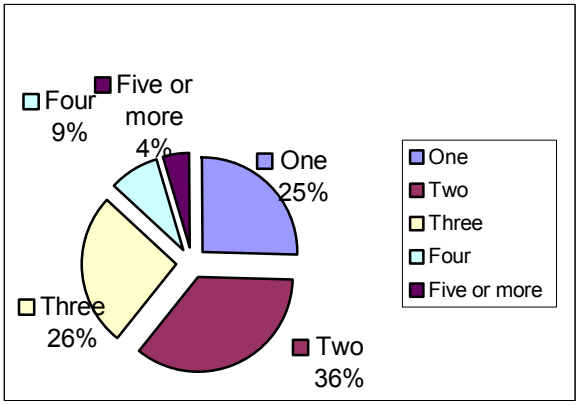
Source: Survey Data, 2004

Putting all the vulnerabilities together, only Abrepo depicted a deviant trend that indicates that most of the things community members are vulnerable to will improve. The people had this to say, 'Vulnerability was high for the past ten years but will be dropping in the next 5 years" (See Figure 4). The community projected an improvement even in literacy saying that the only thing, which will continue to be worse, is landlessness. The explanation given was that there is an increasing urban influence in Abrepo and a departure from predominantly natural resource-based livelihood activities to more diversified livelihood activities such as trade, waged labour, and provision of services.

4.2 Delimiting natural resources related livelihoods

The range of livelihood activities of the PU inhabitants is varied but there is limited numbers of natural resources. Findings from earlier research by Nkrumah *et al* (1998) suggest that some diversity exists in the livelihood portfolios of families in KPUI. Yet another finding by Brook and Davila (2000) indicates that only 2% of 480 people interviewed reported that they had supplementary occupations. This lack of diversity was linked to the high rate of unemployment (17%) in the KPUI. R8090 analysis of livelihood activities of communities in Figure 5 indicates that out of 114 households, 26 % has three sources of livelihood, 36% has two and 25% has only one source of livelihood.

Figure 5: Number of Contributors to Household Livelihood



Source: Survey Data, 2004

In the survey conducted for this research, natural resource based livelihood activities represent a good proportion of the livelihoods of the inhabitants, especially, rural peri-urban. Appendix 1 presents a number of livelihood activities for the KPUI inhabitants. Except for sand and stone winning, saw milling, hairdressing, petty trading and selling of ice water, the rest of the livelihood activities mentioned are natural resource-based. The former were mentioned as those carried out by the upper and middle class category of wealth in the communities while the latter is predominantly undertaken by the poor and vulnerable in the communities. The consumption pattern of the vulnerable was used as a yardstick to determine the level of their reliance on natural resources. In all the four communities where the case studies were conducted, the consumption pattern of the vulnerable who were interviewed show a greater reliance on natural resources from the communities or other KPUI communities (See Figures 6 and 7) than other resources from outside the KPUI.

Contrary to the general belief that there is a fast change in dietary sources in favour of imported food for the KPUI inhabitants, even communities closer to the centre of Kumasi rely heavily on natural resources from locally produced food. An analysis of the composition of food of the vulnerable in a typical day reveals that most of the inputs used in food preparation are obtained from either the community of from other KPUI communities. Most of these inputs such as yam, plantain, maize, vegetable, meat etc are produced locally, which also means that most trading in foodstuff in the KPUI are principally intra- and inter-KPUI community trade, which also demonstrate the extent of pressure put on the available natural resources in the communities. For the other services, the reverse is the case as compared to their consumption patterns. The study also analysed the dependence of the vulnerable on other services such as health, water, education, clothing etc that bother on their basic necessities of life. The result indicates (see Table 5 and 6) that except for water, there is little variation in the sources of other services to the vulnerable. The more urbanised communities rely on pipe borne water, which comes from

outside the communities, while the rural PU communities rely on streams and wells within or bothering the communities

Table 5: Other Services – Behenase (Rural PU Community)

Services	From Community or PUI	Outside Community or PUI
Health	20%	80%
Housing	40%	60%
Water	100% well water	-
Clothing	10%	90%

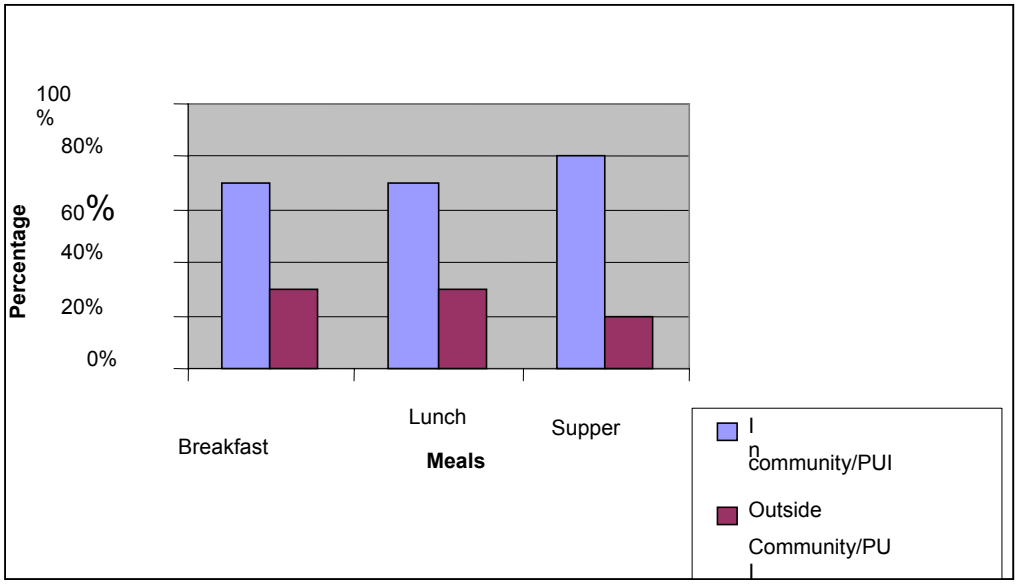
Source: Case Study, July 2004

Table 6: Other Services – Atafoa- (Semi-Urbanised PU Community)

Services	From Community	Outside Community
Health	30%	70%
Housing	50%	50%
Water	-	100% (Pipe Borne)
Clothing	20%	80%

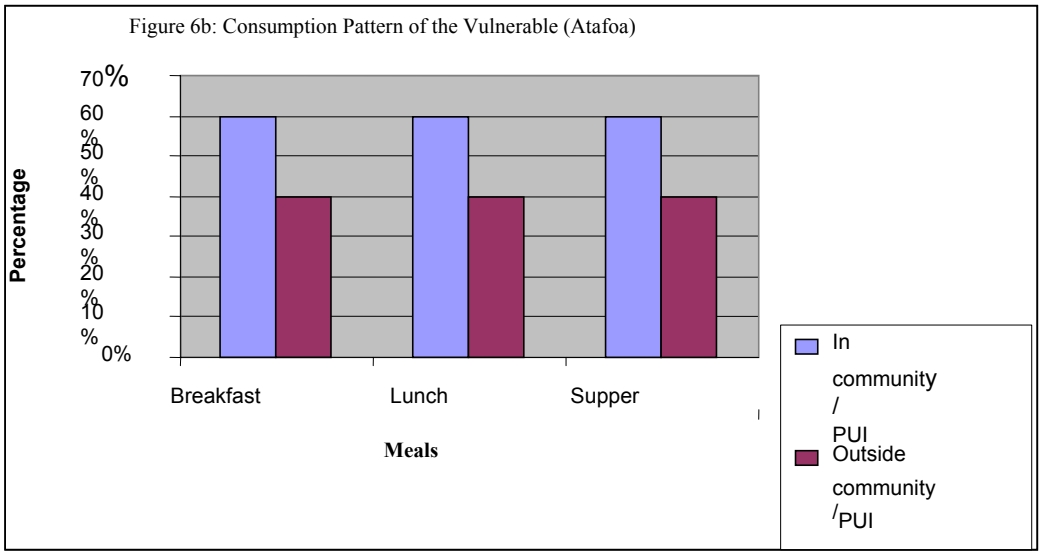
Source: Case Study, July 2004

Figure 6: Consumption Patterns of the Vulnerable (Behenase)



Source: Survey Data, July 2004

Figure 7: Consumption Pattern of the Vulnerable (Atafoa)



Source: Survey Data, 2004

4.3 The Vulnerable and their Needs

A crosscutting issue that came up in all engagements with community members from the plan preparation, through workshops, group discussions and the case studies of plan implementation was that of unemployment. In Table 7 below summaries of perception of the sources of vulnerabilities is presented according to the number of communities, which identified a particular vulnerability. Unemployment was mentioned in all communities and associated with lack of skills and the absence of financial support systems.

Table 7: ***Causes of Vulnerability***

Vulnerabilities	**Frequency**
Unemployment	12
Bush fires	2
Flooding	3
Poor rainfall patterns	5
Lack of credit facilities	4
Landlessness	7
Overexploitation of resources	3
Pollution of water bodies	2
Land degradation /poor soil fertility	5
Large family size	1
Mosquitoes	2
Lack of family support	3
Superstition (witches)	1
Lack of requisite skills for the youth	1
Lack of alternative economic activities	1
Chieftaincy dispute	1
Poor market for farm produce	2

Source: Survey Data, 2004

The vicious cycle of poverty really exists in the KPUI and policy-makers of rural banks that the project collaborates with acknowledged this. There are arguments that the right approach for

breaking the vicious cycle of poverty and turning it into a virtuous cycle of prosperity is by capital injection to boost production. It was often stated that the vulnerable have the least access to financial resources. Even the little that they have, they are forced to use for immediate needs at expense of long-term investment. The dynamics of financial management against the background of their having to satisfy immediate needs was discussed. The crux of the discussion was that the vulnerable either lack the confidence to approach the banks or have no property-based asset to cover credit or loans. Suggestions on how to make good use of the little finances they have indicated that they need expert advice and a facilitator to spearhead their efforts to approach rural banks and district assemblies for financial and in kind support. Some influential experts in the developed countries argue that not until strong financial systems, which facilitated availability and access to financial capital at manageable risk levels were developed, all the good ideas people had for industrialisation would have waited (World Development Report 2002). The poor need someone who can facilitate this. This brings into attention the micro-finance needs of the people.

One other crucial need of the vulnerable in the KPUI is land. During discussions with about 300 individuals in twelve communities, seven out of twelve (58%) communities recognised landlessness as a cause of vulnerability. This reinforces the lack of space for carrying out the livelihood activities being promoted by the project. This is a common issue that limit/interfere with the adoption of livelihood strategies especially in the more urbanised peri-urban communities.

In Table 7 above, land degradation and unreliable rainfall were reported in five out of twelve communities. These two vulnerabilities are related to farming. Communities mentioned their inability to adapt to natural resource constraints due to lack of technology and skills. This perpetuates their vulnerability.

Other issues of vulnerability, which depict their needs, are highlighted in the table. They mentioned how the weakening social system and serious land and chieftaincy disputes have limited their access to land and other common property resources. Mention was made of such needs as market but information to support this was quite anecdotal to make them a strong factor. The local market for local products was said to be vibrant as there is not enough production (given the subsistence scale of production charactering peri-urban farmers) to meet the demand from the urban market close by. There is even a potential to sell products in the sub-regional market.
Lastly, a crucial need discussed among the aged was social security, which, according to them, hinges on their inability to take advantage of opportunities as they come to terms with the loss of their traditional livelihoods. According to them, their activities are traditionally not captured in the formal sector systems so at old age they have to rely heavily on their children.

5 LIVELIHOODS OF THE VULNERABLE

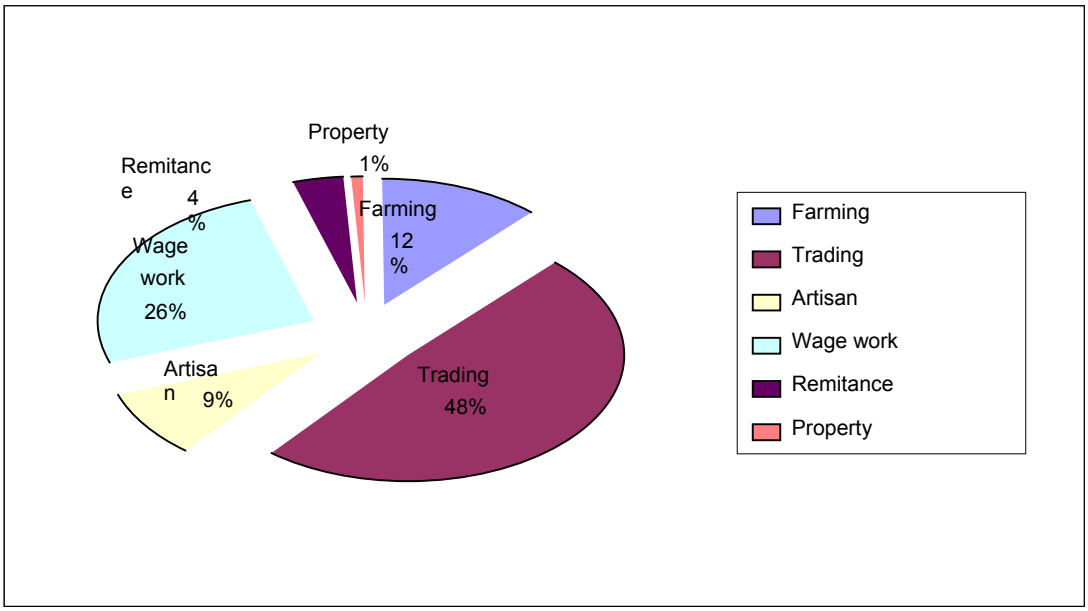
5.1 Livelihoods

Livelihood, as a holistic concept, refers to the capabilities, assets and activities required for a means of living (Brook and Davila, 2000). The livelihoods portfolio of a community is the number of alternative capabilities, assets and activities available to the people of the community for making a living. According to Chambers (1997) cited in (Adato and Meinzen-Dick 2002), "different members of the family seek and find different sources of food, fuel, animal fodder, cash and support in different ways in different places at different times of the year. Their living is improvised and sustained through their livelihood capabilities, through tangible assets in the form of stores and resources, and through intangible assets in the form of claims and access". This is also true for the twelve communities surveyed in the Kumasi Peri-Urban Interface.

Depending on the location of a community, its livelihood may be skewed towards a particular capability, activity or asset. In a Ghanaian fishing community for instance, the livelihood of men is skewed towards their capabilities as fishermen, fishing related activities such as net mending, boat building and fishing, with the sea as common property resource. The livelihood of women in the same community may be skewed towards their capabilities as fish processors, fish mongers, collectors of fuel wood, and activities such as drying, salting, smoking selling of fish and fish products, with trees and other fuel wood related natural resources as additional assets. The poor in such communities may be involved in other activities such as farming, quarrying, livestock rearing and trading. These activities are done side by side with the major livelihood activity or during the lean season of the major livelihood activity. Where the two livelihood activities are combined then one may require very little effort usually the supplementary livelihood activity. Thus, the fisherman may be keeping livestock on free range.

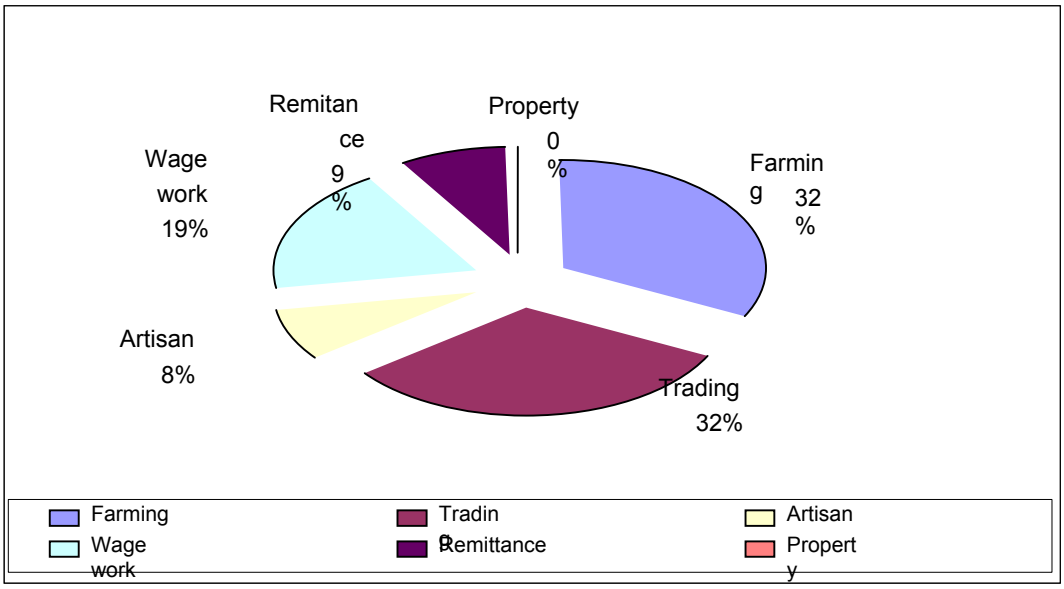
In farming communities, the livelihood of men may be skewed towards their capabilities as farmers, farmland as a natural resource asset and farm related livelihood\activities like maize and cassava farming.

Figure 8: Livelihood Sources of More Urbanised Communities



Source: Survey Data, July 2004

Figure 9: Livelihood Sources of More Rural Peri-urban Communities



Source: Survey Data, July 2004

The women may be assisting with farm related activities and also be gathering forest products such as mangoes, palm fruits and trading, alongside the men.

Figure 8 and 9 were obtained by analysing the livelihood systems for 190 households, who submitted business plans for start-up capital to pursue on experimental basis, livelihood improvement activities of the project. This information was collected systematically over the project period.

In the KPUI, the major livelihood activity identified for the poor is farming. Even in the more urbanised communities like Abrepo and Apatrapa, as shown in Figures 8, farming features considerably as a livelihood activity for the vulnerable. These are, however, small farms where staple foods like cassava, maize and plantain are grown for subsistence. The farms are in most cases located far away from the community and where they are in the community, the farmers do not own the land. They work as tenant farmers but stand the risk of being ejected at short notice any time the landowners decide to develop the land. Disturbance from livestock is another source of insecurity for the farmers. In addition to crop farming, the vulnerable engage in other sources of livelihood within their capabilities and access to assets. Livestock production on free range, mainly shoats and poultry is common.

Trading, i.e. selling anything from ice water, cooked and uncooked food, clothing, cooking wares to electronic gadgets is also popular. From Figures 8 and 9, trading appears to be a major livelihood within the KPUI. It is more popular (Figure 7a) within the more urbanised communities than the rural communities. Good returns from trading can be obtained when the start up is relatively large and the more vulnerable groups, who invariably tend to stay in the more rural peri-urban communities, cannot afford such start-ups. This study has found out that women disproportionately constitute the bulk of traders in the KPUI communities. Unfortunately, they have limited access to land and financial capital, which as a consequence limits their business base and ability to take advantage of new opportunities in the service sector. Most of them have limited start-up capital and sometimes rely on other household members and friends for their capital base. Those who manage to obtain capital in many cases are unable to keep it, as discovered during the case studies (see case 4 below); this capital could get used up on other pressing household expenditure like medicals, school fees, utility bills and sometimes it is lost through theft.

Hunting, fishing and gathering products from the wild constitute another source of livelihood of the vulnerable. Fishing and hunting are becoming less and less reliable as sources of livelihood because of the degradation of the environment and the consequential effects on fish animal species and products

gathered from the wild. Other sources of livelihood include craftwork such as of carving, *Kente*[8] weaving and shoemaking, and such non-natural resource-based livelihood activities as hairdressing, dressmaking, barbering, masonry, welding and fabrication, and fitting. Some are involved as land and building agents, helping people to purchase these items and getting rebates.

Others add prostitution, stealing and racketeering to make up. Remittances from family members abroad or within the country also contribute to the livelihood of the vulnerable. From interactions with church groups in the study communities, it is clear that some receive support on behalf of the vulnerable from charity organisations.

Very striking differences can be seen when the livelihood of people in the more urbanised communities are compared to those from rural communities. As shown in Figures 6a and 6b, which were arrived at by examining the sources of livelihood from business plans[9] prepared by 345 households from all project communities, farming and trading are the main livelihood sources, which varied significantly between urbanised and rural communities. Not surprisingly, farming constitutes an important livelihood activity (32%) for the more rural communities, whereas trading (48%) is more significant for the more urbanised communities. The proportion of people involved in wage work is lower (19%) in more rural communities as against 26% in more urbanised communities. It could also be seen from the above figures that the percentage of those who receive remittances as a source of livelihood is lower (4%) in the more urbanised communities. The difference in the proportion of people, who are dependent within the more urbanised and rural settings, though small, is important. In the more urbanised communities, there are more livelihood choices and hence even the vulnerable are able to make some living.

Case 1: ***The household of Ama Agyemang of Behenase***

Ama Agyemang is about 56 years old. She is currently a single mother. She divorced her husband about 6 months ago after giving birth to 9 children of whom 6 are female. She is currently caring for 6 people: two daughters, three grand children and herself. The rest of the children are taking care of themselves. Ama says her main source of livelihood is farming. She produces maize , cassava and groundnuts. She used to trade but because her husband was not supporting her in looking after the children who were in school, she was compelled to put her capital into the children's school fees.

According to Ama, her two daughters contribute to the running of the family. The older one engages in trading and farming. She sells cooked rice and boiled yam. Her major activity is the trading and the minor being the farming. The younger daughter also trades in maize as her only livelihood activity.

As a farmer, Ama is always at the mercy of the rain. This is a major constraint because any failure in the rains affects her livelihood. This leads to crop failure. Another constraint she faces is the attack of insects, especially on the garden eggs in her farm. She sometimes uses insecticide to control them. She is however, unable to afford the use of insecticides all the time. Thus the attack of insects, especially on her garden eggs farm, is a source of vulnerability. She often uses insecticides to control but when there is no money, nothing is done.

The above constraints often led to hardship. She cited an instance, 2 years ago, in 2002 when her crops failed due to delay of the rains. She said it was her two- (2) daughters who run the house and she felt bad because she is supposed to cater for them.

She expressed interest in petty trading and expansion of her farm in order to earn money all year round. She commended the effort by CEDEP to provide employment and reduce poverty in the peri-urban communities.

The case of Ama Agyemang above suggests, more people may be involved in running a household within the peri-urban area. These people are involved in more than one livelihood activities, which have synergistic effects, so that the whole household is able to cope with adverse situations.

[8] A traditional royal cloth woven on a narrow loom

[9] These plans were products of a Participatory Business Plan Preparation (PBPP) process, which has a tool for analysing the livelihood systems of beneficiaries of DFID R8090

It is an important finding of this research that within the context of all the above sources of livelihood activities, the vulnerable groups in the KPUI develop their capabilities in two main ways: by naturally picking up skills from family members and friends, or by attachment to masters as apprentices, in which case, payment is made to the masters in cash or kind (e.g. service in lieu of payment). In some cases, they also develop capabilities through assistance of church groups, political groups, the district assemblies, civil society organisations and other social groups, who pay people to teach skills like soap and pomade making, batik, baking, tie and dye making, etc.

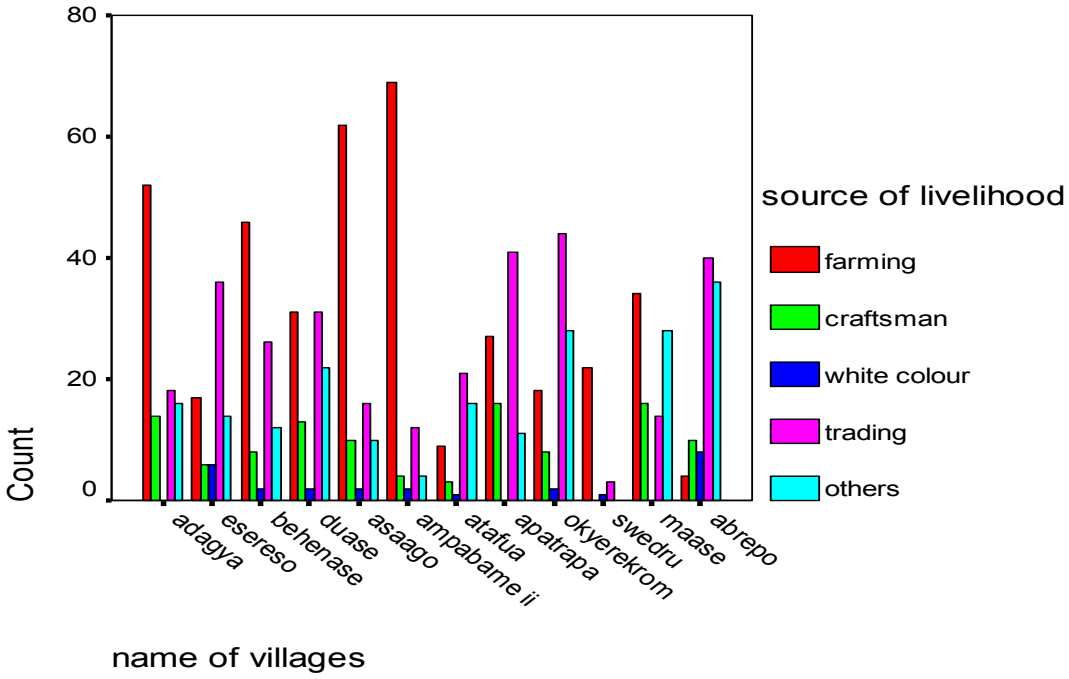
The natural and physical resources supporting these livelihood activities range from undeveloped pieces of land, which come in the forms of farmland, courtyards and backyards, road sides, alleys, street pavement, or electricity, water from pipes, wells, streams and other water bodies, or forest reserves, economic trees like coconut, bamboos, wild palms, raffia palm etc.

In the survey carried out in twelve project communities in the KPUI (refer section 1.1), the capabilities, assets and activities available to vulnerable people in the middle to low wealth class for making a living were investigated and the findings are summarised below:

5.2 Capabilities

5.2.1 Subsistent Farming

The commonest capability, mentioned by all the communities is food crop farming. Most communities by this were also referring to subsistence farming, which this study also found to be more prominent in the rural peri-urban communities (refer to Figure 10). Figure 10: Sources of livelihood reflecting capabilities of the KPUI inhabitant.

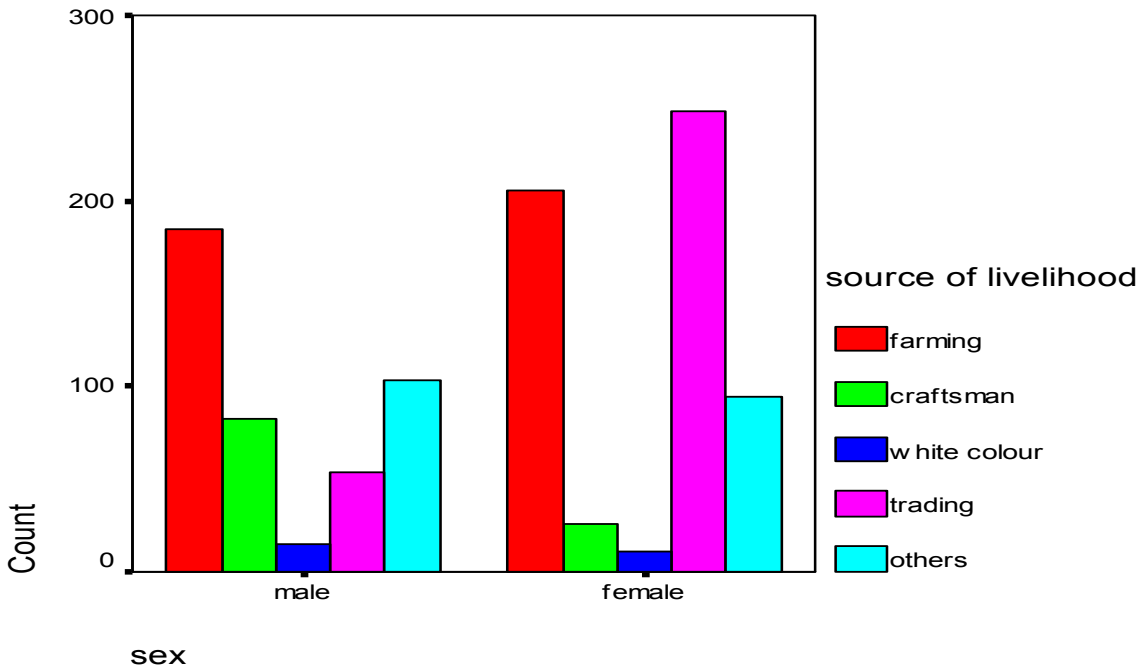


Source: Baseline data, 2002

Some amount of specialisation was identified among KPUI communities along crop lines. In these communities, expertise in the speculation, production and handling of such crops has been developed, even among the vulnerable. In the study area, such specialisations have been developed by some of the communities. Ampabame II is noted for pepper and leafy vegetables production, Swedru for okra, Asaago for garden eggs and Adagya for cassava. These are mainly the rural peri-urban communities who are noted for such products in the market. As well as limited by land availability, the urbanised peri-urban

communities are limited by their ability to create a market niche for the limited product they can produce. Communities like Abrepo, Apatrapa, and Esreso were noted for tomatoes, garden eggs, sugarcane production, often along the main rivers in the communities, but are progressively being displaced in the market place as a result of people's awareness about the potential for contamination of the produce from the communities. Farming, which is still an important livelihood activity of the KPUI inhabitants is limited to the physically strong people and hence the aged, sick and nursing mothers are not able to partake in it. With the demands of physical strength notwithstanding, women constitute the bulk of those who are engaged in subsistent farming (see Figure 11).

Figure 11: Gender and sources of livelihood of respondents



Source: Baseline Data, 2002

Their vulnerability as farmers is related to limited access to farmland, limited capital base to intensify production and to some extent limited access to market information that could enable them leverage for higher prices for their produce and also produce according to the demands of the market. The study discovered that in most of the communities, the woes of the poor farmer have been compounded by the supply of similar produce from a different production source that 'crushes' the market. This is very common among vegetable growers and as they do not have any means to process their produce, they are often compelled to sell them cheap and sometimes leave most them to go bad. This is the condition within which the vulnerable farmers in the KPUI operate and which accentuate their vulnerability. It must however, be stressed that not all women farmers are vulnerable. There are a couple of those who are farmers by virtue of they providing capital or land for people to work for them on share cropping basis. Some of these groups of 'rich' farmers are also traders in the Kumasi central and other satellite markets, who support poor farmers with some capital so that they after the maturation of the produce buy them.

People also have the capability for livestock rearing. This is also more successful in the more rural communities such as Asaago, Adagya, Swedru and Ampabame II. Sheep and poultry are reared in all communities. However, in many communities like Maase, Okyerekrom, and Duase; it is a taboo to rear goats.

Several factors contribute to the development and sustenance of subsistence farming capabilities. The foremost is the low risk involved. Although, seasons seem unpredictable, the risk involved in subsistence farming is quite low, as farmers invest their own resources (time, efforts) into it. If there is failure, they are able to cope with it because there is no third party to be accountable to. The low-risk nature of this

capability explains why these subsistence farmers also remain poor (where there is low risk, there is low yield and hence profit). Secondly, it is quite easy for community members to pick up the skills involved in these livelihood activities because elder family members pass them on to the younger ones. Thirdly, farming lends itself to flexibility, suitable for taking on board other less reliable but more remunerative peri-urban opportunities like 'by day'[10]. Furthermore, there is ease of information dissemination in the communities. Community members have information about what goes on in the community. For instance, in years where there is good price for farm produce, more people are alerted through discussions on earnings and hence pulling more people into farming.

5.2.2 Petty trading

Petty trading ranges from selling iced water, fuel wood, foodstuffs, to hawking soap, clothing and other imported wares. This is the commonest capability of almost everybody in a typical peri urban household. Unlike farming, even the aged and sick people who are not bed-ridden are able to partake in this. Especially for the aged and nursing mothers, they remain in the house, providing security as unpaid 'watchmen' for household property as well us nurses for children and very sick people. Whilst doing the above, they also sell some basic food items such as roasted groundnuts, garri, sugar and ice water, normally packaged in polythene bags and displayed on tables.

Teenage mothers, single mothers and married women also engage in the sale of fruits and raw foodstuffs. They normally travel to the Central Market in Kumasi early in the morning to buy oranges, bananas, plantain, cassava, cocoyam, okra, tomatoes and pepper for sale in their peri-urban communities. These items are in most cases, brought from the hinterlands.

To a large extent, new entrants are more successful at trading than indigenous people. They start in a small way and gradually expand. In many cases, they combine chop bar operation with the sale of a many other wares like cigarettes, matches, Akpeteshie (a local gin), and other provisions.

5.2.3 Apprentices

A good proportion of women take to hairdressing and dressmaking. They carry out other activities in addition to this. In order to support themselves, they carry out other activities such as being house helps and even prostates. The young men are also engaged in apprenticeship programmes, like masonry, fitting mechanic, terrazzo works, plumbing, welding and fabrication and other livelihood activities in that category. Quite apart from living in the margins of KPUI, the youth, who are themselves involved in the above activities are themselves marginalised. They are either school dropouts, or those who could not get the requirements to further their education based on aptitude or poor family background.

5.2.4 Fishing and hunting

Fishing and hunting are minor livelihood activities, which were mentioned by few communities and undertaken by few people. Such community members have the skill for fishing. They normally catch catfish, electric fish, lobsters and crabs. Predominantly, men in the communities do fishing. Fishing is losing its position as an important livelihood activity in the more urbanised peri-urban communities. The only urbanised peri-urban community where fishing still goes on is Esreso because it still has rivers, which can support aquatic life.

Men, who shoot, trap, poison or chase animals in the wild, also sparingly carry out hunting. Chasing animals in the wild is sometimes supported with bush fire. Wildlife normally hunted in the KPUI includes rats, squirrels and grasscutters.

[10] By day- A name given to wage labour, where the person provides a service and takes his/her remuneration at the close of the day.

5.2.5 Gathering

Ampabame II and Asaago have been found collecting wild fruits for sale to clients in the pharmaceutical industry. Thus, in addition to the traditional forest products, which are collected from the wild such as mangoes, cola, chewing stick, kapok, firewood, mushrooms, snails, sponge, marantacaea leaves, dried plantain leaves, and cocoa leaves, more wild fruits are being added.

5.2.6 Craftwork

Maase and Duase are noted for craftwork. Maase is a Kente weaving community and Duase is noted for shoemaking. Carving was also identified at Behenase as a craft but not many people were involved in it.

5.3 Assets

5.3.1 Farming assets

Generally in Ghana people have the impression that farming is for the poor and this serves as a disincentive for unemployed youth to go into farming. A greater proportion of assets that support farming are natural resource-based. Plots of land left undeveloped or court/backyards support farming in the KPUI. During the dry seasons, riverbeds support vegetable farming. The vulnerable farmers rent, own, or in some cases practise sharecropping, in all fertile areas including riverbeds, road sides and under high tension electric cables. Bush fallowing still remains the most popular way of replenishing soil fertility (Nunan *et al* 2000). Those who produce vegetables supplement the natural fertility of the soil with chemical fertilisers but most of such people are not among the vulnerable. Many farmers carry out their farming business completely at the mercy of nature: without irrigating, fertilising or using any chemical. Lately, wealthier farmers have started using chemical weed-killers.

An important natural capital assets supporting farming, which communities know but have not considered as important from all engagements with them is sunlight. They use it to dry weeds before burning and starting most farming activities. When the sun fails them, the outcomes could be as disastrous as when the rains fail. If weeds do not dry well on time before fresh ones start to sprout, burning becomes difficult and that results in difficult brushing and planting. Lack of sunlight can also lead to stunted growth and produce rotting. Farmers have to fell trees to make sure that crops get maximum exposure to sunlight. Sunlight is also used in drying crops for more value and for longer shelf life.

Besides the natural resources, the existence of a large market for farm produce is another asset on which farmers rely. The perception of farmers, regarding the presence or absence of this asset influences their behaviour. Farmers who have experienced gluts would always kick against new options for fear that they will not get buyers for their produce. This is very prominent on the PUI and makes farmers reluctant to try new ideas unless they are sure of some ‘free’ money to use in trying them.

Many livestock rearers on the peri-urban adopt the free-range approach, relying fully on nature to support their livestock. The present land scarcity in the KPUI means that rearing livestock on a free-range style is extremely impossible as the animals will have to walk long distances to obtain food to eat while also destroying the farms of people in the neighbourhood. Respondents in most communities mentioned that some spiritual imperatives underpin the banning of for instance goat rearing in the communities; others like pigs have been ban because of the devastation they can cause to farming. This must have led to the banning of livestock rearing in most communities on the KPUI as the case below demonstrates.

Case 2: “No goats here!”

Many communities in the peri-urban interface forbid the rearing of goats. Some communities have spiritual reasons. For all the communities however, mutton remains a delicacy, and sheep rearing is not forbidden. Goats are known to multiply faster than sheep and can contribute a lot to asset building for the poor. But goats are known to be very

troublesome. They trouble women in the kitchen, at the market and at work. They like climbing and so will normally pour products being sun-dried into the sand. They also destroy crops, denude the vegetation and litter the place with their droppings.

* * * *

Although crops fail anytime it does not rain as expected, Ghana has never known a rain failure, which affected livestock in general. In fact, livestock owners from other countries in the sub-region bring their animals to Ghana to graze during the dry season. What would happen if farmers were to give equal attention to goat production as they do to maize or cassava? This is a question which another project could investigate in future through a participatory research, in which communities could demarcate an area as a goat centre, employ a care taker whose job would be to look after the goats and who will get paid by sharing kids with the owners. This communal goat production centre would allow any body who wants to keep a goat in the community to do so without going through the toil of having to individually confine the animal, and would be particularly useful where most people in the peri-urban villages cannot even get a place to keep goats.

Thus, the social environment in the KPUI is becoming averse to free-range livestock rearing. Livestock rearing on free range has also led to an attitude of farmers, which makes it difficult for them to rear animals like rabbits and grasscutters, which require day-to-day attention. The low litter survival rate experienced with farmers who were pilot-testing grasscutter and rabbit rearing has been due to improper monitoring of the growth of the animals. Rabbits could not be left to litter the way sheep could be left to lamb on their own. Even sheep are in most cases assisted by providing heat for fresh lambs.

5.3.2 Assets supporting trading

In newly built-up areas, people attach shops to their walls for selling provisions, spices, fish and other itinerant goods such as roasted groundnuts, *Fanti kenkey*, sugar, iced water, and minerals in ice chests. Where houses are not walled, people sell these items in wooden kiosks and on tables placed under shady trees. The location of houses on major foot paths, roads or meeting places of groups and community members, such as schools, churches or community centre are all assets supporting trading in the KPUI.

Traders often generate their own capital through wage work, borrowing or personal savings. This capital may get used up or grow, depending on circumstances including family support systems, which play a crucial role in reducing vulnerability. The case of Ama Agyemang (Case 1 under section 5.1 above) and Yaa Asantewaa (Section 5.4.2 below) support the role that others play in reducing or worsening vulnerability. In the case of Ama Agyemang, the failure of the husband to pay the school fees of the children compelled her to invest her capital in the children's education. This led to her losing the capital in the process. Otherwise, she could have grown her capital until it became larger and larger to better educate her children and place them in a better wealth category than she is. In the case of Yaa Asantewaa, a neighbour's kindness in giving her a credit facility improved her livelihood and resulted in good health and long life.

5.3.3 Assets supporting fishing and hunting

The KPUI is on a watershed with numerous streams, swamps and valleys. The valleys provide habitat for wildlife. Grasscutters for instance, like swampy places where elephant, guinea and other grasses thrive. The valleys and their associated rivers and swamps also support inland, fresh-water fish species. Esreso, Adagya, and Asaago are located down stream of the rivers flowing from the urban centre and these rivers are so polluted that the fish species found in them no longer occur in significant quantities. The Odaw River, is highly polluted with liquid waste (waste water from bathroom, kitchen, industrial waste and human excreta). It is hard to believe that it still supports aquatic life. Despite this high level of pollution of the river, inhabitants from Esreso, Asaago and Adagya catch fish from this river for commercial and domestic consumption. Below is an example of fishing at Asaago in the Odaw River.

Case 3: Fish in River Odaw is still edible

Whilst preparing a business plan for a fish seller (Patricia Oduro) at Asaago, it came to light that she depends on the Odaw River for fish. Many women in Asaago are also engaged in this venture as a supplementary livelihood

activity. Patricia earns about ¢80,000 per day from this venture. The season peaks in September, and extends to February.

Comparing this amount with what she earns from farming, which she estimated to be equivalent to ¢310,000 in 19 months over the period February to August the following year, the fish venture looks more profitable. Also, whereas the crop farming requires ¢670,000 to undertake aside capital inputs such as land, hoe, cutlass etc, the fishing venture requires ¢632,000 aside capital inputs (hooks, smoker, pans, baskets).

From experience, Patricia used to get more profit in 1989 when the catch was better compared to the present day catch. Asaago is a confluence of two rivers flowing through urban communities in Kumasi: Kejetia, Asafo, Kaase, Anloga, KNUST and Ahinsan, which are heavily polluted. Fish from the two rivers Sisa and Odaw, sell everywhere in Kumasi and is consumed by the fishers themselves and their families, who know the source, as well as innocent people who do not know the source. It is a surprise to think that so much fishing still goes on downstream.

* * * *

The people living in the KMA territory along the streams flowing into the Odaw River cannot pretend not to care about what happens in this river down stream. Neither can the people living in BAK territory down-stream continue to think that what goes on in Kumasi is none of their business. The people of Kumasi must know that the fish from Asaago is smoked and sold as Adwene[11] to many Chop bars in Kumasi. The people of Kumasi can therefore, be said to be eating their own pollution. What therefore happens on the peri-urban concerns both urban and rural dwellers. We must begin to think globally as we act locally.

5.3.4 Assets supporting gatherers and collectors

Many peri-urban communities have plantain groves on plots, which have not been completely developed. These plantains have dried leaves, which are collected by kenkey producers for wrapping the kenkey. Some of these undeveloped plots become weedy during the rainy seasons. Guinea and elephant grasses, which grow on these plots, yield straw at certain stage, which is harvested, dried and sold to weavers outside Kumasi. Sometimes this straw is exported to Burkina Faso, north of Ghana, where it is used to weave mats, hats, bags and baskets.

Photo 1 below shows a man drinking from a peri-urban stream, as if to say there is no problem in so doing. This photograph shows that people not only eat the fish but also at times drink the water from peri-urban streams. It may sound ridiculous but that is the reality. The man in the photograph was part of a group, which was loading bamboos into a tipper truck at Swedru. At the time this photograph was taken, their truck was loaded and he was sweating heavily. It was obvious that he was tired and thirsty. Under such conditions it is easy to forget about hygiene. These bamboos are sold to contractors in Kumasi who use them as supports for concrete work on storey buildings.

In the very rural communities like Behenase, Ampabame, Swedru, Asaago and other communities where there are forest reserves, these reserves support the collection of fruits, fuel wood and medicinal plants. It is thus not uncommon to visit these communities and find them drying wild plants for sale to pharmaceutical industries.

Photo 1

5.4 Activities

5.4.1 Activities of farmers

Farmers produce a range of staples and cereals such as yam, cassava, maize, beans, groundnuts, and cowpeas. All applicants who prepared plans to engage in farming utilised the simple process of clearing with the cutlass, burning, brushing, planting, weeding and

[11] Adwene is smoked mudfish. It is a fresh water fish brought from communities around the Volta Lake, smoked and sold all over the southern parts of West Africa, as far as Nigeria. It is used as a soup thickener and a spice.

harvesting as in Tables 8, 9 and 10 below. For maize, weeding is carried out twice per cropping season. Maize is intercropped with cassava, a strategy meant to get more output from the same farming space and effort. This technique of mixed cropping is sometimes extended to include other crops like pepper, okra, tomatoes and beans for family consumption. Beans, being creeping plants, are planted close to tree stumps, while tomatoes are planted on anthills or buttresses of tree stumps where heaping and burning of weeds and stumps from brushing have taken place. Crops like okra, because they do not grow well with maize are intercropped with cassava. This was a common practice at Swedru, where they start with okra and later add cassava. They harvest the okra first and the cassava continues to grow.

It is rare to find farmers carrying out mono cropping. Even in communities like Ampabame II, Swedru, Asaago, Adagya, and Behenase where pepper, okra, garden eggs, tomatoes, leafy vegetables and cassava are grown as cash crops[12], the farmers always ended with cassava when they are half way through or about to finish with the cash crop.

Table 8: ***Farming (Tomato, Okra)*** Figures are all in thousands of Cedis
***Name**: Nana Osei*

PROCESS		1	2	3	4	5	6	7	8	9	10	11
		CLEAR	**BURN**	**BRUSH**	**PLANT OKRO**	**PLANT TOMATOES**	**IST WEED**	**FERTILIZER**	**SPRAY**	**2ND WEED**	**HARVEST OKRO**	**HARVEST TOMATOES**
EXPENSES IN CEDIS	*labour*	50	10	100	24	24	48	24	50	48	36	20
	seeds				60	45						
	chemical							80	71			
	total	50	10	100	84	69	48	104	121	48	36	20
GRAND TOTAL		**690**										

Source: Project data, 2003)

Table 9: ***Farming (Cabbage, Cow Pea, Cassava)***
Name: Musah Isaka

PROCESS		1	2	3	4	5	6	7	8	9	10	11	12	13	14
		CLEAR	BURN	BRUSH	PLANT CABBAGE	PLANT COWPEA	PLANT CASSAVA	IST WEED	FERTILIZER	SPARY	2ND WEED	HAEVEST CABBAGE	HARVEST COWPEA	3RDWEED	HARVESTCASSAVA
EXPENCES IN CEDIS	***labour***	100	10	70	20	20	40	50	30	80	50	20	50	50	30
	seeds				30	22									

[12] Cash crop in this regard does not refer to cocoa, coffee, tea, cotton etc. that are traditionally known as cash crops. It refers to any crop which is cultivated not for home consumption but for sale to others. This is popular on the KPUI as people try to take advantage of the urban market.

	sticks						30								
	chemical								120	57					
	total	100	10	70	50	42	70	50	150	137	50	20	50	50	30
GRAND TOTAL		**879**													

Source: Project data, 2003)

Table 10: ***Farming (Cowpea, Cassava)***
Name: Ofori Boadi

		1	2	3	4	5	6	7	8	9	10	11
PROCESS		CLEAR	BURN	BRUSH	PLANT COWPEA	PLANT CASSAVA	IST WEED	SPRAY	2ND WEED	HARVESCOWPEA	3RD WEED	HARVEST CASSAVA
EXPENSES IN CEDIS	*LABOUR*	60	10	90	20	20	30	12	30	60	30	40
	SEEDS				16							
	STICKS					30						
	CHEMICALS							35				
	TOTAL	60	10	90	36	50	30	47	30	60	30	40
GRAND TOTAL	**483**											

Source: Project data, 2003)

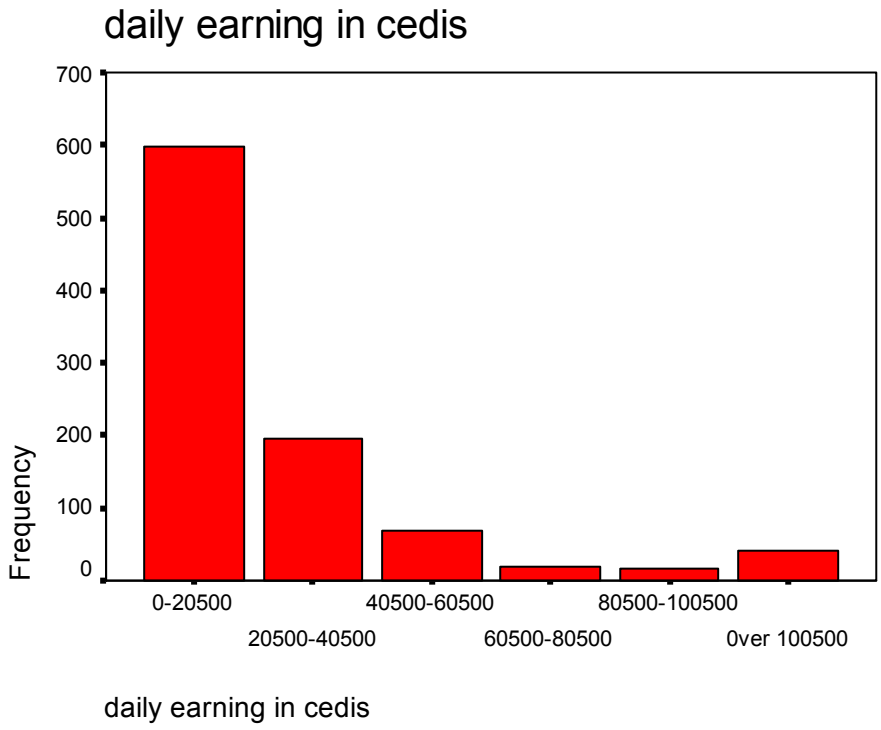
Sheep, goats, chickens, ducks and turkeys are reared on free range or semi-intensive basis. 'Local fowls' are kept completely on free range. Those who have courtyards keep turkeys and ducks on semi intensive basis. Turkeys require more attention especially when they hatch, than local fowls. In some communities like Ampabame II, farmers construct pens or hutch at the backyard or courtyard and keep the shoats in the pen for most part of the day, feeding with grass, maize, and cassava peels. Normally in the evenings the shoats are released to go and feed on their own or they are tethered where they can enjoy fresh pasture. However, in communities like Asaago, livestock (shoats) are left on free range day and night.

Shoats have created much conflict as those who do backyard gardening complain that these animals have been destroying their crops. The peri-urban area also hosts foreigners and Ghanaians from the north who bring cattle and hybrid shoats to Kumasi. Their activities are a serious nuisance to peri-urban farmers. These animals destroy maize farms, trample on unripe tomatoes and nibble okra. The owners in most cases complain but are not able to take any legal action. The owners of these livestock and their agents are very powerful and sometimes even threaten poor farmers who make such complains.

Photo 2. A pen at Ampabame II showing sheep confined. Ducks belonging to the farmer also use this pen

Tables 8, 9, and 10 above provide further insights into livelihoods of the vulnerable and the implications on management of natural resources in the communities. The amounts requested for by the three farmers for implementing livelihood improvement strategies under the Boafo Yɛ Na project on the average fall beyond the income levels of the vulnerable. The baseline study of this project found that majority of community members are within the low-income bracket. Average daily income for most people falls under 20,500 cedis, with majority of them falling below 10, 000 cedis per day (Figure 9).

Figure 12: ***Average daily earnings of KPUI inhabitants***



Source: Baseline data, 2002

Qualitative information obtained for this study indicates that the very poor within the KPUI are the small-scale farmers, unemployed, unsupported disabled/aged, casual labourers. They are those whose income are only but unable to meet their basic needs, unable to support households, unemployed or in un-remunerative employment (Brook and Davila, 2000). Such is the status of majority of the poor who sought support from the project; therefore such amounts as 483,000, 879,000 and 690,000 cedis being requested by the above three farmers (Tables 8, 9, 10) are genuinely beyond their financial reaches.

In the group discussions, it came out in communities like Swedru, Maase and Behenase that in trying to keep some of their livelihood activities going they avoid more expensive inputs such as fertilizer and other chemicals. As bush fallowing is severely affected by the growing population and the associated pressure on the land, the compromise on inputs affect yield and perpetuates their vulnerability. It also came out that the traditional bush fallowing and slash without burning methods ('Proka') have given way to intensive cropping with less use of soil enriching inputs, and this has affected soil quality and the environment. On a minor scale, some of the vulnerable in farming communities like Maase, Behenase, Swedru and Duase have relied on animal droppings, despite difficulty in carting, as a way of sustaining soil fertility.

The vulnerable in line with their activities, feature in the management of natural resources in the KPUI by joining groups like fire volunteers in more rural communities where farming is a major activity.

5.4.2 Activities of traders

Women who sell fruits and uncooked foodstuffs in the PUI communities travel in *trotro*[13] vehicles, early in the morning, to spots in Kumasi, which serve as depots. They buy these foodstuffs and carry them in sacks, pans and baskets, on their heads to the bus station then back to their community where they sell these food items on the ground or on top of tables. Other women also travel to the rural communities, to buy the same foodstuffs, including fresh maize and cassava to sell in the peri-urban communities.

Hawkers, normally transport their wares on foot from community to community as they sell. Some of the items hawked are fante kenkey, alata soap and other soaps, fresh groundnuts, cooked rice and beans, second hand clothing and others. Other hawkers move to Kumasi and take wares from shops and sell them along the streets. Some of the items sold this way include toothpastes, toothbrushes, soaps, cleaning brushes, shoe polish, ice water, fruits like apples, oranges, peeled pineapples, and even electronic gadgets like radios etc.

The aged get other people to assist in the trading, whilst they remain in the house, taking care of children and also selling as in the case of Yaa Asantewaa blow.

Case 4: Yaa Asantewaa of Atafoa

Yaa Asantewaa is about 71 years old and a widow. She lost her husband about 25 years ago and has 1 female and 2 male children. Her household size is currently 7, made up of a sister, daughter, 4 grandchildren and herself.

Yaa Asantewaa used to be a farmer but has stopped farming because of old age. Currently, she sells charcoal as her livelihood activity. She started the business without any capital. She explained that she complained to a charcoal dealer of the fact that she does nothing at home and was afraid idleness could make her weaker. Thus, she expressed interest in selling charcoal to the dealer who agreed to give her a number of bags at a reduced price on credit. According to her, the dealer gave her 20 bags at ¢18,000.00 per bag for a start. She explained that after the sale of each bag, she realises ¢23,000.00 or ¢24,000.00 per bag (yielding a profit per bag of ¢5,000 or ¢6,000 according to her). Although Asantewaa can now buy the charcoal on her own, she still sticks to this arrangement because she and the dealer are both satisfied.

She faces two major constraints with the charcoal business all of which relate to quality. If the charcoal is not well made, it does not sell fast and if the tree used for the charcoal is not hard, people will not buy fast. In both cases, she loses time and money. Her daughter faces higher risks because she travels to Togo to buy the second-hand clothing and there are so many uncertainties; some times her goods get missing. Just recently she lost goods worth ¢8,000,000 in about 2 weeks.
In such circumstances, they fall into hardship and the numbers of meals they take in a day are reduced.

[13] Mini vans operating short distances normally used by people in the middle and lower income groups

6 MANAGEMENT OF NATURAL RESOURCES

The findings reported in the previous sections indicate a gloomy picture of a downward trend in the quantity and quality of natural resources in the KPUI. Just as resources in organisational set-ups are managed, the same could be applied to management of natural resources. This means conscious efforts need to be made in order to ensure that rational use of resources are observed at all levels. The community members, the principal users, and the local government all have important roles to play.

Management involves four main interlocking sets of activities: planning, organising, directing, controlling. Monitoring and evaluation taken together constitute an additional activity, making it possible for managers to iteratively see through their programmes for corrective action to be taken where necessary. While these management functions are important for providing managers a 'blue-sky' horizon of their operations, it also sets the framework for other stakeholders, and/or users, to identify the scope and limits of their involvements or actions in the management processes. This means that these stakeholders have sets of guidelines that shape their actions.

In resource management, it is important to understand the differences in goals of the planner and the user. Essentially, therefore, the point of convergence: sustainable resource use should be the starting point for the two parties. In natural resource management in KPUI, it is always said that planners and users stay in two different worlds: the planner in the city and the user in the communities. This, according to the people in KPUI, has left much room for people to exploit the local resources to meet their individual and immediate interests, often at the expense of the long-term sustainable use of the resources. In practice, communities have a greater stake in natural resources management and planning. Table 8 below shows how the communities see the involvement of institutions or groups in natural resources management.

Table 11: **Managers of natural resources in the KPUI**

Community	Who is involved
Ampabame II	Land Owners Chief and Elders, Wildlife Division, Local Government through Unit Committee
Apatrapa	Queen Mother, District Assembly, Unit Committee, Chief, Linguist
Behenase	Chiefs and Elders, Unit Committees, Families (Controlling Sand and Stone Winning)
Esereso	Traditional Authorities, Taboo Days (Tuesday), Unit Committee
Adagya	Traditional Authority (Odikro And Asantehene), Unit Committee, Families
Asaago	Chief And Elders, Unit Committees, Oti Family (Rivers in the Community), Asantehene (Ensuring Law Enforcement and Administering Sanctions)
Swedru	Chief and Elders, Community Members, New Entrants, Unit Committee
Abrepo	Chief, Community Members, Unit Committee
Okyerekrom	Chief, Unit Committee, Council for Scientific and Industrial Research (CSIR), New Entrants
Atafoa	Community Members, Unit Committee, Chief and Elders, Police
Maase	Chief and Elders, District Assembly, Unit Committee
Duase	Chief and Elders, Unit Committee, Community Members, Police, Landowners

Source: Survey Data, 2004

In Table 11 above, apart from the police, CSIR, and the Department of Game and Wildlife, the rest of the institutions mentioned as managers of natural resources are within the communities. The vulnerable who are mainly the users of the natural resources were only seen to be playing a part in this management by their involvement in such associations as the fire volunteers and by their practice of bush fallowing, and the slash without burn method of farming.

The larger picture represented by what the communities said about who is involved in the management of natural resources may seem to indicate that all community members are equally involved. In practice, the vulnerable that may have closer engagement with the natural resources are more limited to temporary usage than other natural resource management aspects mentioned in Figure 13 below. Table 12 below summarises some of the key issues that community members consider limit and/or promote the participation of some of the vulnerable groups in natural resource management.

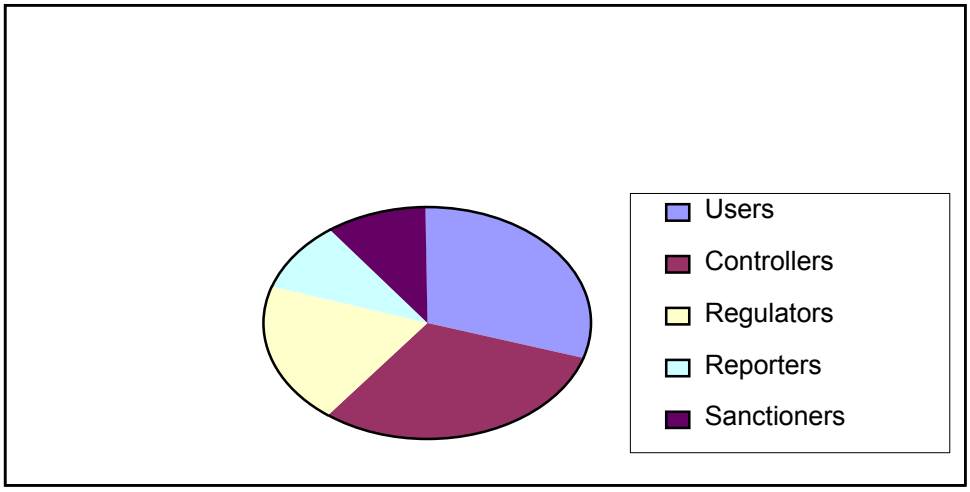
Table 12: **Table 12. Factors affecting the participation of the vulnerable groups in natural resource management**

Vulnerable group	Limiting factors	Promoting factors
Aged	-Health problems -Old age	-Interest in maintaining cultural heritage -Interest in preserving land related natural resources -To keep fit
Unemployed	- Long gestation period of regeneration of natural resources - Pressure to satisfy immediate consumptions needs - Not stable in the communities; will move to the next location where there is a temporary job	- Provision of incentives by organisation to manage resources
Children	- Not mature - Do not know the importance of managing natural resources -Too young to enter into natural resource management contracts	- See their adults taking part in natural management - Means of getting money
Women	-Landlessness; although the KPUI is a matrilineal area, the women own land just in name -Culturally prescribed role in supporting the male than production	-Culturally prescribed role in community resources maintenance

Source: Survey Data, 2004

Legislation, enforcement and administration of sanctions and penalties fall within the ambit of the organised institutions, which largely exclude the vulnerable. However, most communities see the vulnerable (who are closer and in most cases the users) as playing a greater role in the management of natural resources. Figure 13 is an extract from the Appendix 1 and depicts how well the communities see the role of users (mainly the vulnerable) in the management of natural resources. Esreso, Behenase and Okyerekrom see a minimal role played by users in management of natural resources. Esreso is urbanised, Okyerekrom has Council for Scientific and Industrial Research (CSIR) occupying a good portion of its land and the land in Behenase is under a temporary moratorium due to a chieftaincy dispute. This indicates limited access to natural resources and therefore not surprising to see lesser involvement of users who on the majority are the vulnerable (e.g. women straw harvesters and food crop farmers).

Figure 13: Relative Contributions of Natural Resources Managers in Surveyed Communities



Source: Surveyed Data, 2004

Ghana's new decentralised structure clearly sets out the roles of communities in natural resource management, with the assemblyperson in consultation with the Unit Committees linking practice at community level to policy at the district assembly (Figure 14). Within this structure, various ministries, departments and agencies (MDAs) also have responsibility to ensure that natural resource utilisation is balanced with replacement for future uses. The Game and Wildlife Department, Forestry Commission, The Environmental Protection Agency (EPA) for instance generally oversees the rational use of wildlife, the forest and the environment respectively. In practice, however, the community's level of understanding of the existence and operation of the local government institutions does not seem to match with the impact one would expect from such knowledge. In the community group discussions, all the communities mentioned the local government institutions, including some MDAs, as being involved in the management of the local resources (Appendix 1). The communities see the role of the local government and the related organs as setting the rules and regulations that control the use of local resources. This to them is remote and leaves much room for abuse. By such knowledge communities are expected to demand accountability from these government institutions in a manner that will ensure responsible role and use toward natural resources in the communities. In some communities, however, management of natural resources according to the people is a part of the communities' codes of behaviour and it involves the following:

- All excavations resulting from sand winning are to be filled afterwards
- People are not allowed to weed into rivers
- People are not allowed to take fire to their farms during the dry season
- Fishing nets are also not allowed to be used in the rivers to catch fish

6.1 Sand and stone deposits

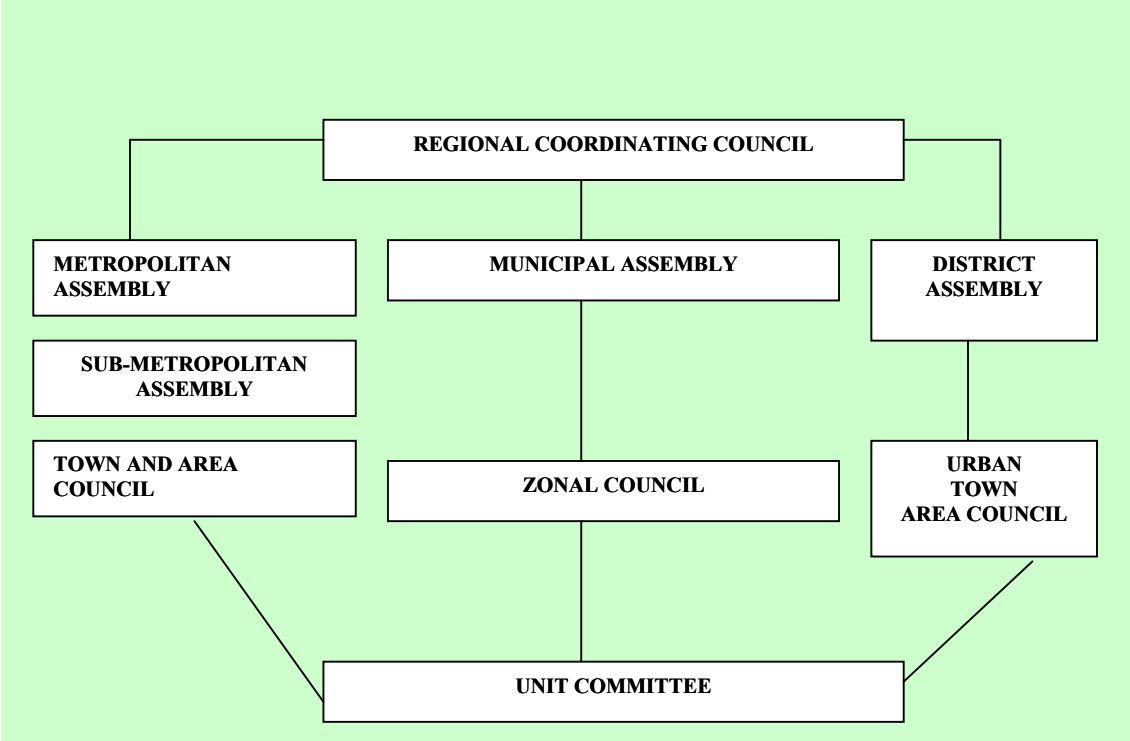
A community mapping exercise carried out in August 2002 showed that for many of the urbanised communities e.g. Atafoa, Apatrapa and Abrepo, sand and stone winning are activities of the past. The family with the usufruct rights to the land on which sand and stone deposit is located has the first access to this resource according the people of Swedru, Adagya and Esreso. One limitation is that these resources may be located deep beneath the earth's crust and the topsoil has to be removed. These private landowners lease the land to private sand and stone winning contractors who have the appropriate excavation machines to mine sand and stone. This is done in consultation with the chiefs and assemblymen, who have shares.

The Kumasi Metropolitan Authority (KMA) was tapping gravel deposits around River Kwatema at Adagya for repairing roads in and around Kumasi. It is not very clear whether the KMA itself wins the gravel or KMA contractors. Since Adagya is also located in Bosomtwe Atwima Kwanwoma (BAK) District, is not clear how KMA could go and fetch resources from BAK and what BAK gets in return. On the other hand, the chiefs of BAK communities are all subjects of the Asantehene. Could the Asantehene be the reason behind this linkage? At the moment KMA is operating a landfill site at Dompoase, between Adagya and Asaago, which is also a BAK community, what is the linkage? The case below may help in understanding such linkages.

Case 5: Temporary refuse dump at Aboabo (BAK)

Whilst KMA was preparing to deposit waste at the waste processing plant at Dompoase, it needed a temporary site and through negotiation with the Chief of Aboabo, another community in the BAK, a temporary site was made available. Community members stood against the arrangement between the chief and the KMA but their efforts did not change anything. According to the community members, depositing waste at Aboabo was hazardous to them in many ways. Firstly, the waste was not well covered and plastic bags and waste debris were scattered all along the trail of the tipper trucks from Kumasi to the site. Secondly, the heavy vehicles that transported the waste drive recklessly, threatening other road users. Thirdly, the stench associated with the rubbish was unpleasant. On the other hand, the use of the land at Aboabo brought some benefits to the communities and other communities around. Firstly, the roads were never abandoned, as was originally the case; they were always in good state to facilitate easy movement of the trucks. Secondly, the same community members who were complaining about the refuse started scavenging the refuse dump for items they could use or sell. There was an occasion when a shoe factory disposed of shoe rejects and some community members went to collect these shoes either for their own use or for sale.

Figure 14: The Structure of Regional Coordinating Council in Ghana



Source: Adapted from King *et al*, 2000

6.2 Water Bodies

As shown in Table 13 below, the twelve communities together have access to over 38 rivers, streams and ponds. To make sure that the communities have access to potable water, the district assemblies and other institutions have provided boreholes. Apart from these boreholes, individuals have also dug their own wells in areas, which are not accessible to tap water. All the communities outside KMA do not have access to tap water. Some of these communities used to have access but due to increase in the population of Kumasi, the supply of tap water is not regular and people have resorted to using water from wells and boreholes. The boreholes are more accessible to the poor than the wells since individuals in their homes normally own the wells whereas the communities own the boreholes. At Behenase, Maase and Esreso, there are ponds which the people use for washing, cooking and sometimes for drinking. At Adagya, the queenmother is in charge of the maintenance of one of these ponds.

According to the Adagya community, in the days of their **forefathers**, the rivers were demarcated and different portions of the rivers were entrusted to certain individuals to control. However, presently, the **government** is in charge of managing the river. The community drinks from the Ankwanim stream. To cater for water shortages associated with drying up of this river during the dry season, their forefathers dug a well close to it, and linked the well with the river through a canal. This was done to prevent water shortages in the dry season.

At Ampabame II, water from all the streams can be drunk, except water from the Supain stream. The people believe that God is the caretaker of the streams although the **Abusuapanyin** is responsible for the streams. To win stones one needs to see the **Odikro**. The volumes of water in all the streams reduce drastically during the dry season. According to the people, the reduction is attributable to stone winning, bush burning and unfavourable weather. Fish is harvested from all of the streams, except Supain. This stream is believed to be a fetish called Kwadu. It is **believed** that anyone who eats fish from River Supain will fall ill.

At Swedru, water from the Aboabo stream can be used only on the farm but not at home. There is the belief that a calamity will befall anyone who brings water from Aboabo home. The community does not

eat fish from this stream. The fish from all the other rivers of Swedru are eaten and the water can also be drunk.

At Abrepo, which is a more urbanised community, River Akosu was believed to reduce pain when drunk by pregnant women in labour. However, in present times, many people no longer uphold this belief. A combination of factors accounts for this attitude. On one hand the river is now highly polluted and hence unsafe for drinking (there are better alternative sources of potable water within the community). On the other hand, many settlers with new and different belief systems have adulterated the existing belief system. Additionally, advances in medicine and the attendant provision of better medical services through hospitals, clinics and maternity homes make the people not to think about an option, which is based on superstition.

Table 13: ***Water bodies, sand winning sites and boreholes in communities***

Community	Streams, rivers, ponds	Sand and stone wining sites	Boreholes
Adagya	Odaw, Ankwanin, Kwatema, Abebensu	-	
Esreso	Odaw, Kwablafu	3	4
Okyerekrom	Subin, Ajonsua, Saman	1	3
Duase	Abena, Sisa, Akokwa, Wewe	3	5
Swedru	Aboabo, Asinsu, Akrasu, Anyirinsu, Diawam	5	3
Maase	Wherentia, Bedibenom, Asuoabena,	2	2
Atafoa	Owabi, Ntikyei	1	0
Abrepo	Akosu	0	4
Apatrapa	Asamansua, Onwam, Asuoyeboah,	2	2
Behenase	Norma, Asuobena, Aburakese	2	2
Asaago	Adaw, Sisa	-	
Ampabame II	Supain, Nkolonko, Akani, Blapon, Namon (Kwadu), Akokoamon	-	2

Source: Survey Data, 2004

The **queenmother** of Adagya manages the Ankwanim stream. The people in that communities said they do not streams, which do not supply potable water to them. At Esreso, the Odaw River harbours much fish. There is no discrimination as to who can feed from the River, however, only hook and line are allowed. The people drink water from Odaw. There is a chief called **Oda Hene**, who takes care of the Odaw River.

Communities perceive river management as weeding the road leading to the river, making sure that people do not defecate or dump refuse close to the river, cleaning the river bed and making sure that the people have access to potable water.

6.3 Land

There are land and chieftaincy disputes in some of the study communities. Because of this, some chiefs are not resident in the communities or are difficult to find. The Asantehene, who is the final authority on land issues within the Asante Kingdom, can place a moratorium on any piece of land with some dispute associated with it. Individual community members are in charge of forest reserves with the support of the chief and unit committee members. At Oyerekrom, a large acreage of land has been reserved for the

Council for Scientific and Industrial Research (CSIR) Forest Research Institute of Ghana (FORIG), Crops Research Institute (FRI) and the Building and Road Research Institutes (BRRI) are located on this piece of land. There is no farmland left in Apatrapa and Abrepo as they complained that all land has been leased out for building purposes. However, in other communities, there is still some undeveloped land, which could be used for farming. Even at Abrepo, there is a piece of land close to the primary school, which is seriously under maize cultivation.

Forests found in Ampabame II, Swedru, and Behenase are invariably burial grounds. In all the communities, it was asserted that the chief and elders manage the burial grounds. At Behenase for instance, there are rules regulating cutting of trees at the burial ground and around River Asuoabena. There were complaints at Behenase that people were felling trees indiscriminately for charcoal burning. When it becomes necessary, the chief mobilises the whole community to go and clean up the cemetery. In some communities e.g. Swedru and Ampabame II, there are two cemeteries: one for the general community (public cemetery) and the other for Christians. In some of the communities, the Unit Committees have assumed responsibility for management the cemetery. Where the Christian community has a cemetery, they are in charge of managing it. Some church groups keep their cemeteries clean and tidy because of their belief in the communion of saints. The Catholics and the Methodists are noted to have their own cemeteries at Ampabame II and Swedru. A bereaved family takes drink to the chief to ask permission to bury their relative at the public cemetery.

Schools often have parks, which they use for sports. Some major community activities like durbars and funerals are organised on such parks.

In most communities, the Unit Committees are in charge of the refuse dump. They mobilise women and children to keep it clean. One exception was at Duase, where the Bola[14] Queen (called Bola Hemaa) is responsible for managing the community refuse dump. Community members manage the bola closest to them (which is used by them). Generally, the men weed around the bola when it becomes bushy and women take charge of the day-to-day management. A striking observation is that, plantain is normally planted round the bola to help restrict its borders. See Figure 1 for the location of the bola in a typical community.

[14] Bola is a name given to the community refuse dump

7 SUMMARY AND CONCLUSIONS

In this section the main findings of this research are reported. This is followed by the major conclusions that can be drawn from the research.

7.1 Summary of findings

Two forms of natural resource management systems were identified in the communities, driven by rural rules and norms, and by urban institutions respectively. The former revolves round superstitions, notions and taboos, which regulate people's behaviour towards natural resources. This is stronger in rural peri-urban communities. In Swedru for instance, there is the belief that water from the River Aboabo could only be used for domestic purposes in the farms and not at home. From the research it was found that such beliefs were equally esteemed in urbanised peri-urban communities in the past. River Akosu at Abrepo for instance is believed to reduce pain when drunk by pregnant women in labour. In present times however, this belief is no longer upheld.

The vulnerable have been confronted with a reduction and alteration of the natural resource base in the KPUI. They cope with the alteration by finding use for the emerging natural resources. The vegetation of the peri-urban areas used to be semi-deciduous with a weed commonly known in Ghana as 'Acheampong'. Today, the peri-urban is full of the guinea grass and women and children, especially new entrants, harvest this grass for sale. The waters from the streams and rivers are no longer potable and many communities now use them for construction purposes. Many of the vulnerable cope with reduction of natural resources by moving out of natural resource related livelihood activities. More people even the aged are resorting to trading in the more urbanised communities. Another strategy, which is more pronounced but not limited to the peri-urban interface is the tendency to make maximum use of the few resources available, as evidenced by the practice of intercropping or rearing more than or rearing more than one livestock species in the same pen.

Economic benefits remain the major factor motivating the participation of the vulnerable in natural resource management. The people of Adagya stated this clearly, when they mentioned that they manage the stream that provide them with drinking water, and just farm round all the rest, which do not. This seems to cut across all institutions including traditional and local government institutions and brings into attention, the need to support institutions that manage natural resources, whether they yield direct benefits or not. Thus if they function effectively, institutions like Environmental Protection Agency (EPA), Ghana Water Company (GWC), Department of Game and Wildlife, and etc have the mandate to take on board, all the other aspects of natural resource management (profit yielding or not) with the support of the private and public sectors. However, many of these institutions play the leading role in the management of natural resources in only when economic gains or other interests induce them.

Communities that are used to making their livelihoods without depending on natural resources are optimistic that their vulnerabilities will reduce within the next five years. Incidentally these communities are not only the urbanised ones, but also with restricted access to natural resources due to chieftaincy conflicts, land disputes, or in the case of Okyerekrom where extensive land ear-marked for a state agency (CSIR). Those communities, which are heavily dependent on natural resources, on the other hand, perceive a worsening of their vulnerabilities within the same period.

Vulnerable groups have temporary access to farmland or undeveloped plots for farming. Sometimes, landowners do not wait for them to harvest their crops before they lease the land to the next developer. This temporary access does not augur well for practising soil improvement strategies. Thus, many farmers just use the land as much as they can, mining all the minerals, whilst they wait for the next developer to come and take over.

7.2 Conclusions

The remit of this research is to investigate the participation of the vulnerable groups in natural resource management in the KPUI. The study has indicated that management is both a set of rules and regulations enacted and monitored by organised institutions in and outside the community and processes or mechanisms for utilising natural resources in the KPUI by various users. The former significantly exclude the vulnerable in the management of natural resources while the latter, which largely affects the nature of natural resources is what the vulnerable significantly partake in.

The study has assessed the state of natural resources in the 12 communities and the livelihood patterns of the people. The study has indicated that quantity and quality of natural resources in the KPUI has significantly been reduced by increasing pressure on the natural resources. This is occasioned by the urbanization of Kumasi. Interestingly, the change has been rapid in the more urbanised KPUI communities than in the rural ones. In similar vein, the urbanised communities increasingly have fewer natural resource-based livelihoods but more other economic-based livelihoods.

The relationship between vulnerability and livelihoods has also been assessed. The result indicates that generally, vulnerability will increase over the years. The rate of increase, as described by communities indicated that the rural KPUI communities, where new wave of urban influence is being felt is higher than the urbanised KPUI communities. The explanation given by urbanised communities is that increased economic opportunities and flow of goods and services from outside the KPUI reduce their reliance on natural resources and therefore their vulnerabilities.

The study also revealed that one group of vulnerable people i.e. food crop farmers; participate in natural resource management through their farming methods, which involve bush fallowing, crop rotation and mixed cropping. The only natural resource- related group these food crop farmers belong to is the fire volunteers in rural KPUI communities. The other vulnerable groups, namely the aged, children, women, single parents, and unemployed adults are increasingly limited in their participation in natural resources management because they have to satisfy immediate needs before thinking about future needs.

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APPENDICES

Appendix 1 Summary of field report

Summary of field report

Community	Vulnerable groups	Livelihood activities	Causes	Historical	Natural Resources	Mode of management	Who are involved	Key roles in management	Relative contribution
Ampabame II	Food crop farmers Petty traders Diseased Aged Unemployed Artisan Apprentices Single mothers	By day Selling water Selling fuel wood Gathering stones Selling brooms and baskets	*Unsecured employment *Bush fires *Flooding *Rotting of tubers (losses) *Poor rainfall patterns *Disease *Lack of any study source\ of income *Lack of cooperative associations *Lack of credit facilities	Worsening over the past 10 years and projected to continue	Water bodies Wild live Farmland Sand and stone Secondary forest Bamboos Raffia palm Wild oil palm Straw Snails Mushrooms Fuel-wood	*Sand and stone- rule to replace top soil after digging *Trees along water bodies are intentionally left to protect the water bodies *Bush-fallowing *Slash method (Proka) *Adhering to wildlife regulations *Fishing prohibited	Land owners Chief and elders Wildlife division Local government through Unit Committee	Traditional **Enforce observance of bi-laws and administer sanctions** **No rewards for reporters** Government **Legislation** **Enforcement** Users	Users (30) Controller (30) Regulators (20) Reporters (10) Sanctioners /rewards (10)
Apatrapa	Artisans Single mothers Aged and unemployed	Remittances General support from extended families By-day	*Lack of farm land for crops and livestock *Overexploitation of resources *Pollution of water bodies (garbage, liquid, distillery)	Worsening over the past 10 years and projected to continue	Water bodies Highly polluted Straw **Sand and stone** Completely exhausted Wildlife Only squirrels **found** near water bodies	-	-	-	-
Behenase	Food crop farmers Diseased Aged Unemployed School drop outs	By-day Making brooms Family support	Poor weather Landlessness Aging Lack of jobs Unemployment Land degradation Poor soil fertility Over cropping of land	Worsening over the past 10 years and projected to continue	Wildlife Forest reserves Medicinal plants Trees Straw Wild palm tree Water bodies Sand and gravel	Banning of use of toxic chemicals Laws on cutting trees from burial grounds Use of poultry droppings Prohibit weeding around streams Group fishing encouraged	Chiefs and elders Unit Committees Families (controlling sand and stone)	Chief and Elders Enact traditional laws and enforce sanctions Unit Committee Enforcement of laws Community members Use	Users (10) Controllers (28) Regulators (20) Reporters (10) Rewarders and sanctioners (40)
Esreso	Food crop farmers		Large family size	Worsening over the past	**Water bodies** **Gravel and Sand**	Ban on chemical fishing	*Traditional authorities *Previously) taboo days	*Traditional authorities The odahene controls	Users (10) Controllers (30)

Community	Vulnerable groups	Livelihood activities	Causes	Historical	Natural Resources	Mode of management	Who are involved	Key roles in management	Relative contribution
	Diseased Aged Unemployed Single mothers School dropouts		Single parenthood Unemployment Unreliable rainfall Urbanisation Flooding Bushfires	10 years and projected to continue	Straw **Wildlife** **Fish**		(Tuesday) *Unit committee	the oda stream (Previously) taboo days (Tuesday) *Unit committee Control, regulate and administer sanctions	Reporters (20) Rewarders/sanctioners (20) Regulators (20)
Adagya	Food crop farmers Petty traders Diseased Aged Unemployed Artisan Apprentices Artisans Single mothers Aged and unemployed	Petty trading Selling of fuel wood Picking Palm fruits Digging sand and stone By-day	Flooding of homes and farms Mosquitoes Disease Unreliable rainfall Erosion Single motherhood Lack of family support	Worsening over the past 10 years and projected to continue	Land Trees, Water bodies Fuel woods Wild palm trees Wildlife Mushrooms Straws and Sand	Controlled fishing Use of sand and stone absolutely linked with seeing owners of the land	*Traditional authority (odikro and asantehene) *Unit committee *Families	*Traditional authority (odikro and asantehene). Control and regulate resources *Unit committee. Responsible for administering sanctions *Families. Permission has to be sought from the before use of land and sand and stone	User (40) Controllers (20) Regulators (20) Reporters (10) Rewarders and sanctioners (10)
Asaago	Subsistent farmers Single mothers Unemployed Aged Settlers + strangers	Petty trading Selling of fuel wood Craft making Straw harvesting Sawmilling Selling of fuel wood	Unreliable rainfall Ill health Unemployment Lack of job opportunities Lack of family support Limited access to Natural Resource	Stable up to now, and is expected to rise	Sand and stone Farmland Rivers and streams Wildlife Bamboo Oil palm Straw Fuel wood Fish	Controlled fishing by taboos Use of Land for cultivation and sand winning on permission from Asantehene, Chief of Asaago and some families Law enforcement Motivation of fire volunteers Sustainable livelihoods Taboos	Chief and elders Unit committees Oti family (rivers) Asantehene Ensuring law enforcement and administering sanctions	Chief and elders Administering sanctions Unit committees Administering sanctions Oti family (rivers) Managing the Rivers and water bodies Asantehene	Users (50) Controllers (10) Regulators (20) Reporters (10) Rewarders and sanctioners (10)
Swedru	Aged Unemployed Aged and unemployed Women Children Handicapped	Construction works Small-scale farming Sand winning Stone quarrying Petty trading Family support and remittances	Biased educational opportunities for male and female children Unfavourable land tenure system Aging Breakdown of	Worsening over the past 10 years and projected to continue	**Sand** **Land** **Rock** **Water bodies and Forest**	Use is linked with having permission from the chief	Chief and elders Community members New entrants Unit committee	Chief and elders	Users (40) Controllers (20) Regulators (30) Reporters (5) Rewarders and sanctioners (5)

Community	Vulnerable groups	Livelihood activities	Causes	Historical	Natural Resources	Mode of management	Who are involved	Key roles in management	Relative contribution
			extended family system Superstition (witches) Lack of requisite skills for the youth Poor soil fertility Sand winning activities Mosquitoes						
Abrepo	Food crop farmers Women Sick and handicapped Unemployed Artisans Orphans	Home gardening Petty trading construct ional work	Drug addiction Hunger Poverty Diseases Ignorance Unemployment Lack of capital Landlessness Environmental pollution	Vulnerability was high for the past ten years but will be dropping in 5 yrs time	Water bodies Land Sunlight Wind	-	Chief Community members Unit committee	-	Users (40) Controllers (20) Regulators (20) Reporters (10) Rewarders and sanctioners (10)
Okyerekrom	Food crop farmers Petty traders Diseased Aged Unemployed Artisan Apprentices Artisans Single mothers Aged and unemployed	Remittances Menial jobs Family support Constructional works Sand winning Petty trading Farming Selling of charcoal Begging Stone quarry	Illiteracy Land tenure Ignorance Unemployment Societal attitude towards aged	Worsening over the past 10 years and projected to continue	Forest Rivers Sand and stone Straw Farm land	-	Chief Unit committee CSIR New entrants	Chief and CSIR Regulates and control Unit committee also regulates and control use of resources	Users (20) Controllers (30) Regulators (30) Reporters (10) Rewarders and sanctioners (10)
Atafoa	Food crop farmers Petty traders Diseased Aged Unemployed Artisan Apprentices Artisans Single mothers Aged and unemployed	Construction work Petty trading	Unemployment Landlessness Ill health Job insecurity Physically challenged Orphaned	Worsening over the past 10 years and projected to continue	Bamboo Streams Land Sand and stone	-	Community members Unit Committee Chief and elders Police	Community members Reporting Unit Committee Controlling Chief and elders Controlling Police Law enforcement and administration of sanctions	Users (40) Controllers (20) Regulators (20) Reporters (10) Rewards and sanctions (10)
Maase	Diseased	Sale of water	Landlessness	Worsening	Rivers and streams	-	Chief and elders	Chiefs	Users (60)

Community	Vulnerable groups	Livelihood activities	Causes	Historical	Natural Resources	Mode of management	Who are involved	Key roles in management	Relative contribution
	Unemployed Orphans Illiterates Divorcees	Fuel wood selling By day Remittances Construction	Lack of alternative economic activities Misuse natural resources	over the past 10 years and projected to continue	Sand and stone Forest Farmland Sunlight		District Assembly Unit Committee	Reward and sanction District assembly Control and regulate Unit Committee Regulates, Report, control Community Members Report	Controllers (10) Regulators (20) Reporters (10) Rewarders and sanctioners (-)
Duase	Parent with large families Farmers Aged Youth Single parent	Petty trading Sale of firewood Farming Hairdressing Cooked food selling	Unemployment Chieftaincy dispute Inadequate capital Poor market for farm produce	Worsening over the past 10 years and projected to continue	Land Streams and rivers Forest Herbs Straw Sand and stone	-	Chief and elders Unit Committee Community members Police Landowners	Chief and elders Regulates and controlling Unit Committee Regulates and controlling Community members and Land owners Reporting incidence of misuse Landowners	Users (70) Controllers (0) Regulators (10) Reporters (20) Rewarders and sanctioners (0)

Appendix 2 Field guide

SURVEY CHECKLIST FOR THE COLLECTION OF FIELD DATA
ON THE PARTICIPATION OF THE VULNERABLE INCLUDING, WOMEN, YOUTH AND SETTLERS IN NATURAL RESOURCE MANAGEMENT IN THE KUMASI PERI-URBAN INTERFACE

GROUP DISCUSSIONS:

KEY WORDS
PARTICIPATION
VULNERABLE GROUPS
NATURAL RESOURCE MANAGEMENT
PERI-URBAN INTERFACE

Names of facilitators…… Date …….

Name of Community ……..

Group Met…….……...

Place of meeting ……..……

VULNERABLE GROUPS

1. What is vulnerability?
   (Please facilitate the understanding of the concept. Do not try to use single Akan interpretations)

2. Who are the vulnerable in this community?

3. What are they vulnerable to?

4. What are the causes of these vulnerabilities?

5. Which of these vulnerabilities are directly natural resource related? (*Shortlist five most vulnerable)*

Vulnerabilities	Natural resource related to	Shock/ Trend/ Seasonal	Coping/ Adapting strategies	How vulnerabilities can be minimised
a.				
b.				
c.				
d.				
e.				

6. Prepare a historical trend analysis of the vulnerabilities (*to examine the vulnerabilities 10 years, 5 years, now and the next 5 years. Use high, medium and low to illustrate the variations. Please refer to fig. 1*)

NATURAL RESOURCE MANAGEMENT

7. Mention the natural resources in this community

8. Identify five major natural resources from the list above

9. How are these natural resources managed in this community?

10. Who is involved?

Natural Resource	Who uses	Control	Who regulates	Who reports	Rewards and sanctions
a.					
b.					
c.					
d.					
e.					

11. For each natural resource mentioned in 8 above compare through ranking and scoring the involvement of the various parties (*Five tables are to be completed)*

Individual groups/ Institutions	Who uses	Control	Who regulates	Who reports	Rewards and sanctions
1.					
2.					
3.					
4.					
5.					
6.					

12. Rank the importance of the following to natural resource management

Management method	Who uses	Control	Who regulates	Who reports	Rewards and sanctions
Rank					

13. For the most important management aspect in 5 above list the factors that limit/promote the participation of the identified vulnerable groups in the management

Vulnerable group	Limiting factors	Promoting factors
a.		
b.		
c.		
d.		
e.		

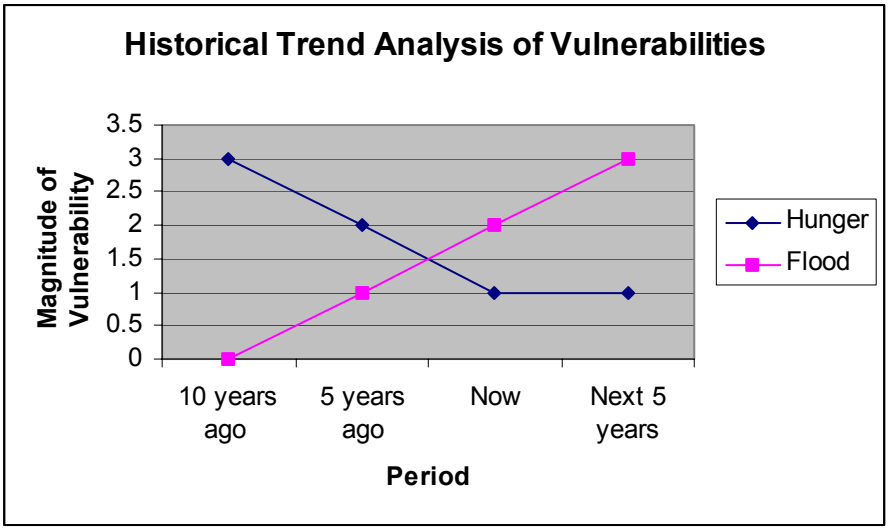
14. What are the sources of livelihood of the vulnerable groups identified above?

Vulnerable group	Livelihood activities
a.	
b.	
c.	
d.	
e.	

15. What natural resource related problems could be associated with the livelihood activities of the vulnerable groups?

(a) Diminishing access to farmland (b) Declining soil fertility (c) Environmental pollution (d) Others

Figure 1


Historical Trend Analysis of Vulnerabilities
Magnitude of Vulnerability
3.5
3
2.5
2
1.5
1
0.5
0
10 years ago
5 years ago
Now
Next 5 years
Period
Hunger
Flood