Title of the project: Urban Development, Population and the Environment in Uganda: The Case of Kampala and its Environs

The person in charge: Dr. Jockey Baker Nyakaana

Applicant Center: Geography Department
Makerere University, P.O Box 7062, Kampala - Uganda
Tel: 256 - 41 - 531261
Fax 256 - 41 - 542265

Country: Uganda
SUMMARY OF THE PROJECT

1. Title of the project: Urban Development, Population and the Environment in Uganda: The Case of Kampala and its Environs

2. The person in charge: Dr. Jockey Baker Nyakaana

3. Address of the person in charge:
   Geography Department
   Makerere University,
   P.O Box 7062,
   Kampala - Uganda
   E-mail dr_nyakaana@arts.mak.ac.ug
   Tel: 256 - 41 - 531261
   Fax 256 - 41 - 542265

4. Centers or teams involved in the project:
   ♦ Gender and Women Studies,
   ♦ Institute of Economics
   ♦ Makerere University Institute of Environment and Natural Resources (MUIENR)
   ♦ Department of Geography
   ♦ Institute of Statistics and Applied Economics

5. Number of researchers involved in the project: 7

6. Disciplines concerned by the project
   Environment
   Gender
   Development Economics
   Geography
   Population

7. Area(s) of research
   Kampala City, Peri-Urban Areas of Kampala

8. Key words describing the project (between 2 and 4 per heading)
   Population
     Growth rates, migration, and livelihoods
   Development
     Unplanned housing, industrialization, income
   Environment
     Pollution, wetlands, solid wastes
   Geographical field
     Kampala, Peri-Urban areas
   Methods of analysis
     GIS, Statistical
   Sources of data
     Secondary, Primary

Abbreviations used in the proposal

P/D/E Population Development and Environment
MPED Ministry of Planning and Economic Development
SAPs Structural Adjustment Programs
NEMA National Environmental Management Authority
Summary of the Project

Kampala, the capital city of Uganda, is a primate urban centre experiencing a rapidly growing population from 774,241 in 1991 to approximately 1.2 million in 2002. The population growth has led to changes in the population structure of the city and a rapid urban growth. Migration from rural areas has also greatly contributed to population growth in the city and both have created significant demographic changes in and around the city. This growth has been responsible for increased demand for employment, land for housing, a fast spatial urban development and an increasing level of industrialization. The effects of demographic changes in Kampala have ushered in unprecedented interactions between population variables and environmental resources through urbanization, urban development and industrialization as the development activities. But the development is occurring in a haphazard manner largely dominated by the urban informal sector, which has greatly contributed to the degradation of the environment through wetland destruction, solid waste accumulation, water pollution and land use change. Though there is an increasing concentration of social services, increasing housing stock and activities like urban agriculture within the city, these are not adequate for a growing population. Consequently, this has created vulnerable groups of unemployed street traders and women who have had to evolve coping strategies, as they cannot afford to go back to the rural areas without realizing their migration objectives. The resultant living environment in the city is deplorable with poor environmental quality, poor housing, poorly managed solid wastes and increased water pollution.

This project is set out to evaluate the impact of the demographic changes in Kampala on the environment through the interactions of urban development, urbanization and industrialization. The study will be multidisciplinary to evaluate the interactions between P/D/E as a result of population increase, urban population structure change and migration. The study will analyze the population change, development and environmental degradation processes of wetland degradation, solid waste disposal and management, water pollution and land use change.

The project will use both primary and secondary data obtained from government documents, academic research reports, and consultancy and newspaper reports. Secondary data will be supplemented with primary data collected through interviews and discussion groups with relevant informed stakeholders. Primary data will be collected using GPS and this will be integrated in the existing GIS data. GIS and RS will be used for input, processing, analysing and display of spatial data. Statistical and qualitative analytical tools will be used in analysing data collected through interviews and secondary sources.

Results of the study will be improved through sensitisation workshops with stakeholders, key informants and presentation to relevant committees of parliament who are expected to provide vital inputs. The final project report will be an important document, highlighting the importance of urbanization in the national development process, and provide awareness to policy makers and planners on issues of population change, urban development and environment. Urban planners can use such information when planning/demarcating land use zones while integrating population and environmental issues. The project result will further be utilized in Policy formulation on waste management for a sustainable clean environment, low cost planned housing schemes for the urban poor and provisioning of safe water.
DESCRIPTION OF THE PROJECT

Problem studied:

The study will evaluate the impact of the background factors of demographic changes i.e. population growth, urban population composition, structure and migration, on how they accelerate urbanization process and urban development through industrialization, search for employment and housing. The impact of the background factors will be analyzed as to manifest the interactions in environmental degradation i.e. wetland degradation, solid waste accumulation, water pollution and land use changes (see figure 1). Demographic changes in the country and the City have accelerated urbanization, urban development and industrialization which in turn are threatening the environment of the City and its environs. Through migration, the attracted population has created stress on the existing infrastructure like housing, water supply and solid waste disposal leading settling in marginal areas. The consequence is the creation of vulnerable groups (low income, women, street traders, children, unemployed), with various coping strategies that impact on the environment through urban agriculture and unplanned housing provisioning. The research will therefore analyze the interactions of population and demographic dynamics with the environment through wetland degradation, solid waste disposal/management, water pollution and land use changes and their implications for sustainable development.
Figure 1 Conceptual model of the study
National Importance of the Problem

The country’s population is growing with corresponding need for development efforts to foster good welfare. But there is a wide difference in the growth levels of population compared to the development process and efforts in the country. Any effort for development and improvement of welfare requires an understanding of the interactions between population, development and the impacts on the environment which form the resource base for development. With a City of such National importance, there is need to analyze the interactions between population, the urbanization and environment for better policies. Therefore this study will attempt to highlight the importance of city specific policy for sustainable development on the following:

- Provisioning of low cost housing for the urban poor in planned settlements.
- Urban development and urbanization policy
- City specific Environmental policy for sustainable development
- Policy on urban poverty

Relevance for policies on sustainable development

Therefore the results of the study will be used in policy formulation on;

- Population growth, urban employment, environment, service delivery (waste management, housing, water) for sustainable development
- Resource utilization for sustainable Industrial development (i.e. industrial development policy that integrates environmental issues)
- Sustainable urban development through appropriate urban planning (being mindful of the vulnerable groups and the environment)

Scientific objectives

General objective: Generate information that can be used for policy formulation, which will lead to sustainable urbanization through the integration of population, development and environmental issues

Specific objectives

- Determine the levels of pollution due to industrialization, siltation and solid waste management
- Determine the extent of wetland degradation through urban development
- Examine the trends of population growth and its impacts on the environment through coping strategies to earn a livelihood
- Assess the trends of industrialization and its role in generating migrants, unplanned housing and impacts on the environment

A brief Literature Review

Population

Data on population will mainly be obtained from the national census reports of 1969, 1980, 1991 and 2002. However research documents which handle specific issues on population will also be used. Mukulu (1994), Adeokun (1994) and Matovu (1994), MPED (1992) looked at methodology of integrating population data in development planning. This will be useful in providing information and methods of integrating population and development.

Poverty and vulnerable groups as they relate to population and development have been documented and presented through workshops and conferences. Omwony Ojok (1995) studied poverty and HIV/AIDS,

Environment

The Kampala District Environment Profile (NEMA 2001/02) is a general document covering the various environmental aspects of the district like wetlands, wildlife, waste management and population. It provides information on effects of human activities on wetlands and environmental implications of Kampala’s physical features. This information is very vital for this study in trying to relate P/D/E. This document lacks policy guidelines on natural resource utilization for sustainable urbanization and development. These gaps will be filled in by this study.

A considerable amount of research has been conducted on different aspects of the environment in Kampala and environment. On solid waste management, UEPF (1995), Mugabi (1998), Mpamize (1998), Nyakaana (2000), Namakula (2003) considered different aspects. Mugabi considered urban commercial wastes, Mpamize studied domestic solid waste and UEPF Nyakaana and Namakula considered waste management in Kampala in general. These studies are vital for the present study as they provide vital information regarding the solid waste problem in Kampala. This study will use this information to relate waste generation and management to P/D/E and based on that propose appropriate measures to improve solid waste management through enacting strong and effective legal and regulatory framework.

It will be important for this study to establish and analyse the infrastructure requirements for Kampala's garbage problem and the legal and regulatory requirements to sustain the established infrastructure. Studies have been carried out which indicate a deficiency in legal and regulatory framework as well as infrastructure requirements. KCC and The World Bank (2000) studied the level of garbage management and actors involved in garbage collection and disposal. While Plan International, (1997) studied the solid waste management problem and drainage. Sengendo (1997) also looked at governance and formulation of environmental strategy in Kampala.

On pollution JET (1994) Kasimwe et.al. (1995) and considered the levels of pollution in Lake Victoria as a result of the developments in the surrounding urban centers. While Kasimwe et.al studied aquatic pollutants and the effects on the distribution of planktons, JET identified five areas of consideration for pollution of lake Victoria namely; water hyacinth, industries, agriculture, human settlements and over population and illegal fishing, over fishing and legislation. These studies are useful for this project in an effort to integrate P/D/E.

Development

Urban development will be studied by focusing on urban housing, urban planning, incomes, industrialization and employment indicators. Available studies in Kampala indicate that urban development is occurring in a haphazard manner despite the existence of planning regulations and law. MOHUD (1990), The Kampala Urban study (1993), Kampala Structure Plan (1994) considered urban housing and planning. On the other hand MFEP (1994) carried out an inventory of industrial establishment in Uganda for different sectors. The statistics will be very useful in determining industrialization levels and trends in Kampala. On coping strategies, Nyakaana (1999), considered the street traders, a vulnerable but important group of the Kampala business life.
Data required for the project

<table>
<thead>
<tr>
<th>Variable</th>
<th>Nature of data</th>
<th>Source</th>
<th>Availability</th>
<th>Indicators</th>
</tr>
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</table>
| General information on Kampala | • Spatial digital database (scale 1:2500)  
• Topographic maps | • Lands and survey  
• Biomass  
• Ministry of Housing and Works  
• National Bureau of statistics | Available on purchase | % of growth  
migration rate  
proportion of migrants  
reason for migration occupation |
| Population | • Total population  
• Distribution  
• Migration  
• Policy issues  
• Population composition | • National housing and population censuses 1959, 1969, 19991, 2002  
• Demographic and health survey 1995  
• Population secretariat | Available  
Available | Type of housing  
Nature of housing  
Floor space  
Level of satisfaction  
Planning procedures  
Environmental consideration  
Average income  
Location of industries  
Types of ownership  
Number of employees  
Proportion of employees migrated |
| Development | • Urban housing Demand, housing stock, quality  
• Urban planning  
• Urban growth  
• Income  
• Industrialization  
• Spatial distribution  
• Types of products  
• Ownership  
• Level of employment  
• Policy | • Kampala urban study  
• Namuwongo housing project dossier  
• MOHW documents  
• Aerial photographs  
• Digital maps  
• Academic research doc.  
• Kampala master plan 1972  
• Kampala structure plan 1994  
• Detailed plans for parishes (Geography department)  
• Not available  
• Ministry of Tourism, Trade and Industry  
• Not available  
• Not available  
• Not available  
• KCC  
• Relevant policy statutes | Available  
Available  
Available for some few parishes  
Available  
To be collected  
To be collected  
To be collected  
Available | Area coverage  
Area change rates  
Area degraded  
Level of pollution  
Number of pollution  
Number of springs  
Waste generation rates  
Disposal practices |
Methodology

Several methods will be used systematically at various stages in conducting the research. Primary and secondary sources of information will be used. Primary sources will involve conducting interviews while secondary data will be derived from existing government documents, academic research findings, consultancy reports and news paper reports. Population and demographic changes will be analyzed using SPSS program basing on available population data and additional field collected data from the sample population of households on incomes and livelihood. A spatial analysis of these changes will also be analyzed using GIS. The urban development process and urbanization will also be analyzed using SPSS program and particularly correlations, regressions and multivariate analyses to elicit relationships between population dynamics and development. A spatial analysis of urban growth, industrialization and housing will also be done in a GIS environment focusing on the characterization of the relationships between population and demographic changes with urban development changes. Data for the analysis will collected by GPS and Remote Sensing on environmental variables; statistical analysis linked to GIS analysis will form the main technique for establishment of relations and interactions between population and environment. Land use changes, wetland degradation and pollution levels will be analyzed in a GIS through interpolation, overlays and trend analysis. GIS will be used because it integrates spatial with socio-economic data. Other data to be collected from the field with GPS is the spatial location of springs and waste disposal points. This data will be integrated with the existing GIS data acquired from existing spatial databases for further analysis. GIS and RS will be used for input, processing, analyzing and display of spatial data. For field surveys the sample size will be determined from a sampling frame, which will be derived from the National Census data for 2002 for selected administrative parishes within the study area. For qualitative data, content analysis technique will be used to establish relations and description between variables. This will be applied to data on urban planning in relation to population, development and environmental degradation indicators. These techniques are appropriate to the study because of the nature of data to be used.

Use and Valorization of Results

The results will be used in policy formulation on;

- Urban population growth, migration and livelihood
- Environmental consciousness in urban planning which caters for the vulnerable groups
- Industrialization without environmental degradation
- Pollution control measures
- Environmental friendly methods of waste management
- Integrated sectoral urban development that links population, development and environment

The valorization process of the results will involve;

- Conducting sensitization workshops for the different stakeholders i.e community, industrialists, urban planners, community leaders, ministry officials (Local government, Health, Tourism trade and Industry) Housing and Urban Development
- Developing a bottom-up approach to planning process
- Presenting the results to the relevant committees of parliament
- Policy formulation by the various organs of government
- Formulating Acts of parliament which integrate P/D/E
Bibliography

Ministry of Finance and Economic Planning, 1994, **Index of Industrial production**, Uganda, April 1995


Mpamize Kanyonyore S (1998) **Domestic Solid Waste Management in Nakawa Division Kampala** (M Sc)


National Environment Authority, 1996, **State of the environment report**, Kampala

Plan International, 1997, **drainage and Solid waste management study in Bwaise III**, Kampala

Sengendo, 1997, **Urbanization, Urban Governance and the environment: Critical conditions for formulating of an environmental strategy for Kampala-Uganda**, Mawazo Journal, Volume 7 No. 2, Makerere University, Kampala

The Uganda First Urban Project, 1993, **Kampala Structure Plan 1994**

The Uganda First Urban Project, 1993, **Kampala Urban Study 1993**

UEPF (1995,) **The Solid Waste Management Programme for Kampala City**

Nyakaana J.B (1999), **Youth in Development: Street traders of Kampala City Uganda**" in Uganda A country of Existence, Fountain Publishers Kampala


I. THE TEAM

1. The person in charge

<table>
<thead>
<tr>
<th>Name</th>
<th>Nyakaana</th>
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<tbody>
<tr>
<td>First name</td>
<td>Jockey Baker</td>
</tr>
<tr>
<td>Sex</td>
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<tr>
<td>Date of Birth</td>
<td>1955</td>
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<td>Nationality</td>
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<td>Position</td>
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2. The Center

Geography Department
Faculty of Arts MUK
Makerere University (MAK)
P.O Box 7062
Kampala - Uganda
Tel: 256 - 41 - 531261
Fax 256 - 41 - 542265
E-Mail geog@arts.mak.ac.ug

Person representing Organisation
Dr. Hannington Sengendo
Dean faculty of Arts
P.O Box 7062 K'la
Tel 256 41 542241
Fax 256 41 542265
Email faculty@arts.mak.ac.ug

3. Team members

<table>
<thead>
<tr>
<th>Surname</th>
<th>Other names</th>
<th>Center</th>
<th>Name of organisation</th>
<th>% working time</th>
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<td>Nyakaana</td>
<td>Jockey Baker</td>
<td>Geography</td>
<td>Makerere University</td>
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<tr>
<td>Lwasa</td>
<td>Shuaib</td>
<td>Geography</td>
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<tr>
<td>Mugisha</td>
<td>Sam</td>
<td>MUIENR</td>
<td>Makerere University</td>
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<td>Sengendo</td>
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<td>Makerere University</td>
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<td>Okiria</td>
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5. Presentation of the Team

The members of the team, especially members from geography department, have been together as a
research team on various projects. These projects include cross border trade in Eastern Uganda, Informal
Sector development and its role in employment creation in Kampala as well as various consultancies on
urban environmental management. This team existed before the call for proposals. All the team members
are researchers and lecturers at Makerere University, which is a public institution. The team members have
various materials at their disposal including software, access to Internet through the University-wide
network and some limited IT hardware. The team is comprised of highly qualified academicians with
proven research experience and quality. The diversity of background disciplines and specialisations will
add a resourceful dimension required for the success of the project since it requires multi-disciplinary and
multi-sectoral approach for integration of population, development and environment.

Given the diverse backgrounds of the research team, the project results will offer new integral and
crosscutting opportunities for further research, which will reinforce collaborative research between the
disciplines involved. Such will enhance and promote education by providing up-to-date information for
reference in teaching. The information generated will also allow the growth of expertise in integrative
studies.

Several members of the team have either individual or group partnerships with other Universities, local
and global research institutes. Members have relations with the University of Stockholm, University of
Bergen in Norway, the International Human Dimensions Program on Global Environmental Change and
Urbanization and Environmental Change Institute. Team members are also part of various research
networks involved in several issues such as Gender relations, Global Environmental Change scientists and
people, Place and Politics of Provisioning in Urban centers.

Non scientific partners also exist including local governments, NGO's, Community organisations and
private institutions. The team is composed of members of different and diverse background and
specialisations including gender, environment, GIS/RS, economic development, Housing, Population
studies and information systems. Therefore, the team does not lack expertise in demography, economics
agronomy and environmental studies. It is suited for the project and will carry out the research effectively.

II. WORK SCHEDULE

<table>
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<tr>
<th>Activity</th>
<th>Duration</th>
<th>Timeframe</th>
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<tr>
<td>Preparation for project</td>
<td>1 month</td>
<td>June 2003</td>
<td>• Study team</td>
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<td>• Setting office</td>
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<td>• Acquiring equipment</td>
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<td>• Organising and editing data layers (features, attributes and boundaries)</td>
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<td>Pre-field preparations</td>
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<td>July 2003</td>
<td>Dr. Nyakaana Mr. Lwasa</td>
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<td>• Preparations of Data collection instruments</td>
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<tr>
<td>Field survey</td>
<td>3 months</td>
<td>August 2003</td>
<td>• Dr. Nyakaana</td>
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</tbody>
</table>
- Field data collection
- Spatial Data capture

November 2003

- Mr. Mwebaze
- Dr. Sengendo
- Mr. Mugisha
- Mr. Lwasa

Analysis
- Statistical analysis (SPSS)
- Image Classification
- Spatial analysis and modeling (ILWIS & IDRIS)

3 months

October 2003 to December 2003

- Mr. Mwebaze
- Mr. Tumwine
- Mr. Mugisha
- Mr. Lwasa

Mid - term evaluation Report
- Drafting report

2 months

December 2003 to January 2004

- Dr. Sengendo
- Dr. Nyakaana
- Dr. Okiria

Submission of mid - term report

February 2004

- Dr. Nyakaana

Field verification

11 months
Including 20 weeks of field verifications spread through the period

March 2004 to February 2005

- Study Team

Pre-report drafting

4 months

November 2004 to February 2005

- Dr. Sengendo
- Dr. Nyakaana
- Dr. Okiria

Valorization Workshop
- Preparation and actual workshop

1 month
Including 2 weeks of travel for preparations

February 2005

- Study team

Final report drafting

1 month

March 2005

- Dr. Nyakaana
- Dr. Sengendo
- Dr. Okiria

Revision of report

3 weeks

April 2005

- Dr. Nyakaana
- Dr. Sengendo
- Dr. Okiria

Submission of report

First week of may 2005

<table>
<thead>
<tr>
<th>Team Member</th>
<th>Work Load in Months</th>
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<td>Mr. Mugisha Sam</td>
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Workload of Team