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**INTERNATIONAL PROGRAMME FOR RESEARCH ON THE
INTERACTIONS BETWEEN POPULATION, DEVELOPMENT AND
THE ENVIRONMENT (PRIPODE)**

APPLICATION FORM

**Application deadline: 28 February 2003
(electronic file)**

Dossier n°

Do not fill in

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To complete the application form follow the instructions given in the instruction note

Title of the project

Population, Development and Environment Linkage
at Farm Level in Uganda.

Name of the person in
charge

Dr. Muwanga James

Applicant Centre

Makerere University Institute of Economics

Country

Uganda

I - PROJECT SUMMARY

1. Project Title: Population, Development and Environment Linkage at Farm Level in Uganda.
2. Name of person in charge: Dr. Muwanga James
3. Address of the person in charge: <i>Postal address:</i> <i>MUIE</i> <i>Makerere University</i> <i>P.O. Box 7062,</i> <i>Kampala, Uganda.</i> <i>Email adresse:aggrey1970@yahoo.com</i> <i>Telephone:256-41-530115</i> <i>Fax:256-41-532355</i>
4. Centres or teams involved in the project: <i>Makerere University Institute of Economics</i>
5. Number of researchers involved in the project: 6 Researchers
6. Disciplines concerned by the project: Economics, Environment, Demography, Statistics, Agriculture
7. Area(s) of research: Uganda, National and Household Level
8. Key words describing the project (between 2 and 4 per heading) : <i>Population: Population growth, fertility rates</i> <i>Development: Agricultural Productivity, Incomes</i> <i>Environment: Environmental degradation, Fuel wood</i> <i>Geographical field: Uganda</i> <i>Methods of analysis: Quantitative and Qualitative methods</i> <i>Sources of data: National Population Census Reports and Primary Sources</i>
9. Summary of the project (no more than one page): Population, Development and Environment Linkages at Farm level in Uganda To Malthus and to his latter-day disciples (e.g. Meadows et al.1972, Demeny, 1981), demographic change is necessary to avert continued resource degradation and a declining standard of living. We may intuitively understand that human populations and their activities cause environmental change and that environmental change in turn affects the quality and condition of human lives, but the specific details of these interactions are still largely speculative. The triple challenge of rapid population growth, declining agricultural productivity, and natural resource degradation are not isolated from one another; they are intimately related. We need to know how households integrate demographic, income and resource use strategies, and how opportunities in one sector reinforce those in another. Understanding the interactions between household's employment off farm, for example, and

their incentive and capacity to invest in sustainable intensification is instrumental to strategic thinking and the way we approach development planning.

The working hypotheses include among others; Population pressure increases agricultural productivity and population growth is a neutral factor in the cause of environmental degradation. The research questions will include; What is the effect of rapid population growth on the environment and agricultural productivity? How are rapid population, agricultural productivity and environmental changes related?

This study on population, environment and development linkages at farm level is important because it provides a framework for understanding intersect oral linkages, and helps us also to define the context and very nature of individual linkages. Understanding how households behave, how they plan, how their strategies are formed and linked, is critical to understanding how programs and policies can best increase their welfare and reduce conflicts among goals. Today there is not only a need for better understanding of these interactions, but also one for urgent action to reduce the negative impact of these synergies.

This study will utilize explanatory approach. The conceptual framework will be based on “vicious circle model” which has become an influential paradigm in the discussion around population and sustainable development (Lutz, et al, 2000). Both the quantitative and qualitative methods will be utilized in the analysis of data. Data will be obtained from National Population Census reports of 1990 and 2002 and primary sources.

II – DESCRIPTION OF THE PROJECT (no more than 5 pages)

This description is left to the discretion of the candidates. It must, however include the following: the problem studied, the national importance of the problem, the relevance for policies on sustainable development, scientific objectives (problems covered by the research, working hypotheses, etc.), data (indicating among the data needed those which are already available and those which need to be collected), methodology (with emphasis on the concepts used), use and dissemination of results, bibliography.

Population, Development and Environment Linkages at Farm level in Uganda

Problem Statement

The triple challenge of rapid population growth, declining agricultural productivity, and natural resource degradation are not isolated from one another; they are intimately related. The challenge is how to achieve economic and environmental sustainability in the face of rapid population. What makes these problems so formidable is that sustainability and population growth are not independent problems and cannot be addressed

individually. Their solution is simultaneous and requires understanding not of how they are unique, but how they are linked.

We may intuitively understand that human populations and their activities cause environmental change and that environmental change in turn affects the quality and condition of human lives, but the specific details of these interactions are still largely speculative. Household strategies as the behavioral basis of population-environment-development links have not been adequately explored in Ugandan case. We need to know how households integrate demographic, income and resource use strategies, and how opportunities in one sector reinforce those in another. Understanding the interactions between household's employment off farm, for example, and their incentive and capacity to invest in sustainable intensification is instrumental to strategic thinking and the way we approach development planning. The same is true for household decisions about child bearing, decisions that are intimately linked to both income and sustainable land management strategies.

The impact of rapid population of Uganda which now stands at 3.3% per annum on the environment and agricultural productivity will be at the heart of this study. In addition, the recently concluded national population census (2002) indicated major demographic transition, whereby some districts registered high increases in fertility rates while in others there was a significant decline. This demographic transition in Uganda remains unexplained. There are possibilities that this demographic transition could be linked to income and environmental changes.

National Importance of the Problem

This study will address some of the fundamental development issues Uganda is facing such as rapid population growth which now stands at 3.3% per annum, poverty, and environmental degradation. Since these development issues currently facing Uganda are closely interconnected, they should be viewed together in national politics and development planning. This study on population, environment and development linkages at farm level is important because it provides a framework for understanding intersect oral linkages, and helps us also to define the context and very nature of individual linkages. In turn, policy and development programming can be improved by taking into account what we know about the compatibilities and inconsistencies among strategic objectives in these key sectors.

This study is also expected both to contribute to an academic discussion on the linkages between population, development and environment, as well as to support the formulation of better integrated development policies in Uganda that take into account population, capital, technological progress, increased productivity and natural resources management. The lack of understanding of strategic linkages can be dangerous, not only because it means stopping short of finding the best possible complementary solutions, but because a seemingly well conceived sectoral strategy can be easily

undermined by factors developing outside the sector, factors that need to be spotted and dealt with as part of the larger program strategy.

Relevance for Policies on Sustainable Development

This study will inform decision-makers in making choices in the policies and strategies to be integrated in the planning process. This study will lead to a better understanding of the linkages and complexities between population, environment and the economy. Understanding how households behave, how they plan, how their strategies are formed and linked, is critical to understanding how programs and policies can best increase their welfare and reduce conflicts among goals. The results from this study will contribute to the formulation of policies and strategies that will contribute to sustainable national development.

Scientific Objectives

This study will be addressing the problems of population pressure, declining agricultural productivity and environmental degradation. The hypotheses include among others;

- The perception of population pressure is unknown to households where wealth flows from the younger to the older generation.
- Population pressure causes populations to intensify their systems of agricultural production with more, improved inputs, better farming techniques, etc. that increases agricultural productivity.
- Population growth is a neutral factor in the cause of environmental degradation.

The research questions will include;

- What is the effect of rapid population growth on the environment?
- How does the increase in fertility influence agricultural productivity?
- How are rapid population, agricultural productivity and environmental changes related?
- Is the contraception/ family planning route or the nature preservation route sufficient to address recurrent demographic dynamics and environmental degradation?
- How can the traditional forms of collective decision making and responsibility sharing practices be revived in order to address the problems related to different aspects of population, environment and livelihoods?
- What are the determinants of fertility rates in Uganda more especially those that have led to sharp demographic transition in some districts?
- Do the environment and income changes have any effect on fertility rates in Uganda?
- What are the coping strategies in resource use and management?
- What are the determinants of environmental degradation and agricultural productivity?
- What is the impact of low incomes as a result of decline in land productivity on fertility rates?

Literature Review

The demographic response has been a focal point since the time of Malthus who noted the higher mortality through, disease, war, famine and other positive checks that populations endure as they adjust to the carrying capacity of their resource base (Malthus, 1798). To Malthus and to his latter-day disciples (e.g. Meadows et al. 1972, Demeny, 1981), demographic change is necessary to avert continued resource degradation and a declining standard of living.

The neoclassical economics perspective contends that population growth is seen as a neutral factor in the cause of environmental degradation and indeed increased population may lead to increased innovation which in turn can act to minimize environmental impacts of humans. It is argued that allowing the market to function properly is the most important means to ensuring environmental protection.

Natural science perspective contends that environment does not have an unlimited ability to meet human demands and that growing population will at some point reach those environmental limits. As a result, population control is an essential element of efforts to protect the environment. There are no natural limits to economic and population growth and that human ingenuity and technological know how can overcome natural resource limits and pollution problems (Tectelbaum and Winter, 1993).

The combination perspective argues that ensuring environmental protection will require identifying on case by case basis the ultimate drivers of degradation. Meanwhile, attempts to control population growth will provide some interim reduction in the level of environmental impacts.

The main place where environment, population, and development interact is the farm itself (Clay et al, 1998), and this is important because farmers constitute the vast majority of Ugandan population. Farm households and their livelihood strategies are at the core of the intersect oral linkages between population, development and environment. What happens on the farm affects whether and how much farmers need to rely on the commons for new farm land to extensify, or for alternative income through selling wood or herding.

Population, environment and development are highly interactive. Fertility, mortality and migration patterns can all influence income strategies and the ways in which households manage land and other resources, but these population variables are in turn affected by household income and resource management. As countless studies have shown, incomes and access to resources can be important determinants of household migration. Likewise fertility and mortality rates are known to vary with income levels and landholding. In Rwanda, for example, it was shown that access to land, resulting higher incomes and better nutrition, has increased household labor through lower mortality (Clay and Johnson, 1992).

Extremely complex concepts, questions and processes have been interpreted in too simplified a fashion. The result is that the nation states and international development agencies have frequently tended to limit themselves to easy or immediate issues such as birth control or the establishment of strictly protected areas, and failed to address wider basic needs and social development issues (Clay, 1998).

The United Nations Conference of the 1990s drew attention to the world's major developmental challenges. Each of these challenges notably environmental degradation and depletion of natural resources and population are generally more pronounced in Africa than any other part of the world. In addition, many studies have shown that all these elements are part of the web of strong and intricate causal relationships that often reinforce each other. Today there is not only a need for better understanding of these interactions, but also one for urgent action to reduce the negative impact of these synergies. This is the starting point of this study. No study has been carried out to shed light on the interactions between population, environment and development process in Ugandan case. Policy makers in Uganda lack policy choices from which to choose from to attain sustainable development.

Data

This study will utilize some of the already collected data during the national population census of 1990 and 2002. The data that is available from these population census reports include; fertility rates, population growth rates, energy consumption more especially fuel wood, mortality rates, household incomes, ownership of animals, types of houses, household expenditure patterns, cultivated land area, etc. Other sources for secondary data will be government publications more especially the statistical abstracts and Background to the budget (various issues) where some relevant variables such as energy consumption more especially fuel wood, demographic variables and income data will be extracted. To complement the information and data that is already available, we shall carry out a survey to get information on; technological adoption, decisions and behavior about child bearing, perceptions, strategies for integrating demographic, income, resource use and management, incentives to invest in sustainable livelihoods, determinants of fertility, environmental degradation, and agricultural productivity and any other information that is relevant to the study. The primary data and secondary data will be used to test our hypotheses and to answer the research questions.

Methodology

This study will utilize explanatory approach. The conceptual framework will be based on "vicious circle model" which has become an influential paradigm in the discussion around population and sustainable development (Lutz, et al, 2000). It essentially assumes that high fertility and poverty are bound up in a web of interactions with environmental degradation in such a way that stress from one of the sources can trap certain rural societies, especially those living in marginal areas into a vicious circle of increasingly destructive responses. For instance, the growth of the population in rural areas contributes to the degradation of land, if not broken; the vicious circle would lead to ever increasing land degradation. From a theoretical point of view,

this vicious circle model is a useful contribution towards a unifying framework in casually linking fertility, agricultural productivity and environmental degradation. Demographic and development factors reinforce each other. High fertility and population growth exert negative influences on economic development and low levels of economic development provide the climate favoring high fertility and hence rapid population growth. The hypotheses to be tested will include; Population pressure increases agricultural productivity, population growth is a neutral factor to the cause of environmental degradation and the perception of population pressure is unknown to households where wealth flows from the younger to the older generation.

Both the quantitative and qualitative methods will be utilized in the analysis of data. This project takes into account interdisciplinarity by having team members from different but complimentary disciplines.

Use and Dissemination of Results

We shall utilize all the available means for the utilization and dissemination of the results such as workshops, publications, etc. More specifically, we shall organize special workshops targeting politicians, bureaucrats, academia, journalists, NGOs and other relevant groups. The member of parliament who has also been appointed the State Minister for Information in the recent ministers reshuffle who is a member of our team will play a crucial role in feeding the study results in government working documents and programs. All these channels will maximize the utilization and dissemination of the study findings.

Bibliography

- Lutz, W and Scherbov, S.(2000); Quantifying vicious circle dynamics: The PEDDA model for population and environmental development and agriculture in African Countries, in E. Dockner, R. Hartl, M. Luptacik and G. Sorger eds. Optimization, Dynamics and Economic Analysis, Springer/Physica.
- Clay, D. and Nan Johnson(1992). "Size of farm or Size of the Family: Which comes First?" *Population Studies*, 46:491-505.
- Clay, D.(1998). Population and Sustainability: Understanding Population, Environment and Development Linkages. *Sustainability in Agricultural and Rural Development*. Aldershot, England: Ashgate.
- Clay, D. and Thomas Reardon. 1996. "Linking Population, Development, and the Environment: How households confront Poverty and Demographic Pressure in Rwanda." Michigan state University population Research Group. Research paper Series. Paper 96-04.
- Demeny, P.1981. "The North South Income Gap: A Demographic Perspective." *Population and Demographic Review*.7(2):297-310.
- Malthus,T,R.1798. An essay on the Principle of Population. New York: August Kelly., Book Seller: reprinted in 1965.
- Meadows,D. H.,j Randers and W.BehrensIII. 1972. The Limits to Growth: a report for the Club of Romes Project on the Predicament of mankind. London. Earth Island.

III - THE TEAM

1. Person in charge

Name: Dr Muwanga **First name:** James
Sex: Male **Date of birth:** January 05,1965
Nationality: Ugandan
Current position: Senior Lecturer

2. The Centre

(the Centre is the institution which will receive the funds if the project is selected)

Name: Makerere University Institute of Economics
Acronym: MUIE

Postal address: P. O. Box 7062, Kampala, Uganda.....
Telephone: 256-41-530115..... **Fax:** 256-41-532355

E-mail: econinst@muie.mak.ac.ug

Give the complete name and position of the person representing the organisation:

Name: Associate Professor Ddumba Ssentamu
Position: Director

3. Table of the members of the team

Name	First name	Parent organisation	Proportion (a)
Asiimwe	Florence	Department of Sociology, Makerere University	30%
Niringiye	Aggrey	Makerere University Institute of Economics, Makerere University	40%
Mbowa	Swaibu	Department of Agricultural Economics, Makerere University	40%
Tuyiragize	Richard	Institute of Statistics and Applied Economics, Makerere University	40%
Buturo	Nsaba	Member of Parliament/ State Minister of Information, Uganda	30%
Muwangga	James	Makerere University Institute of Economics	50%

(a): proportion (in %) of working time dedicated to the project

4. Individual forms

Researchers taking part in the project for more than 30% of their working time must each fill out an individual form (model attached: cf. p. 11).

5. Presentation of the team (no more than 2 pages)

Indicate the origin of the team, the institutions the researchers are affiliated to, the means available to the team, the comparative advantages of the team, the specific objectives of the team in terms of training, and of the dissemination and transfer of results, the organisations the team is working with and its needs in terms of expertise and consulting for it to be able carry out the project.

1.Name: Muwanga.....**First name:** James
Sex: Male**Date of birth:** January 5th,1965
Nationality: Ugandan
Organization: Makerere University
Complete address: MUIE, P.O.Box,7062,
City: Kampala.....**Country:** Uganda
Telephone:256-41-530115...**Fax:**256-41-532355
Email address: aggrey1970@yahoo.com
Current position: Senior lecturer
Main Degrees(title, University, year):
PHD(Economics), Utah State University,1998
Discipline(s) specialised in: Economics

Dr Muwanga James is an experienced researcher, academician and consultant. His comparative advantage as far as this project is concerned is his expertise in agricultural productivity and sustainable livelihoods.

2. Name:Niringiye.....**First name:** Aggrey
Sex: Male.....**Date of birth:** November 17, 1970
Nationality: Ugandan
Organization: Makerere University
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Telephone:256-41-530115 **Fax:**256-41-532355
Email address: aggrey1970@yahoo.com
Current position: Lecturer
Main Degrees (title, University, year):
MA(EPP), Makerere University, 2000.
Discipline(s) specialised in: Economics

Main Publications during the last five years relating to PRIDODE:

Japanese post war planning experience: Lessons for developing countries, Institute of developing Countries, Japan, VRF series No315

Niringiye aggrey is an experienced researcher, academician and consultant from the Institute of Economics, Makerere University. His comparative advantage as far this project is concerned is his expertise in demography and qualitative research.

3. Name: Mbowa **First name:** Swaibu
Sex: Male..... **Date of birth:** March 28, 1964
Nationality: Ugandan
Organization: Makerere University
Complete address: P.O.Box, 7062,
City: Kampala..... **Country:** Uganda
Telephone: 256-41-531152
Email address: mbowas@agric.mak.ac.ug
Current position: Senior Lecturer
Main Degrees (title, University, year):
PHD (Production Economics), University of Natal, South Africa, 1997
Discipline(s) specialised in: Agricultural economist

Dr Swaibu Mbowa is an experienced researcher, academician, and consultant from the Department of Agricultural Economics, Makerere University. His major comparative advantage as far as this study is concerned is his expertise in agricultural productivity and environment.

4. Name: Tuyiragize **First name:** Richard
Sex: Male..... **Date of birth:** July 18, 1969
Nationality: Ugandan
Organization: Makerere University
Complete address: P.O.Box, 7062,
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Telephone: 256-41-530115
Email address: tuyirag@yahoo.com
Current position: Lecturer
Main Degrees (title, University, year):
Msc (Statistics), Makerere University, 1998
Discipline(s) specialised in: Statistician

Tuyiragize Richard is an experienced researcher, academician, and consultant from the Institute of Statistics and Applied Economics. His comparative advantage as far as this project is concerned is his expertise in statistical analysis and quantitative research.

5. Name: Asiimwe **First name:** Florence
Sex: Female **Date of birth:** February 15th, 1960
Nationality: Ugandan
Organization: Makerere University
Complete address: Department of Sociology P.O.Box, 7062
City: Kampala..... **Country:** Uganda
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Email address: florenceakiiki@hotmail.com
Current position: Lecturer
Main Degrees (title, University, year):

MA, ISS-The Hague, The Netherlands, 1990

Discipline(s) specialised in: Sociologist

Akiiki Florence is an experienced researcher, academician and consultant from the Department of Sociology, Makerere University. Her comparative advantage as far this project is concerned lies in her understanding of the theoretical social behaviour of households and expertise in qualitative research.

6. **Name:** Buturo.....**First name:** Nsaba

Sex: Male.....**Date of birth:** March 18th, 1951

Nationality: Ugandan

Organization: Parliament of Uganda

Complete address: P.O.Box, 33899.

City: Kampala.....**Country:** Uganda

Telephone: 256-41-235023.....**Fax:** 256-41-231296

Email address; njbuturo@parliament.go.ug

Current position: Member of Parliament/ State Minister for Information

Main Degrees (title, University, year):

PHD in Development Administration, Birmingham University, 1998

Discipline(s) specialised in: Development Administration

Dr Buturo Nsaba is an experienced researcher, academician, bureaucrat, politician and consultant. His comparative advantage as far this project is concerned is his position as the Member of Parliament and currently the state minister for information. His political and bureaucratic networks will be taken advantage of in the utilisation, transfer, and dissemination of research results.

IV - WORK SCHEDULE

a) Research work carried out before the mid-term evaluation (from June 2003 to February 2004)

Literature Review(June-August 2003)

Collection of Secondary Data(June- August 2003)

Pre-testng questionnaires(July-August 2003)

Collection of Primary Data(September- November 2003)

Data entry(December 2003)

Data analysis(December 2003)

b) Drafting of the mid-term report (for February 2004)

Drafting the midterm report(January 2004)

c) Research work carried out after the mid-term evaluation (from March 2004 to February 2005)

Collection of Secondary data(March-October 2004)

Collection of Primary data(March -October 2004)

Data entry (November 2004)

Data analysis(November 2004)

Revision of the midterm report(December-January)

d) Drafting of the pre-report (for March 2005)

Drafting of the pre-report

e) Meeting of Centres (March 2005)

Meeting of the centres(March 2005)

f) Final drafting of the provisional report (for April 2005)

Drafting the final provisional report(March- April 2005)

g) Revision of the report after evaluation by the scientific Committee (April-May 2005)

Revision of the final report to include comments from the Scientific Committee(April - May 2005)

Submit the final report(May 2005)