

University of South Eastern Kenya

**PROPOSAL FOR THE PROJECT OF THE
ESTABLISHMENT OF THE
UNIVERSITY OF SOUTH –EASTERN KENYA (USEK)**

PROJECT DOCUMENT VERSION 1.1

JULY 2005

**Project co-ordinating committee
University of South Eastern Kenya**

Chapter 1: Introduction

1.1. Preamble:

That over 80% of Kenya may be classified as arid and semi-arid land (ASALS), whose capacity to significantly contribute both to the national economic growth as well as to the national food production, has so far remained unexplored, is a scenario that is rapidly becoming unsustainable in the face of Kenya's population growth

The need to grossly enhance the county's financial base and to increase food production dictates that ways and means be found to effectively address the above scenario.

The most serious and effective approach to this enormous challenge is to establish an institute of higher learning, appropriately situated and charged with the responsibility to carry out high level scientific research on arid and semi-arid lands, with a view to transforming the 80% of land into a useful asset for this country, hence, the proposal for the University of South Eastern Kenya (USEK).

1.2. Introduction:

The need to transform the large expanse of Kenya's arid and semi-arid land into an agriculturally viable land has always been appreciated, both by the various governments as well as by the communities living on these lands, since Kenya became a sovereign state.

In the northern and south western parts the country, the land is largely occupied by pastoral communities while the south eastern areas are occupied by the agro-pastoral Kamba community.

Indeed several efforts have been made to address this very issue through research on dry land farming as exemplified by the establishment of Ukamba Agricultural Institute in 1970, the Kibwezi Dry land Field station by the University of Nairobi in 1975 and the numerous field research stations under the Kenya Agricultural Research Institute (KARI).

The above mentioned efforts have however lacked proper co-ordination and focus and have consequently not yielded the desired transformation of the said 75% of Kenya's arid land to an economically viable asset.

Much more research is therefore needed in the fields of Agriculture, Geology, Medicine, Biology and Anthropology, to name but a few, in order to discover the "hidden" treasures within this expanse of Kenya's land

The co-ordination and management of such an undertaking can only be effectively actualised through the establishment of an institution at the level of a university, one that will be committed to specialised studies in arid land sciences.

1.3. Historical Background

(Background to the various initiatives undertaken and arguments in favour of USEK)

This draft paper lays out the conceptual framework for considering the expansion and the upgrading of the Institute of Dryland Research, Development and Utilization (IDRDU) of the University of Nairobi at Kibwezi into a National University/University College. The ultimate goal is to develop a centre of excellence for sustainable training/teaching, research, development and utilization of drylands or arid and semi-arid lands (ASAL) with the state of the art technological development and which will link with other national institutions as well as international agencies in the development of such lands.

Broaching the possibility of a University or University College at Kibwezi is largely the same as asking; what is the future of the IDRDU? In doing this, it is important to go back and trace the evolution of the Kibwezi Dryland Field Station (KDFS) because the future of the station is influenced by its past.

1.4. The Case For Dryland Research, Development And Utilisation

The search for a suitable dryland field station by the Faculty of Agriculture dates as far back as 1970. The need for such a station was based on the fact that drylands, which include arid and semi-arid lands receiving 250-800mm of rainfall, constitute about 80% of Kenya's total land resources. Further, a substantial part of Kenya's population (about 25%), comprising mainly the nomadic and semi-nomadic communities derive their livelihood from these resources. As 50 percent of native beef cattle are found in these areas, combined with the current population pressures that have pushed sedentary cultivators into drylands, the need for research on such lands is important. Most of Kenya's agricultural research had hitherto been restricted to the high potential areas that constitute the remaining 20% of Kenya's land area.

Evidently the development of viable productive packages for the arid and semi-arid lands is urgently required in Kenya so as to boost the standards of living and quality of life of the local people in particular and the country in general. This will be achieved through appropriate and increased food production and alleviation of poverty through stable incomes.

The problems of drylands cut across many academic disciplines. The land management technologies, food production, health, education, natural resource base (e.g., water, vegetation, animals and soils) and environmental problems require special research orientation to develop appropriate technological packages that are environmentally suitable while at the same time integrating the survival and welfare needs of the inhabitants of these drylands. Recent development emphasis on arid and semi-arid lands in Kenya has created public awareness in respect of the special development needs of these marginal lands.

It is against the above background that the Faculty of Agriculture selected Kibwezi area of Makueni District (then in Machakos District) as an ideal site for training and research priorities that would be relevant to drylands. In addition, Kibwezi offers a good opportunity for

development of other studies pertaining to agro-meteorology, ecology and geology, among others for the benefit of the entire University community. Further, the interest in the potential of Kibwezi development for the whole University has now become a concrete reality in the light of the increasing demand for University controlled field teaching and faculty research programmes.

1.5. The History Of The Station

1.5.1. The Early Years

In 1975, the Government allocated the University of Nairobi about 10,600 acres of land along Kibwezi-Kitui road and fronting Athi river in Kibwezi, Machakos District, about 250 km from Nairobi. The actual letter of allocation was issued in 1978. It was not until 1985 that substantive development (physical facilities for the Department of Range Management) started in Kibwezi. This was part of the Government of Kenya (through the 5th World Bank Education Programme in the Ministry of Education) support to the University in the establishment of Bachelor of Science degree programmes in Range Management and Forestry in the Faculty of Agriculture.

In 1987, the Station became operational after the completion of basic infrastructure. The Department of Range Management, Faculty of Agriculture, was mandated by the University to spearhead and oversee the Station's development for the first three years between January 1988 and February 1991. A Station Manager, a member of the academic staff in the Department, was appointed initially for three years.

The University could not immediately develop the entire land and, consequently, about 4,000 acres of land, particularly along the Athi River, was invaded by squatters. To resolve the problem of squatters, the University was allocated a further 6,000 acres adjoining Kibwezi River in 1988. Of the original allocation about 4,000 acres therefore was lost as part of the squatter settlement project by the Government. The total land currently owned by the University for the Station is approximately 12,093 acres.

By 1987, there was a growing interest of various departments of the University to use the station for field teaching and research and even to exploit the resources for both extension/community and commercial purposes, hence the drawing up in 1989 of a Master Plan for the station.

1.5.2. The 1989 Master Plan

Although the 1989 Kibwezi Dryland Field Station Master Plan was essentially a land use proposal for the entire station, taking into account the expressed and rationalized requirements of most of the University's departments, the plan took into account both short and long term development as follows:

- (a) To establish practical field teaching and residential facilities for both students and staff of the University;

- (b) To develop through research various dryland farming technologies and resource management strategies which are both economically and ecologically sound for sustainable long term utilization of the arid and semi-arid lands of Kenya;
- (c) To boost commercial farming for increased food production and also to conserve Kenya's natural resources in arid and semi-arid areas through application of appropriate technology;
- (d) To aspire to foster income generation and demonstration of viable production systems involving both crops and livestock resources vis-à-vis use of irrigation, range improvements, livestock management and soil conservation techniques;
- (e) To establish external outdoor recreational facilities for staff and students of the University of Nairobi; and
- (f) To establish a regional centre of excellence in arid resource conservation, management and utilization for postgraduate training at international level.

1.5.3 The University Reviews the Status of Kibwezi Dryland Field Station During 1994 and 1995

In 1993, the Department of Range Management prepared and submitted a document proposing the upgrading of the Kibwezi Dryland Field Station to an Institute of the University of Nairobi. Although both the Faculty of Agriculture and the College of Agriculture and Veterinary Sciences did not discuss the proposal, it was considered by the University Management Board (UMB). The UMB resolved that the Deans' Committee should form a Sub-Committee to consider the proposal and to make independent and appropriate recommendations to the University about the station. Consequently, at its special Meeting held on 17th May, 1994, the Deans' Committee appointed a Sub-Committee with the following terms of reference.¹

- (a) To look into the issues and problems affecting Kibwezi Field Station with a view to coming up with an appropriate administrative structure that would optimize the resource utilization of the station; and
- (b) To consider any other matter relevant to the term of reference number (a)

The Sub-Committee prepared a report entitled Administrative Structure of the Kibwezi Dryland Station which was approved by both the Deans' Committee and the University Senate during 1995; the report included the Proposed Statutes of the Institute of Dryland Research, Development and Utilization (IDRDU) of the University of Nairobi.

1.5.4 The Sub-Committee Observations and Recommendations: The Establishment of the Institute of Dryland Research, Development and Utilization (IDRDU)

¹ The Sub-Committee was chaired by Prof. C.M. Kiamba, the current Vice Chancellor, and then the Dean of the Faculty of Architecture, Design and Development.

In proposing the upgrading of the Kibwezi Dryland Field Station to an Institute of the University of Nairobi, the Sub-Committee considered the following crucial management parameters and recommendations:

Full Utilisation: Key to the Future

The Sub-Committee observed that the problem of invasion of KDFS by squatters was a matter that the University could not afford to be complacent about. It had happened once, and if it happened again, it would certainly be much more difficult to deal with this time. Full utilization of the station was the Key to avoiding such a possibility. The 1989 KDFS Master Plan, by providing a rationalised basis for land use in the Station, was part of this strategy. A comprehensive strategy, along with the requisite administrative structure, to implement the plan was the way ahead.

RECOMMENDATION 1:

The Sub-Committee therefore recommended that the University should move toward the full utilization of the Station as a matter of urgency with a view to not only fully exploit the potential of the Station but also to pre-empt any possible squatter invasion of the land.

1.5.5 The Spatial Distance of the Station from the “Centre”

It was noted that Kibwezi is about 250 km away from the University’s Central Administration at Nairobi. Further, communicating with Kibwezi from Nairobi was a trip to yesterday’s technology! The need for a relatively (reasonable degree of) autonomous and/or independent and comprehensive but accountable administrative and financial system was obvious. Efficiency and effectiveness in decision-making regarding all activities/affairs of the Station was seen as depending on limiting the spatial context of such decisions.

RECOMMENDATION 2:

Partly because of the spatial distance of the Station there was need for a relatively autonomous, but accountable, management structure that could respond immediately to the needs of the Station.

1.5.6 Budgetary Allocations

The Station was operating on a meager budgetary allocation from the University. It was evident that nearly all the facilities at the Station (especially the ones under the direct management of the University) were poorly managed and seemed not to have financial allocation for their repair and maintenance. Although the Field Station’s financial allocation had remained constant, its activities had continued to grow and if the University expected better performance and productivity from the station, it would have to be prepared to allocate more funds for the Station operations. Clearly, the enhancement of the status of the Station was related to revamped

financial support from the University. It was, however, clear that the Station should in the future rely on both international support and internally generated funds.

RECOMMENDATION 3:

To achieve better performance and productivity from the Station, the Sub-Committee recommended that the University should increase the annual budgetary allocations for the Station's operations. Clearly, any enhancement of the status of the Station must be related to revamped financial support.

1.5.7 Outreach/Extension and Other Community Related Matters

One of the key goals of KDFS has been its out-reach and linkage with the community. Indeed, the objectives of the largest single project in the Station, the Kibwezi Irrigation Project – described later emphasise the transfer of dryland farming technologies to farmers in the Kibwezi region and expansion of on-farm service, research, outreach/extension, and training activities. Dissemination of technology findings to the community, both locally and internationally, would clearly depend on an appropriate outreach and extension framework that must be built in the administrative structure of the Station. It was noted that the Station did not even have an Extension Specialist.

RECOMMENDATION 4:

In view of outreach and extension and related community matters being a deliberately fundamental part of the Station's objectives, the Sub-Committee recommended that the Station should have this aspect built in its operational activities and management structure. In this connection, the University should appoint an Extension/Outreach and Community expert (including requisite supportive staff) for the Station.

Chapter 2: Proposed Name, Location and Academic Character

2.1 Proposed Name

The proposed name for the University is University of South Eastern Kenya (U.S.E.K).

2.2 Location

We wish to propose the establishment of a new university along the lines described above to be situated on the 12,000 acres of land currently occupied by the Kibwezi Dryland Field Station but with constituent campuses in Kitui, Mwingi, Machakos and Makueni.

2.3 Academic Character

The proposed university shall harness and focus its core programmes, towards Dryland Natural Resources Management and Utilization. Thus its training, research and technology transfer shall be geared towards creating the necessary human and technological packages for sustainable management of dryland (ASALS)

Nevertheless, being an institution of higher learning, the scope will be unlimited for other pertinent academic pursuits related to human existence in a dryland ecosystem. Disciplines such as hard core education, medicine and engineering shall therefore subsequently be included in the wider academic curriculum of USEK in order to achieve the desired goal of maximized human development commensurate with sustainable utilization of the entire dryland ecosystem.

The main aim of the proposed university is therefore to create a centre of excellence in dryland academic disciplines such as:

- a) Dryland Physical Environmental Studies
- b) Dryland Plant Studies
- c) Dryland Animal Studies
- d) Dryland Technology and Development
- e) Dryland medicine (Human and Animal)
- f) Dryland Socio-Cultural Studies
- g) Dryland Mineralogy
- h) Hydrogeology and Hydrological Studies

2.4 Existing Facilities

We note that there are some existing educational facilities in the four districts within which the Southern Eastern Dryland area lies namely: Kitui, Mwingi, Machakos and Makueni. Such institutions include Kibwezi Dryland Research Institute belonging to the University of Nairobi, the Ukamba Agricultural Research Institute (UKAI), several Field research stations belonging to Kenya Agricultural Research Institute (KARI), and several others which could act as seed-facilities, thereby providing for the initial land requirements.

2.5 Proposal for a way forward:

We propose for the formation of a taskforce Committee of approximately ten scholars to critically think through the presented concept and to come up with a strong justification paper for presentation to the Kenya Government, as a proposal for the establishment of the university.

Such a justification should not be difficult to generate in view of the recent abolishment of Primary School fees with the inevitable major increase in the demand for university education facilities in five years time to come.

In addition, it should be possible to justify the concept on the basis of the potential impact such an institution will have on national economic growth and development. A carefully thought justification is nevertheless still crucial, in order to evade potential pitfalls of politicization and negative prioritization.

2.6 Proposed Terms of Reference for the Taskforce:

Terms of reference for the taskforce should include the following:-

- a) To critically analyze the concept of a Dryland based Public University.
- b) To conceptualize the economic value of a Dryland based university.
- c) To design the basic structure of the proposed university.
- d) To visit and evaluate the existing facilities within the region for their suitability as seed facilities for the proposed university.
- e) To prepare a Draft Proposal for discussion by a wider Committee.
- f) To develop the final university proposal for presentation to the Kenya Government.
- g) To solicit for funding and other necessary facilitation for the preparation of the final documentation.
- h) To address any other task, action or matter related to the production of a suitable university proposal document for submission to the Government.

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Prof. Nashon K.R. Musimba

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Nicky Nzyoki

2.7 Members of the Taskforce

Arising from the above a taskforce was constituted and the members are:

- | | |
|-----------------------------|--|
| i) Prof. N. K. Musimba | University of Nairobi 0721 206636 |
| ii) Prof. Peter Kimuyu | University of Nairobi 0722 434066 |
| iii) Prof. Peter Ngao | University of Nairobi |
| iv) David Mbiti | Chair, Education Sub Committee, 020 882427 |
| v) Leonard Mengo | JKUAT 020 312810, 0722 740156 |
| vi) Norbert Musyoki | University of Nairobi 0722 398205 |
| vii) Sylvester Munguti Masu | University of Nairobi 0722553549 |
| viii) Nicky Nzioki | University of Nairobi 0722 715029 |
| ix) Eliud Liku | University of Nairobi |

Chapter 3: Aims and Objects

The main Aim of the Project

The main aim of the proposed university is therefore to create a centre of excellence in dryland academic disciplines such as:

- i) Dryland Physical Environmental Studies
- j) Dryland Plant Studies
- k) Dryland Animal Studies
- l) Dryland Technology and Development
- m) Dryland medicine (Human and Animal)
- n) Dryland Socio-Cultural Studies
- o) Dryland Mineralogy
- p) Hydrogeology and Hydrological Studies

The main Objectives of the Project

- (a) To establish the University of South Eastern Kenya (USEK) as an independent University at the present site of the Institute of Dryland Research , Development and Utilization (IDRDU) of the university of Nairobi (located at Kibwezi)
- (b) To develop a centre of excellence in sustainable training/teaching, research, development and utilization of arid, semi arid and drylands.
- (c) To address through research various natural problems related to the development of ASALS including but not limited to land utilization, poverty eradication, technology transfer, private sector and NGOs involvement in relation to social development
- (d) To develop a regional institution through collaborative research with international organizations and other reputable universities.

Chapter 4- Form of Governance

The Administrative structure of USEK will be as follows:

4.1 The Board of Trustees

As a public university, USEK shall have a nine-member Board of Trustees, who shall be appointed by the Minister of Education Science and Technology. The Board of Trustees shall be the supreme governing body of the University. The Trustees shall meet once or twice every month, to discuss and approve proposals submitted by the Vice Chancellor's office.

4.2 The Vice Chancellor's office

The Vice Chancellor, shall be nominated by the Senate and appointed by the Board of Trustees, and shall be the chief executive officer of the university. The Vice Chancellor, with two appointed Deputy Vice Chancellors and the Registrar would be responsible for governing the University.

4.3 Deputy Vice Chancellors and the Registrar

Deputy Vice Chancellors and the Registrar shall be appointed by the Board of Trustees upon recommendation by the Vice Chancellor, and shall be responsible to the Vice Chancellor.

4.4 Deans and Directors

The largest administrative units within the University shall be the Faculties and Schools, which contain the various Departments. The Faculties and Schools shall be governed by Deans and Directors respectively. Deans of Faculties and Directors of Schools shall be appointed by the Board of Trustees upon recommendation by the Vice Chancellor, and shall be responsible to the Vice Chancellor 's office.

4.5 Department Chairs

Department Chairs shall be nominated by the Dean after consultation with departmental faculty and staff. The Vice Chancellor's Office shall then appoint the nominated faculty member as the Chair of the Department for a period of three years. The Department Chair shall be responsible for the day-to-day running of the Department, and is accountable to the Dean.

4.6 The University Executive Board

The University Executive Board, consisting of the Vice Chancellor, Deputy Vice Chancellors, Registrar, Deans and Directors, shall be responsible for administrative decisions, and also serves as a consultative body for the Vice Chancellor.

4.7 The Faculty Executive Board

Within each Faculty, the Faculty Executive Board, consisting of the Dean, Vice Dean and Department Chairs, shall function in the same way as the University Executive Board, and shall be responsible for administrative and financial decisions.

4.8 Administrative Offices and Units

The following offices and administrative units are proposed:

1. Alumni and Career Research Office
2. Auditing Office
3. Computer Centre
4. Dormitories and Cafeterias Office
5. Environment Office
6. Financial Affairs Office
7. Health Centre
8. Library
9. Personnel Affairs Office
10. Printing Office
11. Project and Technical Work Office
12. Public Relation and Media Office
13. Purchasing and Inventory Control Office
14. Registrar's Office
15. Revolving Funds Management Office
16. Sports Activities Office
17. Social and Cultural Activities Office
18. Archives
19. Bookstore
20. Housing Unit
21. Sanitary Services Unit
22. Security Unit
23. Transportation Unit

4.9 Faculty / School Administrative Chief Officers

The following are the proposed faculties and schools:

1. Faculty of Education
2. Faculty of Law
3. Faculty of Agriculture and Dryland Management
4. Faculty of Business and Economics
5. Faculty of Arts and Sciences
6. School of Computing and Technology
7. School of Tourism and Hospitality Management

Chapter 5: Academic Programmes

5.0 PROPOSED ACADEMIC/RESEARCH PROGRAMMES

5.1 *Background*

The need for scientific and technical innovation in the management of the drylands is paramount in Kenya whose economy is land based. Specifically, the growing population has increasingly overburden agriculture, which employs over 80% of the country's rural population. Consequently, there has been marked drift of the rural population from the high potential rain fed agricultural zones to the low potential drylands. This unpredicted influx of rural cultivators into the extensive drylands has brought about intensive agricultural activities in the fragile environment whose results have climaxed into over-utilization of the environment. As a result, land degradation, loss of natural resource and other environmental hazards have caused further pulverization of the rural poor. It is on the basis of the foregoing that a renewed thrust on dryland management strategies, beginning with training and research, is hereby envisaged as paramount. This strategy will focus on Drylands Natural Resource Management training and Research activities to harness available manpower in order to enhance the functional management and utilisation of the abiotic (soil, and water) and biotic (fauna and flora) resources. Thus the proposed academic and research programmes will address issues of enhanced dryland natural resource management, with specific emphasis on sustainable production and increased well being of the rural population. Food security, alleviation of poverty and rural development will form a complementary objective of producing skilled manpower.

5.2 *Proposed Programmes*

The following academic programmes are proposed to essentially utilise the existing facilities:

- Natural Resource Management
- Animal and Range Science
- Soil and Water Management
- Agricultural Mechanisation and Engineering
- Wildlife and Aquatic Sciences
- Agricultural Education and Extension
- Agronomy and Crop Production/Horticulture
- Agricultural Economics and Farm Management
- Food Technology and Processing

Other areas of study should cover the liberal arts and education, i.e., Bachelor of Arts, Bachelor of Education and the related post graduate degrees. This thrust should also capture the social science based studies. Thus it is envisaged that other programmes shall include

- Bachelor of Arts (Administration)
- Bachelor of Education (Arts and Sciences)
- Bachelor of Arts (Rural Development)
- Bachelor of Science in Business Information Technology

- Bachelor of LAW (LLB)
- Bachelor of Commerce

Note that for the plans for a full-fledged University offering sciences to be initiated the basic facilities, e.g. power from the high lines and laboratories must be in place. Otherwise the liberal disciplines can start as soon as possible. The campuses best suited or that can be developed with minimal effort to start offering sciences are KDFS and UKAI

The scope is enormous for three-year diploma courses, two-year certificate course, and demand driven short courses (up to six weeks) which should exploit the income generation activity mood currently in the public institutions. In line with the dryland agriculture, the programmes and courses could include:

- Dryland agrobiolgy
- Conservation of dryland biodiversity
- Agrometeorogy and climate
- Dryland agroforestry
- Irrigated agriculture/Horticulture
- Animal production (beef cattle production)
- Animal production (sheep and goats
- Animal production (poultry)
- Apiculture (bee keeping)
- Agriculture extension and rural development
- Range management and forage production
- Participatory rural appraisal (PRA) and rural development
- Project management and evaluation
- Trade and craft courses in carpentry, masonry, electrical installation and electronics, welding and fabrication, food processing, motor vehicle mechanics, plumbing and general business
- Other craft courses such as ceramics, textile, leather and metal technologies, information science and bindery
- Management sciences such as supplies, banking and finance, accountancy and business management
- Community development/keys to rural development

5.3 INCOME GENERATION ACTIVITIES

Already information available at the centre indicates that the following programs are viable:

- Cattle ranching (beef and dairy)
- Sheep and goat rearing (meat and milk)
- Bee keeping (Apiculture)
- Horticulture (fruits and vegetables)
- Fish farming
- Oil crops and oil crops industry
- Domestic and wild fowl (game birds, ostrich)

- Game ranching (meat and Eco-tourism)

Chapter 6- Academic Resources

6.0 Basic Information and Institutional Facilities

6.1 Kibwezi Station

The Station is situated off Nairobi Mombasa Road along Kibwezi-Kitui road between Athi River and Kibwezi river in Kibwezi, Makueni District (originally southern Machakos District), approximately 250 km from Nairobi. The Station's Head Office is situated about 15 km from the Kibwezi Urban Centre.

6.2 The Land and Its Ecology

The property covers approximately 12,188 acres (4,872 ha) which include the former Chai Estate along Kibwezi river (approx 600 acres) plus another 6,188 acres along the Kibwezi-Kitui road. The wide diversity of soil types and vegetation base found in the area provides an ideal environment for research on the various land types within the property.

The land comprises gently undulating terrain ranging in altitude from 700 to 780 metres above sea level. It slopes south-eastward and is dissected by several dry valleys. Kyandululu, a seasonal stream which bisects the land from east to west, has been used to sink shallow wells.

The climate at Kibwezi is characterized by a bimodal distribution of precipitation. The mean annual rainfall is 640 millimetres. Average precipitation in the long rains (March – May) is 235 millimetres whereas that in the short rains (October – December) is 317 millimetres. The period between June and September is the driest part of the year.

The soils in this Station are derived from metamorphic rocks comprising the basement complex. They are generally well drained, sandy to medium-textured, deep and slightly acidic. Some profiles are laden with lateritic concretions. The predominant vegetation is scrubland. A large number of indigenous trees/shrubs have enormous ethno-veterinary and human herbal medicine potential.

6.3 Agricultural Economy of the Region

The largest ethnic group in the Kibwezi area is the Kamba who depend partly on pastoral and agronomic economy to meet most of their needs. Much of the production system includes a cultivated plot and access to communal grazing lands. Other activities are bee keeping and charcoal burning.

A general survey of farms in the lowland of Machakos and Makueni Districts shows that the common crops cultivated are maize, beans, cowpeas, pigeon peas, sorghum, castor beans, cotton and millet. These are generally intercropped and planted at the onset of the long and short rains.

Land preparation for planting consists of clearing the native vegetation with hand-held tools and ploughing with oxen. Because these animals emerge from the dry season in poor condition the amount of land that can be prepared between harvest and rains is limited to about 3 hectares. Weed control operations include interrow ploughing and intrarow hoeing.

Livestock herds are composed of cattle, sheep and goats. During the wet season, the animals depend on free-access range for sustenance. Physical overlapping of the pastoral and agronomic sectors takes place in the dry season when the livestock are temporarily moved into cultivated fields. Generally, the pastoral component constitutes the last barrier between subsistence and famine.

6.4 Public Utilities and Amenities

6.4.1 Nursery and Primary School

There is a full nursery and primary school started in 1988, which caters for University staff children as well as the local population. The school has eight classes, including a Science and Arts Workshop. Teachers at the schools are provided by the Teachers Service Commission.

It is hoped that the school will grow into a secondary school which would then be used by the University's College of Education and External Studies for teaching practice.

6.4.2 Health Clinic

The clinic which is part of a World Bank Project started operating in 1992, with only one clinical officer. The clinic caters only for the few permanent staff at the station and does not have provision for the handling temporary staff and the local community who have to go to Kibwezi town for medical treatment.

There was much concern that the clinic does not address itself to the issue of school children, temporary University staff and the local community who are able to pay for the facility. In this regard there is some indication that some international organizations such as African Medical and Research Foundation (AMREF) and United Nations Children Fund (UNICEF), are willing to assist provided the University allows the local community access to the clinic. In view of the extension role of the Station to the local community, there is need to pursue this matter with these and other organizations.

6.4.3 Water and Reticulation Works

Kibwezi Field Station is served by a permanent source of portable water from Kibwezi river to the Station's headquarters and reticulated to over 50% of the land.

The station has a water works system which includes:-

- Under-and overhead water tanks at the Station headquarters;
- Two reservoir tanks, filtration chamber, treatment / chlorination chamber, backwash tank, overhead tank, and attendants' offices and guards' residential blocks at the water works station;
- Two pumps, pump house, pier dam and guards' house at the water intake works; and
- Distribution system (tanks and piping)

The major water works system was developed between 1990 and 1993, a part of the World Bank support, at a cost of about Kshs24 million. The old and original water pipeline laid by the University is now used at the Kasarani market and for the livestock watering point of the Institute.

6.4.4 Road Network

The Station is well served by all-weather road network. The entire land belonging to the University has a road cutting along its boundary to facilitate easy movement and control of potential squatter encroachment.

6.5 Current Facilities

The following facilities are available: administration block with three offices and a store, multipurpose teaching room and laboratory to cater for 25 students, kitchen and dining complex catering for 50 people, hostel/dormitory block with 20 cubicles for students, six bed-sitters, staff houses that include 2 units of 3 bedrooms each, 2 units of 2 bedrooms each, 6 units of one bedroom each; radio communication facility, generator house with two power engines and fuel storage tank, water treatment works workshop, garage complex, gate house and perimeter security fence.²

6.6 Current Research and Development Projects

6.6.1 Goat Breeding Multiplication Project

The project has two phases. The first phase, which ran for three years from 1988 to 1991, investigated the feasibility for practical goat production under Kibwezi semi-arid scrubland. The project is run by both the Department of Range Management and the German Israeli Agricultural Research Association (GIARA). The project is co-funded by the three parties to the project i.e. University of Nairobi, Federal Government of Germany and the State of Israel and executed by the University of Nairobi (Department of Range Management) in collaboration with an Israeli Researcher.

The second phase of the project, also proposed to run for three years and entitled “Integration of Rangeland Livestock and Cropping Systems for Semi-arid Land Development” was signed in 1993 between the University of Nairobi and the State of Israel like the first phase is also co-funded by the three parties involved in project, i.e., University of Nairobi, Federal Government of Germany and the State of Israel and run by the Department of Range Management in collaboration with an Israeli Researcher. The Project has three integrated components involving goat, poultry and fodder/feed production.³

² As one of the urgent developments, the Station should be connected to power mains currently at Kibwezi Township, a 15 km running distance. Further development of the Station, especially as a full-fledged teaching/training facility hinges on this.

³ See “**Agreement**” between Society for Transfer of Technology, on behalf of the Division of International Cooperation (MASHAV), Ministry of Foreign Affairs, State of Israel and the University of Nairobi

6.6.2 *The Livestock (Cattle) Project*

The livestock project was started in 1993 and is funded by the University of Nairobi. Any projects at KDFS dealing with research on livestock (including the goat breeding and multiplication and the cattle projects) should have a close relationship with the Nairobi based International Laboratory for Research on Animal Diseases (ILRAD)⁴ the Addis Ababa based International Livestock Centre for Africa (ILCA)⁵ and the recently established (and jointly hosted by Kenya and Ethiopia from 1995) International Livestock Research Institute (ILRI)⁶. There has not been any meaningful contact between the projects at Kibwezi and these African based international research institutes.

6.6.3 *The Camel Project*

Following the expiry of a camel research project at Athi-River by the Department of Range Management in 1989, the camels were taken to KDFS. At the time, Kibwezi was thought to be the only place within the University of Nairobi where camels could be accommodated. Of the 44 camels taken to Kibwezi, 32 have since died.

6.6.4 *The Herbal Tea (Chamomile) Project*

The initial concept of growing chamomile in Kibwezi emerged from deliberations by the International Chemistry Conference in Africa on Chemistry and Health Service Delivery, which recommended that research on African medicinal plants be intensified. Consequent follow-up identified chamomile as a plant whose flowers have substantial oil that is useful for cosmetic and pharmaceutical products. Some of the useful products include gel against sunburn, toothpaste

⁴ ILRAD was established at Kabete in Nairobi in 1973 by an agreement between the Government of Kenya and the Rockefeller Foundation. The Laboratory was opened in 1978 with the mandate to research on ways to conquer major animal diseases that limit livestock production in Africa and other tropical regions. In 1994, ILRAD was funded by the World Bank and the Governments of Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Japan, Luxembourg, Netherlands, Norway, Russian Federation, Spain, Sweden, Switzerland, UK, and USA.

⁵ ILRAD's sister institute, the ILCA, was established in Addis Ababa in 1974 with the mandate of improving livestock productivity, focusing on research on the management of pastoral livestock systems, the potential use of livestock resistant to disease, alleviation of seasonal grazing shortages, livestock marketing policy, etc.

⁶ ILRI was formally established in September 1994 in Berne, Switzerland, with an international agreement signed by Denmark, Ethiopia, Kenya, Sweden, Switzerland and UNEP. It is hosted jointly by Kenya and Ethiopia with the headquarters at Nairobi. ILRAD and ILCA were integrated into the ILRI on 1 January 1995. ILRI combines high-priority activities at ILRAD and ILCA with new initiatives to tackle emerging issues of global importance like the management of sustainable agricultural practices.

for sensitive and inflamed gums, cream for sensitive, dry and damaged skin, bubble bath, hair shampoo and toilet soap.

Initial trials showed that chamomile grown in Kibwezi had a higher oil content than the one grown at Kabete farm and Yugoslavia where the original flowers were obtained from.

The Chamomile Project at Kibwezi is thus a project of the Department of Chemistry, whose main objectives are (a) cultivation of chamomile; (b) extraction, isolation and analysis of oil and other components from chamomile; (c) development of a pilot plant for production of chamomile oil; and (d) carrying out market studies regarding commercialization of the chamomile products.

So far objectives (a) and (b) have been realized. It is currently on a small scale basis. The flowers are brought to Nairobi (Department of Chemistry) after harvesting for oil content extraction and determination. The responsibility of managing the project at Kibwezi has been placed on an Administrative Assistant/Agronomist from the Department of Chemistry.

A proposal geared towards the achievement of objectives (c) and (d) of the project, by the Department, has already been approved by the World Bank. The Kibwezi Master Plan has allocated 100 acres for the development of the Chamomile Project.

The project has been carried out in close collaboration with the Kenya Agricultural Research Institute (KARI) and the Department of Crop Science, University of Nairobi.

6.6.5 *The Meteorology Station*

This station is located next to the Goat Breeding and Multiplication project site and is run by the Department of Meteorology. In view of the recent selection of KDFS as one of the international "Roselt" network of observatories for long term ecological monitoring under the International Association of the Sahara and Sahel Observatory (IASSO), the meteorology project is likely to undergo extensive expansion in the future.

6.6.6 *Sisal Harvesting*

The Station has about 3000 acres under sisal. This was part of the land owned by Chai Estate before it was allocated to the University. The land was up to 1991 leased to Claymore International for the purpose of harvesting the sisal. Although sisal harvesting activities stopped in September 1991 due to the down-turn in the sisal market and the high cost of bush clearing, this has now resumed.

6.6.7 *The Kibwezi Irrigation Project (KIP)*

The Kibwezi Irrigation Project is the largest project at the Station. Discussions leading to KIP started in the mid 1980's⁷ and originally, the Project was conceived as a three phase irrigation

⁷ See "Memorandum of Understanding" between the University of Nairobi and the Centre for International Cooperation (CINADCO), Ministry of Agriculture, State of Israel, 1987

project⁸, with attendant guidelines for project implementation.⁹ The main goal of the project is to increase research and development capabilities of the University of Nairobi in subjects related to arid and semi-arid zones and to cooperate in the development of the Kibwezi area. The results of the project are expected to be utilized for the benefit of the rural community in order to improve its agricultural performance and living standards. The three phases of the KIP, stated in the feasibility study, are:

Phase One: Construction of a 10-hectare pilot plot over a period of 2-3 years with the following main objectives:

- (a) Introduction of new crops to be grown in the region;
- (b) Examinations of optimal planting dates and varietal selection for all categories of crops;
- (c) Introduction of improved irrigation techniques; and

Demonstration of appropriate agro-technologies, such as water management, rotation, etc. for intensive production of crops under irrigation and for provision of a research base for the University.

Phase Two; Extension of phase one with an additional 20 hectares of land brought under cultivation and netted with an irrigation system with the following objectives:

- (a) A portion of the area to be cultivated as a semi-commercial farm with crops found to be most suitable and economically viable during phase one;
- (b) In the remaining area, the research programme initiated during phase one, would be widened and more sophisticated studies on various cultural practices be conducted; and
- (c) Initiation of an adaptive research programme with on-farm trials

Phase Three: Decisions concerning the concept of further irrigation development were to be determined on the basis of the findings achieved and experienced during phases One and Two according to University policy. Phase three was scheduled to begin 4-5 years after the establishment of the pilot project. The KDFS Master Plan allocated about 800 hectares for irrigation development at the station.

In early 1993, the University prepared a proposal for a major expansion of the irrigation project which was submitted to USAID/Kenya. The proposal, calling for expansion of irrigated crops for the Kibwezi region, was however reconsidered in favour of a continuation of the irrigation project through a Modified Phase Two programme which emphasizes training, extension and

⁸ See "Proposal for the Establishment of Irrigation Project at Kibwezi University Dryland Field Station – Summary and Conclusions", by a Kenyan-Israel Team comprising of members of: the University of Nairobi; Ministry of Agriculture from the Kibwezi Agricultural Division; the Centre for International Agricultural Development (CINADCO), Ministry of Agriculture, State of Israel; and the Division for International Cooperation (MASHAV), Ministry of Foreign Affairs, State of Israel, 1990.

⁹ See "**Memorandum of Understanding: Kibwezi Pilot Irrigation Project**" between the University of Nairobi and MASHAV, 1991.

research activities with a major objective of transferring technologies to farmers producing crops under irrigation in the Kibwezi region.¹⁰

Phase One of the KIP was initiated in January 1991 and was scheduled for completion in December 1993. It started with 10 hectares placed in production but the project has progressed more rapidly than expected and by using proceeds from crop sales, has expanded the area under cultivation to 30 hectares (the total area originally proposed for phases One and Two) (plus 3 hectares of dryland for faculty research). Four types of irrigation are used; furrow, sprinkler, drip and micro-jet systems. The facility is a “state of the art” operation designed to support research, production and demonstration functions.

Phase one budget was provided by the USAID and the Division for International Cooperation of the Israeli Ministry of Foreign Affairs (MASHAV) and included capital and recurrent costs amounting to US\$318,280.

The utilization of KIP by the University of Nairobi has increased dramatically over the last three years. Five faculty members have research projects on the facility, many classes use the facility on a regular basis and seven masters degree theses have either been completed or are in the final stages of completion. Although phase one was not intended to provide major outreach/extension activities, the project has held 5 field days with an average attendance of over 1000 farmers. The outreach activities are carried out in conjunction with the Ministry of Agriculture’s Extension service. Many groups (local, national and international) visit the irrigation project.

Concern has been expressed regarding market competition with local farmers with the Kibwezi region having about 1,800 hectares under irrigation and perhaps 3 times as much planned of both small and large scale holder farmers. Competition from the current 52 hectares should have minimal effect on the local market, especially when one considers the large number of crops grown on the KIP. Under certain conditions, however, market competition with local farmers is likely hence the original feasibility study emphasis on careful selection of crops for commercial production within the KIP in order to avoid undesirable competition with the farmers of the region. Although currently about 52 hectares are under irrigation in the project (and also land expansion beyond this area is not called for under the Modified Phase Two), the KDFS Master Plan allocated up to 800 hectares for irrigated agricultural development. It therefore appears that the potential of 800 hectares under irrigation is the main concern rather than the 52 hectares cultivated up to date.

Under the Modified Phase Two, the joint Israeli/USA Cooperatives Development Project (CDP) assistance to the University of Nairobi, Kibwezi Irrigation Project will not support further expansion of the commercial activities of the project and indeed any “commercial aspirations” of the University. Although it is appreciated that some commercial activity is necessary (and desirable) for the project, the donors have indicated that such commercial activity should not exceed the current 30 hectares and where possible commercial activity should be with the crops not competitive with those by the local farmers. The Modified Phase Two should therefore emphasize the transfer of technology to farmers and expansion of on-farm on farm service,

¹⁰ See “Kibwezi Irrigation Project – Proposal for Phase II” which is attached to the **University of Nairobi Dryland Field Station Irrigation Project CDC Evaluation – Kenya**”

research outreach/extension, and training activities. The budget requirements for two years of Phase Two (1994-95) US\$ was 253,000.

The move towards the direction of income generation at the Station will therefore have to rely on internally organized and generated strategies and funds, not on donor support. This detailed vital history of the Kibwezi Station provides a strong basis for continued growth of the Station as a nucleus for any future development. It is on this basis, therefore, that a proposal for further elevation of Kibwezi Station is hereby supported in collaboration with other Institutions of the Kamba region.

6.7 Other Suitable Facilities in the Region

6.7.1 *Ukamba Agricultural Institute (UKAI)*

Ukamba Agricultural Institute (UKAI) came into being in the 1970s as one of the then Kenya's Harambee Institutes of Technology to harness the country's skilled and semiskilled human labour into productive development. This was in realization of the fact that Kenya's economy was agriculture based. Because of increasing population and, arable land decreasing in the high potential rainfed areas, farming activities were quickly advancing into otherwise drylands, in which the two Kamba districts (Masaku and Kitui) were found.

The Institute was initially registered in 1976 as unaided school under the Ministry of Education. The Institute has two campuses, namely:

- 1 *The Yatta Campus*, 70 km East of Machakos and 40 km west of Kitui town. It has a land size measuring 12,000 acres and it was the main centre for the training programmes.
- 2 *The Emali Campus* located about 30 km south of Machakos on the Nairobi-Mombasa main road. It is now in Makueni District. Both campuses are located in drylands, hence suitable for dryland farming and agricultural practices.

The objectives of UKAI could be broadly summarized as “to promote the sound management, utilization and conservation of the abiotic and biotic dryland resources for the well being of the local people”

UKAI carried out general agricultural training to certificate level at the Yatta campus with the following courses through the 1990s:

- Basic sciences
- Agricultural engineering

- Economics and Farm management
- Animal and crop production
- Extension and Education

At its height of operation in the mid 1990s, UKAI operated as a company with its 1983 Articles of Association as a crystallization of the UKAI objectives. For any further details, refer to the Report of the Committee of Enquiry on UKAI ¹¹.

In addition to the land resources described above, UKAI has two urban plots in Nairobi and Mombasa.

Infrastructure and Facilities

The Infrastructure so far developed by UKAI is at the Yatta campus. These include buildings at the college such as 6 class rooms 4 dormitories, 1 dining hall, 3 staff houses, principals house, office blocks, 1 workshop, 4 water tanks, 1 library, 1 zero grazing unit, 1 cattle Dip, farm office, maintenance workshop and a canteen.

In addition, the college had one diesel powered 27.5 KVA generator, a solar powered HF radio call system, and one diesel powered engine pump for the supply of water with associated 20,000-gal tank reservoir.

Other assets include two motor vehicles, three tractors, a motor bike, a trailer, one mould board, three disc ploughs, one harrow, one speed planter, one ox plough, assorted tools, office equipment and furniture.

To date, UKAI College has been rendered dysfunctional due to its current registration status. The committee on UKAI (1998), mentioned above, recommended under section 5.2 a-d, that, change of legal status, registration and governance be considered immediately so as to bring “UKAI college to function under the Education Act”.

Against this background, the UKAI College could be an integral part of the proposed Institution of Higher learning in Ukambani with a focus on Dryland studies.

6.7.2 Kitui Teachers Training College Project

Kitui Teachers Training College Project is a Ministry of Education domain and its location is about 40 km east of Kitui town in Kitui District. The facility whose infrastructure was started in the 1992/93 is yet to be completed. As such it has not been operational by way of training of teachers. The project stalled supposedly due to lack of funds

¹¹ Report of the Committee of Inquiry on Management and other problems of Ukai, March 1998, Nairobi, Kenya

The incomplete structures in place in the Kitui Teachers Training college (KTTC) Project site include administration block, classrooms, dormitories and an assortment of other structures. There are still some substantial building materials on site, which include sand, ballast and bricks. The site has a perimeter fence and is guarded by two watchmen.

There are rumours that private individuals may be eyeing the site for a private school venture. The ministry of education is in a better position to elucidate the status of this massive public investment.

Under the circumstances, therefore, this facility which is very close to the Ukamba Agricultural Institute (UKAI) could serve as a complementary campus to carry the training load described under the UKAI once it is completed. The facility should however, be assessed and evaluated with a view to completing it and making it a functional entity of the proposed institution of higher learning.

6.7.3 Machakos Training Teachers College

Machakos Teachers Training College (MTTC) is one of a teacher training institution in Ukambani in addition to the Kilimambogo Teachers Training Centre. It is located in Machakos town, about 66 km or so east of Nairobi. Its exact locality is adjacent to Machakos School.

This is a fully functional training college with enormous investment by way of buildings and facilities. The institution is self-sufficient with administration blocks, offices, laboratories, workshops, staff houses, dormitories and recreational features. The site is well served by the national electricity grid, telephone network, national water carrier as well as all weather roads. Unlike all other institutions described in this paper, MTTC is best equipped of all.

The training of teachers in all disciplines, the arts and sciences is the domain of this college. This institution can form a strong base for a full-fledged University by upgrading the currently offered courses to degree level with emphasis on all general /liberal arts, and Basic Sciences.

6.7.4 Human Resources

Proposed Establishment:

Position	Grade	Establishment
Vice-chancellor		1
Deputy Vice Chancellor		1
Registrar	15	1
Deputy Registrar	14	2
Finance officer	15	
Farm Manager	14	
Professor	15	
Associate Professor	14	
Senior Lecturer	13	
Senior Research officer	13	

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Lecturer	12	
Ass. Lecturer / Tutorial Fellow	11	
Teaching Assistant	10	
Systems Administrator	12	
Chief Technologist	12	
Senior Technician	10	
Senior Administrative Assistant	10	
Senior Assistant Registrar	10	
Senior Accounts assistant	10	
Laboratory attendant	2-5	
Secretary	2-5	
Clerks	2-5	