UNIVERSITY OF DAR ES SALAAM

INSTITUTE OF RESOURCE ASSESSMENT

Annual Report

July 2006 – June 2007

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
DA	Division of Antiquities
CBD	Convention on Biological Diversity
CEREGE	Centre European de Recherches at d'Enseignement des Geosciences de l'Environment
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
GISP	Global Invasive Species Programme
HADO	Hifadhi Ardhi Dodoma (Land Conservation Project in Dodoma)
HIBA	Hingilili Basin Association
IDS	Institute of Development Studies
IDRC	International Development Research Centre
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
MNRT	Ministry of Natural Resource and Tourism
MALISATA	Man-Land Inter-relations
MLA	Macro Level Assessment
NBS	National Bureau of Statistics
NCA	Ngorongoro Conservation Area
NEMC	National Environment Management Council
NGOs	Non Governmental Organisations
OPAC	Open Public Access Catalogue
PA	Protected Areas
PADEP	Participatory Agricultural Development Programme
PRAs	Participatory Rural Appraisals
REPOA	Research on Poverty Alleviation
SADC	Southern African Development Community
SAREC	Swedish Agency for Research Cooperation
SEA	Strategic Environmental Assessment
SIDA	Swedish International Development Agency
START	System for Analysis, Research and Training for Global Change Science
SUA	Sokoine University of Agriculture
TANAPA	Tanzania National Parks
TANESCO	Tanzania National Electric Supply Company Ltd
TANRIC	Tanzania Natural Resources Information Centre
TANROADS	Tanzania Roads Agency
UCLAS	University Colleges of Lands and Architectural Studies
UDSM	University of Dar es Salaam
UNDP	United Nations Development Programme
UNESCO	United Nations Educational Scientific and Cultural Organization
USAID	United States Agency for International Development
VPO	Vice President's Office
WARFSA	Water Research Fund for Southern Africa
WWF	World Wildlife Fund for Nature
WVT	World Vision Tanzania
WMAs	Wildlife Management Areas

BOARD OF DIRECTORS

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

List of IRA Board Members (2002/03 – 2006/07)

1. **Prof. Pius Z. Yanda,** Director/Chairman, Institute of Resource Assessment, University of Dar es salaam
2. **Dr. F. Shechambo,** Associate Director (Academics), Institute of Resource Assessment, University of Dar es Salaam.
3. **Dr. Faustin P. Maganga** Associate Director, (Administration) Institute of Resource Assessment, University of Dar es Salaam
4. **Mr. Richard Muyungi,** Assistant Director, Division of Environment, VPO
5. **Ms. Monica Kagya** Acting Assistant Director, Training and Statistics, Forestry and Beekeeping Division Ministry of Natural Resources and Tourism, Dar es Salaam
6. **Mr. Frederick C.N. Rugiga** National Environmental Management Council (NEMC)
7. **Mrs. A. Kaduma,** Director of National Food Security, Ministry of Agriculture and Food Security
8. **Mr. Omari H. Rumambo** Director Water Resource Development, Ministry of Water
9. **Dr. C.T. Musoka,** Institute of Development Studies (IDS) University of Dar es Salaam
10. **Dr. Cosmas H. Sokoni,** Head, Geography Department, University of Dar es Salaam
11. **Prof. H.H Nkotagu,** Geology Department, University of Dar es Salaam
12. **Dr. Eliab Luvanda,** Economic Research Bureau, University of Dar es Salaam
13. **Ms. Anna Nkebukwa,** University Library Services, University of Dar es Salaam
14. **Ms. M. Mwalukasa,** Regional Administration and Local Government, Dodoma
15. **Ms Catherine Malwa** Workers Council University of Dar es Salaam
16. **Prof. J.O. Ngana,** Coordinator, Natural Resources and Environment, Institute of Resource Assessment, University of Dar es Salaam
17. **Dr. H. Sosovele,** Coordinator, Social and Policy Analysis, Institute of Resource Assessment, University of Dar es Salaam
18. **Dr. Emma Liwenga** Coordinator, Training Programmes, Institute of Resource Assessment, University of Dar es Salaam
19. **Prof. N.F. Madulu[1],** Coordinator, Population and Human Settlement, Institute of Resource Assessment, University of Dar es Salaam
20. **Dr. Richard Y.M. Kangalawe,** Coordinator, Information Technology and Remote Sensing, Institute of Resource Assessment, University of Dar es Salaam
21. **Dr. A. Majule,** Coordinator, Agriculture, Food Security and poverty Alleviation, Institute of Resource Assessment, University of Dar es Salaam
22. **Mrs. E.G. Mosha,** Administrative Officer/Secretary, Institute of Resource Assessment, University of Dar es Salaam

[1] Prof. Madulu passed away on 2.7.2007 during the preparation of this report.

DIRECTOR'S FOREWORD

During the reporting period (July 2006 – June 2007), 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 focused on the following activities:

- Implementation of the Research Agenda;
- Implementation of the NARAM Master's Programme;
- Conducting Applied Research;
- Providing Community Services and
- Teaching and Supervision of 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 were 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 continued with the implementation of the Natural Resources Assessment and Management (NARAM) Masters Programme, with the admission of the second batch of 10 students. At the time of this reporting, second year students are in the final stages of writing their dissertations (some have already submitted for examinations). First year students completed their coursework, and they are embarking on the research part of their studies including presentation of research concept notes. A new batch of 14 students has been selected for the next academic year 2007/2008.

Furthermore, the Institute hosted the International Conference on Ecosystem Changes and Implications on Livelihoods of Rural Communities in Africa. The conference was held at Kunduchi Beach Hotel Dar es Salaam from 18th – 20th November 2006. The conference was officiated by his Excellency, the Vice President of the United Republic of Tanzania Dr. Ali Mohamed Shein. The aim of this conference was to share information and experiences from studies undertaken in various parts of Africa so as to establish the degree of ecosystems change and the associated factors. The conference further aimed at establishing the current state of the art and draw policy issues related to ecosystem changes and livelihoods of rural communities.

About 150 participants attended the conference and among them 89 were Tanzanians and the rest were from 18 countries including Botswana, Cameroon, Democratic Republic of Congo, Ethiopia, Hungary, Norway, Sweden, Italy, Malawi, Kenya , South Africa, United Kingdom, United States of America, Rwanda and Sudan. The proceedings of the workshop are under preparation. The conference was financed by various institutions including University of Dar es Salaam, START, UNDP, MNRT, WWF, NEMC and Tanzania Commission of Science and Technology

SECTION ONE: OVERVIEW OF THE INSTITUTE (IRA)

1.1 Institutional Set-up

The Institute's mandate remains as presented in the 2005/06 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 Deputy Vice Chancellor (Academic, Research and Consultancy).

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 two Associate Directors (one for Academic and another for Administrative matters); an Administrative Officer, and an Accountant. The Director is also advised by 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 and academic activities based on the university guidelines. 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. P.Z. Yanda	Director
F. P.Maganga	Associate Director Administration
Dr. F.C. Shechambo	Associate Director- Academics
Prof. N.F. Madulu	Co-ordinator, Population and Human Settlements
Prof. J.O. Ngana	Coordinator, Natural Resources and Environment.
Dr. A. E. Majule	Coordinator, Agriculture, Food Security & Poverty Alleviation
Dr. R. M. Kangalawe	Co-coordinator, Remote Sensing and Information Systems
Dr. E. Liwenga	Coordinator, Training Programmes
Dr. H. Sosovele	Coordinator, Social and Policy Analysis
Ms. E. Mosha	Administrative Officer
Mr. C Msonganzila	Representative of Administrative staff

1.2.2 Staff matters

During the academic year 2006/2007 the number of staff members stood at 38 (22 academic, 7 technicians and 9 administrative staff). During the same period the following changes occurred.

Appointments
Prof. Idris S. Kikula was appointed Vice Chancellor of the new University of Dodoma.

Staff recruitment
Five new Assistant Research Fellows, Ms. Victoria Moshy, Mr. Yusuph Katundu, Mr. Noah Pauline, Mr. Joseph Perfect and Mr. Emmanuel E. Hanai joined the Institute.

Promotion
- Prof. N.F. Madulu was promoted from Associate Research Professor to Research Professor
- Professor Pius Z. Yanda was promoted from Associate Research Professor to Research Professor
- Dr. Richard Kangalawe was promoted from Research Fellow to Senior Research Fellow
- Ms Olipa Simon was promoted from GIS laboratory scientist I to Senior Laboratory Scientist III

- Mr. Bruno Mwano was promoted from Driver to Senior Driver

Transfers
- Mr. Peter Damson- The Accountant was transferred from IRA to the Student Services Department, while Mr. H. A. Mbughuni from the Student Services Department was transferred to IRA to replace Mr. Damson.
- Ms Prisca. Kuhanga - Supplies officer was transferred from IRA to the Central Sores Department, and her place was filled by Mr. T. Sikaponda from Faculty of Commerce and Management.
- Mrs Sophia M. Mwakibete Office Management Secretary was transferred from IRA to Institute of Journalism and Mass Communication.
- Mr. Alex Mgungule wa-Mnyenyelwa was transferred from IRA to the University Transport Unit

1.3 Links and Collaboration

During 2006/2007 the Institute continued to maintain links with local, regional and international Institutions. Continuing links include those with SysTem for Analysis, Research and Training for Global Change Science (START) on Climate change issues, Population Reference Bureau (USA), and the French University of Aix Marseille on research in Climate-Environment-Human Interactions in Africa. The Institute also continues to collaborate with Uppsala University (Sweden) and TATA Research Institute (India) on the Research project "Biodiversity and Development".

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 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 PMO (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 advice to local and international NGOs and development partners such as IUCN, WWF, UNDP and USAID.

1.4 Development of Physical Infrastructure at the Institute.

1.4.1 Library Services and Documentation Unit

In the year 2006/2007, 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 from the Main Library web site. Some institutions, including CIFOR; IIED; Zed Books; FAO; UNDP; ILRI (International Livestock Research Institute) and Chr. Milchelsen Institute continued to donate publications, books and journals to IRA Documentation Unit.

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. The Institute website is linked to other websites such as the Climate Change and Adaptation Programme (CAAA). More computers have been added to the M.Sc. (NARAM) student's computer rooms

SECTION TWO: TRAINING AND TECHNICAL SERVICES

2.1 Short-Term Training

2.1.1 Building African Capacity for Conserving Biodiversity in a Changing Climate in the Albertine Rift Region of Africa

This is a capacity building programme implemented jointly between SysTem for Analysis, Research and Training for Global Change Science (START) and the Institute for Resource Assessment of the University of Dar Es Salaam. The project is funded by John D. and Catherine T.MacArthur foundation

The objective of the project is to support capacity building for conservation of biodiversity in a changing climate in the Albertine Rift Region of Africa. It involves development and implementation of masters' level courses and externships for early to mid-career conservation researchers and professionals and graduate students. The courses will focus on the risks to biodiversity resulting from climate change, and strategies to manage the risks. The program will be implemented at the campus of the University of Dar es Salaam and will be open to participants from across Africa, with emphasis on the Albertine Rift countries of Burundi, Democratic Republic of Congo, Rwanda, Tanzania and Uganda. Successful participants will receive credits toward a Master of Science degree and will acquire enhanced knowledge and skills that will enable them to contribute substantively to adapting biodiversity conservation practices to changing risks in a changing climate.

Development of the curriculum will be done in mid 2007 and the courses and externships will be start being offered from beginning of 2008. The baseline assessment has been completed. This will be followed by development of training curriculum based on needs assessment undertaken during the baseline survey.

Researchers: Prof. P. Z. Yanda, Dr. R.Y. Kangalawe, Dr. E. Liwenga, Dr J. Lyimo

2.1.2 Training of District Staff in the Lake Zone in Monitoring and Evaluation Skills

This was short course training on capacity building in the Lake Zone. The training was undertaken by IRA on request from SIDA-supported District Development Programme for the Lake Zone. The training focused on Monitoring and Evaluation aspects including; methods& skills, indicators and classifications, targets and benchmarking in Monitoring & Evaluation. It also included how to report Monitoring & Evaluation findings.

The training targeted selected group of the local Government staff mainly Heads of Department including agriculture, water, community development, cooperatives, health, internal audit, education and road engineering from Bunda, Ukerewe and Serengeti Districts. The training was undertaken from 30th April to 4th May 2007 in Ukerewe island, and it was attended by 21 district staff.

Researchers/trainers: Ms H L. Kiwasila (IRA) and Dr. Donald Mwiturubani (Dept of Geography).

2.1.3 Short term training of UNDP Staff and Easter n Arc Programme in Morogoro

12 Staff from UNDP and the Conservation and Management of Eastern Arc Mountain Forests Programme were trained on Principles of Environmental Economics and Valuation of Natural Resources from 14th to 17th June 2007 in Morogoro.

This course intended to bring some insights on the linkage between the environment and the economic growth. The participants were expected to develop critical insights into how environmental economics can be applied to various situations of environmental management, including issues of costs and benefits of different environmental interventions. The training also included a half-day trip to the South Uluguru Forest for hands on experience of issues on the ground, such as encroachment.

Trainers: Dr. F.C. Shechambo; Dr. G.J. Jambiya (Geography) and Mr. Z. Kengera (Geography)

2.2 Teaching and Supervision

During the year under review, members of academic staff participated in teaching and supervision of M.Sc. (NARAM) students as shown below;

No.	Student/ Reg. No.	Topic	Supervisor
1.	Amani Gibson, HD/TP.489/2005	Sustainable Management of Game Controlled Areas in Tanzania; Challenges and Prospects: The Case Study of Kilombero Game Controlled Area, Morogoro Tanzania	Prof. J. Ngana Dr. J. Lyimo
2.	Madaka Tumbo HD/T.33/2005	Assessment of Vulnerability and Adaptation of Wetland Ecosystems to Impacts of Climate Variability. A Case Study of Kilombero Valley	Prof. P.Z. Yanda Mr. S. Mwansasu
3.	Gwambene Brown HD/T.616/2005	Adaptation and Coping Strategies for Climate Variability and their Implications in Land Resources Management in Rural Areas: A Case of Masoko Area in Rungwe District, Tanzania.	Dr. A. Majule Prof. E. Shishira
4.	Ally Kebby Abdallah HD/TP.646/2005	Migration, HIV/AIDS and the Environment: Linkages, Impact and Mitigation.	Prof. N. Madulu Ms. H. Kiwasila
5.	Elikana Kalumanga HD/T.628/2005	Abundance and Diversity of Small Mammals in Disturbed and Undisturbed Forests at Uluguru, Tanzania.	Prof. Senzota (Faculty of Science) Ms. C. Masao
6.	Lazaro M. Johannah HD/T.611/2005	Assessment of Ecological Viability of the Selela-Upper Kiteto Corridor with Emphasis to Elephants.	Prof. I.S. Kikula Dr. J. Lyimo
7.	Melubo Kokel HD/612/2005	The Impact of Ecotourism on the Livelihood of Livestock Herders in Protected Areas. A Case Study from NCA.	Dr. C. Mung'ong'o Dr. F. Maganga
8.	Severin K. Kalonga HD/T.354/2005	The Role of Indigenous Knowledge in Forest Biodiversity Conservation. A Case Study of the Kilombero District, Morogoro, Tanzania.	Prof. I. Kikula Dr. A. Mwakaje
9.	Alexander Songoro HD/T.132/2005	Impact of Participatory Forest Management (PFM) on Poverty Reduction and Government: The Case of Suledo Forest Reserve, Kiteto District Manyara Region.	Dr. H. Sosovele Dr. F. Maganga Mr. C. Silangwa
10.	Nyega Nyangubho HD/T.585/2005	The Assessment of the Performance of the Co-Management Strategy (Beach Management Units) on the Lake Victoria Fisheries Resource: The Case of Mwanza Region.	Dr. R.Y.M. Kangalawe Ms. H. Kiwasila
11.	Hamoud I. Hamisi HD/T.344/2005	Wetland Resources Trends and their Contribution to Rural Livelihoods. Assessing the Practicability of the Ramsar's Wise Use Concept	Prof. P. Yanda Dr. A. Majule
12.	Nyakisinda Denis M. HD/T.624/2005	Implications of the Changes of Natural Resources Management Strategies to Ikorongo, Grumeti Game Reserves and Ikoma Opne Area – Western Serengeti.	Dr. H. Sosovele Dr. A. Mwakaje
13.	Mwakipesile A. HD/TP.510/2005	Livelihood Diversification and Its Implication on Wetlands: A Case of Rufiji Wetlands Ecosystems, Rufiji District, Coastal Region, Tanzania.	Dr. F.Shechambo Dr. E. Liwenga

Apart from the M.Sc. (NARAM) supervision, staff members also supervised students from other Departments as follows

Prof. PZ. Yanda:

- Served as External Examiner for 1 PhD. Student from Department of Physical Geography, Stockholm University and Two MSc. candidate from Sokoine university of Agriculture.

Dr. F.C. Shechambo:

- 2 Ph.D. candidates from Demographic Training Unit and Department of Geography
- Served as External Examiner for 1 Ph.D. student from the Department of Agricultural Economics and Agribusiness (SUA) and 3 M.Sc. (Forestry) from the Department of Forest Economics (SUA)
- Served in the *viva voce* panel for 1 Ph. D. candidate from the Department of Geography

Dr. F.P. Maganga:

- Served as External Examiner for 1 PhD student from Faculty of Forest and Nature Conservation, Sokoine University of Agriculture.

Dr. R.Y.M. Kangalawe

- Served as External Examiner for 4 M.Sc. students from the Departments of Forest Economics and Forest Mensuration, Faculty of Forest and Nature Conservation, Sokoine University of Agriculture.

Dr. E.T. Liwenga

- Served as External Examiner for 3 M.Sc. students from the Departments of Forest Economics and Forest Mensuration, Faculty of Forest and Nature Conservation, Sokoine University of Agriculture.

Dr. H. Sosovele

- Served as External Examiner for M.A tourism and BA students at the Faculty of Arts and Social Science, Open University.

SECTION THREE: RESEARCH AND COMMUNITY SERVICES

3.1 Completed Research and Community Services

3.1.1 Natural Resources Management Strategies contributing to Poverty Reduction in the Internal Drainage Ecosystems - The case of Lake Eyasi, Tanzania

The research Project was carried out in Lake Eyasi basin which comprised of five regions namely; Arusha, Shinyanga; Singida and Tabora Regions. The project was supported by Rockefeller foundation and its focus was on sustainable natural resources management and poverty reduction. The overall objective of the study was to establish an integrated management strategy for the Lake Eyasi basin which would contribute towards poverty reduction while maintaining the ecological integrity.

Specific objectives include:

a) To document the natural resources base and livelihoods activities in the basin
b) To document environmental and socio economic challenges and interventions undertaken
c) To document types of conflicts and resolutions mechanisms undertaken
d) To recommend natural management strategies contributing to poverty eradication in the basin.

The research results indicate that Lake Eyasi basin is well endowed with varieties of wild animals and hosts numerous bird species (both resident and migrant species). The region has a wide diversity of ecological habitats, which creates a big potential for ecotourism. Also, the area has a high potential for agricultural diversification especially in Mang'ola Ward (irrigated onion farming) and in Bukundi Ward in Meatu District (rice farming), mining activities (high concentration of soda ash for industries in the lake).

Despite the above potential there is a need to address issues such as governance, capacity building in environmental management, land use planning, entrepreneurship skills and improvement of livestock opportunities e.g. markets etc.

Researchers: Prof. N.F.,Madulu, Prof. J.O,Ngana, Prof. P.Z.Yanda and Ms. V.H. Moshy.

3.1.2 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 this study 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.

The above study has distilled a number of key issues, which are important for future management of natural resources in the Hingilili basin and similar basis in Pare Mountains and their implications to socio economic development of their communities. The emerging issues have been broadly categorized into three groups namely; hydrological, environmental conservation and agriculture. Some of the key results include:

Hydrological issues

- Lack of long term continuous stream flow data has limited analysis of stream flow trends in the basin. It is highly recommended to revive rainfall stations and establish adequate stream flow stations for monitoring water resources in the area for reliable planning of water resources.
- Water quality assessment in the highland and lowlands show insignificant levels of fertilizer residues in the water to cause concern on irrigation in the lowlands

- Pare Mountain highlands are heavily populated with poor sanitation and water supply is through water abstraction directly from rivers. Therefore concerted efforts must be made to carry out monitoring of water quality and also arrangements made for treatment of water before use including enhancement of boiling water for drinking.
- Due to the increasing population and declining water sources there is a need for construction of small dams to offset water shortage in the lowlands.
- Trend analyses of annual rainfall in the basin indicate a general decline in rainfall possibly as an impact on climate change. Up scaling of the study is required to include a larger database of available data in the Pare mountains ecosystem for conclusive statement.

Environmental conservation

- The establishment of Hingilili Basin Association (HIBA) is a positive strategy towards minimizing conflicts on water use between highlands and lowlands and should be strengthened.
- It is claimed that eucalyptus has invaded river valleys and may have reduced stream flows, hence calling for an in depth assessment of extent of invasion and its impact.
- Lessons learnt from Hingilili basin indicate that effective management of natural resources must follow ecosystem approach, which integrates the highland-lowlands environs in a basin framework unlike the management using administrative boundaries.

Agriculture

- Ginger farming is expanding steadily and it is known to consume a lot of water. In view of the decreasing water resources and expanding water needs in the basin, there is need to monitor its expansion and assessment of its impact on water resources availability.

Researchers: Profs. J. O. Ngana and P.Z. Yanda

3.1.3 Dairy Farming and Biogas Use for Poverty Alleviation and Environmental Conservation in Rungwe District, Mbeya Region: A study of Opportunities and Constraints

The objectives of this study were to examine the challenges and opportunities of biogas use in Rungwe district South West Tanzania.

Findings show a number of opportunities for biogas technology adoption including large numbers of indoor-fed cattle and inadequate firewood in the district, which has increased its cost of such commodity. Households generally spend an average of TShs. 20,656.50 per month or TShs. 247,876.8 per annum for energy. The demand for biogas (90%) among respondents is high and the energy policy as well as donor community favour the promotion of energy efficient technologies such as biogas. Constraints encountered in establishing biogas plants were found to include unaffordability (75%) and water scarcity. Also there is inadequate expertise where some of the biogas plants have been poorly constructed leading to ineffective performance. There are also a small proportion of the respondents who admitted that they had heard nothing about biogas technology. It is being suggested that credit should be available as well as developing affordable bio-digesters. Communal biogas should be encouraged to reduce the cost per unit and the government should undertake the improvement of water services.

Status: Final Report has been submitted to REPOA for publication.
Researchers: Dr. A.G. Mwakaje and Prof. R.B.B. Mwalyosi

3.1.4 Environmental Impact Statement for the proposed development of Bilila Lodge, Serengeti National Park.

The objective of this assignment was to identify and analyse impacts associated with the proposed development in Serengeti National Park and to prepare Environmental Impact Statement for submission to the developer – ASB Holdings (T) Ltd.

Status: The report was completed and submitted to developer and to the government. The project was approved with conditions to adhere to mitigation measures. Construction of the lodge has started in Bilila, Serengeti National Park.

Researchers: Dr. H. Sosovele (Team leader); Prof. D. Mashauri (Faculty of Engineering); Dr. A. Mwakaje; Ms. C. Masao; Mr. G. Sangu (Botany) ; Ms. B. Mchome and Mr. A Chambi (East Africa Resource Group Ltd)

3.1.5 Environmental Impact Statement for the proposed development of Mountain Lodge, Ngorongoro Conservation Area.

The objective of this assignment was to identify and analyse impacts associated with the proposed development in Ngorongoro Conservation Area and to prepare Environmental Impact Statement for submission to the developer – ASB Holdings (T) Ltd.

Status: The report was completed and submitted to developer and government. The project was **not approved** due to having significant negative impacts, including incompatibility with the existing General Management Plan of Ngorongoro. The developer was advised to look for an alternative site.

Researchers: Dr. H. Sosovele (Team leader); Prof. D. Mashauri (Faculty of Engineering); Dr. A. Mwakaje; Ms. C. Masao; Mr. G. Sangu (Botany) ; Ms. B. Mchome and Mr. A Chambi (East Africa Resource Group Ltd).

3.1.6 Compensation and Resettlement Report for Affected Persons from the proposed Construction of Mugumu Aerodrome, Serengeti District

The main objective was to prepare compensation report based on the valuation assessment for properties to be affected by the proposed development of the aerodrome in Mugumu Township.

Status: A report was completed and approved by the Ministry of Lands and Human settlement and compensation money paid to affected population in Mugumu. Detailed EIA report is in the final stages of completion for submission to Government.

Researchers: Dr. H. Sosovele (Team Leader); Dr. C.G. Mung'ong'o, Dr. F. Shechambo, G. Sangu (Botany), Ms Z. Kichewele and Z. Kijazi (Kinondoni Lands Office), Ms B. Mchome and Mr. A. Chambi (East African Resource Group).

3.1.7 Water use Conflicts in Zigi Basin: Conflict Management Strategy.

This was a small project supported by Global Water Partnership-Southern Africa as a contribution towards promoting Integrated Water Resources Management in member countries within the SADC region.

The research was undertaken in Zigi basin in the neighbourhood of Muheza and Tanga District. Zigi River drains the eastern slopes of Usambara Mountain through Muheza District and drain to Tanga municipality as the main source of water. The main objective of the research was to assess water use conflicts and develop a conflict management mechanism.

It became apparent that major water use conflict was between Tanga Urban Water Authority who were on the downstream end and the upstream users who were largely small subsistence farmers and the small artisan miners. A baseline survey was undertaken in the basin and a stakeholders workshop involving Tanga and Muheza District Councils, Ministry of Energy and Mining, Tanga Urban Authority, Amani Nature Reserve, Eastern Usambara Research) arranged which deliberated on key issues which emerged in the survey.

Status: A basin wide strategy was developed which addressed all stakeholders concerns and Muheza District was requested to oversee its implementing and monitoring.

Researcher: Prof. J.O.Ngana

3.1.8 Research Protocols for Assessing the Impact of Climate Variability and Change in Rural Tanzania: Water, Food Systems, Vulnerability and Adaptation

The study was funded by START/PACOM through their Small Grants for African Scientists. Climate change and variability have impacts on ecosystems, land use and the people's livelihoods and therefore influence coping mechanisms by various communities. The study evaluates methods for assessment of impact of climate change and variability, and other stress factors on the natural and socio-economic systems in the southern highlands of Tanzania. Emphasis was on examining the impacts, vulnerability and adaptive capacities of the local communities. The study was conducted in Ntungwa and Nyimbili villages representing two agro-ecological zones in Mbozi District, namely the drier lowland and the wetter highlands respectively.

The findings from this study indicate that local people's perceptions on climate change/variability are based on assessment of climate attributes such as rainfall, wind, temperatures, river flows, changes of vegetations, and outbreaks of specific diseases and pests. Climate change/variability is perceived to be caused by both human and natural factors. Besides climate change/variability, other stress factors such as HIV/AIDS and high price of agricultural inputs have several impacts on the livelihood and natural resources in the area. The findings further indicate that variation in livelihood assets influence levels of vulnerability to climate change/variability, consequently their adaptive capacity

Status: Final report has been submitted to START- Nairobi)

Researchers: Prof. P.Z Yanda, Prof. J.O Ngana., Drs. E.T., Liwenga, R.Y.M. Kangalawe, J.G.Lyimo, and A.E., Majule.

3.1.9 Review and Assessment of Information on the Status, Impacts and Management of Invasive species in the United Republic of Tanzania.

This is a Consultancy Report for Global Invasive Species Programme (GISP) and The Division of Environment, Vice President's Office. United Republic of Tanzania.

The primary objective of the project was to provide relevant background information on invasive species, and invasive species management in Tanzania with a view to identifying gaps and needs for the purpose of informing development of the Full Project document. The assessment of invasive species included available information on the occurrence, distribution and trends in distribution of the most problematic invasive species in the country; a listing of other identified or suspected invasive species; and an assessment of the primary pathways and vectors for invasive species moving into, and within the country.

The study has revealed that in Tanzania there is considerable awareness and knowledge on the invasive alien species in some of institutions especially those dealing with research. However, currently there is limited or little demonstrated capacity in terms of human and financial resources to address the issue of invasive species, except for a few cases such that of Nile perch and water hyacinth of Lake Victoria. Generally there are no clearly defined long-term strategies to address the issue of invasive species in many institutions. Much of the little effort done was on ad-hoc basis particularly when there are serious identified problems that have significantly negative impacts on the community such as water hyacinth (*Eichhornia crassipes*) in Lake Victoria.

Status: Final draft report has been submitted to Global Invasive Species Programme (GISP) and the Division of Environment, Vice President's Office. United Republic of Tanzania

Researchers: Drs R.Y.M. Kangalawe, J.G. Lyimo, E. T.Liwenga and Ms M.N. Ringo

3.1.10 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 malonga 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 favourable.

Status: The project has been completed and submitted to REPOA

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

3.1.11 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 include;

- 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.
- 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.
- There is lack of information on the current status of these resources

Status: This study has been completed

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

3.1.12 Macro Level Assessment: A Consultancy for World Vision Tanzania

This Macro Level Assessment provides a descriptive picture of the country in relation to environment, climate, demography, political environment, security situation, and social and economic context. It shows the relationship that exists between the country in the context of regional and international frameworks and explores and brings out the broader picture of the country based on existing sectoral policies and development strategies.

The assessment was conducted as a requirement of World Vision Design Monitoring and Evaluation protocols so as to provide national and sectoral consolidated data for Micro Level Programming. The methodology used in carrying out the MLA included review of relevant research literature pertaining to the sectoral areas of concentration, review of available socio-economic policy and development data, consultations and collection of information from key institutions at the national level, and consultations

with key stakeholders in selected WVT zones. At the zonal level, discussions were carried out with zonal staff, ADP staff and ADP committee members representing local communities in the villages under WVT projects.

Findings:
Micro Successes with Linkages to Macro Efforts: The assessment indicates that there is a remarkable positive impact of WVT activities in its zones of operations. Positive impacts are more pronounced on service provision and socio-economic aspects such as health, education, agriculture and the three cross-cutting issues of gender, age and environment.

Micro Successes without Linkages to Macro Efforts: Two interventions that left positive outcomes at the local level but failed to influence or relate to the macro. These are the Customer Relations and Children Sponsorship and Christian Commitment. The former has, in some zones, created dependence syndrome that has been frowned upon by various government officials and does not augur well for future self-reliance. Although the Christian Commitment Programme facilitates inter-denominational activities such as meetings and supporting church leaders in capacity building, it also implicitly aspires to influence non-Christians to join the faith. The GoT has, however, categorically stated that the state has no religion. WVT should be careful when implementing this programme, lest it be misunderstood as having an ulterior motive or secret agenda with its development interventions.

Micro Failures to Influence Macro Efforts: The establishment and operation of ADPs in WVT operational zones have also faced some micro shortcomings that have for various reasons derailed the process of influencing macro efforts. The major ones have been project sustainability, persistent drought, facilitation of technical expertise, and women involvement.

- *Determinants of Successful Micro-Macro Linkages*: Five major determinants were identified, including:

    1. Civic participation and social capital formation based on people-centred, pro-poor and decentralized development initiatives.
    2. Enhanced institutional capacity to run programmes.
    3. Enhanced human capabilities.
    4. Development of vertical and horizontal institutional links to provide useful channels of information transfer from the micro to the macro, and with other similar programmes so as to add to the synergies and enhance links to resources.
    5. Development of links to markets for outputs of a programme is key to its success and sustainability.

Status: Completed

Researchers: Prof. P. Yanda, Dr. C.Mung'ongo. Dr. E. Liwenga, Ms.C. Masao, Mr. E.E. Hanai and Ms V. Moshi

3.1.13 Development of the Central Slave and Ivory Trade Caravan Route Base Map

The Consultancy was given to IRA by the Ministry of Natural Resources and Tourism, through the Division of Antiquities (DA), in order to accomplish preparation and submission of the Nomination File for the inscription of Bagamoyo and the Slave Trade Caravan Route as a UNESCO World Heritage Site. A field survey was conducted by the Institute of Resource Assessment during November-December, 2006.

Findings: Role of the Route and Associated Sites in trade and spread of religions, Swahili language and culture was established.

The status ownership and management of the Route and associated sites were also established in Bagamoyo, Morogoro Rural, Morogoro Municipality and Mvomero Districts. Other districts included Kilosa District, Kongwa and Mpwapwa Districts, Dodoma Municipality, Dodoma Rural Districts, Manyoni District, Uyui District, and Tabora Municipality. The other districts were Urambo District, Kigoma Urban and Rural Districts

Seven sites were identified along the CSITR as offering a rich cultural, historical and architectural heritage. These included:

- *Bagamoyo,* a "place of memory" for human suffering and humiliation caused by slavery and the slave trade and the imposition of European colonialism.

- *Mamboya,* which has several historical landmarks and features that reflect the slave and ivory caravan trade.

- *Mpwapwa,* the place of the much feared Chief Pindulamagogo that later became the first capital of Central Province in colonial Tanganyika and where one of the oldest Anglican Churches was built on Ving'awe Hill on a plot that the first missionaries who fought against slave trade were given by Chief Chipanjilo Lusito, the son of Pindulamagogo.

- *Kilimatinde***,** which before becoming an administrative headquarters of the German colonizers the town was used as a resting place of slaves and their slave masters.

- *Kwihara,* a key slave market centre, located at an intersection between the trading routes to the coast and those further inland to the Congo and north to Burundi.

- *Ulyankulu,* Chief Milambo's headquarters and later day centre for the fight against slave trade.

- *Ujiji,* the first major trading centre from which Arab and associated traders exchanged slaves, ivory and other goods coming from different parts of Lake Tanganyika, including the eastern region of the DRC, Rwanda and Burundi.

RECOMMENDATIONS

The following recommendations were made:

- Where it passes through wilderness and sparsely populated rural areas, the Route should be uplifted by clearing of vegetation, planting of new mango trees aligning the Route and/or building of slabs along the route.

- Where important landmarks such as the often knocked down Gate Pillars at Bagamoyo, the indiscriminately felled down mango trees marking the Route, et cetera, have been degraded or torn down by development activities, such landmarks should be replaced and safeguarded.

- Nearby the water reservoir at Kola Hill in Morogoro there is a remnant of a foundation that could be a ruin of an ancient building. Archaeological excavations should be done at this site to establish whether the ruin was associated with the slave and ivory caravan trade or not.

- Where some artefacts that were left by the slave and ivory trade still exist, e.g. lone old trees, water wells, old buildings, et cetera, such artefacts should be upgraded and marked by putting signposts detailing their history and importance.

- Renaming of some of the landmarks, e.g. the so-called Livingstone Tembe at Kwihara in Tabora, should be considered so as to reflect the true history of these landmarks and their role in the slave and ivory caravan trade.

Status: Final report has been submitted to MNRT.

Researchers: Prof. P.Z.Yanda, Dr. C.G. Mng'ong'o, Dr. R.Y.M. Kangalawe, Mr. S. Mwansasu and S. Kajula, in collaboration with Ms C. Ntandu and Mr. Kahengwa from MNRT

3.1.14 Women Involvement in Artisan Mining and Poverty Reduction Strategies in the Era of HIV/AIDS in Tanzania: The Case of Gold Mining in Geita, Biharamulo and Kahama Districts, Tanzania

The research project was carried out in artisanal gold mining areas in three mining sites that are in three Districts namely Nyangarata mine in Kahama District, Mgusu mine in Geita and Nyamigele mine in Biharamulo District. The project was supported by Rockefeller Foundation Research Programme through the University of Dar Es salaam. The thrust of the research was sustainable natural resource use, management and poverty reduction. The overall objective of the study was to investigate the extent to which involvement of women in artisanal mining reduces women's income poverty and exposure to HIV/AIDS.

The research was undertaken between September 2006 and December 2006. A mixture of research methods were used including visits to mining holes and river banks; observation of artisanal gold processing activities that uses river water and metallic mercury; focus group discussion and interview of village leaders, miners, mine owners and brokers (informal credit providers). Also undertaken was intensive questionnaire interview of 92 women and a few men who were directly and indirectly involved in gold mining. The results of the study showed that:

More is needed to be done in order for women involved in artisanal mining to alleviate poverty as most of them (73%) were found involved in service provision (food vending, brewing and selling beer, barmaids) and 90% of women reported having no valuable property at all. The housing settlements at mines were congested and very substandard surrounded by unsanitary conditions. In general of the total 92 women interviewed only 48% reported to have benefited from artisanal mining related activities and realized to some extent their goal of bettering their life. However, only 6 of the 25 women directly involved in mining could be said have highly and successfully alleviated poverty.
Successful women who have managed to alleviate poverty were those directly involved in mining, which is highly paying financially than in service provision. However, the successful women have specific characteristic features worth noting that may have contributed to their success. The features included: being independent (divorcees or single, separated) and with control over decision making including of finances; assertive and aggressive teaming-up with men in owning and managing mining plots. Most were in middle age years of age or elderly with limited or no reproductive responsibilities that are likely to consume much of their time. It became clear that a combination of factors and not a single factor helps women in artisanal gold mining to alleviate income poverty rather than a single factor of being directly involved in the mining activity.

The risk of HIV infection was seen high as both men and women interviewed (single, divorced and widows/widower) reported to re-marry without screening for HIV. Promiscuity was reported high and sex without use of condom is highly priced and rewarded. The highest bidder is the one accepted for sexual intimacy. Witchcraft is still attributed for causing HIV indicating the need for intensive and continuous health awareness raising and HIV screening at mines. This was seen lacking. Of the 33 women divorcee 67% re-married without screening for HIV the remaining were cohabiting without precaution over HIV/STDs. 41% of 92 women respondents reported to have migrated from other places 27% from other mining sites within the respective districts where they had different lovers. Such mobility of women as well as of men has been associated with the spread of HIV infection. The fact that few women reported to have alleviate poverty, the majority of women involved in artisan gold mining are at risk of HIV/AIDS infection.

Lack of alleviation of poverty was attributed to similar factors that impact negatively on artisan mining sector in general. These were mainly: use of crude tools, difficulties in stabilizing mining pits, lack of capital and dependence on exploitative loans from informal agents, insecurity due to crime lack of reliable market for gold and poor infrastructure and sexual violence against women (rape) as most men migrate to mining sites without their wives. The latter forces financially secure women to team-up with men for security. More has to be done in the sector in general to uplift women from poverty and HIV infection in particular.

Researchers: Prof. Madulu, N.F; Kiwasila, H.l and Silangwa, C

3.1.15 Policy Options for Promoting the Production and Trading of Organic Products in Tanzania

This was a diagnostic study to examine the status and potential of organic farming in Tanzania. Three case studies for cashew nuts, coffee and honey were selected for analysis in Mkuranga, Kilimanjaro and Rufiji. The study was undertaken by staff from the University of Dar es Salaam (IRA, Economic

Research bureau and Sociology Department) in collaboration with Envirocare (a Tanzanian NGO) and the United Nations Conference on Trade and Development (UNCTAD) and the United Nations environment Programme (UNEP) Capacity Building Task Force (CBTF). It is part of a wider study covering East Africa (Tanzania, Kenya, Uganda, Burundi and Rwanda

The study has demonstrated the potential for organic production in Tanzania as having win-win outcomes for income generation, poverty reduction, equity and environmental protection. However, there are policy, institutional, economic, social and environmental constraints that need to be addressed at national, local government and individual household levels. Some of the key recommendations from the study are:

1. Accreditation should be submitted. Special consideration should for certification of smallholder producers. The government should subsidize/support local suppliers until they are able to stand on their own feet. Consider establishing a government certification service. Make certification less costly in terms of both money and time by enabling local certification bodies. The government should contribute to certification costs by providing subsidies to local certification agencies. This is recommended to MAFC.
2. The government should work together with stakeholders and producers in identifying the causes of constraints and in seeking solutions in a participative manner. There is a need to improve farmer access OA extension services by increasing the number of specialized extension workers knowledgeable in OA. Extension workers could aid , for example, in advising producers in the p[processing of coffee from picking, pulping, drying, storage, transportation and marketing according to certain OA standards. They could also provide advice in the case of cashew nuts, honey and other OA products. This is recommended to extension departments of MAFC, MNR&T and local international NGOs.
3. It is time to incorporate incipient policy statements into official policy documents and establish a Coordinating Unit that will provide road map for the development of OA in the country.. The OA Coordinating Unit will provide road map for the development of OA in the country. The OA Coordinating Unit will become a focal point for liaison with relevant government ministries and other stakeholders. This is recommended to MAFC.
4. An OA Unit needs to be established in the ministry of Agriculture and in other sectoral ministries (MLD and MNR & T and Environment). The overall goal of OA Units in ministries is to ensure that OA is included in policy documents, coordination and training. They can help make the OA Sub-Sector competitive, equitable and sustainable to benefit small-scale farmers in Tanzania.
5. There is a need to develop a longframe for monitoring and evaluate of the following indicators for tracking the development of OA in the country;
    - Number of farmers involved in OA
    - Availability of affordable certification services
    - Food quality
    - Productivity (Yields) of OA Sub-Sectors
    - Access to Technology and Research support to OA
    - Awareness and sensitization for OA production
    - Export growth for OA
    - Gender issues in OA

Researchers: Dr. F.C. Shechambo (IRA); Dr. Kassim Kulindwa (ERB); Dr. Simeon Mesaki (Sociology); Ms. Esther Mella (Envirocare).

3.1.16 Study on strengthening institutional, legal and policy frameworks for petroleum development in the United Republic of Tanzania and develop a Proposal for the Development of Oil and Gas Strategy with incorporation of SEA for Tanzania

This was a small consultancy to scan the policy and legal framework for the oil and gas sector which is expanding fast in Tanzania, especially along the coast. The study involved reviewing key documents and engaging stakeholders to get their views on how active their institutions are in the oil and gas sector, including identification of policy, legal and institutional gaps that need to be in place in order to steer the oil and gas sector in a sustainable development path and to avoid bad experiences of countries such as Nigeria, where oil wealth has become a curse rather than a blessing to livelihoods of

communities in the oil rich areas of the country. The findings of the study were shared with stakeholders at a one-day workshop held at the Golden Tulip Hotel on 14th May 2007. Recommendations from the workshop were submitted to the Ministry of Energy and minerals for further transmission to the Government. The report was completed in June 2007.

Researchers: Prof. I. S. Kikula; Dr. F.C. Shechambo and Mr. E.E. Hanai

3.1.17 Preparation of a Proposal to EU for on Acceleration for Integrated Water Supply, Sanitation and Hygiene Promotion for the UNICEF Country Office

The Institute was requested by the UNICEF Country Office to assist in the preparation of a proposal to the 9th European Development Fund. The proposal was submitted in July 2006.

Researchers: Prof. A.S. Kauzeni (retired Prof.) and Dr. F.C. Shechambo

3.2 On-going 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).

The project is on going, construction of small dams under preparation

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

3.2.2 Coordination of the NRM Policy Implementation support through Livelihood approaches for Improved Quality of Life and Biodiversity in Tanzania

In this project IRA is providing coordination, overall managerial and technical support to a programme that aims to facilitate the implementation of integrated NRM policies through (a) the development and implementation of policies and laws that integrate conservation and development (b) support conservation enterprises to generate increased and equitable benefit from sustainable use of natural resources.

The programme is still on going running in its 6th year with significant achievements. During the reporting period, the programme has assisted in the development of three Regulations as part of the Environmental Management act No 20 of 2004. These are (a) Regulations for Strategic Environmental Assessment (b) Regulations for Fees and Charges Payable under EMA and (c) Regulations for Ozone Depleting Substances. Draft regulations are ready and consultants are finalizing final versions that will be submitted to Vice President's Office for approval. Other achievements include gazettement of 8 Wildlife Management Areas (WMAs) out of 16 pilot areas. Among these 8, five WMAs with hunting

blocks have received US$ 61,000 from hunting activities in these areas. Several capacity development programme targeting the District councils with WMAs and the Wildlife Division and Division of Environment. This programme is funded by WWF.

Researcher: Dr. H. Sosovele - programme Coordinator.

3.2.3 Environmental Impact Statement for the proposed development of Steel and Allied Industries in Ludewa District

The main objective of the assignment was to identify and analyse main impacts – negative and positive that could arise from the proposed development. This is one of the very large and critical projects that are to be established in Tanzania in recent years. The developer intends to undertake the mining of coal and iron ore in Liganga and use these resources to produce various steel products for local and export markets.

The final EIA report has been submitted to government for approval. Development may commence as soon as government approval procedures and licences have been completed.

Researchers: Dr. H. Sosovele (Team Leader); Dr. F. Shechambo, Dr. A Majule, Dr. J Lyimo, Prof. D. Mashauri and Dr. E Masanja (Faculty of Engineering), G, Sangu, (Botany), B. Mchome and A, Chambi (East African Resource Group)

3.2.4 Environmental Impact Statement for the proposed development of Permanent Tented Camp at the Bay of Masekera B, Rubondo Island National Park.

The assignment involved identification, prediction and analysis of negative and positive impacts associated with the proposed development of permanent tented camp in the Rubondo Island National Park.

Preparation of the draft report is at advanced stage.

Researchers: Dr. H. Sosovele (team Leader). Prof. J. Kabigumila of DUCE, Mr. E.E. Hanai and Mr. J. Perfect.

3.2.5 The dynamics of farming systems, food security and poverty alleviation strategies in the semi-arid 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 draft 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 was funded by VICRES. 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), are jointly undertaking this study. 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-linkage between communities living in the highlands and in the lowlands due to differences in the types of commodities available in the two agro-ecological 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. The second phase of the project is in progress.

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

3.2.7 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 (from IRA), Ms Beatrice Mchome and Alex Chambi (from East African Resource Group). Prof. R.B.Mwalyosi (retired Prof.) and researchers from Zoology and Botany Departments,

3.2.8 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. The project is still on progress.

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

3.2.9 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

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

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 indicate 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.

Research draft report has been submitted to REPOA

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

3.2.11 Preparation of an Integrated Management Plan of the Malagarasi-Muyovosi Ramsar Site

This is on-going project aimed at preparing Integrated Management Plan for consolidating and improving the conservation of the Malagarasi-Muyovosi ecosystem. The plan also intends to foster the improvement of the livelihoods of communities living within and around the wetland areas. The Malagarasi-Muyovosi is Tanzania's first Ramsar Site. The other sites are Lake Natron, Rufiji, Kilwa and Mafia. Some of these sites are already currently funded for the development of their plans while others are in the process of developing them and the rest are in the process of implementation of their plans.

The Plan is being developed within the context of the national policies and appropriate legislations. The implications to the planning process of GoT policies and legislations such as EMA, the Agricultural Sector Development Strategy and the professed intension of expanding areas under irrigated agriculture, or the Urgent Actions for Land Degradation and Water Catchments has been assessed and taken on board. Planned developments and/or infrastructure investments and interventions in the area, e.g. the road and bridge over the Malagarasi, has also been considered.

Researchers: Prof. P.Z. Yanda, Prof. I.S. Kikula, Dr A.E. Majule, Dr. C.G. Mung'ong'o and Ms C. Massao

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

This study is funded by WARFSA 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. First phase field work has been undertaken and progress report submitted to WARFSA. Second phase which involves detail village survey is on progress.

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

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

The study is funded by REPOA. 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, fieldwork 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 report is under preparation.

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

3.2.14 Gender Issues in resource Management in the Southern Highlands of Tanzania: A case of Mufindi District

The study is funded by UDSM Gender Centre. The main objective of this study is to examine the dynamics of gender roles and the implications to natural resource management in the southern highlands of Tanzania. It is examining the resource management strategies by various gender groups, and how such strategies contribute towards poverty alleviation, food security and sustainable development under changing environments.

Second fieldwork has been completed data analysis and report writing is in progress.

Researchers: Dr. R.M.Y. Kangalawe and Dr. E.T. Liwenga

3.2.15 Strengthening local agricultural innovation systems in less favoured and more favoured areas of Tanzania and Malawi to adapt to the challenges and opportunities arising from climate change and variability.

This is a four year project funded by IDRC. The main objectives of the project are;
To strengthen farmers' capacity to access and use quality information, training and products in order to adapt to climate change and climate variability

- To strengthen the capacity of private and public sector stakeholders to make agricultural innovation systems work more efficiently, equitably and responsively to climate

The project has just started.

Researchers: Dr. A. Majule, Dr. F. C. Shechambo and Dr. E.T. Liwenga

3.2.16 Development and bio-diversity in East Africa and India

This is a SIDA funded project. The main objective of the project is to assess the extent to which conservation benefits local communities in East Africa and India. The research project is on going. Field work has been completed in Karatu, Ngorongoro and Serengeti districts. Data analysis is going on.

Researcher: Dr. F. C. Shechambo

3.3.17 Management of START activities in Africa (recent projects include: ecosystem management, climate change and biodiversity conservation).

Following recommendations of the START SSC and START's Pan-Africa Committee, START's Pan-Africa Committee Secretariat (PASS) has been relocated to the Institute of Resource Assessment (IRA) at the University of Dar es Salaam in Tanzania as of April 2007. The Institute of Resource Assessment is a multidisplinary institute with long experience in global change research. The Institute is engaged in START activities in Africa (recent projects include; ecosystem management, climate change and biodiversity conservation).

The PASS office at IRA-UDSM will facilitate the following activities:

- Convene periodic meetings of PACOM and its subcommittees, including making logistical arrangements, preparation of meetings agendas, briefing and background paper for such meeting, make travel arrangements for committee members attending, disburse per diem, and provide administrative support for the travellers.
- Provide information on START effort in Pan-Africa region by publishing and disseminating newsletter on START activities in the region. Maintain a PASS/PACOM website and other means as appropriate.
- Maintaining and organise a mailing list of global change researchers in Africa and other relevant data for committee operations.
- Provide an annual reports and other information to be used on the START secretariat.
- Seek to engage scientific, policy makers and others from across all parts of Africa in START and PACOM on global environmental change activities.
- Keep liaison within regional network to facilitate implementation of agreed-upon regional development plans.
- Execute task and implement programs as may be agreed with PACOM resources and fund permitting.

The University of Dar Es Salaam has allocated office space and basic facilities for PASS operations. However, more facilities are still needed to enable full operation of the office. PASS activities are co-ordinated by Prof. P.Z. Yanda

SECTION FOUR: PUBLICATIONS

A total of 30 publications were produced. These include 7 chapters in books; 6 journal articles, 5 journal articles sent for publication and 12 research reports, consultancy reports and workshop proceedings, as indicated below;

4.1 Books

1. Shechambo, F. (with, Sosovele, R.B.B. Mwalyosi, R.K.M. Kangalawe, E. Liwenga,) (2006). The Development of Poverty-Environment Indicators. Dar es Salaam: Vice Presidents Office.

4.2 Chapters in Books

1. Wandiga, S. O., Opondo, M., Olago, D., Githeko, A., Githui, F., Marshall, M., Downs. T., O pere, A., Yanda, P.Z**.,** Kangalawe, R., Kabumbuli, R., Kirumira, E., Kathuri, J., Apindi, E., Olaka, L. Ogallo, L. Mugambi, P., Sigalla, R., Nanyunja, R., Baguma, T. and Achola, P. (2007): Vulnerability to climate induced highland malaria in east Africa. *In:* N. Leary, C. Conde, A. Nyong and J. Pulhin, eds., *Accepted for Publication in Dimensions of Vulnerability in a Changing Climate - Case Studies from the Developing World.*

2. Wandiga, S. O., Opondo, M., Olago, D., Githeko, A., Githui, F., Marshall, M., Downs. T., O pere, A., Yanda, P.Z., Kangalawe, R., Kabumbuli, R., Kirumira, E., Kathuri, J., Apindi, E., Olaka, L. Ogallo, L. Mugambi, P., Sigalla, R., Nanyunja, R., Baguma, T. and Achola, P. (2007): Vulnerability to climate induced highland malaria in east Africa. *In:* N. Leary, C. Conde, A. Nyong and J. Pulhin, eds., *Accepted for Publication in Dimensions of Vulnerability in a Changing Climate - Case Studies from the Developing World.*

3. Yanda, P.Z., Wandiga, S. O., Kangalawe, R., Opondo, M., Olago, D., Githeko, A., Githui, F., Marshall, M., Downs. T., Opere, A., Kangalawe, R., Kabumbuli, R., Kirumira, E., Kathuri, J., Apindi, E., Olaka, L. Ogallo, L. Mugambi, P., Sigalla, R., Nanyunja, R., Baguma, T. and Achola, P. (2007): Adaptation to Climate Change - Induced Malaria and Cholera in the Lake Victoria Region. *Accepted for Publication as a Chapter in the AIACC Adaptation Book.*

4. Vogel, C., Nyong, A. Boko M, Niang-Diop, I., Tabo, R. Osman Elasha, B., Githeko, A., Yanda, P.Z., and Medany, M. (2007). Africa Chapter – Chapter 9. Accepted for Publication In: Climate Change Impacts, Adaptation and Vulnerability. ***Intergovernmental Panel for Climate Change (IPCC) (Working Group II). Fourth Assessment Report***

5. Liwenga E.T, and J.G. Lyimo (2006): The Relevance of indigenous knowledge for sustainable farming systems of Tanzania. The case of Iraqw farming system. In Sustainable Development and the Environment in Tanzania, Issues, Experiences and Policy Responses (Ed.Komba A.A.) Organisation for Social Science Research in Eastern and Southern Africa (OSSREA) Publication Tanzania Chapter. Chapter 8: 117 – 131pp

6. Kangalawe R.M.Y and J.G. Lyimo (2006): Local knowledge and its role in sustainable agriculture in the Southern Highlands of Tanzania. A case of the Matengo Pit cultivation system of Mbinga District. In In Sustainable Development and the Environment in Tanzania, Issues, Experiences and Policy Responses (Ed.Komba A.A.) Organisation for Social Science Research in Eastern and Southern Africa (OSSREA) Publication Tanzania Chapter, Chapter 7: 99 – 116pp

7. Maganga, F.P; R. Odgaard and E. Sjaastad. 2007 " Contested Identities and Resource Conflicts in Morogoro Region, Tanzania. Who is Indigenous?". In Derman, B.; R. Odgaard and E. Sjaastad (eds.) Citizenship, Identity and Conflicts over Land and Water in Contemporary Africa, London, James Currey

4.3 Journal Articles

1. Yanda, P.Z., Kangalawe, R.Y.M. and Sigalla, R. (2006): Climatic and Socio-Economic Influences on Malaria and Cholera Risks in the Lake Victoria Region of Tanzania. ***IJEE, Vol. IV, No. 3. P.44-70.***

2. Wandiga, S. O., Olago, D., Opondo, M., Githeko, A., Githui, F., Marshall, M., Downs. T., O pere, A., Yanda, P.Z., Kangalawe, R., Kabumbuli, R., Kirumira, E., Kathuri, J., Apindi, E., Olaka, L. Ogallo, L. Mugambi, P., Sigalla, R., Nanyunja, R., Baguma, T. and Achola, P.(2006): Climatic, Socio-economic and Health Factors Affecting Human Vulnerability to Cholera in the Lake Victoria Basin, East Africa. ***Ambio Vol. 36***

3. Yanda, P.Z. (2007): Drying of Lake Jipe – Is it Climatic and/or Human Induced Phenomenon. (**In press) – *IJEE Vol. V. No. 1***

4. **Yanda, P.Z. (2007):** Transformation of Natural Ecosystem to Agricultural Land and Implications on Environmental Integrity and Rural Livelihood in Lower Irangi, Semi-arid Central Tanzania. (**Accepted for Publication) - *UTAFITI Journal of the Faculty of Arts and Social Sciences,* Vol.7, No.1** of June 2006.

5. Yanda, P.Z. and Ngana, J.O. (2007): **Integrated Natural Resources Management in the Highland – Lowland Ecosystems** – The Case of Hingilili Catchment in the Pare Mountains, Northern Tanzania. **(In press):** *Journal of Geographical Association of Tanzania (JGAT); Issue No. 33.*

6 Mung'ong'o C., and Yanda P.Z. (2006) Risks, Livelihoods and Vulnerability to Flooding in Kyela District, South western Tanzania. *Tanzania Economic Trends*

4.4 Journal Articles submitted for publication

1. Majule, A., J.O. Omollo and P.Z. Yanda (Forthcoming): Performance of Maize During Acid Amelioration with Organic Residues in Soils of Mtwara, Tanzania. (**In press) - *Tanzania Journal of Sciences***

2. Yanda, P.Z. (Forthcoming): Impact of Small-Scale Tobacco Growing On The Spatial And Temporal Distribution Of Miombo Woodlands In Western Tanzania. **(Submitted for Publication)**. ***Bunda J. of Agric. Env. Sci. and Tech.***

3. Yanda, P.Z., Shishira, E.K., Mwakaje, A.G. and Majule, A.E. (2005): Underlying Threats on Forest Reserves in Tabora Region, Western Tanzania . (Submitted for Publication). ***Bunda J. of Agric. Env. Sci. and Tech.***

4. Mung'ong'o, C.G. and Yanda, P.Z. (Forthcoming): Risks, Livelihoods and Vulnerability to Flooding in Kyela District, Mbeya Region, Tanzania. (**In press**): ***Tanzania Economic Trends, TET: A Biannual Review of the Economy***; **Volume 19, No. 1;** June 2006.

5. Benjaminsen, T.A.: Maganga, F.P. and Abdallah, J.M. (Forthcoming) "The Political Ecology of a Farmer-Herder Conflict in Tanzania", Paper submitted to A Journal of *Development* and *Change*, The Hague.

6. Shechambo, Fanuel (2006) "Conserving the Environment and Improving Livelihoods using Traditional knowledge and Organisation: The Case of Ngitili Areas in Shinyanga Region, Tanzania". Paper submitted to the Journal of the Geographical Association of Tanzania

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

1. Yanda, P.Z., Wandiga, S. O., Kangalawe, R., Opondo, M., Olago, D., Githeko, A., Githui, F., Marshall, M., Downs. T., O pere, A., Kabumbuli, R., Kirumira, E., Kathuri, J., Apindi, E., Olaka, L. Ogallo, L. Mugambi, P., Sigalla, R., Nanyunja, R., Baguma, T. and Achola, P. (2006): Adaptation to Climate Change/Variability – Induced Highland Malaria and Cholera in the Lake Victoria Region. **AIACC Working Paper No. 43. www.aiaccproject.org**.

2. Kiwasila, H.L (2007) Gender-Based Violence and its impact on Utilization of Family Planning Services in Tanzania. Paper Presented at the Ministry of Health Workshop on Strengthening Family Planning in Tanzania using Quality of Care Perspectives Addressing Gender-Based Violence (GBV) and Promoting Best Practices 4th-7th June 2007. Courtyard Hotel.

3. Kiwasila, H.L (2007) FGM Interventions: Achievements, Challenges and Prospects in the Light of the National Plan of Action to Accelerate the Elimination of FGM and other Harmful Practices in Tanzania. Paper Presented to the National Gender Macro-Economic Group, REPOA Conference Room 30th March 2007. Unpublished Paper

4. Kiwasila, H.L (2007) Campaign Against Gender-Based Violence in Tanzania

5. Paper presented at the National FGM Eradication Secretariat Seminar CCT Dodoma 23rd - 24th April 2007. Unpublished Paper

6. Madulu, F.N; Kiwasila, H.L and Silangwa, F.C (2007) A Research on Women Involvement in Artisan Mining and Poverty Reduction Strategies in the Era of HI/AIDS in Tanzania: The Case of Gold Mining in Geita, Biharamulo and Kahama District, Tanzania. Paper submitted at the Dissemination workshop for the Rockefeller Foundation Cooperation Programme on 9th June 2007. Council Chamber, UDSM

7. Sosovele, H. (forth coming) Environmental Governance and EIA: The Challenges of balancing Development and Environmental Conservation in Tanzania. Submitted to Journal of Environmental Policy, Korea Environmental Institute

8. Wandiga, S. O., Opondo, M., Olago, D., Githeko, A., Githui, F., Marshall, M., Downs. T., O pere, A., Yanda, P.Z., Kangalawe, R., Kabumbuli, R., Kirumira, E., Kathuri, J., Apindi, E., Olaka, L. Ogallo, L. Mugambi, P., Sigalla, R., Nanyunja, R., Baguma, T. and Achola, P.(2006): Vulnerability to Climate Induced Highland Malaria in East Africa. ***AIACC Working Paper No. 25. www.aiaccproject.org***.

9. Hussein, H. (2007) "*Capacity Building for Environmental Assessment in Tanzania: The Challenges and actions after EMA 2004"*.Paper presented in the Conference on Growth, Conservation and Responsibility: Promoting Good Governance and Corporate Stewardship through Impact Assessment, organized by International Association of Impact Assessment in Seoul, Korea 31 MAY – 12 June 2007.

10. J.O. Ngana, 2006. Water Resources Management in Zigi Basin Research Report

11. P.Z Yanda J.O Ngana 2006. The Highland-Lowland Ecosystems and Livelihood Options in the Hingilili Basin in the Pare Mountains Research Report.

12. Madulu, N, Ngana, J.O, Yanda, P.Z and Victoria, H.2006. Natural Resources Management Strategies Contributing to Poverty Reduction in Internal Drainage Systems- Lake Eyasi Basin. Research Report

13. Shechambo, F. (2006). Proceedings of the Stake holder's Workshop on the Development of Poverty-Environment Indicators 11-12 October 2005. Dar es Salaam: Vice Presidents Office

14. Shechambo, F. (with K. Kulindwa, S. Mesaki and E. Mella) (2007). Policy Options for Promoting Production and Trading Opportunities for Organic Agriculture. Report submitted to UNEP/UNCTAD Capacity Building Task Force, May 2007.

15. Kikula, I.S.; F. C. Shechambo and E.E, Hanai (2007). Report on strengthening institutional, legal and policy frameworks for petroleum development in the United Republic of Tanzania. Report submitted to WWF., May 2007.

16. Kauzeni, A.S. and F.C. Shechambo, M. Uwesu, R. Budimu and S. Agbo (2006). ACP-EU Water Facility EUWF Country Summary, Tanzania. Proposal submitted to 9th European Development Fund. July 2006.

SECTION FIVE: FINANCES

5.1 Sources of Funds

5.1.1 Government Sources

During the year 2006/2007, the Institute received a budgetary allocation of about TShs 67,585,904.00 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. **Pius Z. Yanda, Director, Research Professor**, B.Sc., Hons; (Dar), Dip. MNRSA; M.Sc. (AUN), Ph.D. (Stockholm) Environment, Water Resource Development

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

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

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

5 **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.

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

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

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

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

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

11 **Richard Y.M. Kangalawe, Senior Research Fellow,** Dip. Crop Prod. (Uyole), B.Sc. Agric. (SUA), M.Sc. (AUN), PhD Physical Geography (Stockholm). Agriculture, Natural Resources Management and Land use issues.

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

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

14 **James G. Lyimo, Research Fellow,** B.Sc. Agric. (SUA), PGDIP. MNRSA, M.Sc., (AUN) Natural Resource Management, Ph.D. Geography (Copenhagen), Natural Resource Management and Land Use Systems

15 **Emma T. Liwenga, Research Fellow,** Dip. Crop Prod. (Uyole), B.Sc. Agric. (SUA), M.Sc. (AUN), Ph.D. human geography (Stockholm). Agriculture, Natural Resources Management and Food security issues.

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

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

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

19 **Emmanuel E. Hanai, Assistant Research Fellow,** BSc. Env. Eng. (UCLAS), MSc. Env. Eng. UDSM

20 **Joseph Perfect, Assistant Research Fellow** BSc. Forestry (SUA), MSc. Dryland biodiversity (Addis Ababa University)

21 **Noah Pauline, Assistant Research Fellow** BSc Env. Mgt. (SUA), MSc. Env. Science (UDSM)

22 **Victoria Moshy, Assistant Research Fellow,** BA (Geog & Env. Studies) UDSM; MA (Geography& Env. Mangt) UDSM

22. **Yusuph Katundu, Assistant Research Fellow** BSc. Forestry (SUA), M.Sc. MNRSA (AUN)

Key:

***** **On study leave**

****** **Appointed Vice Chancellor Dodoma University**

Box 2: List of Technical Staff

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 Cartography (Horsens Polytechnic, Denmark).

3. **Chrisant Msonganzila, Principal 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. **Captain Patrick Kikwaya, System Administrator,** BSc Electronic Science and Communication, (UDSM).

7. **Olipa Ngereja, Senior GIS Laboratory Scientist III,** BSc Hons –Survey (UCLAS), MSc Computer science (UDSM)

Box 3: List of Administrative Staff

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

2. **Hendrix Mbuguni Azaria, Assist. Accountant Grd II**, Cert. Cooperative (Coop. College Moshi), Dip. Business UK.

3. **Mr. Thompson Sikaponda, Senior Assist. Supplies Officer II**, ADBA

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

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

6. **Agnes Holela, Office Management Secretary** I

7. **Bruno Mwano, Senior Driver**.

8. **Musa Fulano, Driver**

SECTION SEVEN: 2007/2008 ALMANAC

Monday 17th September 2007	Teaching Session begins Semester I
Tuesday, 4th September 2007	Faculty/ Institute Boards Supplementary/ Special Examinations)
Friday 28th September 2007	Board of the Institute of Resource Assessment
Friday 28th December 2007	Teaching session end semester I
Wednesday 2nd January 2008	Examination session start Semester I
Friday 11th January 2008	Examination session ends Semester I
Monday 4th February 2008	Teaching session start Semester II
Friday 16th May 2008	Teaching session ends Semester II
Monday 19th May 2008	Examinations session start semester II
Friday 30th May 2008	End of examination session Semester II