UNIVERSITY OF DAR ES SALAAM

INSTITUTE OF RESOURCE ASSESSMENT

Annual Report

July 2005 – June 2006

The Vision

"to become a high performance and reputable institution that excels in research, teaching and service provision to the community in natural resources management at national, regional and international levels".

Our Mission

"to enhance sustainable capacity in human, financial and physical resources in order to excel in quality research, teaching and service provision to the community in natural resources management; and further IRA's image as a centre of excellence in knowledge creation and skills development at a postgraduate level".

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ACRONYMS

AIACC – Assessment of Impact and Adaptation to Climate Change
CACO – Chief Academic Officer
CBD – Convention on Biological Diversity
CLEHA – Climate – Environment and Human Dynamics in Africa
EAAIA – Eastern Africa Association for Impact Assessment
EAC – East African Community
EIA – Environmental Impact Assessment
GIS – Geographical Information System
HADO – Hifadhi Ardhi Dodoma (Land Conservation Project in Dodoma)
IDS – Institute of Development Studies
ILRI – International Livestock Research Institute
IRA – Institute of Resource Assessment
IUCN – International Union for Conservation and Natural Resources
IWSD – Institute of Water and Sanitation Development
KEA – Kondoa Eroded Area
MALISATA – Man-Land Inter-relations
NBS – National Bureau of Statistics
NEMC – National Environment Management Council
OPAC – Open Public Access Catalogue
SAREC – Swedish Agency for Research Cooperation
SASA – Sustainable Agriculture in Semi-Arid Areas
SEA – Strategic Environmental Assessment
SUA – Sokoine University of Agriculture
TANAPA – Tanzania National Parks
TANESCO – Tanzania National Electric Supply Company Ltd
TANRIC – Tanzania Natural Resources Information Centre
UCLAS – University Colleges of Lands and Architectural Studies
UDSM – University of Dar es Salaam
UNDP – United Nations Development Programme

VPO – Vice President's Office
WARFSA – Water Research Fund for Southern Africa
WWF – World Wildlife Fund For Nature

BOARD OF DIRECTORS

The Board that started in 2002/03 has continued to provide guidance to IRA.

List of IRA Board Members
(2002/03 – 2003/07)

1. **Prof. Raphael B.B. Mwalyosi,** Director/Chairman, Institute of Resource Assessment, University of Dar es salaam[1].
2. **Mr. Richard Muyungi,** Assistant Director, Division of Environment, VPO
3. **Mrs. Ester C.J. Kerario**, Director EIA/SEA, NEMC[2]
4. **Mrs. A. Kaduma,** Director of National Food Security, Ministry of Agriculture and Food Security
5. **Mr. J.M. Mihayo,** Assistant Director, Water Resources Development, Ministry of Water and Livestock Development
6. **Dr. S.H. Sinda,** Institute of Development Studies (IDS) University of Dar es Salaam
7. **Prof. S. Misana,** Head, Geography Department, University of Dar es Salaam[3]
8. **Dr. C.Z Kaaya,** Geology Department, University of Dar es Salaam
9. **Dr. J.L.M. Shitundu,** Economic Research Bureau, University of Dar es Salaam
10. **Prof. J. Nawe,** University Library Services, University of Dar es Salaam

[1] Resigned in October 2005 to pursue a political career as Member of Parliament.
[2] Deceased. Replaced by Mr. B.T. Baya
[3] Promoted to Deputy Principal, Dar es Salaam University College of Education, replaced by Dr. Cosmas Sokoni.

11. **Mr. R. Musingi,** Regional Administration and Local Government, Dodoma
12. **Prof. S. Iddi,** Director, Forest and Beekeeping, Ministry of Natural Resources and Tourism, Dar es Salaam.[4]
13. **Prof. J.O. Ngana,** Coordinator, Natural Resources and Environment, Institute of Resource Assessment, University of Dar es Salaam
14. **Dr. H. Sosovele,** Associate Director, Institute of Resource Assessment, University of Dar es Salaam
15. **Prof. I. Kikula,** UCLAS/IRA,
16. **Prof. N.F. Madulu,** Coordinator, Population and Human Settlement, Institute of Resource Assessment, University of Dar es Salaam
17. **Prof. P.Z. Yanda,** Coordinator, Information Technology and Remote Sensing, Institute of Resource Assessment, University of Dar es Salaam[5]
18. **Dr. A. Majule,** Coordinator, Agriculture, Food Security and poverty Alleviation, Institute of Resource Assessment, University of Dar es Salaam
19. **Dr. F. Shechambo,** Coordinator, Social Policy Analysis, Institute of Resource Assessment, University of Dar es Salaam.
20. **Mrs. A. Hollella,** Representing the Supporting Staff, Institute of Resource Assessment, University of Dar es Salaam
21. **Mrs. E.G. Mosha,** Administrative Officer/Secretary, Institute of Resource Assessment, University of Dar es Salaam

[4]Replaced by Mr. I.Y. Mnangwone
[5] Promoted to Acting Director to replace Professor Mwalyosi.

DIRECTOR'S FOREWORD

During the reporting period (July 2005 – June 2006), the Institute of Resource Assessment (IRA) continued to prepare a number of Programmes as a way of implementing the Research Agenda and Strategic Rolling Plan. The IRA concentrated on the following activities:

- Implementation of the Research Agenda;
- Implementation of the NARAM Master's Programme;
- Conducting Applied Research;
- Providing Community Services
- Teaching and Supervision of other Postgraduate students

The IRA continued with the implementation of the project planning process whereby research proposals from IRA staff members were submitted to various funding agencies. The proposals are based on the five thematic areas presented in the IRA Research Agenda namely:

- Natural Resources Management;
- Environment;
- Agriculture, Poverty Alleviation and Food Security;
- Population and Human Settlement;
- Social and Policy Analysis.

The Institute successfully launched the implementation of the new Natural Resources Assessment and Management Masters Programme, with the admission of the first batch of 13 students. At the time of this reporting, the students have already completed their coursework, and they are embarking on the research part of their studies. A new batch of students has been selected for the next academic year.

SECTION ONE: OVERVIEW OF THE INSTITUTE (IRA)

1.1 Institutional Set-Up

The Institute's mandate remains as presented in the 2004/05 Annual Report as per its interim constitution that stipulates its establishment, administrative structure and staffing. The Director manages the Institute. He is an appointee of the University Council and reports to the Chief Academic Officer (CACO).

Through the office of the Director, IRA has two participatory organs to facilitate decision-making i.e. IRA Board and a Management Committee. The former is a statutory organ of the University whereas the latter is an informal but useful arrangement to assist the Director to exploit the fertile treasure of ideas from members of the Institute.

The Director is assisted by Associate Directors (one for Academic and another for Administrative matters); an Administrative Officer, and an Accountant. Finally, the Director supervises 5 research team leaders or co-ordinators that also form the Management Committee. These are principal advisors to the Director and are responsible for planning and reviewing the institute's research activities. The Management Committee may also co-opt other staff when necessary and include a representative from the non-academic staff.

1.2 Management and Administration

1.2.1 Management committee

Name	Position
Prof. R.B.B. Mwalyosi[6]	Director
Dr. H. Sosovele	Associate Director- Administration
Dr. F. Shechambo	Associate Director- Academic & Coordinator, Social & Policy Analysis
Prof. N.F. Madulu	Co-coordinator, Population and Human Settlements
Prof. J.O. Ngana	Coordinator, Natural Resources and Environment.
Dr. A. E. Majule	Coordinator, Agriculture, Food Security & Poverty Alleviation
Prof. P. Z. Yanda	Co-coordinator, Remote Sensing and Information Systems
Ms. E. Mosha	Administrative Officer/Recorder
Mr. C Msonganzila	Administrative staff

1.2.2 Staff matters

During the academic year 2005/2006 the number of staff members stood at 36 (18 academic, 8 technicians and 10 administrative staff). During the period two new Assistant Research Fellows, Ms. Catherine Massao and Mr. C. Silangwa were recruited. Dr. Amos Majule was promoted to Senior Research Fellow, and Dr. James Lyimo successfully defended his PhD Dissertation in December 2005, and he was promoted to a full Research Fellow. Ms Kiwasila continued to work on improving quality and content of her PhD Dissertation. Ms. Anna Mushi embarked on BSc studies in Computer Science under government sponsorship.

[6] Resigned in October 2005 to pursue a political career as Member of Parliament. Replaced by Professor P.Z. Yanda

1.3 Links and Collaboration

During 2005/2006 the Institute continued to maintain links with local, regional and international Institutions. Continuing links include those with Population Reference Bureau (USA), and the French University of Aix Marseille on research in Climate-Environment-Human Interactions in Africa.

Also, collaboration was continued with several regional institutions including: the Institute of Water and Sanitation Development (IWSD); the Water Research Fund for Southern Africa (WARFSA); World Wildlife Fund for Nature (WWF); International Union for Conservation of Nature and Natural Resources (IUCN), Southern Africa Institute for Environmental Assessment; International Association for Impact Assessment and; Eastern Africa Association for Impact Assessment (EAAIA).

Within Tanzania, collaborative research also continued with the Institute of Development Studies, Economic Research Bureau, Constituent College of Engineering, and Faculty of Science of the University of Dar Es Salaam. Public service contacts were undertaken on a routine basis with government ministries such as Vice President's Office, Ministry of Natural Resources and Tourism, Ministry of Agriculture and Food Security, Ministry of Water and Livestock Development, and Ministry of Regional Administration and Local Government. Other partners in public service included Tanzania National Parks (TANAPA), National Environment Management Council (NEMC) and the National Bureau of Statistics (NBS). Also IRA continued to provide public services to international NGOs and development partners such as WWF, UNDP and USAID.

1.4 Development of Physical Infrastructure at the Institute

1.4.1 Library Services and Documentation Unit

In the year 2004/2005, the IRA Documentation Unit continued to provide reading materials to Institute staff, other university staff, graduate and undergraduate students. The Documentation Unit is now fully computerised. Over 150 paper/books have been catalogued and linked to the Main Library Computerized Open Public Access Catalogue (OPAC). That means a reader can access documents successfully from the Main Library web site.

Some individuals and organizations continued to donate publications, books and journals to IRA Documentation Unit. Some of these Institutions include CIFOR; IIED; Zed Books; FAO; UNDP; ILRI (International Livestock Research Institute) and Chr. Milchelsen Institute.

1.4.2 Information and Communication Technology Infrastructure

The computer facilities owned by the Institute offer several services including running a computerized information system in Natural Resources and the Environment; data processing and analysis of GIS activities; image processing; word processing; and database management including EIA. A computer has been installed in the documentation unit and links Internet services with the main University library. The IRA website is up and running providing information to our stakeholders.

SECTION TWO: TRAINING AND TECHNICAL SERVICES

2.1 Short-Term Training

2.1.1 Communicating Environmental Research to Policy Makers

IRA planned to conduct another two-week International policy communication workshop for participants from all-over Africa. The objective of the workshop was to train participants how to maximize policy makers' and planners' use of research results that illustrate the interaction of population, health and environment variables. However, the workshop was postponed to a later date because only few applicants applied.

2.1.2 EIA Training to TANAPA Staff

A training workshop was organized for all TANAPA Staff at Mto wa Mbu, about the EIA process in relation to the Environmental Management Act and TANAPA procedures.

Trainer: Dr. H. Sosovele

2.2 Teaching and Supervision

During the year under review, members of academic staff participated in the following activities that are related to teaching and supervision.

1. Prof. N Madulu is a co-supervisor of Mr. Haule, Michael J. doing PhD on "Population Dynamics and Sustainable Catchment Forest Conservation: A Case Study of Matogoro and Litenga Catchment Forests in Songea District in Tanzania", University of Kwazulu Natal, School of Development Studies.

2. Prof. I. Kikula: supervised Mr. Ndangarasi of Botany Department in his PhD studies; also supervised dissertations of undergraduate students in URP at UCLAS; and was external examiner at NTNU, Norway.

3. Prof. P. Yanda: supervised Mr. A. Lyimo of IRA who has just completed his MSc. Studies and; supervised Mr. C. S. Sokile who has already submitted his PhD Thesis.

2.3 Preparation of Teaching Programme and Curricular

During the year under review, members of staff continued working on various aspects of the Masters Degree Programme named ***Resource Assessment and Management (NARAM)*****.** At the time of this reporting, the draft courses and modules had been prepared and approved by the higher authorities at the University of Dar es Salaam. Advertisements and information to the public has also been issued. The programme started during the 2005/06 academic year.

SECTION THREE: RESEARCH AND COMMUNITY SERVICES

3.1 Completed Research and Community Services

3.1.1 Risk Perception, Land Use and Labour Migration in Northern Tanzania

This research exploratory study designed to examine and characterize local assessment of risks and evaluate how perceptions of risk are changing overtime. The study aimed to identify the risks people associate with alternative livelihood strategies as they affect household economics, health and labour migration; and gauge the perceived severity of hazards and what determines these assessments at the household level. The study was in six villages located in Simanjiro and Kiteto Districts in Manyara Region. The six study villages that were covered are Landanai, Kitwai, Engerosoingine, Namerok, Terrat and Loiborsirret. Risk identification was done using a risk questionnaire containing unstructured questions. Data collected enabled calculation of risk incidence, severity and risk index. Risks or concerns of high incidence and severity identified by 184 respondents and as an outcome of application of the risk ranking formula were water shortage, lack of health services, livestock diseases, crop vermin, seasonal food insecurity, inadequate primary schools, drought, lack of arable land, hunger and starvation, lack of transport, income poverty, HIV/AIDS, lack of pasture and lack of agricultural inputs. The report suggests a number of mitigation measures for solving the above risks that exposes people to poverty, poor health status and welfare. This work was done in collaboration with Carolina Population Center,

University of North Carolina and the Institute of Behavioural Science of the University of Colorado, and it took place between September 2004 and -January 2006.

Researchers: Prof. N Madulu and H Kiwasila

3.1.2 Implications of Customary Laws for Implementing Integrated Water Resources Management (2003-2005)

This DFID-funded project was motivated by the fact that the current water reforms in most southern African countries focus on the use of statutory legal systems to regulate the use of water resources. However, these countries have pluralistic legal systems - land and water resources are regulated by different pieces of legislation and institutions, including statutory law, customary laws of different ethnic groups and Islamic law. Especially in poor rural areas, diverse customary laws are often more important than statutory law and are relied upon in developing access to natural resources and resolving management conflicts. Neglect of customary laws may cause IWRM implementation to fail, or will have negative consequences for individuals and groups who were better served by customary-based systems – especially the poor.

The project's goal was: 'significant improvements are made to the lives and livelihoods of poor men, women and children in Southern Africa'; and the purpose of the project was 'more sustainable and equitable water management policy and practice are established in southern African countries'. The project aimed at achieving the following outputs:

1. New knowledge derived on local water rights, and the complementarities and contradictions between statutory and customary systems in addressing equity and access issues, development and management of water resources, with particular focus on poor people's livelihoods.
2. Guidelines – 'good practice' knowledge resource – developed for taking account of customary laws in the delivery of more effective and equitable IWRM under plural legal systems in Southern Africa.

3. Awareness - capacity and practice of river basin managers and IWRM policy makers in taking account of plural legal systems for IWRM significantly improved, communities' voices heard and their customary arrangements better understood.

The project had 3 components: case studies, development of guidelines and awareness raising. Case studies in 3 countries (Tanzania, South Africa and Zimbabwe) were developed through the following stages:

- Literature review
- Archival search
- Fieldwork
- Presentations to workshops and symposia to validate the findings.

During the course of the project, a total of 7 conference and symposia papers were presented in Dar es Salaam (Tanzania), Gaborone (Botswana), Windhoek (Namibia) and Johannesburg (South Africa). Two of the conference papers were later published in Physics and Chemistry of the Earth. The

case studies have also been published on the project website at www.nri.org/waterlaw.

Two guidelines have been developed. One 4 page guideline is targeted at policy makers. This is based upon the outcomes and statement of the African Water Laws conference (already published at www.nri.org/waterlaw/workshop). The second 6-page guideline is targeted at catchment managers. Both guidelines were validated and honed during training workshops to be held in Tanzania and South Africa.

Results and Conclusions

- The South African case study explores the continuing 'secondary status' of African smallholder water users in the former Lebowa and Kwa Ndebele homelands, compared to the former white-dominated areas in the Olifants Basin. It compares the implementation of the Water Act of 1956 in the former white areas, with implementation in the former homelands by customary tribal authorities.

- The Tanzanian case study surveys the increasing pressure on water resources and the efforts by the government to fix property rights and formalise informal arrangements related to the use of water resources. The case study considers the new roles of established Basin Water Boards and Basin Water Offices in management of water utilisation by different users, especially traditional rights holders, and the extent to which the proposed legislative dispensation

will protect the existing traditional or customary water rights.

- The Zimbabwean case study documents findings from Guruve district in the Manyame Catchment, where culture and lifestyle is still deeply influenced by customary laws and values, compared to other parts of Zimbabwe.

The 3 case studies show that, so far the weight given to customary law in the water sector reform programme has not been substantial and empirical evidence indicates that the survival of customary practice is almost always overshadowed by the reality that the legal supremacy of the imposed law is clearly established. In the case of conflict between local people and the state, it is this imposed legal regime that is authoritative. Also, the findings show that there is a general lack of understanding about customary law among water management practitioners and policy makers in the 3 countries.

Researchers: Dr. F.P. Maganga, Ms. H. Kiwasila, Prof. I.H. Juma, Dr. J. Butterworth, Mr. M. Morris and Dr. B. van Koppen

3.1.3 The Changing Livelihoods in the Maasai Plains – Implications on Poverty Levels and Sustainability of Natural Resource Base

This study is funded by REPOA. Two fieldworks have been conducted and progress reports ware submitted and presented to the Annual REPOA Workshop
Objectives of this study are the following;

- Identify responsive mechanisms as a strategy to alleviate poverty and improve the standard of living in the study area,
- Examine whether such livelihood strategies have helped alleviate poverty in the study area,
- Examine the evolution of the poverty alleviation strategies in relation to dwindling natural capital in the study area,
- Propose tenable poverty alleviation strategies as the basis for achieving improved standard of living and sustainable use of the natural capital.

Final report has been submitted.

Researchers: Prof. P. Yanda and Mr. C.M.P. William

3.1.4 Development of Poverty-Environment Indicators in Tanzania

The overall aim of this work was to develop a set of indicators linking poverty and environment in Tanzania that can be used to understand poverty-environment interactions and to monitor poverty reduction that can result form environmental change. The specific objectives of the consultancy include (i) to assess and determine the different use of poverty-environment indicators from local to national levels, (ii) to identify existing data collection systems and surveys producing, or with the potential to provide poverty-environment indicators, (iii) to propose a core set of poverty-environment indicators for use by the poverty monitoring systems and the local level; planning and (iv) to build national capacity on development and use of poverty-environment indicators.

The VPO/UNDP funded this work as part of the process to revise the Poverty Reduction Strategy and Poverty Monitoring System. Data collection has been completed and a final report submitted to the VPO. The work was undertaken in collaboration with Environmental Resources Management (ERM) of the United Kingdom. The Final Report has been already been submitted to VPO/UNDP.

IRA Researchers: Dr. H. Sosovele; Prof. R. Mwalyosi; Dr. R. Kangalawe; Dr. Emma Liwenga and Dr. F. Shechambo.

3.2 Ongoing Research and Consultancy

3.2.1 Systems Research on Small Groundwater Retaining Structures under Local Management in Arid Areas of East Africa (REAL)

A consortium of research institutes is undertaking this research project with funding from the European Union (EU). The main focus of the research is to explore ways and options of community participation in land and water management, taking small groundwater retaining structures as a case in point. The main emphasis is placed on the role of community participation in East Africa in planning, construction and management and evaluation of the performance of the groundwater retaining structures for humans, wildlife and livestock. It should be noted that this research project comes at a time when most Sub-Saharan Africa is experiencing recurrent drought or sometimes too much rain, which simply percolates underground, or flows all the way to the sea and disappears there, leaving behind people who face and have to cope with the after-effects of too much rain and later drought or shortage of water.

The project is undertaken jointly with the University of Dar es Salaam (Institute of Resource Assessment and Faculty of Engineering); Technical University of Delft - the Netherlands; Catholic University of Leuven, and University of Nairobi. The project involves local communities (livestock keepers and wildlife managers) in the Kitenden area, Arusha (Tanzania), and Amboseli National Park (Kenya).

This research started in 2003, and it is planned to be completed in November 2006.

Researchers: Dr. Sosovele, Prof. Shishira, Dr. Kangalawe, Ms. C. Noe (Geography Dept) and Prof. D. Mashauri (CoET).

3.2.2 EIA for Bilila and Mountain Lodges in Serengeti and Ngorongoro Conservation Area

These EIAs are to be undertaken from November 2005 to February 2006 The objective of the studies is to assess the environmental implications of the proposed development in the two protected areas. The Environmental Management Act (EMA) requires full and detailed EIA for development activities planned to take place in protected areas. These EIA were responding to this national requirement.

EIA Report for Bilila Lodge is ready and submitted to developer and NEMC for approval process. The EIA report for the Mountain Lodge is in the final stages of completion. The delay is caused by inadequate preparations to secure the site and approval from TANAPA that the developer overlooked.

Researchers: Dr. H. Sosovele, Dr. A. Mwakaje, Ms. C. Massao, Prof. D. Mashauri of Engineering, Mr. Sangu of Botany Department and Beatrice Mchome and Alex Chambi from East African Resource Group.

3.2.3 EIA for Proposed Development of Sponge Iron and Allied Projects and Thermal Transmission from Mchuchuma, Ludewa District

This EIA started in June 2006 and will be completed in September 2006.The objective of the studies is to assess the environmental implications of the proposed development in the two areas of Mchuchuma and Liganga and beyond. The Environmental Management Act (EMA) requires full and detailed EIA for development activities planned to take place in protected areas. These EIA were responding to this national requirement.

The Scoping exercise for this work has been done and a scoping report is ready for submission to developer and NEMC. The team will be returning to Ludewa in August 2006 for detailed EIA study.

Researchers: Dr. H. Sosovele, Dr. F. Shechambo, Ms. Massao, Prof. D. Mashauri, Dr. P. Valimba and Dr. of Engineering, Ms. Beatrice Mchome from East African Resource Group and Mr. George Sangu of Botany Department, University of Dar es Salaam.

3.2.4 The dynamics of farming systems, food security and poverty alleviation strategies in the semiarid areas of Sukumaland, Tanzania

The research project started in June 2004 and is approaching completion. The study is funded by REPOA. Fieldwork for this study has been completed and the draft final report has been prepared and submitted to REPOA. The main objective of this study is to investigate the dynamics of the farming systems in Sukumaland. The study further examines the food security situation and poverty alleviation strategies that are carried out by local communities under changing environments, with specific reference to the impact of livelihood activities on land degradation and the environment in general. The study has been undertaken in Geita and Misungwi in Mwanza Region and Kahama and Kishapu in Shinyanga Region. In addition to agricultural and other livelihoods activities, Geita and Kahama represent areas with small-scale gold mining whereas Misungwi and Kishapu represent areas involved with small-scale diamond mining. In each of the two districts, two villages were selected in consultation with the respective districts authorities. Villages selected were Nyarugusu in Geita District, Mabuki in Misungwi District, Ilogi in Kahama District and Songwa in Kishapu District. At the villages detailed data collection was undertaken through discussions with key informants, participatory rural appraisals (PRAs), household interviews and field observations.

Findings indicate that the village communities are differentiated in various socio-economic groups namely the wealthy, the moderately wealthy and the poor, and majority of the people belong to the “poor” group. The village communities have different economic capacities, different food security situation and different poverty alleviation strategies. Majority of the people depend on agriculture (both crop production and livestock keeping) for their livelihoods,

though other activities such as small-scale mining and business contribute to the food security situation and to alleviate poverty. Small-scale mining has been reported to have mushroomed only since the early 1990s, which is ascribed to have resulted in many people from other places migrating into the study areas. The study has established also that there are intergenerational differences in terms of activities undertaken by various age groups, including the strategies used to achieve food security and alleviate poverty. While the youths are more involved in business and small-scale mining activities the middle age and the elderly are more involved in agriculture as the main means of livelihood, ensuring food security and alleviating poverty. However land for agriculture is increasingly becoming scarcer due to increasing population and the expanding mining activities that have converted much of the arable land into badlands that cannot be cultivated.

The final report was finalised and presented at the Annual REPOA Conference. Work is in progress to incorporate the comments given at the conference.

Researchers: Dr R.Y.M. Kangalawe, Dr E.T. Liwenga, Dr A.E. Majule
and Prof. N.F. Madulu.

3.2.6 Livelihood Diversification and Changing Land Use Patterns in the Lake Victoria basin: An Assessment of Causes and Implications to Local Communities

This project started in November 2004 and I funded by VICRES. This study is being jointly by researchers from the Institute of Resource Assessment, University of Dar es Salaam, (TANZANIA); School of Public Health and Community Development, Maseno

University (KENYA); and Department of Sociology, Makerere University (UGANDA). The overall objective of the study is to examine the extent to which changing socio-economic and environmental conditions contribute to livelihoods and poverty reduction initiatives and the environmental conservation efforts in the Lake Victoria Basin. The study intends to address the linkages between population pressure, livelihood strategies and impact on land use and environmental degradation. The study addresses these linkages by also focusing on food security issues and poverty alleviation strategies of local communities in the Lake Victoria Basin. The study is being carried out in three phases, each phase per year. Phase One of the study involves collection of background information of the study sites and establishing and documenting the causes of livelihood diversification and the current patterns/trends with particular focus on poverty alleviation strategies. The study is being undertaken in two agro-ecological zones in the Lake Victoria Basin in each of the participating countries (i.e. Tanzania, Kenya and Uganda). In each country, one case study represents the highlands above 1,500m above sea level; and another one in the lowlands i.e. areas close to the lakeshore with altitude less than 1,500m above sea level. In Tanzania the study sites are located in Tarime District in Mara Region. The two study villages are Mogabiri Village representing the highlands; and Kibuyi Village representing the lowlands. In Kenya the study sites are located in Vihiga District, whereas in Uganda, the study sites are located in Wakisu District. The preliminary findings indicate that the areas around Lake Victoria have an increasing pattern of population. Tarime District, for instance has the largest population in Mara Region i.e. increasing over years. This is reflected in the population density. The

highland ecological zone is characterized by high population density of about 295 people per square kilometre whereas; the lowland areas have moderate population density of about 109 people per square kilometre.

Preliminary findings indicate that with regard to food security there is a close inter-linkages between communities living in the highlands and in the lowlands due to differences in the types of commodities available in the two agroecological zones. The market places in the lowland areas always appeared to sell commodities produced in the highland areas whereas; fishes are being sold in the lowlands as well as highland areas. The poverty alleviation strategies appeared to vary based on wealth groups. The findings show that the poor group has a limited number of strategies employed in poverty alleviation. The diversity of livelihood strategies seems to increase with increasing wealth status; this could probably be due to flexibility in terms of how the available resources can be allocated and utilized. The findings further show that the youth appear to have more diverse strategies than both the middle aged and elderly people. These aspects will be further investigated and confirmed in the remaining phases of the project. Preparations for Phase Two of the project are going on. A presentation was done at the Annual VicRes Conference in Kisumu. The researchers are awaiting funds for Phase Two to be released

Researchers: Dr E.T. Liwenga, Dr R.Y.M. Kangalawe, and Prof. N.F. Madulu.

3.2.7 Natural Resource Management (NRM) Policy Implementation Support through Livelihood

This programme started in 2001 as the "Capacity Building for the Implementation of Wildlife and Environmental Policies in Tanzania". IRA is providing coordination functions in ensuring the project is implemented. The programme coordinator is the main technical adviser to WWF, USAID and Tanzania Government and prepares work plans and supervises implementation of the programme in collaboration with Government and other donors. The programme is restructured to include the current thrust (above focus) and more stakeholders and Government policies and, it is scheduled to continue to 2010.

The programme focuses on Natural Resource policies and supports their implementation in collaboration with Government.

Objective of the programme:

The overall objective of this program is to support and facilitate the implementation of integrated Natural Resource Management (NRM) policies in Tanzania. While the thrust of the program is to support implementation of NRM based policies in order to enhance the conservation of biodiversity, the program is also supporting initiatives that promote rural livelihoods and improving the quality of life by reducing poverty and addressing linkages between HIV/AIDS and conservation. The programme has achieved significant milestones that include

- The development and approval of Regulations for establishment of Wildlife Management Areas (WMAs) Regulation 2002.

- The development and approval of Environmental Management Act (Act No. 20, 2004)
- Development and approval of EIA Regulations, 2005
- An assessment of Game Controlled Areas for purpose of setting up proper legal management system for these entities
- Economic Instruments for Environmental Management
- Four WMA gazetted
- Land Use Plans for 10 WMAs completed and approved

Researchers: Dr H. Sosovele as coordinator, but other staffs from IRA are involved in specific activities, e.g. research and consultancy feeding information into the implementation process (e.g. Assessment and mapping of Game Controlled Areas in Tanzania, Assessment of Baseline Data for Wildlife Management Areas).

3.2.8 Development of Tourism in Western Serengeti

This project started in 2004 and is continuing to end of 2007. The Grumeti Reserves Limited asked IRA to provide technical advice on the proposed development to develop tourism in western Serengeti. The Grumeti Reserves Ltd, currently manages Sasakwa Lodge and Grumeti and Ikorongo Game Reserves and the Ikona Open area as hunting blocks.

The main objective of the study is to explore ways that could increase the sustainability of tourism activities in westerns Serengeti. The Grumeti Reserves development concept seeks to increase the

value of the Grumeti and Ikorongo Game Reserves by introducing species of high value such as rhinos. The translocation and re-introduction of rhinos in the area would require changing management regimes to ensure such animals are well protected and larger land areas are set-aside for them. Similarly, the proposed development concept seeks to stop hunting for some time until the value of the trophy has increased in numbers and size. Other activities include development of tourism infrastructure of high quality (lodges and airstrips, aerodromes) and realigning the road network in the protected areas. IRA is providing technical advice as well as Strategic Environmental Assessment of the proposed development programme and specific EIAs.

Several important activities have been accomplished. These include.

- An analysis of the cost-benefit for the proposed development concept showing environmental and monetary value of the proposed development. The analysis shows significant positive impacts in terms of monetary value as benefits to local communities, the local authorities and the nation. The benefits are to be derived from increased tourism flow, sale of goods and services to tourists, sale of construction materials. Increased conservation will result in improved environment.
- EIAs for the proposed Sasakwa Lodge, Mugumu Aerodrome and Sasakwa Airstrip.
- Socio-Economic Baseline data for the proposed Ikoma pilot WMA, which is western Serengeti between Grumeti and Ikorongo Game Reserve.

- Preliminary survey for the proposed road realignment from Natta to Tabora B and Kleins Camp on eastern Serengeti.

As part of the effort to improve infrastructure and reduce environmental degradation in protected areas, the Grumeti Reserve has supported the idea of reducing traffic flows inside protected areas of Ngorongoro and Serengeti by redirecting traffic from Natta to Mugumu- Tabora B-Kleins Camp and down to Mto wa Mbu. This route will limit traffic flows inside protected areas to those activities related to tourism activities only. Commuter buses, trucks, and other vehicles that have nothing to do with tourism will have to pass outside the PA. IRA has done analysis and provided input to TANROAD and Grumeti Reserves that has eventually resulted in Government approving this proposal in the current Parliament session.

Researchers: Dr. H. Sosovele, Dr. C. Mung'ong'o, Dr. F. Shechambo, Mr. S. Mwansasu, Ms. C. Massao in collaboration with colleagues from Zoology and Botany Departments, as well as Beatrice Mchome and Alex Chambi from East African Resource Group. Prof. Mwalyosi was also involved as team leaders before his retirement from the University of Dar es Salaam.

3.2.9 Socio-Economic Aspects of Traditional Canals in Mwanga District

This research is funded by WARFSA. The main objective is to analyse the historical socio-economic context of traditional irrigation system in Mwanga District with a view of establishing the underlying causes of its decline. The study also aimed to analyse the government's and donor's efforts to revive the

traditional irrigation system, and establish the reasons why they did or did not succeed. The study was conducted in Mwanga District. The final report is yet to be completed.

Researchers: Prof. N.F. Madulu, with Prof. D. Mashauri and Dr. A. Mvungi.

3.2.10 Rural-urban dynamics in a globalizing world: Changing livelihoods and settlement patterns in frontier regions of Africa and Asia

This research Programme is funded by DANIDA and implemented jointly by the Institute of Geography, University of Copenhagen. Other participating countries are Vietnam, Thailand, Ghana and Tanzania. The overall objectives of the research Programme is to examine the implications of changing rural-urban dynamics on livelihoods paying special attention to emerging mobility patterns and settlement characteristics and how these impact on poverty reduction and local economic development. Phase 1 and Phase 2 data collection has bee completed. Data processing and analysis is in progress and preparations for Phase Two are going on well.

Researcher: Prof. N. F. Madulu

3.2.11 Development of Sustainable Natural Resources Management Plan in the South Pare Mountain Ecosystem-The case of Hingilili catchment in the South Pare Northern Tanzania,

The objective of the research is to establish sustainable management plan for the Hingilili basin in the South Pare Northern Tanzania in order to

contribute towards the restoration of ecological integrity and subsequently contribute to the improvement of rural livelihood and poverty alleviation.

The study considers Hingilili basin as a case study to draw lessons which could be used in similar environments in South Pare Mountain ecosystem.

Researcher: Prof. J. O. Ngana

3.2.12 Assessment and monitoring of seismic and associated risks in the areas surrounding the Rungwe Volcanic Province, southern Tanzania

The study is proposed to assess and monitor the risk of seismic and other risks associated with volcanic eruption in the Rungwe Volcanic Province. The study is targeting to use geophysical, geological and geochemical methods to synthesise the magma reservoir in Rungwe and eventually use seismic monitoring, ground movement control and thermal emanation monitoring to be able to predict future volcanic related activities in the area. Specific objectives are;

- To map out areas that are likely to be affected in case of a volcanic event
- To document destructive forces that would take place in the immediate surroundings of the Rungwe Volcanic Province.
- To establish the probabilities of a volcanic event in a given time period
- To predict the possibility of loss (life, property, economy, etc.) due to a volcanism-associated hazard

Researchers: Prof E. I. Mbede, Prof. M. Maboko, Prof. P. Yanda, Dr. Isaack Marobhe, Dr. R. W. Ferdinand, and Mr. Ayubu Mbegha

3.2.13 Verification of FBD Forest Reserves

This study is part of the major study on valuation and registration of fixed assets for Forestry and Beekeeping Division. Verification of FBD Forest Reserves entails assessment of the current status of forest reserves and establish changes in forest reserve areas and vegetation cover using 1995 and 2003/4 satellite images. First fieldwork has already been conducted and second fieldwork has just commenced.

Researchers: Prof. P.Z. Yanda, Prof. E.K. Shishira, and Mr. S.L. Mwansasu

3.2.14 Natural Resources and Socio-Economic Baseline Survey for the Songwe River Trans-boundary Catchment Management Project

The objective of this study was to undertake scoping of the proposed project to determine natural resource use patterns, identify associated environmental and socio-economic threats to the catchment and propose intervention measures within the Songwe catchment.

Key findings from this study are;

- Soil erosion is well pronounced in some areas due to deforestation and cultivation on steep slopes.
- The area along Songwe in Mwaulambia, Tanzania, is overstocked, thus leading to soil erosion along cattle routes.

- Mono-cropping cultivation of seasonal crops such as maize, tobacco and beans is predominant. This is less effective in terms of soil and water conservation.
- The upper reaches of Songwe River are typified by presence of adverse slope conditions.
- Most forest reserves are under inadequate management because of inadequate financial and human resources.
- Shifting cultivation (e.g. Chitemene system) contributes to deforestation in the middle and upper catchment, thus subjecting soil to water erosion.
- Bush fires associated with charcoal burning and hunting of game meat, reduce protective vegetation cover and biodiversity.
- Charcoal burning, brick burning and fuel wood collection contribute to deforestation.
- Inappropriate fishing methods, such as complete blocking of the river with traps and nets at the mouth of the river and also the use of seine nets, lead to the destruction of breeding grounds and consequently diminished fish stock.
- The ongoing degradation of water sources in the middle catchment will change the hydrological regime of the river.
- There is lack of information on the current status of these resources

Researchers: Prof. R.B.B. Mwalyosi, Prof. P.Z. Yanda, Prof. E.K. Shishira, Dr. C.G. Mung'ong'o, Dr. A. Majule

3.2.15 Resource Poor Environment and Poverty Alleviation in Mbinga District

This research project was financed by REPOA. The main objective of this project was to assess performance and effectiveness of *Ngoro* and *Malonga* farming systems in Matengo highlands in the conservation soil fertility and enhancement of crop productivity.

The results show that ngoro farming practice has more positive impacts on poverty alleviation, environmental management and sustainable agriculture compared to *malonga* system. Ngoro system is more effective on prevention of soil erosion. On the other hand, cultivation along the hills using *malonga* practice leads to soil erosion reduces soil fertility and productivity. Non-farm income generating activities are associated with *malongo* farming systems and thus appear to be adopted as a strategy of reducing poverty. This farming system is associated with marginal environments where agriculture is not favorable.

Researchers: Prof. P. Yanda Dr. A. Majule, and Dr. A. Mwakaje

3.2.16 Development of Sustainable Soil Fertility Management Practices Through Innovative Training, South Eastern Coastal, Tanzania

Declining soil fertility in southern east coastal areas have reported to be rapidly following land clearing and cultivation as well as after dusting elemental sulphur on cashew trees. Poor nutrients cycling including inability of farmers to apply inorganic

fertilizers are common to the majority of farmers. However, recent research finding involving two farmers research groups in Tandahimba and Nachingwea districts have indicated that soil fertility and crop yields can be improved if organic residues sources are properly incorporated in soils. This information is limited to very few farmers and extension staff in the area. An innovative training approach through classes and field demonstrations is therefore needed at least for a period of one season in order to disseminate the information generated so far.

The main purpose of this study is to develop and disseminate sustainable soil fertility management strategies.

The objectives for undertaking this research are therefore

a) To provide training to both extension workers and farmers on the role of different organic residues sources in maintaining soil fertility.
b) To allow farmers and extension workers to develop soil conservation strategies in order to sustain land productivity and alleviate poverty.
c) To enable farmers to appreciate responses of different management strategies as indicated by crop responses.

This project started with farmers training which took place at Naliendele Agricultural Research Institute in July, 2005. It has developed a lot of interest in the Ministry of Agriculture and Food Security through PADEP Project. Project area has been expanded to cover more districts where PADEP operates. In the future, over 20 districts will be covered with support

from PADED. At this time, farmers are implementing different soil fertility management practices they selected in their individual plots.

Researchers: Dr. Majule, A.E.; Prof. Shishira, E.K., Dr. L. Kasuga and Mr. Samuel Mugogo

3.2.17 Climate Human Environment Interactions in Africa

The IRA and the Change de Recherches (CNRS) though Centre European de Recherches at d'Enseignement des Geosciences de I'Environment (CEREGE) of France have developed a joint research project called "Climate – Environment and Human Dynamics in Africa (CLEHA). The project operates in the Southern Highlands of Tanzania and seeks to address the following questions:

- What are the contributions of climate change and human impacts on tropical environments as reconstructed for Holocene (vegetation, water resources, soils, etc.) and;
- What are the consequences of environmental change on the livelihood of human societies?

In order to address these key issues, routine data collection is needed for reconstructing the past history of climate change so that we can predict the future. In light of this requirement, a monitoring station has been established at Masoko, Rungwe District. Currently, there is an ongoing data collection on temperature, rainfall, soil erosion and other socio-economic data on the surrounding environment. A number of research papers have been published and some are under preparation. There is also a move toward more integrated research which is going to involve more researchers to address research, training and development issues in the area.

IRA Researchers: Dr. A. E, Majule, Prof. R. Mwalyosi, Dr R. Kangalawe and Dr E T Liwenga

3.2.18 The Role of Non-Wood Food Forest Products on Poverty Alleviation in the Southern Coastal Areas of Tanzania

The overall focus of the study is on the role of edible non-wood forest products and how they contribute to poverty alleviation. In undertaking the study, field work was conducted in Mtwara Region in two districts – Mtwara Rural and Tandahimba. In each district participatory studies and field observations were undertaken. Findings indicate existence of different socio-economic groups in each village whereby the majority of the people are poor and live below the poverty line. A fairly large proportion of the population depend for their livelihoods on non-wood food forest products for their livelihood. Thus, for example, the use of *ming'oko* has increased and overexploitation has changed the availability and size of the product. Poverty alleviation in theses areas is constrained variably by several factors including lack of or poor water services, schools and other related infrastructure. Further, ecological characterization of different non-wood forest products needs to be undertaken in order to understand the impact of exploitation on the environment. A final draft research report has been submitted to REPOA which funded the project.

Researchers: Dr. A. Majule, Dr. E. Liwenga and Mr. H. Ndangalasi

3.2.19 Wetland Utilisation, Poverty Alleviation and Environmental Conservation in Semi Arid Areas of Tanzania – The Case of Dodoma

The study is funded by REPOA. Major objectives are;

- To assess the current wetland utilization pattern and how that promotes food security and reduces poverty levels
- To ascertaining utilization practices that may lead to the degradation of wetlands and how these effects could be minimized.
- To establishing ways in which benefits accrued from the wetlands could be optimized without compromising the ecological and hydrological integrity of the wetlands.
- To study existing land tenure system and its implication on land use pattern and environmental management.

Field work has been completed and final draft report was submitted and presented to the Annual REPOA Workshop in 2005. Researchers are now working on the comments before final submission. However, key research findings indicates that;

a) There are a number of socio economic activities undertaken in Bahi wetlands and these have significant contribution on poverty levels interms of food and cash to the community living in such areas.

b) There has been a differentiation of three major socio economic groups namely *Mgoli* (the rich), *Enachiba* (the middle) and *Asinachinji* (the poorer). The former group are very few while the later consist most of the village community. There is high

interdependence among the three major groups and this has increased poverty levels of the poorer.

c) The pattern of various resources located in wetlands including water resources, soil fertility and land itself, fish, forest products have been declining over time due to changing environment and over use of resources due to increased human demand.

d) This study has established livelihood interdependence between the rich and the poor in the community. Such interdependences enhances gap between the three wealth groups, hence rich becoming richer and poor becoming poorer.

Researchers: Prof. P. Z. Yanda, Dr. A.E. Majule and Dr. A.G. Mwakaje

3.2.20 Participatory Improvement of Soil Fertility and Water Management for Sustainable Small Scale Agriculture in Tanzania, Malawi and Zimbabwe

In mid-2004, funds were made available to IRA by FIRCOP-SADC to develop a concept proposal into a full proposal on the subject above. The project involves three SADC countries, Tanzania, Malawi and Zimbabwe. The project aims at increasing crop productivity and raising farmers' incomes through improved sustainable soil and water management in the context of changing livelihood systems. The main objectives are:

- To understand current farmers' perception and practices regarding soil and water management;

- To review current approaches by agricultural service providers in relation to changing farming practices and environment;
- To build on and enhance farmers' capacity to manage soil fertility and water at farm level through development of innovative learning approaches and tools;
- To identify implications for private and public sector service provision relating to soil fertility management and;
- To investigate the impact of soil and water management on livelihoods and provide sustainable recommendations for action.

The project will use participatory approaches involving key stakeholders who will identify, prioritise problems and develop sustainable soil and water management practices/services. Activities will include field work, training, stakeholders' and dissemination workshops.

The project has been delayed due to administrative changes took place within FIRCOP SADC including withdrawing of some donors. However further funding is expected.

IRA Researchers: Dr. A.E. Majule, Prof. R. Mwalyosi, Dr. A. Mwakaje and Dr. E. Liwenga

3.2.21 Development of training manual for informal sector and employment

This manual development task was coordinated and prepared by theUniversity consultancy Bureau (UCB) and funded by the International Labour Organisation (ILO). The training manual was tested in Dar es Salaam, Zanzibar and Mwanza. About 40 participants

were involved per training. The participants were mainly from the cities/municipal administrators and people who are involved in the informal sector.

Researchers: Prof. S.A.K Mlacha, Prof. Kundi, Dr. Temu and Dr. Agnes G. Mwakaje.

3.2.22 Dairy farming, biogas use and poverty alleviation in Rungwe District: A study of opportunities and constraints

Rungwe District is one of the densely populated districts in Tanzania. It has little 'natural' vegetation which in recent years, much of these 'natural' vegetations has been cleared / transformed for agriculture and habitat. Even those found in government forest reserves and in locally protected areas have been subjected to varying degrees of people driven disturbances.

While deforestation is at a high rate in the district, the district is one of the districts in the country with high population of smallholders' dairy keepers. Keeping of dairy cows contributes positively to the poverty alleviation through provision of income, nutrition and food security. Dairy keeping also contributes positively to the environment through animal manure provision. However, the activity also significantly increases work-load for those who provide fodder for cattle and clean the stalls. This study investigates the opportunities and constraints of biogas use in Rungwe district. A preliminary field visit and main study has been undertaken and now the work is on data analysis and draft report production.

Researchers: Dr. Agnes G. Mwakaje and Prof. R.B.B Mwalyosi

3.2.20 Environmental Monitoring Assistance to Dar es Salaam Water and Sewerage Authority (DAWASA)

This is a consultancy project commissioned by the Dar es Salaam City Water Services. This project is to last five years, although it is being mplemented on yearly basis.

The objectives of the project are:

- Assist DAWASA to develop and implement an environmental review and reporting plan, procedures, standard tests, and reporting formats
- Assist DAWASA to review the various environmental compliance reports submitted by the Operator, Contactor, etc to ensure that the requirements of various Acts, Regulations, Contracts, and Licences have been complied with and that the submitted reports are fair and reasonable statement of environmental performance / compliance by the Operator and Contractors.
- Assist DAWASA to report progress and performance against the agreed Environmental Management Plan, and
- Train DAWASA environmental staff so that they can effectively deliver and sustain an appropriate environmental review and reporting Programme.

As the Programme comes to the end, the following has been achieved:

- Establishment of monitoring sites

- Establishment of analysis parameters to gauge the performance
- Composing/setting-up a monitoring Programme and its subsequent implementation
- Generation of performance data
- Influencing awareness to environmental implications of DAWASA activities through repetitive meeting with some of the employees
- Development of a Report Format
- Development of Database
- Conducting on-job training to DAWASA staff
- Influencing quality assurance to the Private Operator
- The EMA team gained experience in carrying out the monitoring

Collection of data is going on. This data is then fed into the DAWASA monitoring system. The IRA team is also reporting on compliance for environmental management plans, including rehabilitation of the system. Samples of water quality are taken from selected areas and assessed. Condition of water reported to DAWASA.

Researchers: Prof. R.Mwalyosi, Dr. H. Sosovele, Prof. A. Mashauri, Dr. R. Mato, Mr. Pallangyo, and Mr. F. Mlenge of UCLAS

3.2.23 Implications of Rural-Rural Migration and Expansion of Livelihood Activities on Water Resources and Wetlands of the Kilombero Valley, Tanzania

This study has been accepted by WARFSA for funding. The objective of this study is to examine the

implications of immigration of rural communities on natural resource management and people's livelihoods in the wetlands of Kilombero Valley in Tanzania. Funds for the first phase of this study have been released and activities are scheduled to start in July 2006.

Researchers: Dr. R. Kangalawe, Dr E.T. Liwenga, and Prof. N.F. Madulu

3.3 Future Research and Consultancy

SECTION FOUR: PUBLICATIONS

A total of 37 publications were produced. They include 3 books, 6 chapters in books; 9 journal articles, 2 journal articles sent for publication and 17 research reports, consultancy reports and workshop proceedings, as indicated below.

4.1 Books

1. Kikula, I.S. I. Shivji, J. Kipokola and J. Semboja (Compilers) (2005). Researching Poverty in Tanzania. Mkuki na Nyota.

2. Kikula I. S. and D. Howlett (2005). Learning About Livelihoods: Lessons for Poverty Reduction in Tanzania. United republic of Tanzania. DUP.

3. Sosovele, H., J.Boesen and F. Maganga (2005) Social and Environmental Impact of Irrigation Farming in Tanzania, Dar es Salaam University Press, Dar es Salaam.

4.2 Chapters in Books

1. Kangalawe, R.Y.M. and Liwenga, E.T. (2005). Management of Wetlands in the Kilombero Valley, Tanzania. Chapter 7. In: Sosovele, H., Boesen, J., Maganga, F. (eds.). Social and environmental impact of irrigation farming in Tanzania: Selected cases. Dar es Salaam University Press, pp 134-166. (ISBN 9976 60 431 9).

2. Madulu, N.F. (2005), The Impact of Small-Scale Mining on Agricultural Land, Poverty,

and Environment in Mwanza Region, in M.A.K. Ngoile, R.N. Muheto, F.H. Khatibu, A.L. Mapinduzi, and P.S. Maro (eds), Agriculture, Environment and Poverty Eradication in Tanzania, National Environmental Management Council (NEMC), Dar Es Salaam (pp.139-151) (ISBN: 998 7435 02 5)

3. Majule A.E, and Mwalyosi, R.B.B. (2005). Enhancing Agricultural Productivity through Sustainable Irrigation. A case of Vinyungu Farming System in selected Zones of Southern Highlan, Tanzania. A chapter in a Book Social and Environmental Impacts of Irrigation farming in Tanzania: Selected Cases: Edited by H.Sosovele, J. Boesen and F. Maganga. Dar es Salaam University Press. ISBN 9976 60 431 9

4. Mwakaje A.G and C.H Sokoni (2005): Crop-livestock integration in Irrigation Farming Systems and Conflict Reduction: In Social and Environmental Impact of Irrigation Farming in Tanzania: Selected Case Studies

5. Sosovele, H. and F. Maganga (2005) The Implications of Recent Institutional and Policy Changes for Irrigation Development in Tanzania in: Sosovele, H., J. Boesen and F.Maganga(Eds) (2005) Social and Environmental Impact of Irrigation Farming in Tanzania, Dar es Salaam University Press, Dar es Salaam.

6. Sosovele, H. (2005) The Root Cause Analysis of Water problems in the Great Ruaha River

and its Implications on irrigation Farming in Tanzania in: Sosovele, H., J. Boesen and F.Maganga (Eds) (2005) Social and Environmental Impact of Irrigation Farming in Tanzania, Dar es Salaam University Press, Dar es Salaam

4.3 Journal Articles

1. Kangalawe R.Y.M. and E.T. Liwenga (2005). Livelihoods in the Wetlands of Kilombero Valley in Tanzania: Opportunities and Challenges to Integrated Water Resource Management. In *Physics and Chemistry of the Earth* (30): pp.968-975.

2. Madulu, N.F. (2005), Impact of Population Pressure and Poverty Alleviation Strategies on Common Property Resource Availability in Rural Tanzania, African Journal of Environmental Assessment and Management, Vol. 10, March 2005, pp 26-49 (http://www.ajeam-agee.org/defaultv10.asp). (ISSN 1438-7890).

3. Madulu, N.F. (2005), Environment, poverty and health linkages in the Wami River basin: A search for sustainable water resource management, Physics and Chemistry of the Earth, Vol. 30, Issue 11-16, pp. 950-960.

4. Madulu, N.F. (forthcoming), Linkages Between Population Growth and Environmental Change in Tanzania, Tanzanian Economic Trends, Vol. 18, No. 1, pp. 1-17 (Accepted for Publication).

5. Mvungi, A.K, D. Mashauri and N.F. Madulu (2005), Management of water for irrigation agriculture in semi arid areas: problems and prospects, Physics and Chemistry of the Earth, Vol. 30, Issue 11-16, pp. 809-817.

6. Sosovele, H. (2006) Integrating Strategic Environmental Assessment (SEA) into the District Planning in Tanzania: Methodological Considerations for Practice The Journal of Building and Land Development, Vol 13. No. 1 April 2006.

7. Yanda, P.Z. and N.F. Madulu (2005), Water resource management and biodiversity conservation in the Eastern Rift Valley Lakes, Northern Tanzania, Physics and Chemistry of the Earth, Vol. 30, Issue 11-16, pp. 717-725.

8. Yanda, P.Z. and N.F. Madulu (2005). Water resource management and biodiversity conservation in the Eastern Rift Valley Lakes, Northern Tanzania, Physics and Chemistry of the Earth, Vol. 30, Issue 11-16, pp. 717-725.

9. Yanda, P.Z. and Madulu, N.F. (2005): Natural Resource Use Patterns in the Highlands and Lowlands of Karatu and Monduli Districts: A Study of Linkages and Environmental Implications, Tanzania Journal of Development Studies, Vol. 6, No. 2, 2005: 2005:1-22

4.3 Journal Articles submitted for publication

1. Ngana, J.O. and Pius Yanda. 2005. Hydrological considerations and their implications in the Hingilili river basin, Pare mountains. Submitted to Journal of Environment, Development and Sustainability.

2. Yanda, P.Z. and J.O Ngana 2005. The Highland-Lowland Ecosystems and Livelihood Options in the Hingilili Basin in the Pare Mountains. Submitted to Journal of Environment, Development and Sustainability.

4.4 Other Publications (Research Reports, Service Reports, and Conference Proceedings)

1. Cooksey B. and I.S. Kikula (2005). When Bottom Up Meets Top Down: The Limits of Local Participation in Government Planning in Tanzania

2. Juma, I. and F. Maganga 2005. Current Reforms and their Implications for Rural Water Management in Tanzania. In African Water Laws: Plural Legislative Frameworks for Rural Water Management in Africa (Eds. B. van. Koppen; J.A. Butterworth and I.H. Juma) Proceedings of a Workshop held in Johannesburg, South Africa, 26-28 January 2005.

3. Kikula I.S. and R. Kiunsi (2005). Environmental Impact Assessment (EIA) Process: a Technical Report as an Input to the Formulation of Regulations for the EIA in Tanzania. Vice President's Office.

4. Liwenga, E.T. (2006) The Role of Local Knowledge in Managing Water Scarcity for Sustaining Agriculture in the Drylands of Central Tanzania (A Paper presented at the SADC Scientific Symposium, 14th -16th February, 2006, Lilongwe Malawi)

5. Madulu, N.F. (2005), Assessment of Child Mortality in the Refugee Prone Areas of Western Tanzania: The Case of Kigoma and Kagera Regions, Paper presented at the Annual Demographic Seminar, University of Dar es Salaam, 5th-6th April2005.

6. Madulu, N.F. (2005), The Impact of Small-Scale Mining on Agricultural Land, Poverty, and Environment in the Lake Victoria Basin, Paper Presented at the Annual Scientific Conference on Environmental Sustainability in Tanzania, Organized by the National Environmental Management Council (NEMC), September 28th – 30th, 2004, White Sands Hotel – Dar Es Salaam.

7. Madulu, N.F. (2005), Water Resource Management in Diverse Ecosystem and Providing for Human Needs: The Case of East Africa, Paper presented at the UNU-INWEH / UNESCO-MAB-IHP International Workshop on Water and Ecosystems: Water Resources Management in Diverse Ecosystems and Providing for Human Needs, Hamilton, Canada, 14 - 16 June.

8. Madulu, N.F. (2005), Reconstructing the history of Lukobakobe River: An assessment of poverty, socio-economic development, and environment linkages in Mwanza, Tanzania, Paper Presented at the WARFSA Waternet Symposium.

9. Madulu, F and Kiwasila, H (2005). Causes and Consequences of Changing Livelihood Diversification in Kiteto and Simanjiro Districts in Northern Tanzania. Preliminary Assessment of Risks. Draft Report, February 2005.

10. Maganga, F. P. 2005. Social Capital and Conflict Management: Lessons Learned and Options for

Minimizing Resource Use Conflicts. ECAPAPA Policy Brief No. 6, February 2005. Entebbe, Eastern and Central Africa Programme for Agricultural Policy Analysis.

11. Maganga, F.P.2005. Whose Forests? Implications of Different Management Regimes for Sustainable Utilisation, and Minimisation of Conflicts. ECAPAPA Policy Brief No. 7, March 2005. Entebbe, Eastern and Central Africa Programme for Agricultural Policy Analysis.

12. Maganga, F.P. 2005. Managing Conflicts over Pasture and Water Resources in Semi-Arid Areas: Beyond Misleading Myths and Ethnic Stereotypes. ECAPAPA Policy Brief No. 8, May 2005. Entebbe, Eastern and Central Africa Programme for Agricultural Policy Analysis.

13. Mitlav, U; Kiwasila, H and Mwakaje A (2005) Evaluation of the Socio-Economic Aspects of the Pangani Falls Hydropower Redevelopment Project. Evaluation Report Submitted to ORGUT/WSP Sweden International AB July 2005.

14. Ngana, J.O 2005. Development of Framework for Action for Vision for Water Life and Environment, Tanzania. Workshop Proceeding on Global Water Partnership Southern Africa, Southern Africa.

15. Ngana, J.O (2005). Key Issues in Transboundary Shared Water Courses in East Africa and SADC. Proceedings of Cross Border Workshop on Lake Jipe and Umba Ecosystems. Moshi.

16. Sosovele, H. (2006). The Role of Environmental Impact Assessment in enhancing Environmental

Governance: Challenges and Opportunities with reference to Tanzania. Paper presented to IAIA International Conference on Power, poverty and sustainability: The Role of Impact Assessment held in Stavanger, Norway, 23-26 May 2006.

17. Swiderska, K. and F.P. Maganga, 2005. Policy that Works for Biodiversity and Poverty Reduction. Tanzania Scoping Study. London. IIED Issues Paper.

SECTION FIVE: FINANCES

5.1 Sources of Funds

5.1.1 Government Sources

During the year 2005/2006, the Institute received a budgetary allocation of about TShs 14,000,000 from the Government through the University of Dar es Salaam to cover other charges, over and above personal emoluments.

5.1.2 Own Sources

The Institute continued to generate funds from internal sources. These came mainly from community services rendered.

SECTION SIX: APPENDICES

Box 1: List of Academic Members of Staff

1. **Raphael B. B. Mwalyosi, Research Professor**, **Director,** B.Sc. Hons, M.Sc. (Dar), Ph.D. (AUN). Ecology[7].

2. **Hussein Sosovele, Senior Research Fellow, Associate Director,** BA Hons; M.A. (Dar), Ph.D. (Bremen) Sociology.

3. **Elieho K. Shishira, Associate Research Professor,** B.Sc., Hons, (E.A), M.Sc., Ph.D. (Sheffield) Applied Geomorphology, Remote Sensing of Land Resources, Land Classification.

4. **Ndalahwa F. Madulu, Associate Research Professor,** B.Ed. Hons, M.A. (Dar) Demography, Ph.D. Dar). Demography.

5. **Idris S. Kikula, Research Professor,** B.Sc. Hons; M.Sc. (Dar) Ph.D. (Griffith) Land Resource Management, Environment and Remote Sensing. **

6. **James O. Ngana, Associate Research Professor**, B.Sc. Hon.; M.Sc. (Dar), M.Sc. (Galway), Ph.D. (KTH, Stockholm) Water Resources.

[7] Resigned in October 2005 to pursue a political career as Member of Parliament.

7. **Pius Z. Yanda, Associate Research Professor**, B.Sc., Hons; (Dar), Dip. MNRSA; M.Sc. (AUN), Ph.D. (Stockholm) Environment, Water Resource Development.

8. **Fanuel C. Shechambo, Senior Research Fellow**, Dip. Lib. (Makerere), BA, Hons; M.A. (Econ.) (Dar), Dr.sc.agr. (TU Berlin) Agricultural and Resource Economics.

9. **Faustin P. Maganga, Senior Research Fellow**, BA Hons; M.A. (Dar), M.Sc. (Zimbabwe), Ph.D. (Roskilde) Institutional Aspects of Natural Resource Management.

10. **Claude G.M. Mung'ong'o, Senior Research Fellow**, Dip. Lib. (Makerere), B.A. Hons (Dar), M.A. (Dar), Ph.D. (Stockholm). Environmental Sociology.

11. **Amos Enock Majule, Senior Research Fellow**, B.Sc. Agric. Hons (SUA), Ph.D. (Reading) Environment, Soil Fertility and Conservation.

12. **Agnes Mwakaje, Research Fellow**, B.Sc. Agric. Hons (SUA); M.Sc. Agric. Economics (Reading) Ph.D. Agric. Economics (London)

13. **Hidergard L. Kiwasila, Research Fellow**, BA Hons (Dar) M.P.H. (North Carolina) PGWSST (Loughborough) Sociology, Public Health. *

14. **Richard Y.M. Kangalawe, Research Fellow,** Dip. Crop Prod. (Uyole), B.Sc. Agric. (SUA), M.Sc. (AUN), PhD (Stockholm).

15. **James G. Lyimo, Research Fellow,** B.Sc. Agric. (SUA), PGDIP. MNRSA, M.Sc., (AUN) Natural Resource Management. *

16. **Emma T. Liwenga, Research Fellow,** Dip.Crop Prod. (Uyole), B.Sc. Agric. (SUA), M.Sc. (AUN).

17. **Simon Mwansasu, Assistant Research Fellow,** Visual C++ Programmememing (QA, UK), B.Sc. Hons; M.Sc. (Pinar Del Rio,Cuba). Forest Engineering

18. **Catherine Massao, Assistant Research Fellow** B.Sc.(Gen) UDSM, M.Sc – Conservation Biology, Kent – Cantebury UK

19. **C. Silangwa, Assistant Research Fellow,** Diploma Education (Korogwe), B.Educ. (UDSM), MA Demography (UDSM)

Key:
***** **On study leave**
****** **On secondment**

Box 2: <u>List of Technical Staff</u>

1. **Stephen K. Kajula, Chief Technician,** Cert. in Agro-meteorology-WMO (Nairobi Kenya); Cert. Photo Interpretation Land Use/Land Cover (ITC Netherlands); Cert. Laboratory Photographic Technician (PCL UK); Cert. In Image Data Processing (Copenhagen); Cert. Land Resource

Management & Image Data Processing (Zimbabwe); Cert. Wildlife Management (Mweka).

2. **Anna Mushi, Cartographic Technician,** GIS (Trondheim, Norway), Diploma in Cartography (Horsens Polytechnic, Denmark).

3. **Chrisant Msonganzila, Senior Field Officer,** Dip. Crop. Production (Uyole).

4. **Augustine J. Yonah, Senior Field Officer,** Certificate in Social Work, ISW (Dar).

5. **Evod B. Ulaya, Field Officer I,** Certificate in Rural Development Planning (IRDP Dodoma).

6. **Alexander Mnyenyelwa, Technician,** FTC (Arusha Tech. College).
7. **Captain Patrick Kikwaya,** System Administrator, BSc (Electronic Science and Communication), UDSM
8. **Olipa Ngereja,** GIS Laboratory Scientist, BSc Hons –Survey (UCLAS)

Box 3: <u>List of Administrative Staff</u>

1. **Eva-Grace Mosha, Administrative Officer**, Dip.Ed. (Morogoro), B.A (Ed.) (UDSM), M.A. (UDSM).

2. **Peter E.K. Damson, Accountant,** ADA (IFM).

3. **Prisca Kuhanga, Supplies Officer,** Diploma in Business Administartion, Advanced Diploma in Materials Management.

4. **Mary Mwavalla,** Office Management Secretary.

5. **Anita Kidinilo,** Office Management Secretary.

6. **Sophia M. Mwakibete,** Office Management Secretary.

7. **Agnes Holela,** Secretary Grade I

8. **Bruno Mwano,** Driver.

SECTION SEVEN: 2006/2007 ALMANAC

AUGUST 2006

Saturday 26th	**First Semester Teaching Session begins**

SEPTEMBER 2006

Tuesday, 5th	**Faculty/ Institute Boards (Supplementary/Special Examinations)**
Friday, 29th	**Board of the Institute of Resource Assessment**

OCTOBER 2006

Friday 22nd	**Teaching Session ends – Semester 1**
Monday, 30th	**Board of the Institute of Resource Assessment**

JANUARY 2006

Saturday, 13th	**Teaching Session begins – Semester II**
Friday, 26th	**Board of the Institute of Resource Assessment**
Monday, 30th	**End of Semester II examination**

APRIL 2007

Friday 11th	**End of Semester II Examinations**

JUNE 2007

Monday 25th	**Board of the Institute of Resource Assessment**

AUGUST 2007

Saturday 25th	**First Semester Teaching Session begins**
Friday, 28th	**Board of the Institute of Resource Assessment**