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**Training of Tanzanian engineers in India**

TRAINING OF ENGINEERS IN INDIA
ABSTRACT

The training of Engineers and other professionals in specialised fields is an expensive programme. It is even more expensive in developing countries where shortages and lack of well qualified teachers, training materials, teaching aids and equipment are not available.

Tanzania like any other developing country was faced with shortage of Engineers and other professionals when it became independent in 1961. In 1970 when the country had decided to launch a massive programme of trying to provide clean and potable water to her people by the year 1991 the situation with Engineers available in the Ministry had not changed very much.

This paper therefore attempts to explain how the Ministry of Water, Energy and Minerals (MWEEM) achieved this programme by launching a crash Training Programme of training Engineers outside the country. It gives an account of how the idea was conceived and explains how financial support was obtained from Swedish International Development Agency (SIDA).

BACKGROUND

The Party and the Government had met to draw up a Five Year Development Plan (FYDP) for the year 1971-75 and also review the social and economic development achievement of the country during the past ten years of independence.

At the end of this meeting, both the Party and the Government agreed that provision of clean and potable water to her people living in rural areas should be given priority. The Five Year Development Plan had stipulated that all Tanzanians should have access to clean and potable water within 400 metres reach by the year 1991.

This important decision had great significance to the Ministry which is responsible for the implementation of water projects in the country.

Immediately the Ministry was asked to present a paper to the Cabinet which would outline how this proposal would be achieved by the year 1991.

The paper presented described the various bottlenecks in the implementation of water projects. Lack of sufficient and local qualified Engineers and other professionals in the Water Sector became evident. The Ministry proposed to the Government that alternative means of training Engineers outside the country at a fast rate should be considered. This is because the number of Engineers allocated to the Ministry through the High Level Manpower Allocation Committee (HLMAC) of the Ministry of Labour and Manpower Development (LMD) could not satisfy the high demand of Engineers for the Ministry to meet the target.

FINANCIAL SUPPORT

The proposal to train Engineers outside the country was accepted by the Government. But considering that this would need considerable amount of funds to meet the cost of training in foreign exchange it was necessary for the Government to seek for financial support from International donors. The Royal Swedish International Development Agency (SIDA) agreed to provide financial support for the programme. SIDA agreed also to meet the cost of travel for the students including tuition and maintenance allowance for the students during the whole period of training.

Having now been assured of the funds the Ministry started to identify and locate suitable institutions outside Tanzania which would be ready to accommodate large numbers of students at one time and whose medium of instruction was English language. The element of cost was also considered.

UNIVERSITY OF ROOKEE, INDIA

University of Roorkee probably one of the oldest learning institution in India was found to be suitable.

Roorkee is situated north east of the Capital New Delhi and 120 kms. away towards the famous Ganga River. The University agreed to take a batch of 129 undergraduate students for a Bachelor of Engineering (B.E.) Degree in Civil Engineering with special emphasis in Water Resources Engineering. A four years 'Tailor Made' programme to suit Tanzania environment was prepared and later on approved and accepted by the University of Dar es Salaam Faculty of Engineering, the Ministry and the University of Roorkee.

What followed next was the selection of suitable candidates for the course. A Senior Lecturer from the University of Roorkee was deputed to come and conduct the selection together with some senior Engineers from the Ministry. A survey was conducted through the records of the Ministry of Education of students who had completed 'A' level education in 1974 and were by regulation serving a one year compulsory training in the National Service (JKT). Consideration was also given to candidates who had previously obtained excellent results in the Full Technicians Certificate (FTC) course obtained from Technical Colleges. The final selection resulted in picking 129 students.

When all other formalities were completed with the Government the first batch of 129 students accompanied by one official from the Ministry left for India in August, 1975.

#### MECHANICAL AND ELECTRICAL ENGINEERING COURSE

It was immediately realised that in the construction, operation and maintenance of any water supply system the services of both Mechanical and Electrical Engineers is always essential. Therefore training of Civil Engineers alone would not have been meaningful in the implementation of projects without them. Therefore in 1976 another batch of 30 students was selected and sent to the same University for undergraduate degree course in Mechanical Engineering.

Four years later another batch of 75 students was sent to India for both Electrical and Mechanical Engineering degree course. But admission to the University of Roorkee this time was interrupted by students who were admitted from other African countries. The

Ministry had to find other suitable Institutions within India which would admit the students.

The students were then placed in three different colleges as follows:-

- PSG College of Technology Coimbatore  
30 students
- Birla Institute of Technology (BIT) Ranchi 20 students
- PES College of Engineering Bangalore  
25 students

There are very few students now left in India who have not completed their degree course although some had to be dropped from the course on various grounds (See Table I).

This programme of training big numbers of students in India had now started to attract other Ministries and Organisations in the country. The Ministry of Communications and works, The Textile Industry, Ministry of Industry and Trade only a few to mention are among the Organisations which had sent large numbers of students to India for various professional training.

#### FOLLOW UP AND GRADUATION

Throughout the training period of the students in India there has been quite a lot of correspondence between the College authorities and the Ministry including exchange of visits. A number of Senior Staff from the Ministry have visited the students in India either to solve some problems which came up or to see the progress of the students in general. Likewise some teachers from Bangalore, Coimbatore and Ranchi Colleges have also visited Tanzania.

During the graduation ceremony of the first batch in June, 1979 at the University of Roorkee, the guest of honour was the Hon. Al Noor Kusun, Minister for Water, Energy and Minerals.

TABLE 1 SUMMARY OF STUDENTS POSITION SOME 20 YEARS

Name of Institute	No of Student sent	Year	Field of Eng.	No of graduates	Year	Students Dropped	Remaining	Remarks
University of Roorkee	129	1975	Civil Eng.	122	1979	7	-	100%
University of Roorkee	30	1976	Mech. Eng.	25	1980	5	-	-
IES Coimbatore	30	1980	Elect.	28	1984	8	-	-
IES Ranchi	20	1980	Mech.	16	1984/ 1985	3	1	will complete late June 1986
IES Bangalore	25	1980	Mech.	7	1984/ 1985	3	15	will complete late June 1986

CONCLUSION

It can be realised from the information that this programme has been quite expensive and time taking as Franklin' argues, but without this programme the Ministry would have taken longer time to achieve its present stage. The worldwide economic crisis which has hit seriously the developing countries has also affected Tanzania in the implementation programme of water for rural areas by 1991 as envisaged earlier. But despite of all these problems Tanzania has been able to provide nearly 40% of the 6.9 million population living in rural areas and in terms of manpower requirement the Ministry has provided at least three to four engineers in each of the twenty regions in the country. Some engineers have been posted to work up to District level. The idea is to send the experts to the village where they can work close to the people and understand their problems.

There are no plans now of training large numbers of engineers outside the country but this does not mean that the Ministry is self-sufficient in manpower requirement. The Ministry will continue to rely on the allocation of few engineers who have been trained locally or sometimes abroad.

REFERENCES

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