

**Institute of Resource Assessment
University of Dar es Salaam**

RESEARCH AGENDA

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1.0 HISTORICAL BACKGROUND

The predecessor of the Institute of Resource Assessment (IRA), the Bureau of Resource Assessment and Land Use Planning (BRALUP) was established in 1967 as a research wing of the then University College of Dar es Salam in the Faculty of Arts and Social Sciences. The Management of the Bureau was under a **Programme Committee** drawn from the University, Government institutions and other bodies deemed relevant by the university. The Principal Secretary of the Ministry of Development Planning and Economic Affairs (Dev Plan) chaired the Programme Committee.

The mandate of the Bureau were as stated below:

- To carry out research and develop research capacities pertinent to the social, cultural, environmental and economic development of Tanzania
- To organize and assist research activities carried out by the staff of the Bureau and staff from other departments in related fields in the University of Dar es Salaam.
- To co-ordinate and assist research carried out by staff seconded from government, research fellows from other research institutions and other visiting research workers.
- To furnish advice, upon request, to the government, public and other organizations.
- To arrange conferences, seminars or postgraduate courses on natural resources and land use-planning matters.
- To collect information necessary for the research activities of the Bureau.

- To contribute to the training of Tanzania research staff within the areas of its competence and to provide specialized teaching materials for the University of Dar es Salaam and other related institutions.

The following research themes were the main focus of research and consultancy activities of BRALUP.

- Monitoring and Assessment of the Environment.
- Food and Agricultural Production
- Population Analysis
- Socio-Economic Analysis of Water Development
- Transportation systems
- Social services distribution etc.

In 1979 a review mission was commissioned to assess the performance of BRALUP over the period 1967-79 and concluded on the following:

- The Bureau needed more capacity building
- The Bureau was specialist on the whole (interdisciplinary)
- The Bureau should maintain current themes but should also look for new initiatives
- The Bureau should be an Independent consultant
- The Bureau should establish Links but not chains
- The Bureau should be elevated to an Institute after 3 years

Following the recommendation by the Review Mission in 1979 the Government of Tanzania approved the establishment of the Institute of Resource Assessment (IRA) in 1982. The mandate of the Institute remained the same as that of BRALUP. The current IRA research themes are:

- Natural Resources and Environment
- Agricultural systems
- Population and Human Settlement; and
- Water Resources Management.

Remote sensing and Geographical Information System (GIS) – provides technical support in all research themes.

2.0 INSTITUTIONAL CAPACITY OF IRA

2.1 Human Resources

2.1.1 Academic

- 2 Research Professors in Applied Ecology
- 4 Associate Research Professors in Applied Geomorphology; Water Resources; Natural Resources & Environment and Demography
- 4 Senior Research Fellows in Sociology: Local Institutions and Rural Planning; and Agricultural Economics
- 4 Research Fellows in Agricultural Economics; Soil Science; Agriculture & Natural Resource Management and Sociology & Public Health.
- 2 Assistant Research Fellows in Soil Science & Natural Resource Management and Agriculture & Natural Resource Management.

2.1.2 Technical

- 1 MSc. Holder- Visual ++ Programming
- 1 Diploma holder – Crop Production
- 1 Diploma holder - in Cartography, GIS
- 1 Diploma holder - Cartography
- 1 Certificate holder in Photo Interpretation, Lab Photographic Processing, Image Data Processing
- 1 Certificate holder – Rural Development Planning
- 1 Certificate holder – Social Works
- 1 Artisan – Full Technicians Certificate

2.1.3 Administrative

- 1 Administrative Officer
- 1 Accountant
- 1 Assistant Supplies Officer
- 4 Office Management Secretaries
- 1 Driver
- 2 security Guards

2.2 Physical Resources

The Institute has relatively ample office space for its current and future staff and maintains various technical and ICT capacity as described below:

2.2.1 Documentation unit

- About 400 Titles (BRALUP/IRA Papers, Reports, Notes and Service Papers from 1967-2002)
- General Collection = 3,500 (books etc)
- Theses = 35
- Conference collection = 56
- Periodical collection (journals) = 200

2.2.2 Aerial photo/remote sensing laboratory

- Aerial photo collection (the biggest in the country) from 1950s to 1970s covering about 60 % of the country.
- Satellite images collection (the biggest in the country) in hard copies and chips 70x70 for the period 1972-1980 with Additive Colour Viewer

- Hard copies and Digital data TM Sat images from 1980-1995 covering the whole country at a scale of 1:250,000.

2.2.3 Tanzania Natural Resources Information Centre (TANRIC)

The Institute hosts the Tanzania Natural Resources Information Centre (on behalf of the Government of Tanzania). It is a national depository of natural resources database. It has technical and physical expertise in mapping land resources using Remote Sensing Technology and GIS. Also it has a well-equipped GIS Laboratory with modern facilities including 6 powerful computers, two modern plotters, 5 digitising tables, and ArcGIS software.

2.2.4 Information and communication technology (ICT)

The Institute has a local server networking with the University wide Computer Centre. Most of the offices have PCs and are connected to Internet. The Institute has several Lap Tops and various scientific and field equipment including GPS, levels, Digital Camera, etc.

2.2.4 Printing

There exists a heavy duty printing facility for producing IRA publications. Also, arrangements are underway to acquire a Desktop-Publisher to improve quality of the Institute's publications.

2.3 Research Experience

In the following sections we provide a brief profile of the Institute's research experience.

2.3.1 Multidisciplinary and Interdisciplinary Research

Over the last 35 years IRA has built interdisciplinary/multidisciplinary research expertise and capacity with well-trained and qualified staff that has been involved in various integrated research activities in Tanzania. The capacity to handle integrated research can be demonstrated by the wide range of published materials available in the Institute and in other institutions within and outside Tanzania. This particular strength has enabled the IRA to be a focal point on natural resource management, land use and socio-economic planning in the country.

2.3.2 Participatory Community Planning and Development

During the last three decades, IRA has acquired tremendous experience in developing methods and techniques for involving local communities in planning, managing and decision-making on sustainable development. Some of the best practice participatory planning initiatives tested in Tanzania includes the following:

- Involvement of local communities around protected areas in planning and management of wildlife resources through PRA techniques using Village Councillors, Village Assemblies and influential peoples.

- Facilitation via PRA of local communities in the Pangani River Basin, Lake Manyara Basin and Usangu Catchment Basin, to articulate the various constraints related to water use, its availability and associated water pollution and land degradation.
- Participatory planning for the conservation of the Kihansi Catchment Area
- Bio-energy Options

2.3.3 Appropriate Technology and Indigenous Knowledge

Application of PRA techniques in areas with energy crisis, using Village Councillors, Village Assemblies and informants drawn from representative groups prioritised the needs and plans for their fulfilment using their own resources. In the process, appropriate technologies have been learnt, developed and disseminated.

In an attempt to learn from the rural resource users, the indigenous knowledge that has worked for them and realized sustainable development, the IRA was involved in the Innovative Rural Action Learning Areas (IRALAS) Programme in Tanzania. Most of the techniques used addressed soil erosion, water management, pasture management, agricultural production, horticulture and rural energy (biogas). The results suggest that indigenous knowledge has the capacity to enhance sustainable production.

2.3.4 Environmental Impact Assessment (EIA) and Management and Strategic Impact Assessment SEA)

IRA is one of the leading local institution in EIA and SEA training and practice in Tanzania and Southern Africa. In collaboration with the International Institute for Environment and Development (IIED), the IRA has developed EIA training manuals specifically for Tanzania. The manuals provide resource materials for Environmental Impact Assessment (EIA) and its role in Tanzania. The manuals are designed to help improve understanding of the contribution that EIA can make towards sustainable development planning in Tanzania. The manuals provide a resource for planners and policy-makers responsible for the development of a national institutional and regulatory framework. The manuals have been tested in Tanzania and in the Eastern Africa, and have been widely circulated for adoption and use.

2.3.5 Remote Sensing and Geographic Information Systems

On behalf of the Government of Tanzania, IRA supervised the work on the National Reconnaissance Level Land Use and Natural Resource Mapping, which was a component of the Forest Resource Management Project (FRMP). This project utilized the Landsat TM of 1994/95 and SPOT satellite data sets to produce land cover and land use maps for the whole country at the scale of 1:250,000. All the materials produced (both in hard copies and in digital formats), and the equipment used in this project are deposited at and are available from IRA.

2.3.6 Co-ordination of National/International Activities.

In order to strengthen the research and public services capacity, the IRA undertakes collaborative activities with many other

Institutions inside and outside Tanzania. In many of these activities IRA plays the co-ordination role. Currently, the IRA co-ordinates the Pangani River Basin Project which brings together researchers from Tanzanian institutions and the Centre for Environment and Development of the Norwegian University of Science and Technology. It co-ordinates research on Sustainable Agriculture in Semi-Arid Areas (SASA) with the Institute of Geography of the University of Copenhagen. It also co-ordinates the Man-Land Interrelation in Semi-Arid Tanzania (MALISATA) Programme undertaken together with Swedish Institutions. Other activities which the Institute is currently co-ordinating include a comprehensive study on the management of wetland resources in the Usangu River Basin together with British Institutions and; Programmatic Environmental Assessment of Tanzanian National Park Roads, with American Institutions.

2.3.7 Collaboration with other Institutions

Apart from the collaborative activities mentioned above, other international links and co-operative activities are with the Development and Project Planning Centre (DPPC) of the University of Bradford, UK; the International Institute for Environment and Development (IIED), UK; Centre for Development Research (CDR), Denmark; The Norwegian Centre for International Environment and Development Studies (NORAGRIC), Agricultural University of Norway; and the African Studies Centre, University of Leiden, Netherlands, University College London (UK); Catholic University Luveain (Belgium) and; Kenya Wildlife Services.

There are also research agreements with many local institutions including faculties and institutes within the University of Dar es Salaam. Contacts are undertaken on a routine basis with government ministries, other public institutions and private sector. The Institute has a system of affiliating research scholars from outside Tanzania in its areas of research. Between 1995 and 2000 alone, the Institute has had six affiliates from the UK, USA, and Scandinavia.

3.0 NEED FOR RESEARCH AGENDA

The development of the Institute Research Agenda is in response to a number of factors including those by the University of Dar es Salaam, national and international needs as outlined in sections 3.1 to 3.4 below.

3.1 IRA's Internal Review

IRA has been constantly reviewing research themes and focus albeit without making significant changes in the overall research thrust and focus. These internal adjustments have been undertaken as part of the process to adjust to the changing national and international scenes and these are better explained by the changes in focus from BRALUP to IRA. More impetus and considerations for a revised research agenda was given by the more recent changes at the University of Dar es Salaam as described in the following sections.

3.2 UDSM Corporate Strategic Plan

In 1994 the University of Dar es Salaam developed a Corporate Strategic plan to address the general inefficiencies in the UDSM management systems, national and global socio-political and economic environment changes including;

- National liberalization policies
- Impact of globalisation
- Revitalization of the UDSM financial situation

The IRA being part of the UDSM, had to address itself to these corporate strategic plans.

3.3 UDSM Institutional Transformation Programme

The UDSM Institutional Transformation Programme (ITP) comprised of development of a 5 year Rolling Strategic Plan for the period 1997-2002. The programme generated 16 Strategic Objectives geared at revamping the University wide functions. Some of these strategic objectives include:

- To expand student enrolment
- To improve further strategic planning process
- To conduct academic audit
- To optimise on UDSM physical facilities
- To diversify sources of funding
- To review regularly teaching curricular
- To establish university wide Research Policy
- To review regularly research agendas
- To cluster similar academic units

3.4 UDSM Research Policy

Guidelines of UDSM Research Policy include the following:

- To ensure that research aims at advancing and refining knowledge
- To ensure that Research Agendas are relevant to the national development objectives and priorities

- To enhance internal efficiency in utilisation of resources, i.e. time, human and material resources without duplication of efforts
- To ensure effectiveness of the research activity in terms of achieving desired results, dissemination and applications of results in solving societal problems.

4.0 DEVELOPMENT OF THE RESEARCH AGENDA

4.1 Objectives of IRA Research Policy

- To contribute towards diversifying University financial resources
- To address national priority research issues
- To address issues of regional and international concerns
- To maximise on Institute/University resources available
- To establish a relevant and up-to date Research Agenda

4.2 Methodology

4.2.1 Establishment of Criteria

The Institute staff intensively deliberated on the criteria for establishing a research agenda. The following criteria were identified for consideration:

- The capacity of the Institute
- Generation of new and/or improvement of existing knowledge
- Impact to society development/poverty eradication
- Strategic importance nationally and internationally.
- Respond to stakeholder needs
- Attractiveness for funding i.e. marketability
- Multi-and inter-disciplinary orientation

4.2.2 Review of Experiences within UDSM

A survey of experiences within the UDSM was carried out on preparing Research Agenda. The following lessons were learnt:

- To ensure multi- and inter-disciplinarity
- The need and importance of engaging all key potential collaborators and stakeholders
- To ensure a balance between commissioned research and independent/basic research
- To emphasize long-term institutional goals rather than short-term interests.

4.2.3 Review of National Policies and International Conventions

In order to take on board national and international concerns, review was made of national policies and international conventions relevant to the mandate of the Institute

4.2.4 Consultation with Stakeholders

Firstly, consultations were made with key stakeholder institutions in the country with the aim of capturing their major interests. Subsequently a workshop was convened for a wider audience of stakeholders where stakeholders' needs were discussed and taken on board. The workshop also deliberated and agreed on potential funding strategies. The List of participants is given as Appendix 1.

4.3 Results

4.3.1 Main Research Themes

The following Research Themes were generated during the stakeholder consultations and workshop:

1. Natural Resource Management
2. Agriculture, Food Security and Poverty Alleviation
3. Environment
4. Population and Human Settlement
5. Social Policy Analysis

The activities generated for each of these research themes are given in Appendix 2.

4.3.2 Thematic Concept Notes

A. NATURAL RESOURCE MANAGEMENT

IRA and its predecessor, BRALUP, have all along put natural resource management at the centre of activity. All other activities are geared towards this central objective. This situation will continue for long time to come because of its significance to the global and national environmental, social and economic development.

At a global level, there has been many initiatives geared at addressing the broad and evasive concept of sustainable development. Basically, the concept emphasizes on the need and importance of ensuring, among other things, that the

natural resource capital is used in such a way those future generations will also enjoy it. To this effect there was the Stockholm environmental conference in 1972. Although at this conference there was a lot of prominence of environmental problems at the expense of other facets of sustainable development, the conference kick-started an organized debate on the central issues of the concept.

Ten years down the road at the Earth Summit of 1992 in Rio, a broadened picture was adopted thus bringing to the equation issues like, poverty, community/stakeholder participation, information, integration etcetera, which had not previously been effectively articulated. All these and many other development agenda were encapsulated in the Agenda 21, an action plan for development in the twenty first century. Heads of states, including the President of the United Republic of Tanzania, committed themselves to the justified course of action towards sustainable Development.

There have been international criticisms that commitments to Agenda 21 have not been honoured hence the altering of its implementation. Nevertheless, there have been definite attempts to put in place the framework for implementation of the action plan. An example is the number of protocols and conventions that have had to be signed. Some examples include, the United Nations Convention to Combat Desertification, convention on Biological Diversity, the United Nations Framework Convention on Climate Change, the Ramsar Convention, etc.

Tanzania has committed herself to the implementation of these and many other international conventions that she is a

signatory. On this account, the Institute of Resource Assessment has the noble responsibility to contribute towards the realization of these international obligations.

Furthermore, in Tanzania like many countries in the world, the natural resource base is the foundation of the entire economy. Both the rural and urban livelihood systems almost entirely depend on the natural resource base. It is logical, therefore, that efforts have to be in place to sustain this base of the livelihood systems, which is quickly being depleted. These efforts of sustaining the natural resource base must be guided by scientifically derived technologies of sustainable management of resources. This means research. Therefore Research institutions must pioneer methodologies and techniques of resource management in line with the prevailing political and social economic development. This includes taking into consideration the globalisation process and its ramification in natural resource management.

The Tanzania Development Vision, the Poverty Reduction Strategy Paper and the sectoral policies all zero around the sustainable management of the natural resource base. This is why institutions like IRA have an important role to play.

B. POPULATION AND HUMAN SETTLEMENT

Demography is a social science that addresses issues of population size, growth trends, age structure, gender composition, morbidity, mortality and migration and their impact on social services, health status, natural resources and economic growth. The Tanzanian population grows at the rate of 2.8% per annum and is expected to double by the year 2050.

This is due to increased number of women of childbearing age. Women constitute 52% of the existing population and children below 15 years make half of the total population. This trend exists despite the existing population policy, family planning services and reproductive health education.

However, what makes this growth trend problematic is the fact that the interaction between population growth, settlement patterns and environmental change and general socio-economic development is not well understood. Some present policies, especially those that approve rural to rural migration of pastoralists and agropastoralists with large herds in pure agricultural areas, are among the complex problems resulting from lack of understanding of the linkages.

Despite the increased concern on environmental issues after the UNCED 1992 and the concerns raised by the 1994 International Conference on Population and Development, integration of population, development and environmental planning in rural and urban areas has progressed little. In urban areas we still see allocation of waterlogged areas for settlements and of wetlands for business structures. Such settlements have negative impact on efficient drainage of waste and storm water that has increasingly flooded residential areas causing physical and health hazards. In rural areas there is still no effective formal zoning corresponding to land use practices so as to reduce land use conflicts between people practicing different and often incompatible livelihood strategies.

Fragmentation of responsibilities on population matters involving different government implementing and coordinating agencies and lack of integrated planning and feedback

mechanism is another problem of lack of understanding of the linkages. IRA needs to foster training of researchers on how to link Population, Health and Environmental issues and Communicate Research Results to policy makers, rural and urban planners in private and public practice and NGOs/CBO that work at the local level for better planning, policy formulation and implementation.

Population increase due to high birth rates and migration have a bearing on creating more settlements, including unplanned ones, that produce more waste, pollute the environment, and exert pressure on social services and natural resources. Impacts of such developments need to be analysed and their amelioration prescribed. In case of resettlement, both in rural as well as urban areas, local people's welfare and priorities need to be considered and taken on board.

There is need to study the effect of liberalization policies on social services such as waste collection and disposal that used to be done by city and municipal authorities. These services are at present undertaken by the private sector and community-based organizations. However, the link between waste disposal, environmental pollution and poor health has not been well established. This is a crucial area for studies by IRA.

Economic, social, institutional, legal and cultural constraints affect women and men's rights to access and control of resources. In Tanzanian culture as well as in other African countries, women and men have different gender based roles, have different opportunities to own and manage resources, and in decision-making regarding natural resources. They are therefore affected differently by lack or presence of adequate

resources. Thus understanding these gender-based roles and their relationship to environmental resources is crucial in addressing poverty alleviation, sustainable use and management of resources and in developing and promoting social and environmental services that cater for gender needs.

C. ENVIRONMENT

Environment can be defined as “external conditions or surroundings, especially those in which people live and work”. Over the last approximately 200 years our perception of the natural environment has changed from the past notion that ‘nature’ was inexhaustible, to the emerging consensus that we are approaching close to the limits of the productive and assimilative capacities on the natural systems. This is demonstrated by the environmental degradation evident in many parts of the world including Tanzania.

In the rural areas of Tanzania environmental degradation manifests itself in almost barren landscapes, soil erosion, gullying and poor drainage. In most cases this is brought about by inappropriate agricultural systems, deforestation, overgrazing, bush fires, climate variability and change, etc. All these factors endanger the regenerative capacity of soils, vegetation, forests and water. On the one hand, land and water degradation leads to loss of biodiversity on which the country’s development is heavily dependent. On the other hand, rapid unplanned and uncontrolled urban growth and industrial development bring about pollution of water, air and soil thus, increasing health hazards particularly for the urban people and impairing the quality of life. This theme will undertake

environmental studies and/or research to specifically address the following:

- Integration of environmental, social, cultural and economic considerations in the planning and management procedures at all levels;
- Understanding of climate variability and change in relation to both environmental and socio-economic repercussions, determining the vulnerability of societies to such variations and exploring effective and adaptive strategies;
- Rehabilitation and/or regeneration of the productive environmental elements including soils, water, forests, etc. including adoption of traditional techniques;
- Creation and promotion of appropriate stakeholder strategies in the decision-making processes at all levels;
- Review of projects to ensure inclusion of environmental, socio-economic and cultural assessments as key aspects to strengthen project sustainability;
- Develop and promote environmental tools and instruments for resource planning and management at all levels;
- Commissioning of EIA and SEA practice and training to influence decision-making and ensure sustainable development;
- Preparation of urban and district environmental profiles for sustainable development planning
- Economic valuation of natural resources

D. AGRICULTURE, FOOD SECURITY AND POVERTY ALLEVIATION

Agriculture is the leading sector of the Tanzanian economy. It accounts for over 50% of the GDP and export earnings. Over

80% of the Tanzanians who live in the rural areas depend on agriculture for their livelihoods. It is argued that the agricultural sector has maintained a steady growth rate of 3% per annum over the last decade. It is a fact, however, that this growth rate has not managed to improve the livelihood of the rural people whose major occupation is agriculture. More than half of them face food insecurity although they are the main crop producers. By the middle of 1997 it was clear that parts of Tanzania were experiencing serious food shortages, and that at a national level the country was facing a significant cereals deficit. The causes of the food crisis are various, including poor weather and problems at the institutional and social levels. Of special significance were the economic reforms of the mid-1980s, which although they liberalized the economy, they reversed the equity policies of the 1970s, dismantled the entire farm support system and created a policy environment no longer favourable to smallholder farmers.

The livelihoods of smallholder farmers and livestock-keepers are increasingly at risk. Family farming no longer provides a strong basis for subsistence on a full-time basis. Alternative off-farm activities provide essential supplementary incomes, but also represent a withdrawal of needed labour on family farms and herds. A vicious circle is thus created.

Food insecurity has also increased for many farmers because of fluctuating and/or declining real returns for cultural products. The majority of low-income food and cash crop growers also depend on off-farm sources of income to supplement food self-provision. More than half of their staple food crop is sold at harvest at low prices to provide for cash needs. During the lean

months of the year, farmers are forced to purchase food at inflated prices in local markets.

In addition to problems of weather, soils and other natural resource factors, food insecurity is influenced by the persistence of low productivity in agricultural and livestock sectors. Such low productivity is mainly due to limited access to means of production such as inputs (as influenced by the removal of subsidy to the agricultural sector following the economic reforms of the mid-1980s), land, labour and technology; infrastructure; social services and the general poverty. Research in this sector should address such limitations that prevent farmers from making optimal use of the available resources to maximize food production. Areas of concentration include:

Field research in various rural districts has identified a range of macroeconomic policy areas which have an impact on household food security, and which may need either reform, or measures to ensure their more effective implementation and coordination. One of the policy sectors involved was marketing and pricing of crops and livestock products. This theme will investigate some of the impacts of the marketing policies on agriculture and hence rural food security in Tanzania. The theme will also investigate the plight of women and the youth who seek resource in off-farm employment opportunities in the rural areas.

Among other factors, Economic distress and poverty are associated with food insecurity. People have been recorded in several micro-level studies as saying that they wake up in the morning with no idea of what they and their children will eat

that day. Moreover, as women are forced to devote more time to market-oriented activities, they have less time available to feed young children or to prepare family meals. Malnourished and overworked mothers are more likely to experience complications and/or death during pregnancy and childbirth, and to bear low birth weight babies, whose own chances for survival are low. This theme will investigate issues of nutrition as related to agricultural production, poverty and food security.

Human activities that impact on biodiversity are likely to cause negative impacts on food security. The most obvious area of concern in this context includes seed importation and development policy and its impact on food security.

There are also opportunities for collaboration with other research organizations and/or government institutions in areas where IRA's expertise is weak. For example, IRA is not very strong in matters of nutrition; but it has often times collaborated with TFNC and researchers from SUA to perform research of this nature. Such is also the case with technology transfer, energy and traction research, et cetera. There is, however, need to recruit new staff in farming systems research.

E. SOCIAL AND POLICY ANALYSIS

Policies are broad guidelines on desired national objectives or goals. They normally include indications on how to achieve the stated goals. Emerging trends at national and international levels make it imperative for the Institute to have a sharper focus on social and policy analysis. Needless to say, good policies result in good programmes and strategies. The importance of Policy Analysis is in assessing the strengths and

weaknesses of different policies, and their effect on social development.

Currently, Tanzania is implementing a number of policy reforms related to the economy, environment and natural resource management. Most of these policies aim at redefining and restricting the role of Government and support for greater involvement of local communities in planning and implementation of development initiatives. However, the tools and means of community involvement have not been worked out and the capacity to handle these policy-related issues is not known.

Also, there is a need to analyse the main features of the economic reforms which were launched in 1986 and their implications for environmental management i.e. dismantling of state economic controls; encouragement of participation of the private sector in economic activities; privatisation of agricultural processing and marketing and divestiture of agricultural parastatals. The environmental implications of pronouncements such as Vision 2025 and the National Poverty Eradication Strategy should be examined. It is also important to examine the implications of local government reform and the new responsibilities of local government functionaries for policy implementation at the local level. It is equally important to analyse the social and environmental implications policies such as the Land Policy, 1995; and the Agricultural and Livestock Policy, 1997; as well as other related policies.

Various social policies have indirect effects on natural resource use and management needs to be analysed. Examples of these are:

- Vision 2025.
- National Poverty Eradication Strategy.
- Health Policy (relevant for food supply, clean water for drinking and sanitation).
- Education Policy (relevant for aspects of environmental education).
- Gender related policies (relevant to illustrate men and women's interaction with the environment).
- Justice Policies (relevant to settlement of disputes of natural resources).

4.4 Approach to Research

Implicit from the above concept notes, is that the management of the environment and natural resources has to be within the context of the concept of sustainable development, which by its nature is multi-sectoral. It may be important to note here that the design of both BRALUP and IRA took this multi-sectoral approach into consideration. IRA has built multidisciplinary and interdisciplinary expertise and capacity on various activities including participatory community planning and development, appropriate technology and indigenous knowledge.

Both international and national commitments towards management of natural resources advocate participatory approaches. The rationale is based on the well-established findings that top-down approaches to development do not work. Unfortunately there has been a lot of rhetoric to participatory approaches. Thus IRA must show the way to true

participatory approaches to management of natural resources and/or the environment.

Agricultural production is another interactive involvement of many people in differing institutional contexts. Hence research in the sector must of necessity involve multiple systems of research, including:

- Agro-ecosystems Analysis
- Farming Systems Research
- Participatory Rural Appraisal and Planning
- Participatory Poverty Appraisal
- Participatory Social Assessment
- Rapid Food Security Analysis
- Marketing and Input Supply Analysis

Population issues also cut across all sectors and are the task of every institution including IRA. The multidisciplinary and interdisciplinary expertise of IRA places it in a better position to address these issues. For years IRA has collaborated with the government institutions (The Bureau of Statistics and Planning Commission, and the Reproductive and Child Health Section of the Ministry of Health have collaborated with the Institute) and international organisations (UNICEF, UNFPA, USAID) that deals with population issues. Other collaborators include the Department of Statistics of the UDSM, Medical and Community Health of the Ministry of Health and Muhimbili Medical School.

A multidisciplinary and interdisciplinary policy analysis can also serve to unveil the implications of various customary laws for implementing integrated water resources management.

Thus for example, the fact is that Tanzania has a pluralistic legal system – land and water resources are regulated by different pieces of legislation. Diverse customary laws are often more important than statutory law and are relied upon in resolving natural resource conflicts. Neglect of customary laws may cause Integrated Water Resource Management to fail, or will have negative consequences for individuals and groups who were better served by customary-based systems – especially the poor.

4.5 BRALUP/IRA Major Research Works

4.5.1 Pioneered Studies

- EIA and SEA practice and training
- Agro-ecological zoning of Tanzania
- Remote sensing and aerial photo interpretation
- Natural resources information management
- Soil erosion monitoring in Tanzania
- Preparation of soil atlas of Rukwa Region
- Techniques for communicating environmental research to policy makers
- Programmatic environmental assessment

4.5.2. Integrated Resource Management

- Man-Land Interrelations in semi-arid areas of Tanzania (HADO Programme)
- Integrated resource management strategy for Lake Manyara Basin; Pangani River Basin; and Usangu Catchment Basin

- Rukwa Regional Development Plan (RIDEP)
- Land Use Planning and Resource Management

4.5.3. Participatory Planning Processes

- Innovative Rural Action Learning Areas Programme (IRALAS) in Tanzania
- Conservation Plan for the Kihansi Catchment Area
- Development Plans, Regional Teams, Economic Reports for various Regions in Tanzania
- Anew Development and Management Plan for NCA

4.6 Funding Strategies

The following funding strategies were recommended:

- Collaborative research with stakeholders
- Marketing of research services offered by IRA
- Conduction of short-term courses
- Consultancy services

5.0 IMPLEMENTATION STRATEGY

Having established the Research Agenda it is then important to lay out a strategy on how it should be implemented. The following sequential steps were recommended for an effective implementation mechanism.

- Development of Research Programmes
- Enhancement of Research and Consultancy Collaboration
- Identification of gaps of research staff for recruitment
- Regular Monitoring and Evaluation of Implementation of Research Agenda with stakeholders

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APPENDIX 2: RESEARCH THEMES AND ACTIVITIES

1. NATURAL RESOURCES MANAGEMENT

- Water catchments management
- Water quality assessment
- Water erosion and sedimentation
- Water resource management
- Economics of water
- Integrated resource management
- Sustainable resource management
- Resources use conflict resolution
- Natural resource economics
- Resource degradation and rehabilitation
- Economics of wildlife hunting
- Wetlands management
- Management of Ramsar sites
- Participatory resources management
- Biodiversity management
- Resource mapping and monitoring

2. ENVIRONMENT

- Environmental economics
- Environmental management
- Environmental impact assessment
- Social and health impact assessments
- Strategic environmental assessment
- Biodiversity impact assessment
- Decentralization of EIAs.

- Early warning systems
- Climate change
- Environmental degradation and rehabilitation
- Vulnerability analysis
- District environmental profiles
- Urban environmental profiles
- Traditional conservation approaches

3. AGRICULTURE, FOOD SECURITY AND POVERTY ALLEVIATION

- Sustainable irrigation farming
- Least cost energy technologies
- Sustainable rangeland management.
- Agri-biodiversity and food security
- Traditional farming systems
- Poverty assessment
- Poverty alleviation
- Gender and resource management
- Globalisation and livelihood systems
- Livelihood strategies
- Employment opportunities
- Food security and malnutrition
- HIV/AIDS
- Biodiversity and food security

4. POPULATION AND HUMAN SETTLEMENT

- Demography
- Population growth trends
- Population and natural resources
- Population and social services

- Population and migration
- Population dynamics
- Industrial occupational health
- Liberalisation and occupational health
- Management of change and reforms
- Social services and gender interrelationships
- Women and child rights to resource use

5. POLICY ANALYSIS

- Macroeconomics
- Fiscal policies
- National policies
- Sectoral policies
- International conventions
- Local government reform programme