

# KISM - A NEW EDUCATIONAL INSTITUTE FOR SURVEY AND MAPPING IN KENYA

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### ABSTRACT

The Kenya Institute of Surveying and Mapping (KISM), was established within the Ministry of Lands & Settlement of the Government of Kenya and is initially to be run as a project jointly sponsored by Japanese and Kenyan Governments. The Institute was launched on 1st October, 1994 as a full fledged Government Training Institution offering Diploma Courses in Land Surveying, Cartography, Photogrammetry & Remote Sensing and Map Reproduction. The Institute will in addition offer Higher Diploma Courses in Land Surveying, Cartography, Photogrammetry & Remote Sensing and some specialised short term training courses in related fields.

The unique feature of this relatively new institution is that it is established within the Survey Department of the Ministry of Lands and Settlement. It is thus privileged to be in a position to expose its trainees to real practical and actual experiences available in the Survey Department especially during the industrial attachment periods of the training programme. In this context it may be regarded as one of the few institutes in the African continent with access to such broad facilities.

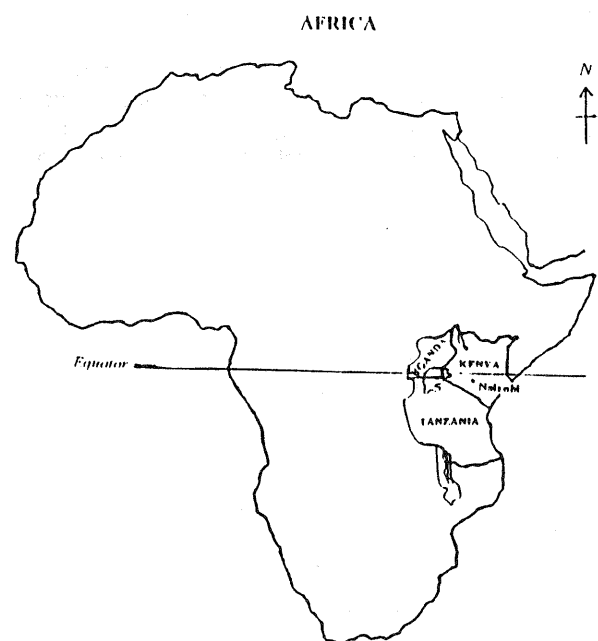
The need to develop such a medium type of institution within the Ministry was to produce adequate middle-level technical personnel who would satisfy the national demand for such skills.

### 1. INTRODUCTION

Although survey work in Kenya started in 1902 it is not until 1948 that a department to offer such service was established to support the Governments policy of maximum exploitation of its Land and natural resources.

The need for this department was necessitated by the demand to have Kenya mapped to facilitate effective resource distribution and management. The functions of the department were (at the time) monopolised by the European soldiers whose authority controlled the extent to which the land resource was being utilized.

Around 1950 the first indigenous Kenyan Surveyors (5 in number) graduated from the Entebbe School of Survey in Uganda. These are people who had been in contact with tactical Surveyors operating in the world war II. During the same period (1950) the first Survey of Kenya Training School was established at Ngong near Nairobi, mainly for the European soldiers who were to train in Surveying. The new Survey Headquarters was by design in-corporating training facilities to accommodate the training programmes that had earlier been introduced at Ngong.



## 2.0 COURSE MANAGEMENT

### 2.1 Courses Conducted at the Training School

The first instructions of the Survey of Kenya training school was mainly basic courses in Land Survey. In later years advanced courses were introduced together with courses in Cartography, Photolithography, Photogrammetry and Survey Records.

The courses were designed to

- (a) Improve the individual efficiency of officers,
- (b) Prepare the candidates to sit for trade tests (popularly referred to as occupational tests)

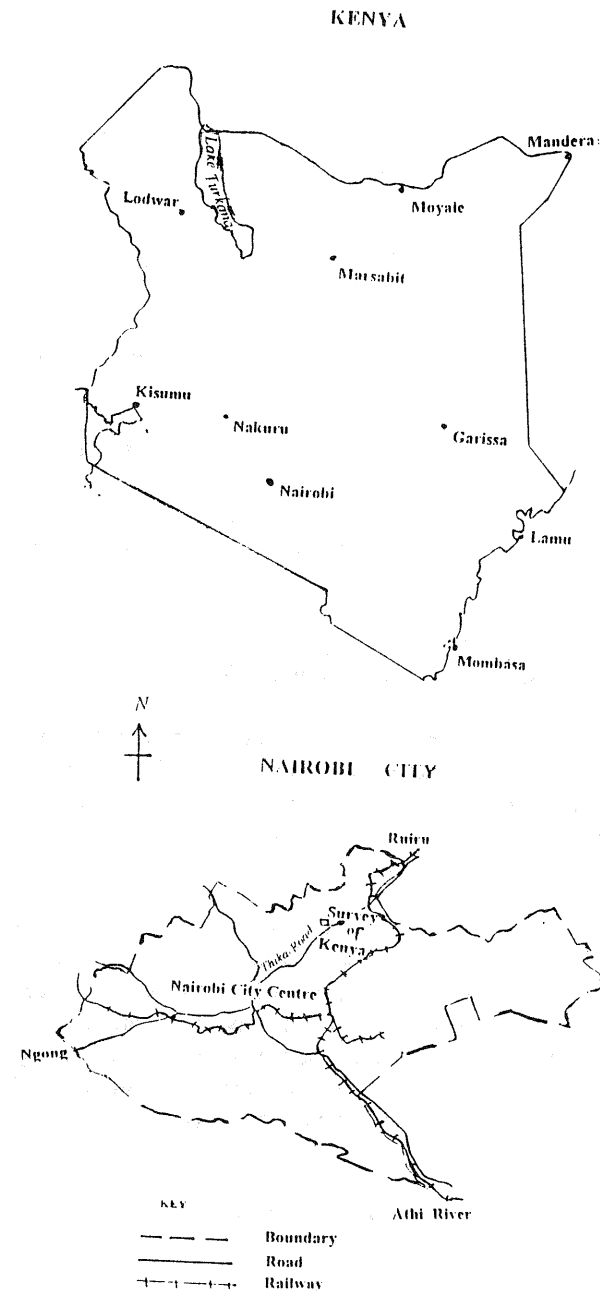
In principle the trade tests were primarily meant to examine technicians who had trained on the job and the main purposes for administering the examination was

- i. to offer an avenue for the candidates to rise to the professional level.
- ii. to upgrade the staff who successfully completed any of the tests.

### 2.2 Transfer of Training Programme to the Kenya Polytechnic.

In 1970, the Kenya Polytechnic started the Ordinary Diploma programme in Land Surveying and Cartography. Recognising the need for further expansion of the Survey activities outside the urban centres and settlement areas the Survey Department suspended its internal training and switched over to sponsoring students to the Kenya Polytechnic to pursue Diploma courses. Suddenly the need for in-service training did not rate highly and it was anticipated that the graduates from the polytechnic would satisfy the needs of the Survey department. As a result the existing classrooms of the school were converted into office space for cartographic work.

Soon after, the Department did not only realise the importance of running the in-service training for upgrading unskilled personnel but had also to keep up with insufficient supply of the Diploma pre-service trainees from the Polytechnic. For instance the Department was authorised to recruit and train 40 Survey Assistant but only 24 places were reserved. As the years went by the annual supply of Surveyors could not cope with the rising demand. The Polytechnic had been training for the Survey Department the following number of trainees on an annual basis.



In 1954 the school enrolled the first 24 African technician Surveyors. The training in cartography, Photogrammetry, Photolithography and Survey Record immediately followed.

Land Surveyors -	Ordinary/ Diploma	24
Cartography	" "	20
Photolithography	Certificate	15
Land Surveyors -	Higher/ Diploma	10

A small scale Photogrammetry Diploma course was however being conducted at the Survey of Kenya Training school. Intake was being done once every 3 years.

### 2.3 Graduate Surveyors

Another course that used to be carried out in the Training school is that of induction for newly recruited graduates from the University of Nairobi. Induction entails an introduction to the activities and management techniques that would integrate the new graduates to the various routine functions of the Department of Surveys (Survey of Kenya).

### 3.0 ESTABLISHMENT OF THE NEW INSTITUTE

As earlier mentioned, upto a certain stage, Survey of Kenya recognised that the Kenya Polytechnic was after all not meeting the Departments requirements in supply of technicians to satisfy the ever increasing demand. To this end the idea of establishing a medium sized Institute to offer Diploma courses was mooted in 1990 so as to overcome this problem. The present capacity is not sufficient and the Department has set in motion some expansion programmes geared towards covering Kenya to the least administrative unit, -the District.

### 4.0 JUSTIFICATION FOR THE INSTITUTE

#### 4.1 Expansion of Administrative Units.

The Government of Kenya continues to expand its administrative units by creating new Districts which require new offices to be staffed with Surveyors.

#### 4.2 Mapping Information

The demand for accurate maps, charts, plans and aerial photographs in Kenya's development has greatly increased. These basic products are critical in planning and decision making. The Government is required to provide accurate maps that can be used in project planning and implementation. The preparation of such maps require trained personnel in Land Surveying and the allied professions.

### 4.3 Development of Arid and Semi-Arid Lands (ASALS)

The Arid and Semi-Arid lands of Kenya which comprise of more than 80% of the country's total land surface area is poorly mapped and the available 1:100,000 scale topographical maps are out of date and inaccurate. The basic mapping of these areas at 1:50,000 scale is of great concern.

### 4.4 Necessity for Title Surveys and Topographical Mapping

At present the demand for security of title has now become irresistible as more people have access to mortgage facilities. Consequently the pressure on Survey of Kenya to carry out Cadastral and Adjudication Surveys for registration of titles is so high that this accounts for over 95% of the Survey of Kenya's activities at the expense of geodetic control and topographical mapping operations.

### 4.5 Survey and Mapping Role under the District Focus for Rural Development Strategy.

Another major cause of the increased demand for Surveyors, Photogrammetrists, Cartographers, Photolithographers and Records officers is undoubtedly the adoption in 1983 of the District Focus for Rural Development Strategy, a new Government policy of shifting the responsibility for planning and implementing rural development projects from the Government Headquarters in Nairobi to the individual Districts. The amount of work at District Survey Offices has therefore increased tremendously as the offices have to undertake surveys and produce the maps required by the District Development Committees for planning and implementing rural development projects.

### 5.0 IMPLEMENTATION OF KISM PROJECT

#### 5.1 Inauguration of KISM

As previously mentioned the idea of putting up the Institute was conceived and polished by 1992. Implementation was however not possible due to lack of funding. The Kenya Government sought a donor for the project and was fortunate to find Japan willing to jointly support it. An agreement was reached on the mode of implementing the project by identifying the role to be played by each participating country. The project was inaugurated in October, 1994 and shall take a period of 5 years upto the year 1999.

During the first year of operation i.e. October, 1994 to October, 1995 the Institute mounted a post Diploma training programme for both Geodetic and Cartographic technicians of Survey Department, Ministry of Lands and Settlement.

## 5.2 Participatory role by both Donor and Recipient Governments.

At the design stage it was agreed that Japan would provide finance to support the construction of the Institute's facilities and procurement of Equipment. In the same understanding it was agreed that Japan assign experts to the Institute to transfer the necessary technical know how. Kenya was instead to provide the necessary technical resource persons and the other General services staff. During the period of the project the teaching staff shall benefit from counterpart training programmes available through Japan International Co-operation Agency (JICA) and other special upgrading courses.

## 5.3 Projection

Presently the Institution has admitted its first intake of 85 trainees to pursue Diploma course in the specialised areas already mentioned in the abstract to take a period of three (3) years. It is projected that the Institute will be in a position to admit 103 student yearly to undertake Diploma courses in

Land Surveying	48
Cartography	25
Photogrammetry	15
Photolithography	15

In addition the institute will offer Higher diploma courses in Land Surveying, Photogrammetry and Remote Sensing and Cartography.

The curricula is designed to incorporate all the latest technological advances in approach and practice. The equipment and techniques to be employed shall be the very modern and current for the graduates to appropriately fit in the present job market.

Since the Institute is established within Survey of Kenya it is intended to offer practical training that will possibly benefit and suit the needs in Kenya and that of the sub-region.

## 5.4 Curricula Development

The Institute does not operate in isolation but rather

employs curricular that was directed and developed by the Kenya Institute of Education, the official body responsible for the development of curriculum. The Institute was however involved and participated in the development of the syllabi for all the Diploma programmes.

On completion of the programme students will be required to sit for Diploma examinations set by the Kenya National Examination Council which is responsible for the administration of all the national examinations.

The following tabulation provides the subjects studied at the Institute.

### 5.4.1 Common Support Subjects

1. Social Studies
2. Entrepreneurship Education
3. Communication Skills
4. Computer Applications
5. Mathematics
6. Physics
7. Geography

### 5.4.2 Trade Support Subjects

1. Management
2. Computer Assisted Mapping
3. Land Surveying
4. Cartography
5. Photogrammetry and Remote Sensing

### 5.4.3 Core Subjects

#### Land Surveying Department

1. Surveying Instruments
2. Topographical Surveys
3. Cadastral Surveys
4. Engineering Surveys
5. Survey Control
6. Project

#### Cartography Department

1. Thematic and Special Purpose Cartography
2. Cartographic Reproduction
3. Topographic and Cadastral Cartography
4. Project

#### Photogrammetry and Remote Sensing Department

1. Photogrammetry
2. Remote Sensing
3. Project

## Map Reproduction Department

1. General Printing Studies
2. Printing Science
3. Map Print Origination
4. Photomechanical Processes
5. Machine Printing
6. Print Finishing
7. Chemistry
8. Project

### **5.5 Equipment**

Provision for training equipment will be provided by both donor and the recipient countries.

### **5.6 Integrated practical approach.**

It has already been mentioned that the Institute operates within a production department and would like to further emphasise that, whenever possible, most of the practicals shall be deliberately designed to benefit Survey of Kenya either on short or long term basis. This will be achieved by carefully identifying areas of mutual benefit for both sectors.

The immediate concern to us is the restoration of destroyed Geodetic controls which are fundamental for most survey work. It has been noted that the available National Geodetic controls have slowly been destroyed due to vandalism and the initial step the Institute and Survey of Kenya wishes to take in resolving this problem is to undertake the restoration exercise of the destroyed reference datum. This will be implemented gradually through deliberate efforts designed to incorporate such activities, especially during the industrial attachment of the trainees.

The other area of concern to training and at the same time beneficial to Survey of Kenya is that of photography. KISM will once again target areas whose photographs would have immediate application in mapping and revision of existing maps.

### **6.0 JOB MARKET**

As earlier stated Survey of Kenya will absorb most of the graduates from the Institute and some may filter out to the general industry scattered all over the country. The annual programmes will be synchronised with the retirements so as to remain at a production level that will always sustain the demand without straining the market.

## **7.0 FUTURE PROSPECTS**

### **7.1 Research**

There are very promising prospects for KISM and in particular in the area of research. In the expanded outlook of the project it is intended that research forms part of the institutions activity. At this point it would not be absurd to forecast that KISM may have an edge over the other existing Institutions in as far as conducting research is concern. This view is so held due the location of the Institute and the available options under which the Institute would have to operate in.

Admittedly the Institute has at its disposal so much and yet diverse unexploited environment under which to operate. Given the above circumstances, solutions are bound to emerge from such research activities which would address specific problems that partly apply to the African Continent and possibly to other parts of the world.

### **7.2 Benefits to neighbouring Countries**

It is envisaged that as the training opportunities provided by the Institution unfold to the relevant authorities in the neighbouring countries, demand for such will also arise. With this point of view it is being considered necessary to open up the programmes to outside participants at least within the sub-region of East Africa. At present this arrangement has not been incorporated, but is likely to be included in the future expansion plans of the Institution.

## **8.0 CONCLUSION**

KISM is relatively a young Institute but one with a promising future. The advantage it has is that it enjoys committed support from both the Japanese and Kenyan Governments plus the devoted personnel assigned to it. In addition the Institute enjoys overwhelming support from Survey of Kenya. In its development it has been shown that demand for Technicians in the fields of Land Surveying, Cartography, Map Reproduction and Photogrammetry and Remote Sensing, was the primary reason for the establishment.

It has been demonstrated that the Institute would benefit the production department through integration of certain activities. It has also been made clear that as time goes by, expansion of the programmes to cater for higher learning and the neighbouring countries shall be inevitable. Long live KISM.