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# Trainees at Moshi National Vocational Training Centre - Internal Achievements and Labour Market Adoption.

*Final report on a tracer study project in Tanzania January 1992*

Anders Närman

SIDA

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## *PREFACE*

This is the final report on a tracer study project dealing with the Moshi Vocational Training Centre. In this case the common manner of giving credit to many people in the intial stage is more appropriate, than probably many other similar instances.

First of all my gratitude goes to Mr Manyanga, the Director of Vocational Training. To a large extent it is through his initative and encouragement that this study has started at all. At the same department credit is also given to Mr Athumani and Mr Kombe.

Thanks are directed to the staff and trainees at Moshi NVTC. Often they interupted a busy working schedule for our queries. Particularly, I would like to mention the two principals, Mr Chaky and Mr Mallya, together with their advisors; Mr Högberg, Mr Selin and Mr Johansson. A lot of help has also been given by Mr Kessy.

Throughout the work a lot of interest has been shown by personnel at SIDA, both locally and at Stockholm, especially Mr Wickmann, together with Mr Ericsson and Mr Sundström. A lot of valuable comments have been gained from Dr Lauglo and Mr Frøyland.

Finally I have been assisted in the search by numerous research students on so called Minor Field Studies grants. Of them I would like to mention specifically Ms Espling, Ms Sjöberg, Mr Waller, Mr Assmo, Mr Johansson, Ms Lundbohm, Mr Lovén, Ms Groth, Ms Källström, Ms Hagen, Ms Persson, Ms Persson and Ms Lindgren. Without their contribution this report had never been written.

Göteborg January 1st, 1992

Anders Närman

# 0. *EXECUTIVE SUMMARY.*

This paper is a description of the first five groups[1] of trainees passing through the Moshi NVTC. Data collection has taken place, between 1987 and 1991, using various tracer study methods. Our main intention, in this context, has been to give a pragmatic approach, rather than a refined "scientific" one.

Initially an account is given as to the basic educational and socio-economic characteristics of the trainees, at the time of selection for Moshi NVTC. This is, thereafter, correlated to achievements during the training at the centre.

The initial confrontation with the Tanzanian labour market, either as inplant trainees or employees, constitute a central theme of the paper. This part is further put in relation to the national employment conditions prevailing.

## 0.1 Trainees selected for Moshi NVTC.

According to estimates a total of 1,162 trainees have been enrolled for training at Moshi NVTC. Out of them 1,055 have been able to complete at least one year at the centre, which will give a drop out rate of 9.2 per cent.

Training at Moshi NVTC is offered in 13 trades. For six of them (Tool & Die Maker, Machine Tool Repair, Electronics, Industrial Electrical Fitter, Pattern Maker and Diesel Engine Mechanics) there is a minimum entry qualification of either a previous vocational training or relevant working experiences. Entry into one of the trades (Pipe Fitting & Boiler Mechanics) is based on a pass in the secondary school examination (Form IV). Remaining trades (Instrument Mechanics, Machine Fitter, Refrigeration & Air Condition, Foundry, Mechanical Draughting and Black Smith General) have no selection criteria above primary school.

Not less than 15 per cent of trainees accepted for the seven trades, with a minumum requirement above primary school, have been accepted without being formally qualified. This is particularly noticeable for the 85 group, which has resulted in a comparatively mediocre performance.

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[1] Hereafter 84, 85, 86, 87 and 88 group in accordance with year of entry at Moshi NVTC.

On the other hand we can notice that among trainees in the other trades, as many as 38 per cent have a qualification exceeding the bare minimum. This can be from either secondary schooling or previous vocational training. The proportion of primary school leavers have increased throughout the first five years.

Previous relevant working experiences is not common among the Moshi NVTC trainees, except to some extent for the 84 group. This means that few companies have utilized the possibility to sponsor employees for training.

Table 0.1 Background of the trainees in the two categories of trades, demanding (A) or not demanding (B) a selection criteria above primary school (percentages)

| Entry qualification | A | B |
|---|---|---|
| Primary school | 6 | 62 |
| Secondary school | 22 | 19 |
| Primary+vocational training | 41 | 8 |
| Secondary+vocational training | 24 | 4 |
| Primary+working experience | 3 | 3 |
| Secondary+working experience | 4 | 3 |
| (Total No | 519 | 527) |

Note: For nine trainees this information is missing

It is obvious that many trainees at Moshi NVTC have got a wide education/training experience in addition to what is given at the centre. This is an important aspect in evaluating their success at the labour market. At the same time there has been some critique levelled against the existing inequal standards within the same classes. An important task would be to make an assessment of the selection criteria (and realities) in relation to the length and contents of the courses offered.

Apart from the educational background there are numerous socio-economic variables that are influencial on the final outcome. A medium starting age among trainees have been at approximately 21 years old. However, there has been a clear trend that the medium age at enrolment has gone down from 23 to 20 years, from 1984 to 1988. Ages of trainees for the six trades not demanding any qualification above primary school is on the average two years below the other seven ones.

There has been a total of 131 female trainees enrolled into the Moshi NVTC, of whom 106 have completed at least the first year course. More than 70 per cent of all girls have been accepted for Instrument Mechanics, Machine Fitter, Refrigeration & Air Condition and Mechanical Draughting trades. In an assessment of female performance we have to give account to the fact that trainees from Instrument Mechanics and Mechanical Draughting are particularly difficult to place in the Tanzanian industries.

Furthermore, it seems problematic to fill vacancies for the girls. Therefore, many of them are younger and less experienced education/training-wise compared to the boys.

As for socio-economic background, the average trainee at Moshi NVTC, belong to the upper strata of the Tanzanian society. This would in itself be an important factor in the ability to secure modern wage employment after a completed training.

Inspite of the fact that we are dealing with a national institution, the most common home region for the trainees is Kilimanjaro, of which Moshi is the main town. Many trainees are also originating from Dar es Salaam, Mwanza and Tanga regions.

## 0.2 Internal achievements at Moshi NVTC.

Most of the trainees are satisfied with the training conditions at the centre, while the social situation gives rise to numerous critisism. At the same time it seems that an interest is developed in a technical/ manual working career.

Above we noted that the drop out rate for the entire group (9.2 per cent). However, it is a slight exaggeration as it is partly an effect of a deliberate over-recruitment, as a kind of selection procedure, for the 86 group. If we exclude this the actual drop out rate would fall to just exceeding 6 per cent. However, there is a wide variety between different trades. For the seven trades demanding an entry qualification from either previous vocational training or secondary school it is as low as 5.9 per cent, while it was up to 12.2 per cent for the other six ones.

One reason for this variation might be that some trainees are chosen for a specialization at Moshi NVTC, on account of the ability shown during a previous training.

Trainees are assessed continuously during the institution-based training on a scale from A (the best) to E (failure). These grades are set for the practical and theoretical component in the specific trade, as well as in subsidiary academic subjects.

Trainees given an aggregate A to D will be provided with a basic certificate (after a one or two years' course), while the ones noted for an E are regarded as outright failures. Some of the trades are offering a compulsory or an optional second year of training.

Like in the case of drop out, failure rates are showing a wide variation depending on the particular trade. Trades demanding previous education/training experiences before selection are noted for a drop out rate of 5.2 per cent, with 15.2 per cent for the rest.

In most cases a low grade is caused by poor performance in the subsidiary "academic" subjects, such as English and Mathematics, rather that practical trade application. This is so particularly for trainees without either secondary school or previous vocational training. One point to make based on this data could be to review the curriculum in the "academic" subjects, or to consider a preparatory course for some of the trainees. The latter approach could possibly level out some of the existing variations within one and the same class.

One conclusion drawn out of the significant variations in results in the specific trades is a need to carry out an integrated survey of selection criteria, curriculum, length of training and internal performance. From this some important aspects could be crystallized that might increase the internal efficiency considerably.

## 0.3 Trade test.

The internal grading is hardly an assessment of any significance for the subsequent competion at the labour market. Of greater value is the results attained in the trade testing, at least among the governmental and parastatal employers.

Trade tests can be taken on three different levels, grade I (the highest) to grade III. Among all trainees (groups 84 to 88) only 41 per cent have passed a trade test up to now (1991). Still we can expect some attempts at the lowest level for group 88 (and possibly 87), but even within the first three groups less than half have been noted for a successful trade test.

Table 0.2 Highest trade test results attained by all trainees

| Grade | Number of trainees N | (%) |
|---|---|---|
| I | 56 | (10) |
| II | 129 | (23) |
| III | 249 | (43) |
| Failure | 139 | (24) |
| Total | 573 | |

Considering the value given to the trade test, particularly among governmental employers, it is surprising that so many are not even trying for a test.

Like in the case of internal assessments there is a significant variation between trades. Once again, the ones demanding a qualification above a mere pass in the primary school examination, are noted for a substantially higher rate of passes in the trade tests.

A high share of trainees with grades I and II is noted among trainees from Electronics, Diesel Engine Mechanics, Tool & Die Maker and Pattern Maker trades.

There is a clear correlation between a high mark in the internal assessment and a positive result in the trade testing. In addition to this a more advanced educational/training background seem to be an advantage during the attempts at a trade test.

## 0.4 Inplant training.

A full training cycle for trainees enrolled at Moshi NVTC is supposed to contain a four years period. Out of this two or three years are to be completed as inplant trainees in the industries.

As the inplant exercise is to be an integrated component of the vocational training it could be expected that all trainees are enrolled for this stage. However, many of them are not even placed in any company for the apprenticeship. Even fewer are able to pass through it for the anticipated period.

According to the "official" inplant postings only 595 out of the trainees (56 per cent) in all five groups were placed. However, the

reality is even more gloomy. During visits to industrial establishments it has been obvious that some trainees are never reporting at the appointed place of apprenticeship. Others are just simply rejected by the employer before starting this phase of the training.

In addition to this there is a frequent mobility among "inplant trainees", for various reasons. This can be either of an economic nature, but also due to the fact that tasks given at the industry has no relation whatsoever to the training.

All this, in combination with the comparatively low pass rate in trade testing, is a strong pointer to the need for a close monitoring of the training conducted outside the institution. Even if internal efficiency is deemed positive, the final outcome must be assessed in relation to an integrated four years of training.

Inplant training cannot only be regarded, as some kind of cost-sharing alternative, but also as a functional part of the training. At the same time it is not supposed to be only a way to find employment for the trainees.

## 0.5 Employment status after the training.

The final assessment of the efficieny of the Moshi NVTC must be a measurement of the labour market success after the training. One complication in such an evaluation is to isolate the effects of the training itself. As noted above numerous other educational, as well as socio-economic, background variables have to be accounted for. Furthermore, employment must also be seen in relation to a more general economic structure.

Tanzania has to a large extent been characterized by a serious economic depression. Industrially there has been a very low capacity utilization. A large fraction of the industries are run by the government, as parastatals. These ones have been able to employ an excess of labour, disregarding a strict profit maximation objective.

During the late eighties Tanzania adopted a policy of economic recovery. This includes a much stricter adherence to greater financial efficiency within the parastatals, which will have serious reprecussions on the employment situation. However, at the same time it might be possible that the kind of skilled craftsmen trained at Moshi NVTC will be in even greater demand during the restructuring process.

In 1987 the wage employment in Tanzania amounted to a mere 700,000 workers (compared to a total population of 22.5 millions). The annual increase between 1978 up to 1987 is approximately at the same level as the population growth.

Out of the total labour market some 17-18 per cent are to be found within the manufacturing sector. Most of the industrial activity is located to Dar es Salaam. Both Kilimanjaro, and the neighbouring region Arusha, are important secondary industrial centers.

Manufacturing establishments in Kilimanjaro region employed some 5,500 workers in 1989. A slight expansion during the decade had been concentrated exclusively to the parastatal sector, which is marred with a very low utilization of capacity. In an attempt for greater efficiency it is hard to see how many of these kinds of industries will be able to survive.

From interviews in the industries in Kilimanjaro and Arusha it was obvious that most employers regarded the adverse conditions to be connected to the general economic hardship in Tanzania. Views varied as to the state of affairs in relation to the need for skilled man-power.

Moshi NVTC does not seem to have made much of an impact on the local industrial scene so far. Industrial employers do not seem to be familiar with the centre and its function. It is obvious that Moshi NVTC would be able to gain substantially if it was to make itself more known in its closest environment. Not least this could be positive in an attempt to make the inplant training more efficient.

Even with these points in mind it is obvious that many of the trainees are still getting employed, at least this is so for the first three groups. For the others most of the trainees are expected to be in inplant training when we have tried to locate them.

In an attempt to follow up on the first three groups, after the institution-based training, we have been able to find not less than 78 per cent. However, we have to be aware of a certain bias in the data collected. It is always easier to find the ones actually working. Inspite of this some quite clear indications can be referred to.

Table 0.3 Activity after training for the 84, 85 and 86 groups

| Activity | Number of trainees N | (%) |
|---|---|---|
| Employed | 220 | (49) |
| Inplant | 158 | (35) |
| Self-employed | 26 | (6) |
| Training | 9 | (2) |
| Unemployed | 37 | (8) |
| Total | 450 | |

First of all we can note the fairly low unemployment rate, especially in view of the depressed labour market conditions. In reality we can assume that it is a bit higher, if the total sample had been found.

It can also be observed that in most cases the employed ones are actually working in a trade they have been trained for, or at least within a similar sector.

The share of self-employed trainees is probably distinctly higher, but this is the category that is most difficult to trace.

Like in what is referred to above it seems to be easier to be established at the labour market, for the trainees with the most varied educational/ training background.

For the future it could be valuable to introduce a method for a continuous follow up of the trainees after the training period. This would be a natural task for the centre to carry out in close co-operation with the NVTD. Only if this kind of monitoring system is applied it is possible to assess how well the training is actually functioning and to rectify when things are getting astray.

## 0.6 Some critical observations.

This report is a follow up study of the Moshi NVTC over the first few years of operation. A lot of information has been collected, related to the first five groups of trainees. From the experience gained during this exercise some observations have been drawn, which could be worth a critical investigation for the future. These ones can be summarized in a few points:

(i) The stated, as well as actual, selection criteria has to be scrutinized thoroughly.

(ii) The curriculum content, and length of training, must be balanced in relation to the stated entry requirements.

(iii) There seems to be an urgent need to over-haul the trade testing system. If trade testing is supposed to be the final assessment of skills, all trainees must be given a fair chance to pass. Furthermore, the potential to pass for any level must be equal irrespective of the trades taken.

(iv) Inplant training must be made a functional part of the total training. One part of this must be to integrate Moshi NVTC closer into the local environment. Further a closer monitoring system must be developed.

(v) A continuous follow up of trainees at the labour market should be introduced. The potentiality to gain employment must be measured, as a function of the training itself, as well as other relevant background variables.

So far it seems that Moshi NVTC has been able to turn out skilled labour demanded within the Tanzanian industrial labour market. From many points of view, the results referred to can be used to counter-balance the intensive insistence that vocational training is best provided privately in the low-income countries. For the future it is essential to establish some kind of in-built evaluation system of the vocational training, as it is developed within the realm of the entire Tanzanian economy.

# *1. INTRODUCTION.*

In a situation characterized by harsh economic realities African governments are faced with numerous choices between diverse strategy options. A main dividing line is between a privatization of the development efforts or a closer central control. Tanzania, like most other African countries, is trying to find a way out of their present dilemma, through a programme formulated for economic recovery, emphasizing greater efficiency.

Even within the social sector calculations on the economic rate of return are the main criteria to either justify or dismiss proposed projects. Based on this perspective policy papers, from the World Bank, have referred to "evidence" showing that there is a particularly strong case to promote primary education in low income countries. If this sector will be given priority it will meet both the objective of equity, as well as increased productitivity, it has been claimed.

In Tanzania the industrial sector is run on a very low level of capacity utilization. Immidiate problems are mainly related to factors, such as financial constraints, lack of raw materials and spare parts, infrastructural status. However, to be able to create a self-sustaining industrial trend it is essential to establish an indigenous skilled technical labour force. An independent industrialization process cannot be built on expatriate personnel.

The crux of the matter, then must be where the responsibility, lies to train these craftsmen, technicians and engineers. According to the World Bank opinion this task is performed to the highest efficiency, outside the public domain, by private employers or institutions. Inspite of this many African countries have established various public organizations for vocational training. One such structure has been operating in Tanzania for more than two decades, sponsored by bilateral development assistance.

Educational planners in African countries are normally equipped with a rather scant set of information upon which to make their decisions. Estimates of economic benefits cannot be a sufficient foundation on which to direct educational policies as a component of a complex reality. It must be an urgent task to deepen the understanding of educational/training impact, from a more multi-dimensional approach. This present study has to be viewed in that particular context.

Few educational projects in Africa have been so intensely followed up from different perspectives, as the Moshi National Vocational Training Centre (NVTC). It can, therefore, be assumed that the bank of knowledge assembled can be useful, not only in the continuous planning of this institution, but further from a more general point of view, as a concrete empirical contribution to the perpetual debate on vocationalization of education in poor countries.

Moshi NVTC had its first intake of trainees in 1983, divided into 13 different trades. Within this paper a detailed account will be given as to the first five groups of more than 1,000 trainees. Our main objective is to focus our attention on how well the training offered is adapted to an exisiting labour market. This specific experience can, thereafter, constitute one piece of information to build upon to paint a more generalized picture.

Not only the training itself will have an impact on the final outcome. We also have to put this in relation to the background of the trainees selected. This brings us to the first issue for investigation;

***What are the basic educational and socio-economic characteristics of the Moshi NVTC trainees?***

Against this background we will analyze the performance during the institutionalized part of the training. As a measure to this we have collected data on the internal grading and the official trade testing. In addition to this we have estimated the annual drop out rates. These factors can be summarized in the following question;

***How can the internal "efficiency" be assessed at Moshi NVTC?***

One essential part of the total vocational training is done through an industrial inplant period.

***To what extent are trainees placed in inplant training, and how well is this component functioning in imparting practical skills?***

However, the final outcome must be related to the relevance of the training to the labour market, both nationally and locally in the Arusha and Kilimanjaro regions.

***How well does the training at Moshi NVTC prepare the trainees for a future technical working career?***

***To what extent does the Moshi NVTC contribute in training suitable manpower for the industrial development of the Arusha and Kilimanjaro regions?***

Even if the content in this paper is based on an independent research work it is closely linked to the major evaluation of vocational training in Tanzania, with a special emphasis on Moshi NVTC. The report from this comprehensive work has been published as SIDA Education Division Document No 48: *Vocational training in Tanzania and the role of Swedish support* (Lauglo, 1991). The mass of information contained in that report is an impressive summary of various inputs from numerous researchers and practitioners in the field, both Tanzanian and others.

To a large extent what is her commented upon can be regarded as a valuable complement to that previous report, rather than an over-lapping exercise. We are here trying to systematize a five years follow up study on the trainees.

Our intention is to present a quantitative survey of factual empirical data, intervowed with expressions on various aspects from interviews with trainees, instructors and employers. Numerous quotations will be brought out in the text to high-light certain views.

## 2. *METHODOLOGY.*

> *...more and more education projects now include evaluation procedures, including tracer studies, which follow samples of students from schools to employment. Such procedures may make it possible to discover how education contributes to manpower and employment goals.*[1]

One important tool to provide *"evidence"* on which to base suggestion for future policy direction in education has been economic cost-benefit analysis. Even if this cannot be the only criteria for evaluation, *"it provides one essential ingredient in the assessment and choice of investment projects."* [2]

Our intention is to present an evaluation of an educational project that goes beyond the borders of mere economic assessment. It can be seen as part of a generally more holistic trend.

> *There has been considerable recent development in the use of qualitative methods, ranging from case studies to ethnographics, and including observational, documentary, and qualitative interview data.* [3]

We can hardly refer to the results presented below, as emanating from one singular tracer study. Throughout the years we have had to adjust the approach in different directions. It is, therefore, not possible to claim that conclusions drawn are the outcome of one cohesive "scientific" study. Our main intention has been to adopt a pragmatic approach.

### 2.1 Tracer study approaches and inherent shortcomings.

Tracer studies can be carried out in different manners. It could be either a follow-up study, which will be interviews of students/ trainees just prior to the exams, and, thereafter, once or more times after leaving the specific institutions.

Another way is a retrospective approach, which is an attempt to search for former students/trainees some time after leaving the object of the study. Normally this would require at least some

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[1] Psacharopoulos, G.-M. Woodhall (1985): *Education for Development- An Analysis of Investment Choices.* Oxford, p. 6.

[2] Ibid, p. 68.

[3] Fägerlind, I.-L. Saha (1989): *Education & National Development-A Comparative Perspective: 2nd Edition.* p. 207.

rudimentary files left at the school, with some adresses to start off from.

A third way could be to approach the labour market directly, whether this is within the service or industrial sector. This could be either to evaluate a more general employment situation, or some particular educational centre.

Within the present study all of these methods have been utilized. Most of the trainees at the Moshi NVTC from 1987 up to 1991 have been interviewed, at the centre. As the first intake was in 1983 we have had to rely on retrospective searches for the trainees enrolled before the initiation of the study.

We have also gone out to conduct a couple of studies related to the local industry. Here we have met numerous former Moshi NVTC trainees, some of whom previously not contacted.

From this we have an obvious bias straight away. It has always been easier to reach the ones working in industries or at a particular work place that we have visited. This factor has to be taken account of in relation to the conclusions being made. It is easy to get "too positive" effects noted. However, we have got a very clear picture due to a high share of responses from the original target group, which eliminates some of the mistakes anticipated.

Another doubtful aspect is that a large number of participants have taken part in the collection of data. That means that we are faced with individual interpretations of answers given. We are also compelled to accept that there has been different styles of questioning. Naturally all the replies cannot be totally comparable due to this. A related factor could naturally also be mention, as the language difficulties encountered. Further it is not an easy task to get answers that actually contain real substance.

One basic problem has been that we have not been able to get data on the individual trainees at one specific occasion. We have assembled different pieces of the puzzle in various ways. The basic philosophy here adopted has been to get as many indications as possible merged into this final report.

Furthermore, the staff at the college has been changed from time to time. This is both among the expatriate Swedish experts, as well as the local personnel. Since the start of the study there has been two Tanzanian principals and three Swedish advisors, all with varying

interpretations of their individual roles and responsibilities. One exteremly valuable contribution from the point of continuity has been represented by the inplant training officer.

Changes among the adminstrative staff have often had an effect on how records are kept. From the start it has been obvious that files at the centre have been incomplete in various ways, leading to a lack a number of essential information. It is not even possible to tell the exact sample we have been trying to follow up. This will be discussed below in chapter 4, on student characteristics.

During the course of the study it has been realized that we are faced with a much more complex reality in studying vocational training, compared to for example secondary education.[1] Trainees have been selected from a wide variety of backgrounds, lengths of courses differs, placements of inplant trainees functions on paper, but not always in reality. The over-all contacts with the industrial scene could be a research task on its own.

In some cases we have been able to adjust our methodology in response to various new aspects discovered. This is, of course, detrimental to the purely "scientific" value of the presentation here given.

One major strength in this study is that we have been able to reach a substantial coverage rate, in terms of questionnaire replies and direct face to face discussions with the trainees.

## 2.2 The procedure used for data collection.

This evaluation was initiated during a short visit in Moshi by myself in November 1986. An outline for the work was presented and discussed at SIDA, locally and in Sweden, plus at the National Vocational Training Division (NVTD)[2]. After some adjustments this proposal was accepted for the study. As indicated above, however, there has been a need for continuous revisions.

The bulk of the data here collected was done during three annual field work periods in 1987-89. In all eleven students, on so called MFS grants participated in this exercise. To the project we also had one participant recruited from the NVTD, taking part at various

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[1] Närman, A (1985): *Practical Subjects in Kenyan Academic Secondary Schools. Tracer Study.* SIDA Education Division Documents No 21.

[2] In most cases we will use this acronym in relation to the ministerial authority guiding this sector. The Ministry in charge of labour affairs has been transferred at different times during the study.

stages. Unfortunately one member, from the University of Dar es Salaam, supposed to be associated to the study decided to withdraw at the last minute.

Trainees were first interviewed at the centre, individually with questionnaires and in group discussions. We dwelt on a number of factual issues, as well as some of an attitudinal character. From this we were able to acquire a first impression of the trainees themselves and their expectations of the training offered. Apart from aspects on the actual pedagogical environment an insight was given into the social life in Moshi.

Information given during the interviews were complemented by what could be extracted from available files. Apart from this, interviews were done in the work-shops with personnel, and at industries. A valuable insight was also gained through just being around making casual observations of the daily life at the centre.

Data collected at the centre has been an essential input into the continuous follow up after-wards. Questionnaires were sent out to previous trainees, starting the training in 1983 and onwards. This retrospective approach has, thereafter, been intensified by different means.

In 1988 and 1989 longer field studies were carried out. A questionnaire was administrated to the former trainees, which was coupled with interviews by a direct confrontation. This was a valuable contribution related to the information on the interviewees themselves and from the respect of second hand data on others acquired.

A lot of the work has been conducted in industries where trainees had been employed. Thereby we were also able to get some opinions expressed by employers.

In an effort to eliminate previous bias in the data an intensified effort was made in 1989 to find 40 former trainees, belonging to the 85 group, not responding to earlier attempts to reach contacts. Through this search we found out that a main reason for not answering was failures in the postal services. In some other cases it was due to an unwillingness or suspicion to renew the contact with Moshi NVTC. Possibly this could have been caused by a breach of inplant contract, for a better job or similar.

Apart from this main tracer study a number of more specialized tasks have been carried out simultanously. The 1989 part of the

study was done in conjunction with a major evaluation of vocational training in Tanzania (see above). One joint effort was to carry out an industrial survey of the Kilimanjaro/Arusha regions. Some further interviews in the industries took place in 1991.

An attemt to carry out a cost-benefit analysis of the project was done, as an examination paper in economics by one of our students.

In 1990 a smaller survey, by two MFS students, an assessment was made, as to the practical use of some of the more "specialized" trades offered at Moshi NVTC. At the very end a survey was putting the focus on the female trainees. This has been in answer to the emphasis on women in Swedish development assistance.

As obvious from this account many people have been involved in the data collection. Throughout the study, however, there has been only one main researcher involved, to direct and supervise the study at home and in Tanzania. Annual reports have been produced since 1987 to highlight the continuous findings. In addition to this various reports from the students have been written.

## 2.3 Some related studies.

One shortcoming in the present study is that there has been no "control" group to compare our results with. However, there are a few other studies that we could draw some experiences from.

As part of the major evaluation in 1989, one tracer study on Tanga NVTC was started. This was supposed to be organized by ministerial staff, on advices gathered through the Moshi study.

We can also point to similar studies on Dodoma NVTC, done by ESAURP.[1] Among the main results was a favourable both public and private rate of return calculated. However, the coverage rate in the survey seem to be rather low to draw any more conclusive evidence.

Not far out of Moshi, in Leguruki, there is another vocational training centre located. This project has been started by the local community, but is also receiving church assistance from the Netherlands. From a tracer study on this school it was found out

[1] ESAURP (1990): *DVTC Graduate Employment Opportunities-A Tracer Study Report.* Dar es Salaam.

that a high proportion of the graduates had been able to establish themselves as self-employed, primarily in the rural areas.[1]

A major comparative study on diversified education in Colombia and Tanzania has been instigated by the World Bank. This comprehensive study concluded, by giving economic evidences, that diversified schools are not superior to conventional schools. Thereby, the sought scientific validity of the basic policy line, to avoid pre-vocational experiments within the formal educational structure, had been confirmed.[2]

## 2.4 Conclusion.

This present study is an attempt to give a multi-dimensional perspective to the Moshi NVTC, through a combination of various tracer study approaches carried out during a five year period. We are aware of many of the methodological shortcomings in this kind of an exercise. At the same time the data collected can be assumed to contain valuable information, not least from a pragmatic point of view. This is so not least on account of the high coverage rate attained.

Most of the direct field work has been carried out by MFS students. Not only have they done an admirable job, but also the experiences seem to be of value to themselves, as a few of them are now working abroad in development assistance agencies.

Even if we have not followed up any comparative "control" group, the data given can be viewed in relation to other similar studies. Not least our more holistic approach can to a certain extent widen the scope from many cost-benefit (-efficiency) calculations, that are now common in this field.

Finally, some words on terminology used. For convenience we are referring to members of our sample, as trainees irrespective if they are at the centre, in inplant or have left the training altogether.

Collectively the trainees are named in groups after the first year at Moshi NVTC, i.e. 84, 85, 86, 87 and 88 groups if they started in 1984, 1985, 1986, 1987 or 1988 respectively. This is so even if they are found as second year trainees the next year. Note that

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[1] Fowler, A (1987): *After Vocational Training - What? A Tracer Study of Graduates of Leguruki Vocational Training School King' ori-Meru, Tanzania.*
[2] Psacharopoulos, G-W. Loxley (1985): *Diversified Secondary Education and Development-Evidence from Colombia and Tanzania.* John Hopkins.

even if the 84 group actually started in 1983, it is always referred to as the 84 group.

# 3. *SOME NATIONAL SOCIO-ECONOMIC FEATURES.*

Before specifically dealing with the Moshi NVTC and its trainees it is necessary to put it into a more general context. The national vocational training will be seen in a perspective of the educational and industrial development of Tanzania. In chapter 7 below we will give an account of the local environment surrounding Moshi, e.g. Arusha and Kilimanjaro regions. This will be in an attempt to assess the impact on the immidiate labour market.

It is fairly difficult to get reliable up-to-date background information on which to interpret general development trends in Tanzania. Naturally, accurate regional statistics are even more scarce. One planner complained to us that his estimates had to be based on information collected some ten years ago.

We have tried to compile available relevant official information obtained since 1978. From this some characteristic features will be analysed. Initially a background picture will be painted by a presentation of some basic demographic data.

## 3.1 Population.

According to the population census 1988 there were just over 23 million inhabitants in Tanzania. This paper is mainly focusing on the mainland, with a total population of 22,533,758 people. Since 1978 the population had increased by 5.5 millions or 2.8 per cent annually. Table 3.1 gives the regional division of population for 1978 and 1988, plus the population density.

This national growth is somewhat slower compared to what was experienced between 1967 to 1978, which was recorded at 3.2 per cent annually.

During the period 1978 to 1988 Dar es Salaam had the fastest growth with 4.8 per cent annually, followed by Arusha at 3.8 per cent. Among the lowest growth figures we find Kilimanjaro at only 2.1 per cent.

The fast population growth found in Arusha is consistent with experiences from the whole of the period 1967 to 1988, while the growth rate for Kilimanjaro has slowed down considerably. On the other hand, Kilimanjaro is one of the most densely populated regions nationally.

There seemed to be a fairly high number of people living in Arusha region originally born in Kilimanjaro (or Dodoma) region in 1978. Possibly this trend has continued up to the present time. One obvious reason to influence such migratory movements is the available labour market opportunities.


Map 3.1 The regions of Tanzania (mainland)

Tab 3.1 Population in total (thousands) and density (pop/sq km) 1988 and 1978

| Region | 1988 No | density | 1978 No | density |
|---|---|---|---|---|
| Dodoma | 1238 | 30 | 972 | 24 |
| Arusha | 1352 | 16 | 926 | 11 |
| Kilimanjaro | 1109 | 85 | 902 | 68 |
| Tanga | 1284 | 48 | 1038 | 39 |
| Morogoro | 1223 | 17 | 939 | 13 |
| Coast | 638 | 20 | 517 | 16 |
| Dar es Salaam | 1361 | 972 | 843 | 605 |
| Lindi | 647 | 10 | 528 | 8 |
| Mtwara | 889 | 52 | 772 | 46 |
| Ruvuma | 783 | 12 | 562 | 9 |
| Iringa | 1209 | 21 | 925 | 16 |
| Mbeya | 1476 | 25 | 1080 | 18 |
| Singida | 792 | 16 | 614 | 12 |
| Tabora | 1036 | 14 | 818 | 11 |
| Rukwa | 695 | 10 | 452 | 7 |
| Kigoma | 855 | 23 | 649 | 18 |
| Shinyanga | 1773 | 35 | 1324 | 26 |
| Kagera | 1326 | 47 | 1010 | 36 |
| Mwanza | 1878 | 94 | 1443 | 74 |
| Mara | 971 | 49 | 724 | 37 |
| Total | 22534 | 26 | 17036 | 19 |

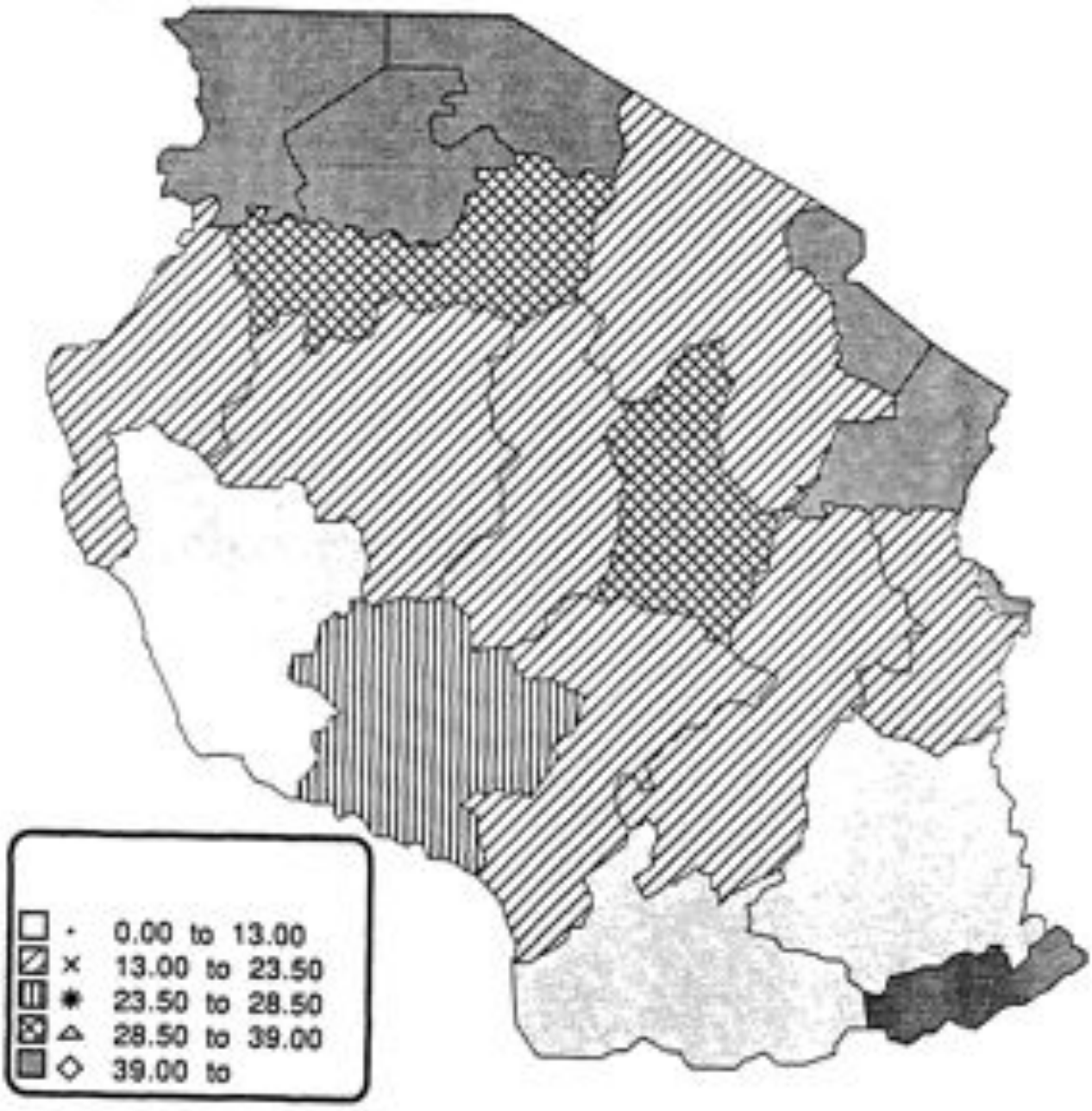
Next to the capital Dar es Salaam and Mwanza at Lake Victoria, the Kilimanjaro region is the third most densely populated nationally. Traditionally the slopes of Mount Kilimanjaro have provided a fertile ground for an advanced agriculture. A fairly affluent small-holder production is creating a surplus for the people of this region. In terms of agricultural productivity Kilimanjaro is in a unique position nationally.

Even in view of a migration from rural to urban areas between 1978 to 1988, the rurally based population is still dominant. Consequently an absolute majority has to eke out a living through agricultural activities.

In 1978 a total of 2,258,000 people (or 13 per cent) lived in what was classified as urban centres. Dar es Salaam was the largest urban center in 1978 with almost 800,000. Other towns with above 100,000 inhabitants were Mwanza and Tanga.

Arusha and Moshi were at that time placed on ranks 8th and 9th respectively, with just above 50,000 inhabitants. At the same time the designated new capital (Dodoma) had only 45,000 people. Urbanization rate for both Arusha and Kilimanjaro regions is well below the national average. For both regions there is only one town among the 50 largest, except for the two regional head-quarters, namely Babati with almost 10,000 inhabitants.

In 1988 both Arusha and Moshi had approximately 100,000 inhabitants each.




Map 3.2 Population density in Tanzania 1988 (inh/sq km)

## 3.2 Educational structure.

Since independence the expansion of the primary schools towards the goal of *"Universal Primary Education"* has been a priority. In addition to this, strong emphasis has been given to adult education. From the time of the Arusha Declaration in 1967 up to the middle of the eighties the national literacy rate was increased from some 30 per cent up to above 90 per cent. Kilimanjaro is here noted for a functional literacy rate at 97 per cent.[1]

Guide-lines in accordance with the philosophy formulated in the Arusha Declaration, was translated into the educational sector within what was coined, as *"Education for Self-Reliance"*. [2] Tanzania set up its goal to not only expand education quantitatively, but also to reform the content, for example by stressing the virtues of productive work.

Like in other African countries the average age of the population is very low. In 1985 not less than 47 per cent were below the age of 15 years. This would put extra pressure on scarce resources for educational expenditures.

The primary school enrolment rate for 1988 is estimated at approximately 66 per cent.[3] During the early eighties a slight increase was observed, but in the latter part this trend had turned into a negative one.

Most of the primary school leavers can be assumed to vie for a vacancy at the secondary level. However, the expansion on this level was not provided for in the same way as for the lower grades. In 1988 there were just over 35,000 Form I vacancies available. At that time some 10 per cent of the St. 7 pupils would find a place in a secondary school the next year. This, however, is a substantial proportionate increase since the early eighties.

During the latter half of the eighties there was a drop of primary school leavers from above 400,000 down to 270,000 in 1989. At the same time the secondary education, especially the private side of it, expanded with a fairly fast pace.[4]

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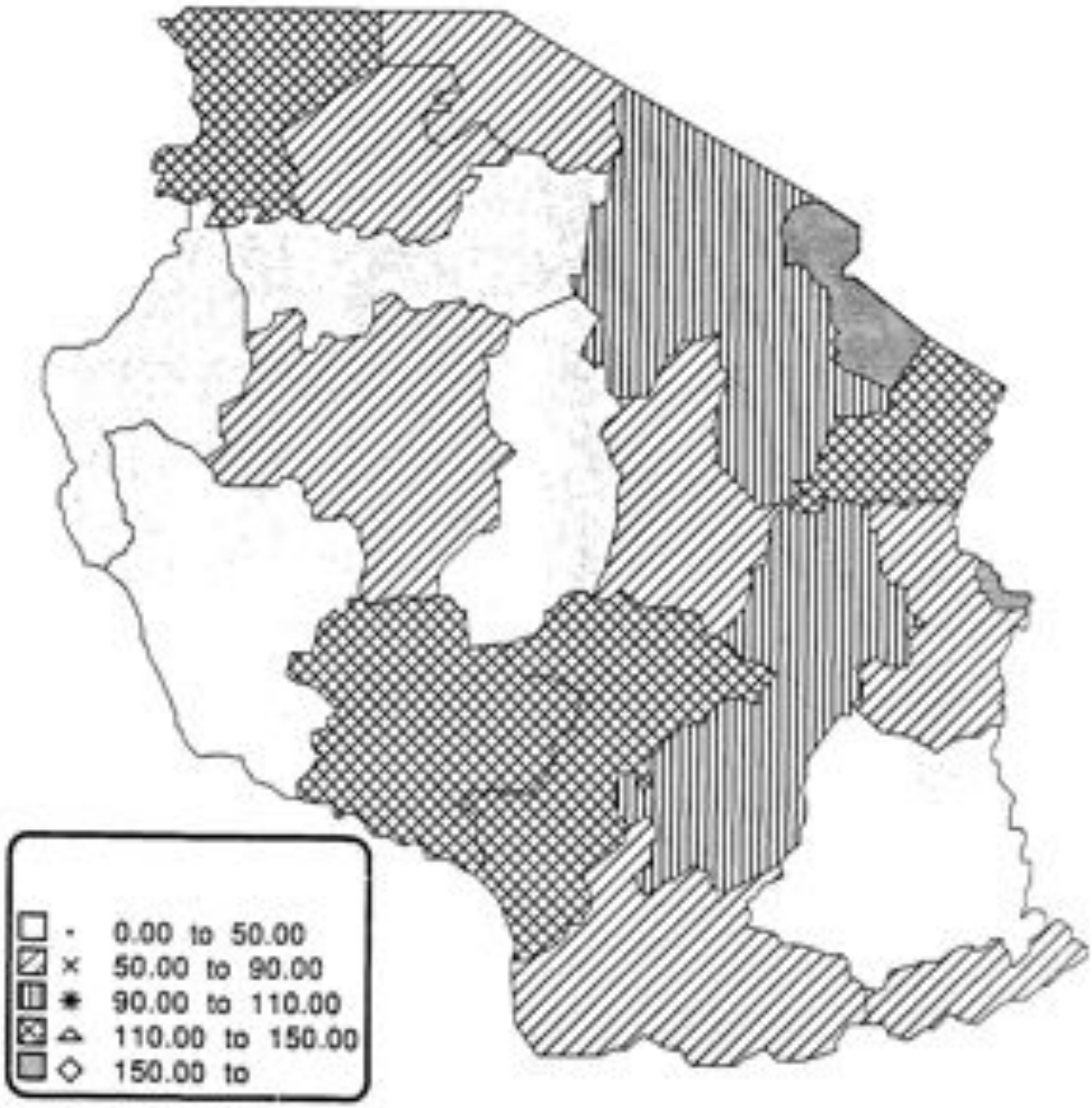
[1] The United Republic of Tanzania (1987): *Basic Education Statistics in Tanzania (BEST) 1982-1986.*

[2] Nyerere, J (1968): *Education for Self-Reliance.*

[3] The World Bank (1991): *World Development Report 1991.* Oxford.

[4] The United Republic of Tanzania (1990): *Basic Education Statistics in Tanzania (BEST) 1985-1989.*




Map 3.3 Secondary school enrolment 1987 (proportionate in relation to total population, national average =100)

From Map 3.3 it is obvious that Kilimanjaro is well provided with secondary school opportunities, viewed in a national comparison. Arusha, on the other hand, is taking an average position. However, it has to be noted that recruitment to the Moshi NVTC is supposed to be conducted nationally.

Inspite of the present trend, there is a hard competition for available secondary school vacancies, which will also raise the demand for alternative education/training. Among the possible careers open are teacher training, which enrolled a total of some 13,000 trainees in 1989.[1]

Another alternative would be the vocational training centres, government of private ones. The policy to take St. 7 leavers for the NVTCs can be a reflection of the few alternative educational opportunities.

One reform within the secondary education has been to introduce a pre-vocational component in some schools. In 1985 40 per cent of the secondary school students were taking any of these biased subjects. Most of them were enrolled for either commerce or agriculture. A few students (less than 2,000) had been selected for any of the two technical secondary schools, of which one is located to Moshi. In some of the trades offered at Moshi NVTC this could be seen, as a suitable background.

A post-secondary technical alternative is the Technical Colleges, in Dar es Salaam, Arusha and Mbeya. In 1989 there was a total of almost 3,000 students enrolled in these institutions. An additonal 600 students took, at the same time, an engineering course at the University of Dar es Salaam.[2]

## 3.3 Labour market.

From Tab 3.2 we can see that some 80 per cent of the total mainland population, in economic active ages (15-55 years), of Tanzania are making a living from agriculture. As could be expected the proportion of males in non-agricultural activities is considerably higher compared to females.

In 1978 the majority (98 per cent) of the rural population lived in some kind of a village. These figures indicate that the scattered or nomadic population is rather insignificant. Arusha region is here an exception with almost 4 per cent migratory people, mostly consisting of the masai.

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[1] Ibid

[2] Ibid

Tab 3.2 Occupations among economic active ages (15-55years), out of school, 1978 (percentages).

| Activity | Males | Females | Total |
|---|---|---|---|
| Agriculture | 71.7 | 85.6 | 79.2 |
| Crafts/machine operators | 6.6 | 0.2 | 3.1 |
| Sales/clerical | 3.9 | 0.9 | 2.3 |
| Professional/tech/teacher | 3.9 | 1.2 | 2.4 |
| Manager/administr. | 0.5 | 0.0 | 0.2 |
| Non-agricultural labourer | 3.0 | 0.5 | 1.7 |
| Other workers | 4.4 | 1.8 | 3.0 |
| Other/unoccupied | 6.0 | 9.9 | 8.1 |
| (Total No | 3219095 | 3799262 | 7018357) |

Wage earning opportunities in Tanzania is a privilege for a minority. In 1978 there were a total of 536,000 formally employed. This would constitute less than 7 per cent of the population in economic active ages. During the period up to 1987 it was estimated that 164,000 new jobs were created, i.e. making the total to be at 700,000 employees. Still only 7 per cent were in fact employed.

Tab 3.3 Wage employment per sector, various years 1978-87 (percentages), and total number in thousands.

| Sector | 1978 | 1980 | 1984 | 1987 |
|---|---|---|---|---|
| Agriculture | 23.0 | 21.7 | 17.1 | 16.7 |
| Mining & Quarrying | 0.9 | 1.0 | 0.8 | 0.8 |
| Manufacturing | 18.7 | 17.5 | 18.3 | 17.7 |
| Water & el | 4.1 | 3.2 | 4.3 | 4.1 |
| Construction | 7.9 | 8.1 | 5.4 | 3.9 |
| Commerce | 6.4 | 6.3 | 7.4 | 6.9 |
| Transport & Communication | 11.0 | 9.7 | 9.7 | 10.1 |
| Finance | 1.7 | 2.3 | 2.6 | 2.8 |
| Services | 26.3 | 30.2 | 34.4 | 37.0 |
| (Total No | 536 | 603 | 633 | 700) |

As could be expected the agricultural sector has experienced a sharp decline in proportion to the formal wage earners since 1978.

In fact at independence (1961) more than half of all employment opportunities were within agriculture. Of course this does not include the informal farming sector, engaging an absolute majority of the Tanzanian adult population.

We can note the slight fluctuating trends concerning the share of employment in the manufacturing industry. In 1987 close to 124,000 employees were engaged within this sector, which represents an increase of 24,000 since 1978.

The construction sector has experienced a proportionate as well as an absolute decline in terms of employment. This in itself can be taken as an indicator of general economic hardship.

A fast expansion is attributed to the service sector. Often this kind of employment is to be found within the public sector administration. Therefore, this increase will to a certain extent constitute an additional financial strain to the government budget.

In 1978 there were in Tanzania 1,933 manufacturing establishments, with a working force of at least 5 persons. The total number of employees were 105,283, of which 83 per cent were engaged in production as operatives.

Most of the industries, 773 (or 40 per cent), were in wood and wood products (incl. furniture), followed by textiles, leather and foot-wear (22 per cent) and food, beverages (14 per cent).

Tab 3.4 indicates the dominance of Dar es Salaam within the Tanzanian manufacturing industry. However, both Arusha and Kilimanjaro regions have a fair share of wage earners within this sector.

Consquently we can note that both Kilimanjaro and Arusha are fairly well established secondary industrial centres, with Dar es Salaam being the dominant one. Kilimanjaro and Arusha can from this respect be grouped together with Tanga, Morogoro and Mwanza, as other regions with any significant industrial development. We will come back to the industrial scene in Kilimanjaro and Arusha regions in chapter 7.

Tab 3.4 Establishments and number employed in manufacturing, 1978

| Region | Est (No) | Number employed Tot No | (%) |
|---|---|---|---|
| Dodoma | 40 | 828 | (0.7) |
| Arusha | 114 | 8213 | (7.2) |
| Kilimanjaro | 174 | 7413 | (6.5) |
| Tanga | 137 | 9553 | (8.4) |
| Morogoro | 112 | 9080 | (8.0) |
| Coast | 73 | 1444 | (1.3) |
| Dar es Salaam | 371 | 48785 | (42.7) |
| Lindi | 84 | 1334 | (1.2) |
| Mtwara | 113 | 2205 | (1.9) |
| Ruvuma | 37 | 1779 | (1.6) |
| Iringa | 48 | 2304 | (2.0) |
| Mbeya | 58 | 1558 | (1.4) |
| Singida | 20 | 270 | (0.2) |
| Tabora | 44 | 1370 | (1.2) |
| Rukwa | 28 | 399 | (0.3) |
| Kigoma | 61 | 827 | (0.7) |
| Shinyanga | 37 | 2840 | (2.5) |
| Kagera | 131 | 2579 | (2.3) |
| Mwanza | 186 | 9687 | (8.5) |
| Mara | 65 | 1656 | (1.5) |
| (Total No | 1933 | 114124) | |

## 3.4 Future prospects.

The future industrial development in Tanzania has to be viewed from the governmental policies towards this sector. After the Arusha Declaration the dependence on foreign capital was to be reduced, partly through nationalisation of manufacturing companies. Emphasis was placed on the parastatal industrial organizations. Within these ones employment increased, while labour productivity went down.

From an early stage a main strategy adopted for the Tanzanian industrialization was to be import substitution. In the middle of the seventies economic priority was transferred from agriculture on to industry. Self-reliance should be promoted through a greater utilization of domestic resources.[1]

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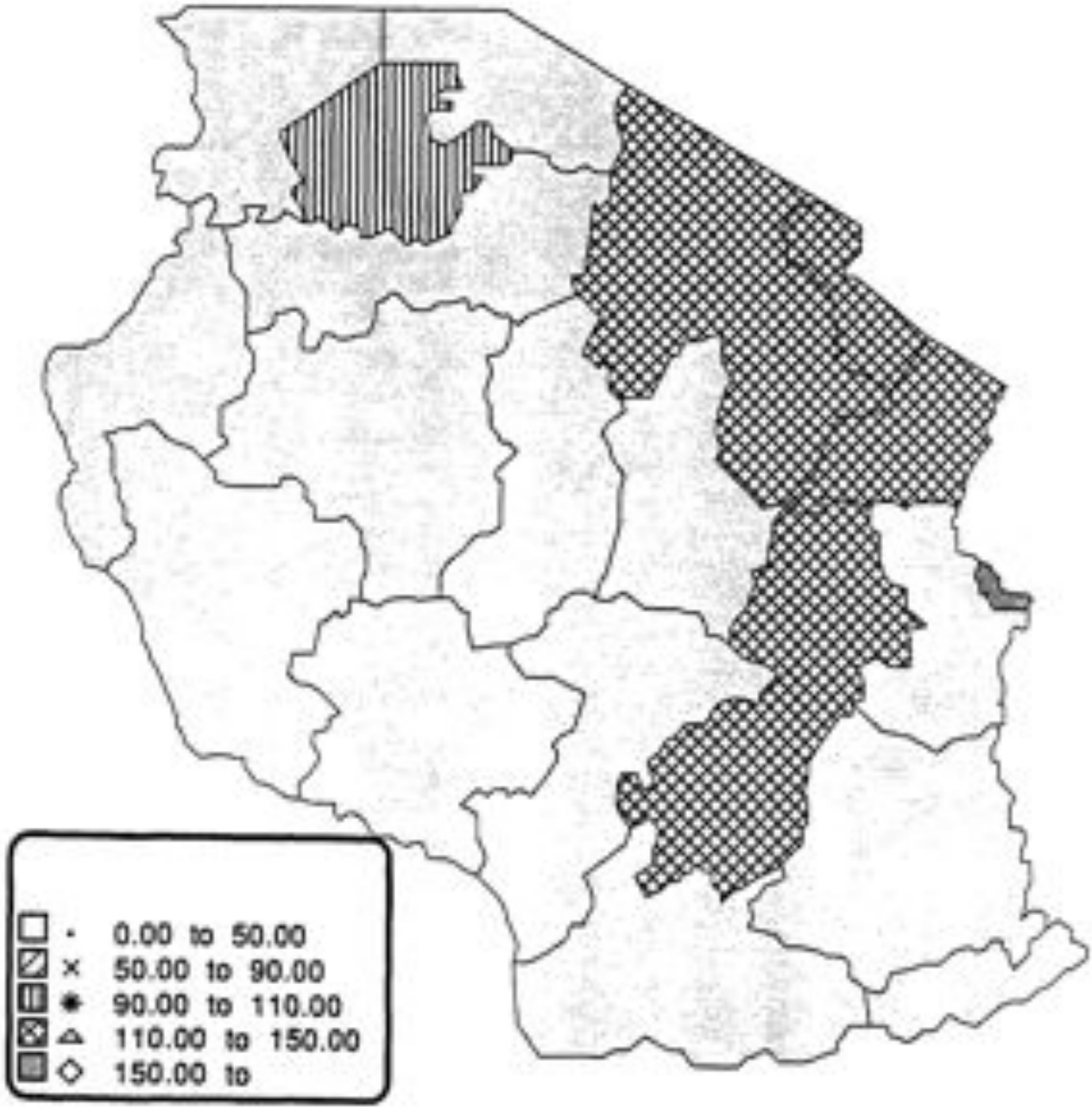
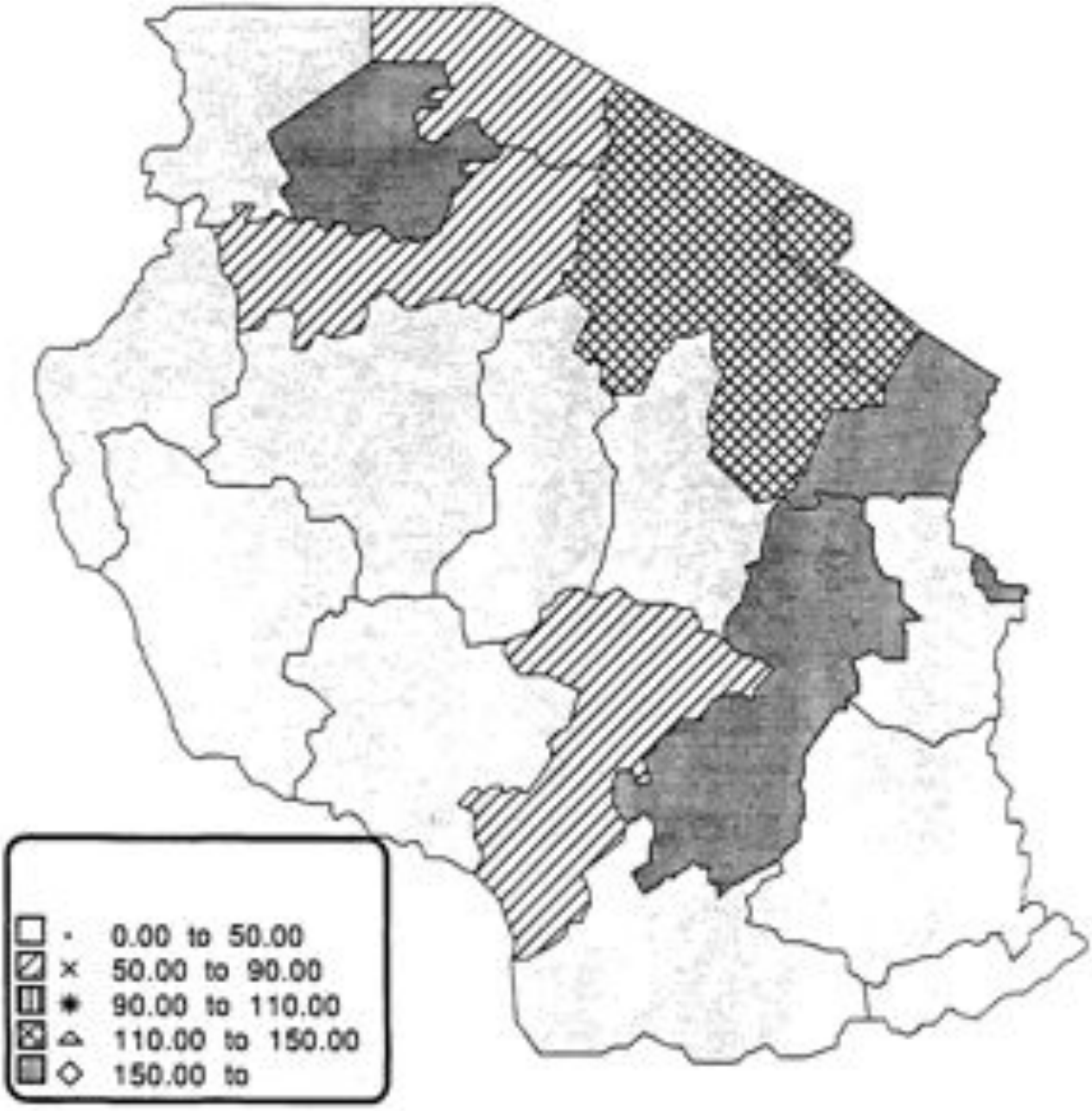
[1] Havnevik, K et al (1988): *Tanzania-Country Study and Norwegian Aid Review*. University of Bergen, pp 76- 87.




Map 3.4 Regional employment in manufacturing industries, 1978 (proportion in relation to the total population. National average =100)




Map 3.5 Regional employment in manufacturing industries, 1983 (proportion in relation to the total population. National average =100)

In the early eighties a significant feature of the Tanzanian industry was that of a serious under-utilization of capacity.

> *...the dominant problem for the industrial sector as a whole is the great underutilization of capacity. This underutilization has co-existed in several instances with*

> *investments for capacity expansion in the same industry. As gross fixed capital formation has continued, output and labour productivity have fallen in relation to GDP. It is therefore questionable whether the real incentive to expand capacity has been to increase output.* [1]

In this perspective it must have been essential to make the companies to improve on the efficiency.

> *If individual firms have no incentives to increase efficiency or to penetrate the export market, the incentives need to be created.* [2]

During the eighties a number of programmes for economic recovery have been adopted. For the years 1986-89 an *"Economic Recovery Programme" (ERP),* was put into operation. One evaluation gives a positive indication, at least on a preliminary stage.

> *With ERP output from manufacturing industries has increased for some firms especially those receipient of import support. The greater general availability of foreign exchange has helped even those small industries that have had no direct access to import support. Some factories have made workers redundant to achieve efficiency as require by ERP. Many Government and other companies have kept their whole workforce and overall employment has stabilized and even increased somewhat.*[3]

Still, however, it might be a bit early to give a fair long-term assessment of the effects of the ERP. In relation to this policy programme a strategy of import liberalization was also introduced. This seem to have an adverse impact on at least some sectors of the manufacturing industries.

> *Competition with imports has brought complaints that liberalization was killing local industry by increasing competition. The textile industry for instances faces stiff competition from imported second hand clothing and so far has failed to increase production.* [4]

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[1] Kahama et al (1986): *The Challenge for Tanzania's Economy.* James Currey, p. 97.
[2] Ibid, p. 97
[3] Rugumisa, S (date unknown): *A Review of the Tanzanian Economic Recovery Programme (1986-89).* Tadreg Research Report No 1, p. 8-9.
[4] Ibid, p. 9

This last point has been illustrated vividly in many of the interviews conducted in both Arusha and Kilimanjaro (see chapter 7).

From other African countries various structural adjustment programmes have led to an increased unemployment rate, at least initially.

> *The repercussions of these measures on the social sector have been grave. Millions of jobs have been lost as a result of a reduction in the level of investment and cuts in social services. The resultant rise in unemployment has increased poverty and hardship in many African households.* [1]

Irrespective of which direction the employment figures will go, due to the structural adjustment programmes, this can be assumed to be the main determining factor for the future development in the labour market. Even if this will lead to a reduction, in an attempt to bring up efficiency there might still be a need for trainees, with certain skills from the NVTCs. In this situation the demand for craftsmen could be increased, making the future for Moshi NVTC trainees looking bright.

Besides the official industrial sector an expanding second economy has been thriving. It has been estimated that some 30 per cent of the official GDP is emanating from this structure. On the one hand there is the productive activities, which could possibly attract a few trainees from the NVTCs. On the other hand there is a fairly extensive black-marketing of various character, nurtured on the prevailing economic crisis.[2]

## 3.5 Conclusion.

Like so many other African countries Tanzania has a comparatively young and fast growing population. The demand for education is thereby immense. One priority has been to expand the primary education, while not emphasizing the higher levels of education to the same extent. A result of this has been a desperate search for

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[1] Grey-Johnson, C (ed) (1990): *The Employment Crisis in Africa. Issues in Human Resources Development Policy.* Southern African Political Economy Series. p. 42.

[2] Maliyamkono, T-M. Bagachwa (1990): *The Second Economy of Tanzania.* James Currey. pp. 133-136.

educational/training alternatives outside the secondary school sector. One such solution tends to be the NVTCs.

The formal labour market in Tanzania is still rather small. Manufacturing industries have been faced with numerous problems, boiling down to a low efficiency. To what extent this will influence future manpower needs, will to a large extent depend on the outcome of various policies for economic recovery. Under these conditions it can be assumed that the future is rather bright for a cadre of skilled craftsmen, as this category of personnel is always in demand to achieve greater efficiency.

# 4. *TRAINEES AND THEIR SELECTION TO MOSHI NVTC*

In the last chapter it was noted that Moshi NVTC could be one of the alternative options for primary school leavers. Officially, more than half of all trainees (60 per cent) are supposed to be directly recruited among the primary school leavers. However, less than 0.1 per cent of the national total can be absorbed into this particular institution. Consequently, its role to alleviate the problems for those ones leaving the primary school cycle can be nothing more than marginal.

Initially within this chapter we will try to determine how many have actually been enrolled and completed at least the first year of institutionalized training at Moshi NVTC. Further, we will discuss the entry qualifications, e.g. educational, training or working experiences, for the first five years of trainees. One issue here is to find out whether the criteria for selection has been changed over time.

Apart from the previous experiences at the time of starting at Moshi NVTC, we will also give some other characteristics on the trainees, such as age, gender, socio-economic and regional background. All these factors have an impact on the future success in a chosen working career.

## 4.1 Quantitative intake to Moshi NVTC 1984-88.

To get, as accurate a picture, as possible on the total sample we have had to combine various data. If we were to use only the class lists held at Moshi it seems that not less than 1,224 trainees have passed through the centre. However, some of them have probably never even sat their foot at Moshi NVTC.

Through daily attendance records and other files we have tried to calculate the total number of trainees, that have at least been taking part in the training, which will bring the above figure down to 1,162. This number seem to be a fair representation of how many trainees there has been at Moshi NVTC during the first five years. However, it has to be noted that a few (14) will be counted twice, as they have been enrolled for two different trades.

In most cases we will be referring to the trainees that have actually completed a full one year, or in some cases two years at the centre. These ones are found to be 1,055, which will be 1,041 individuals if we account for the trainees enrolled for two trades. Table 4.1 gives

the maximum number of trainees, compared to the ones remaining at the end of the first year per group.

Table 4.1 Maximum number of trainees, compared to the ones completing the first year.

| Group | Maximum | At end of year one |
|---|---|---|
| 84 | 208 | 190 |
| 85 | 167 | 157 |
| 86 | 280 | 229 |
| 87 | 236 | 225 |
| 88 | 271 | 254 |
| Total | 1.162 | 1.055 |

Built on this data there will be a drop out rate of 9.2 per cent. This will be discussed more in detail below.

The optimal capacity of Moshi NVTC is supposed to be 328, of which 236 are supposed to be enrolled for the first year courses. Different trades are to recruit either 16 or 20 trainees per year. An exception to this is Mechanical Draughting, a two years course with enrolment only every second year.

A total of 385 trainees (33 per cent) were enrolled for the second year of training at Moshi NVTC. According to available records only five (1.3 per cent) of them dropped out during the course. However, not all of the rest were given a certificate, as they failed in the exams.

Table 4.2 Second year trainees at Moshi NVTC first five groups

| Group | Number |
|---|---|
| 84 | 80 |
| 85 | 57 |
| 86 | 85 |
| 87 | 74 |
| 88 | 89 |
| Total | 385 |

A few of the trainees have even been given a third (or even fourth) year at the centre.

For the two initial years 1984 and 1985 the centre was run with a certain under-capacity. Even if this was natural for the first group that had no second year trainees it was noted with concern, in relation to 1985, that;

> *...the centre had an enrolment of 239 trainees out of a total of 328 available training places. It was agreed that effort would be taken to ensure that the centre will have full classes in every trade. This will be achieved through changes in the selection procedure to allow for the calling of more students to the initial phase of the training and giving the possibility of a final selection of the students some weeks into the training programme.*
>
> *Efforts were made to ensure that the centre had full classes in each trade, with an exception of Tool and Die Makers, Machine Tool Repair, Instrument Mechanics and Pattern Making sections, all trades had an extra five to ten students more than their annual intake. After the first ten weeks of training the final selection was made at the centre.* [1]

Apart for the surplus enrolled, as a kind of selection procedure, one trade, e.g. Machine Fitter, started a double intake scheme.

Among the individual trades Instrument Mechanics, Machine Fitter, Refrigeration & Air Condition, Foundry, Mechanical Draughting, and Black Smith General have no entry requirement above a primary school leaving certificate.

Pipe Fitting & Boiler Mechanics demands a minimum qualification of a secondary school exam from Form IV. The remaining six trades are demanding an entry qualification of either a relevant working experience, proved by a passed trade test, or previous training from a vocational training centre.

Below we will give a detailed analysis of educational and working experiences among the trainees, broken down into the three groupings of trades, according to entry qualification demanded.

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[1] Moshi National Vocational Training Centre: *Progress Report 1986.*

## 4.2 Trades demanding a background above primary school.

### 4.2.1 Trades demanding previous vocational training or relevant working experiences.

The trades of Tool & Die Maker, Machine Tool Repair, Diesel Engine Mechanics, Industrial Electrical Fitter, Electronics and Pattern Maker are exclusive to Moshi NVTC. A total of 448 trainees have completed at least one year of training in the six trades, demanding an entry qualification, from either previous vocational training or relevant working experiences. This is only 85 per cent compared to the planned potential.

Table 4.3 Number of trainees starting and completing the first year of training in the six trades demanding previous vocational training or relevant working experiences, compared to planned potential.

| Trade | Number of trainees Maximum | At end of year one | Potential |
|---|---|---|---|
| Tool & Die Maker | 63 | 58 | 80 |
| Machine Tool Repair | 64 | 57 | 80 |
| Diesel Engine Mechanics | 102 | 97 | 100 |
| Industrial Electrical Fitter | 95 | 89 | 100 |
| Electronics | 97 | 94 | 100 |
| Pattern Maker | 54 | 53 | 64 |
| Total | 475 | 448 | 524 |

From the figures given in Table 4.3 it is obvious that there is a recruitment 10 per cent short of the potentially planned number for these three trades. The reasons for this will be discussed below.

A minimum entry qualification to any of these trades should be a previous experience, up to at least trade test grade III. For Tool & Die Maker and Machine Tool Repair, this could be from either one of Fitter Mechanics, Fitter & Turner, or Machine Fitter. Therefore, the Machine Fitters from Moshi NVTC would here have a chance for further specialization.

Among Diesel Engine Mechanics trainees we find, apart from Motor Vehicle Mechanics, such trades as Auto Mechanics, Panel Beating and Auto Electrical. The latter one is also not uncommon among trainees in the both electrical trades, together with Motor Rewinding and Refrigeration & Air Condition.

If we regard any kind of vocational training or relevant working experiences, as enough we can see that in Machine Tool Repair only 5 per cent of the trainees were not qualified for this particular trade. For the others we find the following order; Tool & Die Makers (14 per cent), Pattern Maker (16), Electronics (18), Diesel Engine Mechanics (20) and Industrial Electrical Fitter (25). For the two electrical trades we can note that a few more of the trainees might have a sufficient base from a technically biased secondary school.

Below we will find out that these six trades have a comparatively low drop out rate. This can be referred to the fact that most of the trainees have actually been recommended for selection to Moshi NVTC from their previous training institution. This would mean that they have shown skills and interest from before. In most other cases the assessment of entry qualifications are done from only "paper" merits, which are a bit harder to evaluate.

Within Tool & Die Maker the course is supposed to be for two years, still three out of the 58 trainees completing one year successfully, did not continue. One reason for this might be illustrated by this quotation;

> *I was asked to do a second year and only to receive a basic certificate, so I said no.*

Among the other trades there are a high share of two year trainees in Electronics (48) and Pattern Maker (36), with a bit fewer in Diesel Engine Mechanics (23), Machine Tool Repair (13) and Industrial Electrical Fitter (11).

### 4.2.2 Pipe Fitting & Boiler Mechanics.

One of the trades, e.g. Pipe Fitting & Boiler Mechnics, is demanding a Form IV exam as entry qualification. In all 74 trainees, out of a total potential of 80, has completed one year of training in this trade. Throughout the years six trainees have dropped out during the course. 43 trainees have been accepted for a second year of training.

Table 4.5 Educational and other qualifications for trainees in Pipe Fitting & Boiler Mechanics

| Entry qualification | Number of trainees | | | | | |
|---|---|---|---|---|---|---|
| | 84 | 85 | 86 | 87 | 88 | Tot |
| Primary only | - | - | 1 | - | - | 1 |
| Some Secondary | - | - | - | - | - | - |
| Complete Secondary | 10 | 10 | 15 | 14 | 15 | 64 |
| Primary+other VTC | - | - | - | - | - | - |
| Secondary+other VTC | - | - | - | - | 1 | 1 |
| Primary+working experiences | - | 2 | - | - | - | 2 |
| Secondary+working experiences | 4 | 1 | - | 1 | - | 6 |
| Total | 14 | 13 | 16 | 15 | 16 | 74 |

Obviously, only three of the trainees have not been formally qualified for the training enrolled into. However, it can also be concluded that few had any previous experience apart from formal schooling before coming to Moshi NVTC.

4.3 Trades without any background above primary school.

In six trades, e.g. Instrument Mechanics, Machine Fitter, Refrigeration & Air Condition, Foundry, Mechnical Draughting and Black Smith General, there is no set entry requirement above primary school examination. In principle the competition for vacancies in any of these trades are supposed to be among St. 7 leavers.

For these trades the number of trainees recruited has actually been above the planned potential. A total of 533 individuals have passed through one year of training, against a potential of 580. However, the maximum number is as high as 606. It is noticeable that Machine Fitter has a double intake from 1986 onwards.

For these trades there has been an "over-recruitment" of 104 per cent. However, compared to the other trades, accounted for above, the drop out has also been higher.

Table 4.6 Number of trainees starting and completing the first year of training in the six trades without entry qualification above primary school, compared to the planned potential.

| Trade | Number of trainees Maximum | At end of year one | Potential |
|---|---|---|---|
| Instrument Mechanics | 79 | 74 | 80 |
| Machine Fitter | 173 | 153 | 160 |
| Refrigeration & Air Condition | 87 | 77 | 80 |
| Foundry | 92 | 82 | 100 |
| Mechanical Draughting | 62 | 56 | 60 |
| Black Smith General | 113 | 91 | 100 |
| Total | 606 | 533 | 580 |

Even if the principle has been to take trainees into these six trades directly from St 7 it is obvious that some do have both previous vocational training, working experiences, as well as secondary education.

Table 4.7 Educational and other background for the trades not demanding an entry qualification above primary education.

| Entry qualification | Number of trainees 84 | 85 | 86 | 87 | 88 | Tot |
|---|---|---|---|---|---|---|
| Primary only | 33 | 39 | 67 | 78 | 111 | 328 |
| Some Secondary | 1 | 3 | 5 | 2 | 1 | 12 |
| Complete Secondary | 10 | 11 | 27 | 19 | 22 | 89 |
| Primary+other VTC | 19 | 10 | 8 | 2 | 2 | 41 |
| Secondary+other VTC | 10 | 8 | 4 | - | 1 | 23 |
| Primary+working experiences | 10 | 1 | 4 | 2 | 1 | 18 |
| Secondary+working experiences | 4 | 1 | 6 | 3 | 2 | 16 |
| Total | 87 | 73 | 121 | 106 | 140 | 527 |

Note: For six trainees the educational background has not been known

From Table 4.7 we can find out that only 62 per cent of the trainees in these trades are directly from primary school. As many as one quarter of the recruitment is done among former students of

secondary school, of which a majority even have a Form IV exam. This can possibly be seen as a pointer to the employment predicament even for this category of school leavers.

There are some distinct trends to be found on previous experiences. Among the 84 group there were few trainees with only a primary school background, while it was up to 80 per cent for the 88 group. This can be a reflection of a changed policy, with the objective to increase the proportion selected straight from primary school.

In the 86 group we have the highest share of secondary school leavers. This might possibly be explained by the fact that they were the ones selected finally, after the initial trial period (see above). If that is so it could be a good argument for a further discussion on entry requirements.

Only the 84 group has any significant proportion of trainees, with some working experience. Most of these 14 trainees were actually sponsored. Even if the figures are small, this could be indicating that sponsoring is more common to not so specialized trades, but more general ones. This could be an indication of the perceived industrial needs in the country.

A vocational training background is particularly obvious among the 84 and 85 groups. The two dominating backgrounds here are from Welding & Fabrication and Fitter & Turner. Some trainees are also from Plumbing and Electrical Installation. One odd selection is among the Refrigeration & Air Condition trainees in the 85 group, with almost all having a previous training in the same trade. In spite of this most of them actually failed in the continuous assessment at Moshi NVTC.

Among previous vocational training instituitions for these trades the absolute majority are from Changombe, with a fairly high number also from Mwanza. Some few are from Tanga, Dodoma, Iringa or Moshi.

Among individual trades the most distinct variations between the first bunch of trainees and the latter ones, are found within Instrument Mechanics, Refrigeration & Air Condition and Foundry. For the other three trades few have anything above formal school, as the stated qualification. However, for both Machine Fitter and Black Smith General close to 30 per cent had a secondary school education.

The trade with the highest number directly from primary school is Mechanical Draughting. This might seem a bit awkward, as it could be assumed that trainees in this particular trade could benefit from some additional "academic" schooling. Actual success at the continuous assessment at the centre and thereafter must be viewed with this point in mind.

Like in the case of the more specialized trades accounted for above, even here we find that trainees are arriving very late for the courses, in many cases up to at least two months. Undoubtably this must be a serious matter to adress urgently, to improve on internal efficiency.

One example of these late arrivals can be taken from Machine Fitter in 1986. At the end of March this trade had reached not less than 52 trainees enrolled, which dropped down to 39 at the end of the year.

Out of these trades Mechanical Draughting is supposed to be a two years course. However, it seems some have been absent from training for different lengths of time, in addition to arriving late. Nine of the trainees have not been entering for the compulsory second year, in most cases due to poor performance. In all 44 trainees in Mechanical Draughting have entered the second year of training, some with an E grade ("failure") from the first year.

A second year has been common for the Instrument Mechanics trainees, with 69 being enrolled for this. Black Smith General has contributed 23 two years trainees, while few were selected for the optional time in Foundry (8), Machine Fitter and Refrigeration & Air Condition (6 each).

### 4.4 Some comments on the selection.

For the trades with vocational training as a criteria for selection, this has not always been fulfilled, especially there is a significant short-fall in the 85 group.

In general it can be noted that most of the trainees have got a wide experience in the field of education/training. Even if primary education is supposed to be the normal formal education needed, a substantial share still have a secondary school background. This has to be taken into account when evaluating the outcome in the confrontation with the labour market.

Working experiences are limited among the trainees. Only within the 84 group we find trainees sponsored by their employers to any extent.

There has been a clear change in the recruitment pattern throughout the first five years. A gradual increase of primary school leavers directly from school has been taking place.

Many trainees are pointing to the effects of the selection system used.

> *The ones with only primary school not only cannot follow the education at Moshi, they are also lowering the standard of the education for the rest of us.*

> *It's very important that students at Moshi VTC have previous technical experience.*

The need for a better background among the trainees has also been stressed by the instructors. If this was improved it would have been possible to start on a level above the bare essentials. One suggestion given is that entry to Moshi NVTC should be determined after some kind of a test.

> *The problem is not that the training is in English it is that the school accepts primary school leavers. They should not be accepted, but only secondary school leavers or students from other VTC:s. The problem is with administration; they only accept their friends' children or relatives, the system is corrupt. This problem could be solved by forcing everybody to do a test before they are accepted.*

Connected to the selection criteria is the matter of length of course. As seen most of the trainees (64 per cent) are staying at the centre for one year. From many discussions we are getting a clear indication, that better craftsmen can be produced if the selection procedure is improved, and training at the centre is prolonged. If the trend to accept a higher proportion of primary school leavers will continue, it must be essential to offer a longer course, to get the trainees up to a level acceptable to employers. A typical comment from one of them was;

> *NVTC should train not only primary leavers, but also secondary leavers.*

We will come back to this issue more in detail below.

## 4.5 Other background data.

There are numerous factors influencing the career of the trainees passing through Moshi NVTC, that is related to the training as well as other conditions. Above we have been giving an account on the educational/training/working background. From this we will treat information related to age, gender and socio-economic situation. Furthermore, some data will be given on the home regions of the trainees.

It has been possible to get a fairly complete set of data on the groups 86, 87 and 88, while it is a bit more scanty for the early intake. Some of the trainees in the 84 and 85 groups have not been met during the field work periods to answer the relevant questionnaires.

### 4.5.1 Starting age.

There is a wide variation age wise among the trainees at Moshi NVTC. The youngest have been enrolled at the age of 14, while some were above 30 years old. To a certain extent the differences are caused by the fact that some trades are demanding experiences above primary schools. It was said by one official that selection ought to take place straight from school, with no time gap in between. The reason for this was supposed to be that otherwise the candidates would "deteriorate" too much into getting bad habits.

One tendency has been that the starting age has been decreasing considerably for every intake. For the 84 group only eight per cent were below the age of 20, when starting the training. For the 87 and 88 groups the corresponding figure was 41 and 50 per cent respectively. On the other end 23 per cent among the 84 group were 25 years of age or older. This was down to eight and four per cent respectively for the 87 and 88 groups.

The starting age is one influencial factor for the future working career. It cannot be easy to get employed or placed in inplant, for that matter, for those who are regarded to be too young.

Naturally the changes in starting age can be directly correlated to the trends given above, increased number of primary school leavers in the selection. During the middle of the eighties, most of the pupils leaving primary schools were to be found in the age category 14 to 16 year olds. Still, however, more than 10 per cent were even 17 years old or above.

Table 4.8 Starting age for the first five groups.

| Trade | Medium starting age per group 84 | 85 | 86 | 87 | 88 | Tot |
|---|---|---|---|---|---|---|
| Tool & Die Maker | 24.5 | 23.7 | 23.4 | 21.4 | 22.9 | 23.0 |
| Instrument Mechanics | 23.7 | 21.5 | 21.7 | 18.8 | 19.1 | 20.8 |
| Machinery Fitter | 20.2 | 19.7 | 20.6 | 19.5 | 18.4 | 19.6 |
| Refrigeration & Air Condition | 23.1 | 19.2 | 19.3 | 19.9 | 18.6 | 19.9 |
| Foundry | 25.2 | 22.2 | 20.4 | 19.2 | 18.5 | 20.4 |
| Pipe Fitting & Boiler Mechanics | 21.9 | 22.6 | 22.2 | 21.8 | 22.3 | 22.2 |
| Electronics | 24.6 | 21.8 | 22.6 | 20.7 | 20.8 | 22.1 |
| Pattern Maker | 24.8 | - | 22.5 | 21.9 | 20.4 | 22.3 |
| Machine Tool Repair | 25.2 | 24.5 | 21.8 | 20.2 | 21.1 | 22.4 |
| Mechanical Draughting | 21.2 | - | 20.4 | - | 18.1 | 19.8 |
| Industrial Electrical Fitter | 23.4 | 22.2 | 21.8 | 20.3 | 21.3 | 21.7 |
| Diesel Engine Mechanics | 22.7 | 22.2 | 23.3 | 20.8 | 21.6 | 22.1 |
| Black Smith General | 19.9 | 20.6 | 21.4 | 19.3 | 19.4 | 20.1 |
| Total | 22.9 | 21.7 | 21.4 | 20.4 | 19.9 | 21.1 |

All the seven trades demanding some kind of previous experiences are, of course, showing a higher age at the time of entry. Normally the selected trainees for the trades demanding previous training/working experiences are two years older compared to the rest of the trainees.

Table 4.9 Starting age for trades demanding previous experiences and other trades.

| Kind of trade | Medium starting age 84 | 85 | 86 | 87 | 88 | Tot |
|---|---|---|---|---|---|---|
| Demand previous experiences (7) | 23.8 | 22.7 | 22.5 | 21.0 | 20.6 | 22.0 |
| No demand for previous experiences (6) | 22.0 | 20.6 | 20.6 | 19.4 | 18.6 | 20.1 |

For the analysis on the labour market success below it is essential to take note of the trend of lower ages at entry in the latter groups. However, it seems that most trainees are of an age that would not

be a barrier to get employed. Only a small minority would be below 18 years old after a complete one year of training.

### 4.5.2 Gender.

An absolute majority of the trainees so far have been boys. For the trades offered there are few women engaged in the present labour market. One policy pursued at Moshi NVTC has been to promote girls in the technical training and consequently at the formal labour market.

Among the group 1,162 trainees starting the course we find 131 girls (11 per cent).

Table 4.10 Female trainees in the first five groups

| Group | Number | (%) |
|---|---|---|
| 84 | 12 | (6) |
| 85 | 21 | (13) |
| 86 | 34 | (12) |
| 87 | 30 | (13) |
| 88 | 34 | (13) |
| Total | 131 | (11) |

If we compare the proportion of girls at Moshi NVTC, which is a boarding institution, with the day centre at Dodoma, it is slightly lower. Between 1983 and 1989 18 per cent of the trainees were girls, at that place.[1]

Most of the girls have been enrolled within only a few trades. Some of them have been starting in one trade and have, thereafter, been transferred.

Mechnical Draughting, with recruitment only every second year, together with Instrument Mechanics, Machine Fitter and Refrigeration & Air Condition, have enrolled more than 70 per cent of all female trainees. Another 17 per cent have been found in the two electrical trades, i.e. Electronics and Industrial Electrical Fitter.

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[1] Chambey, R (1991): *Technical Education Female Participation and Jobs in Tanzania.* ESAURP.

In the two trades of Foundry and Black Smith General there have been no girls selected at all.

Table 4.11 Trades for the female trainees.

| Trade | Number of trainees 84 | 85 | 86 | 87 | 88 | Tot |
|---|---|---|---|---|---|---|
| Tool & Die Maker | - | - | - | 2 | 2 | 4 |
| Instrument Mechanics | 1 | 3 | 2 | 7 | 8 | 21 |
| Machine Fitter | 2 | 5 | 8 | 5 | 10 | 30 |
| Refrigeration & Air Condition | - | 5 | 3 | 7 | 6 | 21 |
| Foundry | - | - | - | - | - | - |
| Pipe Fitting & Boiler Mechnics | - | 3 | 2 | - | 1 | 6 |
| Electronics | 1 | 2 | 2 | 5 | - | 10 |
| Pattern Maker | - | - | - | 1 | - | 1 |
| Machine Tool Repair | - | - | 2 | - | 1 | 3 |
| Mechnical Draughting | 7 | - | 9 | - | 5 | 21 |
| Industrial Electrical Fitter | - | 2 | 6 | 3 | 1 | 12 |
| Diesel Engine Mechanics | 1 | 1 | - | - | - | 2 |
| Black Smith General | - | - | - | - | - | - |
| Total | 12 | 21 | 34 | 30 | 34 | 131 |

In Dodoma NVTC, for comparison, girls have mostly been attracted to some specific trades, i.e. plumbing/pipe fitting and painting/signwriting. [1]

In an assessment of the labour market confrontation we have to take account of not only the gender aspect. but also the employer perception of the respective trades. Neither Mechanical Draughting nor Instrument Mechanics seem to be very well known by the Tanzanian companies.

On the educational background girls have on the average been recruited from a somewhat poorer background. Only 24 of them (19 per cent) had any formal schooling above the primary level. A total of six girls had been to a technical secondary school.

From the above it was obvious that a rather substantial number had some kind of vocational training previous to coming to Moshi NVTC. Among the girls there were only 28 or 21 per cent, with such

[1] Ibid

a background. Furthermore, only two girls had any prior relevant working experience.

Due to this recruitment of girls directly from primary schools, their average age at the time of entering Moshi NVTC is substantially lower than that of the boys. For all girls in the groups 84 to 88 the average starting age is as low as 19.6 years. For the individual groups it has been 20.6 (84), 20.7 (85), 19.8 (86), 19.0 (87) and 18.9 (88) years respectively.

From this we can conclude that the achievements among girls at Moshi NVTC can be severely hampered by insufficiencies in their educational background. It is said to be difficult to fill vacancies specifically assigned for female trainees. From a special survey devoted to this theme it has been obvious that girls have actually been recruited for trades requiring either Form IV or basic vocational training, without fulfilling this minimum qualification. Above we saw that this was not uncommon for the total sample, but for girls it was even more obvious.

In many cases girls complained about their ability to master the English used for teaching. This was more frequent among girls, compared to the boys. The disparities in educational background have also influenced the ability to follow theoretical teaching, such as Mathematics and Science.

### 4.5.3 Socio-economic background.

While gender is one issue normally brought out among donors, the socio-economic pattern of recruitment is more difficult to tackle. This is inspite of stated development assistance objective formulated for SIDA on a promotion of greater socio-economic equality.

Further, we cannot disregard the impact family contacts and position can wield for job seekers.

Initially we can note that an extermely high share of the trainees have a father (and often a mother) with a substantial educational background. It can be observed that in the middle of the sixties only some two per cent of relevant ages were enrolled in secondary schools. At the same time 32 per cent had been given a place in primary education.

Table 4.12 Educational level for fathers to Moshi NVTC trainees

| Highest level of education | Proportion per educational level, percentages | | | | | |
|---|---|---|---|---|---|---|
| | 84 | 85 | 86 | 87 | 88 | Tot |
| None | 25 | 16 | 10 | 8 | 6 | 11 |
| Primary | 44 | 50 | 50 | 37 | 46 | 45 |
| Secondary | 22 | 24 | 31 | 40 | 36 | 33 |
| University | 8 | 9 | 9 | 16 | 12 | 12 |
| (Total number | 108 | 117 | 163 | 224 | 226 | 838) |

It is obvious that the number of fathers with education at secondary level or above is substantial throughout the years, even if there are some variations over time. Trainees in trades with an entry requirement above primary schools have a slightly higher share of fathers, which have attained secondary school or above.

Almost 20 per cent of the mothers to the trainees have been to at least secondary school.

Like in the Tanzanian society in general most of the fathers to the trainees are making a living from farming. For the ones we have data on, 428 (or 56 per cent) are to be found in this activity. Out of them more than half have an educational background from primary schools. However, included in this category are also some with secondary education.

As will be obvious below the main recruiting area is the Kilimanjaro region. It can be noted that we here find an unusually intensive cash cropping from a Tanzanian point of view, with a comparatively affluent farming community.

From the above it was shown that the industrial sector is comparatively insignificant, as an employer nationally. In our sample 86 (out of 770) of the fathers are/were engaged within this field. Slightly more than half of them have an educational level from at least the secondary stage.

Wage employment is normally found in some kind of "service" occupations. From what is known about our sample some one third of the fathers are working with tasks in this category. It can be assumed that many of them are to be found in fairly advanced

positions, as 90 per cent of them have at least secondary education. Even as many as 30 per cent have got a university background.

Within the "service" sector we find fairly many teachers 32 individuals, while only 14 of them have an employment related to the health sector.

From what is shown in this context, the obvious conclusion is that our sample is emanating from a socio-economic strata well above the average Tanzanian one.

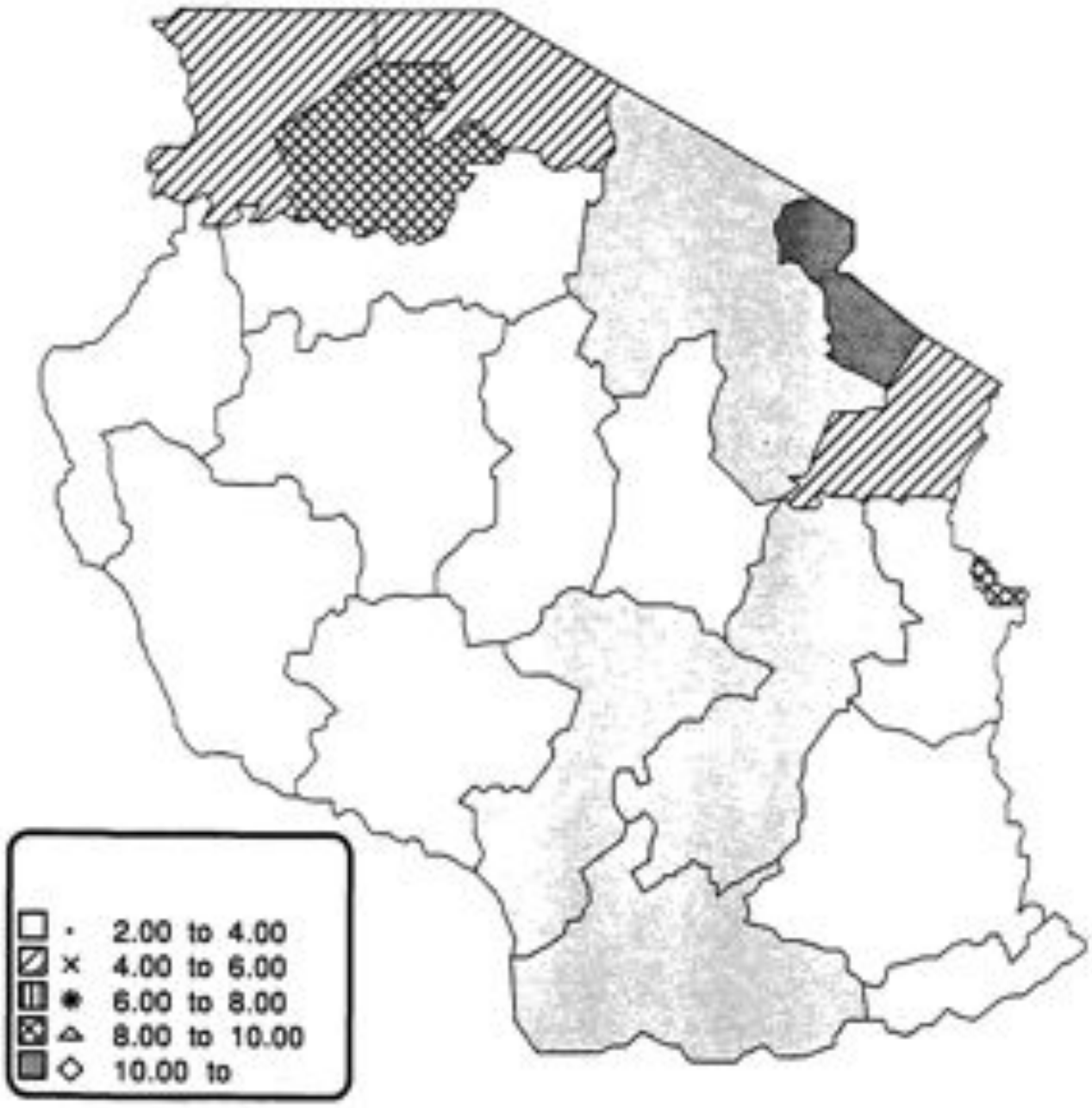
### 4.5.4 Home regions of the trainees.

Moshi NVTC is to be a national institution, with a recruitment from all over the country. However, six regions only have contributed not less than 80 per cent of the trainees.

Table 4.13 Home regions for the trainees.

| Home region | Number of trainees | | | | | | |
|---|---|---|---|---|---|---|---|
| | 84 | 85 | 86 | 87 | 88 | Tot | (%) |
| Kilimanjaro | 51 | 70 | 108 | 109 | 154 | 492 | (48.2) |
| Dar es Salaam | 11 | 21 | 20 | 22 | 17 | 91 | (8.9) |
| Mwanza | 36 | 20 | 13 | 13 | 5 | 87 | (8.5) |
| Tanga | 9 | 11 | 17 | 10 | 12 | 59 | (5.8) |
| Mara | 13 | 7 | 7 | 12 | 7 | 46 | (4.5) |
| Kagera | 16 | 4 | 12 | 5 | 5 | 42 | (4.1) |
| Iringa | 4 | 1 | 1 | 6 | 13 | 25 | (2.4) |
| Arusha | 4 | 1 | 6 | 10 | 3 | 24 | (2.4) |
| Morogoro | 7 | 6 | 4 | 2 | 5 | 24 | (2.4) |
| Ruvuma | 1 | 2 | 7 | 7 | 6 | 23 | (2.3) |
| Tabora | 6 | 3 | 3 | 2 | 5 | 19 | (1.9) |
| Dodoma | 2 | 2 | 8 | 3 | 3 | 18 | (1.8) |
| Mbeya | 3 | 3 | 2 | 8 | 2 | 18 | (1.8) |
| Singida | 2 | - | 2 | 2 | 6 | 12 | (1.2) |
| Shinyanga | 6 | 2 | 1 | 1 | 1 | 11 | (1.1) |
| Pwani | 4 | 1 | - | 2 | 1 | 8 | (0.8) |
| Zanzibar | - | 3 | 1 | 1 | 2 | 7 | (0.7) |
| Mtwara | 1 | - | 3 | 1 | 1 | 6 | (0.6) |
| Kigoma | 3 | - | 1 | - | 1 | 5 | (0.5) |
| Rukwa | - | - | 1 | 1 | 1 | 3 | (0.3) |
| Lindi | - | - | - | 1 | - | 1 | (0.1) |
| Total | 179 | 155 | 219 | 218 | 250 | 1021 | |

Almost half of all the trainees are originating from the region of the centre itself. It can here be pointed out that Kilimanjaro is a leading region in terms of educational acheivement nationally, as more than ten per cent of all secondary school students are to be found in this region.




Map 4.1 Home regions of the Moshi NVTC trainees (percentages)

The three next regions in rank order are all important industrial regions, and with their own VTCs. We saw above that in many cases Changombe (Dar es Salaam), Mwanza and Tanga VTC:s are contributing with previous training for the Moshi NVTC trainees.

The figure for Arusha is surprisingly low, as it is not only significant from an industrial point of view, but is also the neighbouring region. Dodoma, with another VTC, is another "home" region with an unexpectedly low number of trainees.

Even if some regions are dominating, it is also noticeable that all of the regions of Tanzania have contributed trainees to Moshi NVTC. In addition to this some are also from Zanzibar, which has a separate educational system.

## 4.6 Concluding remarks.

A total of 1,162 trainees have been enrolled at the Moshi NVTC, with 1,055 completing the courses, in the 84, 85, 86, 87 and 88 groups. A total of 385 have also done a second year at the centre. This is a bit short of the planned potential for Moshi NVTC.

Selection of these trainees have been done from a variety of educational/training backgrounds. Even in trades not demanding it many have previous secondary education or vocational training. We can also note that some trainees in trades demanding vocational training lack this minimum qualification standard. This is particularly so within the 85 group.

Few trainees have got any relevant working background. Consequently, the sponsoring from industries is not very significant. A slight difference from this can be found in the 84 group.

A present trend is that more and more trainees are recruited straight from primary school.

Due to the various background the starting age of the trainees varies largely, within the same classes. In correlation with the trend in selection criteria, there is also a lowering of starting age found.

There are two main aspects to be drawn from data related to socio-economic status. First of all an affluent background might be more

influential than the training attained when it comes to the potential in securing a job.

The other point that can be made here is that while the issue of gender can be debated intensively, the plight of the poorest segment or regions seem to be grossly neglected except for a token general recognition. May be these disadvantaged strata of the society have fewer proponents able to identify themselves in this position, compared to females, represented by an eloquent "lobby" in western countries.

Most of the trainees originate in the location of the centre, e.g. Kilimanjaro.

# 5. *CONDITIONS AND ACHIEVEMENTS AT MOSHI NVTC*

Almost half of the trainees at Moshi NVTC have motivated their choice of training, as a perceived suitable background for a future working career. They regard the prospects on the labour market, as favourable with such an education. However, this does not say if they are looking for a technical specialization, or **any** kind of vocational training. After all the opportunities, as discussed above, for primary school leavers are not that many.

A specific interest in technological matters has been referred to by 37 per cent of the trainees, answering to our queries. In addition to this some have expressed an idealisitic desire to assist in the developement of Tanzania, as the main reason for being enrolled to Moshi NVTC.

This chapter is an attempt to find out to what extent the institutionalized part of the training has lived up to expectations or not. It has to be realized that this kind of a survey is only based on rather subjective statements. After all it can always be on the back of the mind, that there might be something to gain from the mere contact with an interviewer, for example, in terms of further education or employment, if he/she is pleased with the answers given.

In addition to a discussion on the conditions we will also give an account on how well trainees are actually doing while at the centre. We will here relate this to drop out rates and the continuous internal assessment of the trainees. This can be seen as a formal indication on how well the trainees have been able to grasp the training received. Naturally the ultimate litmus test will come with the placement, as apprenticees and eventually, as employed in the industrial sector. This, however, will be discussed in the following chapters, also in relation to the official measurement, on skills and knowledge imparted, through trade testing.

## 5.1 The training milieu.

### 5.1.1 The social scene.

Like in so many studies of this character there is an undivided praise for the actual training conditions, while the social situation is deplored.

During the discussions we have got into the perpetual topic on the quality of food at the centre. In the previous reporting from this study we have heard many complaints, such as;

> *The food was very bad: porridge in the morning, ugali at lunch, ugali at dinner. You cannot be expected to study if you don't get good or enough food.*

While we have listened and recorded these kinds of feelings, we have similarily been given the other side through clarifications by the administration.

From our point of view we have no way of knowing to what extent this criticism is justified. On the one hand it might be caused by the fact that the average trainee is originating from fairly well-to-do families, not used to the cooking provided for in a canteen. However, if the standard of the food is not sufficient it can certainly be detrimental to work in some of the more physically strained trades, such as Black Smith General.

An over-all positive opinion has been given so far, as to the boarding itself, even if life has been surrounded by too many rules and regulations. During our visits it has been possible to find a lot of building and repairing activities going on in respect of the housing conditions.

One seriously neglected area has been the provision of social amenities. There is no emphasis put into sports or other spare time activities. Some Swedish experts have referred to examples, on how they have been discouraged from getting involved in this field.

Under the circumstances it is also strange to note that extra-curricular work related to the courses taken is absent from the agenda.

If the trainees are doomed to be idle during their "spare" time it can only be a breeding ground for discontent.

> *I expected to enter second year at Moshi VTC because my sponsor is sending me to attend this course for two years. But if the situation is not changed I think it is very hard to continue in this school.*
>
> *We have got no priviliges to refresh or release our tensions after studies.*

*The trainee is restricted to remain in the college boundaries, i.e. the college compound like a jail and this is quite opposite compared to other colleges.*

*In our spare time we haven't got the thing which can refresh our mind, eg cinema and other which can help us in to continual well in our study.*

Undoubtably, these kinds of issues must be attended to, not least as it could very well influence the actual training process negatively. We must realize that even if the ages have gone down somwhat, trainees at the centre are adults. Restricting their movements seem to be a bit exaggerated. The administration has to pay heed to these kinds of sentiments. From a trainee in the 84 group it was said that;

*Big problems with administration. Any complaints from students are not dealt with, no one ever listens to the students.*

It has been claimed that organizational changes have improved the functions of the administration considerably since the early days, but a defensive attitude towards critisism, on the social conditions, indicates that all is still not well.

5.1.2 Training conditions.

While the social conditions are costantly coming under stern critique, the training itself is normally seen with different eyes;

*Theory is good, practical is good, teachers are good: the school is very good, very good.*

Still there are numerous expressiom, that are considerably more substansive. Above we touched on the need for a longer training period. There seems to be a total agreement of the need to have the institutionalized training for at least two years. What is learnt during the basic year is regarded as much too basic.

*My first year here in fact has not lived up to my expectations, because one year training for this trade cannot be enough.*

*For me I like it but we have a short time for learning.*

As it is not possible to place all trainees for the inplant period it might be better to reduce the intake somewhat if all can be given a

sufficient course length. This can be a better utilization of the advanced equipment available at the centre. As many of the trainees have a previous experience from another VTC they can make comparisons, that are normally to the advantage of Moshi NVTC.

> *This centre is well equipped compared to other vocational centres. So that the training provided here is more efficient.*

> *The learning equipments are abundant compared to other technical colleges. The course facilities are of high standard.*

However, another comparison has been made with the other VTCs, and that is the lack of flexibility with Moshi trainees. They are used to the advanced equipment, but are not able to improvise. A manager from one of the companies in Moshi had this to say on the sophistication of the training:

> *...the students are trained on very precious and most modern machines and they find it very difficult to work in private sectors because no workshops in Tanzania are having such types of machinery.*

Some comparions have been made to trainees from the Tanga NVTC, which has an inferior material standard, to what Moshi has to offer. However, some employers with experiences from both of these centres are claiming that the Tanga trainees are more adaptable to a harsher environment. This issue will be discussed further below. However, it can here also be worthwhile to quote another comment from an industrialist, on the need to prepare for self-employment among the trainees.

> *Training and equipping some of the trainees for self-employment may be useful for the future as the job market is becoming more tight. If the training also introduces starting and running own business it may prove more useful.*

Considering that one of the pillars around which the Tanzanian educational philosophy is built has been *"Education for Self-Reliance"*, this might be a valied point to ponder, especially against the background of the present economic recovery programme, introduced.

Most of the trainees regard the practical workshop training as the most essential educational component. Still the theoretical part is not regarded as unnecessary, but the standard of text-books does not seem to be at the same level as tools and machines.

There is a library on the campus, but it does not seem to be utilized to any large extent. During the first field studies it was even closed for long periods of time.

Instructors at Moshi NVTC seem to be in high esteem among the trainees. Initially most of the praise was given to the Swedish experts.

> *The expatriates conducting the courses to each department are well skilled and they provide the knowledge expected to the trainee.*

Early on it was some complaints about a few Tanzanian instructors. This was not so much due to their technical skills, but more as to industrial experiences. Later on, however, this claim does not appear in the comments to any large extent.

Of course it must be difficult for the Moshi NVTC to keep the best of the instructors, as they can be offered favourable terms if they were to leave for the private industries. On the other hand they might be able to use the status of being a VTC instructor in doing some odd jobs in the informal sector, outside normal working hours.

In view of the perceived lack of industrial experience among the instructors it could be asked why the TA:s are taken straight from the training. Possibly they should be at least exposed for some time to the industrial reality, before being engaged as instructors. TA:s (see chapter 6) are Moshi inplant trainees engaged at the centre, as some kind of assistant instructors.

Finally, there has been some deficiences indicated on curricular issues, and the lack of co-operation between different trades.

## 5.2 Drop out.

Above we noted that for the five first years there was a drop out rate of 9.2 per cent. In all 107 trainees had not been able to complete the first year of training. We are here not including the 62 trainees named in class lists, but who were never involved in the training seriously.

Table 5.1 Drop outs per group, in total and as percentages of total group starting

| Group | Number | (%) |
|---|---|---|
| 84 | 18 | (8.7) |
| 85 | 10 | (6.0) |
| 86 | 51 | (18.2) |
| 87 | 11 | (4.7) |
| 88 | 17 | (6.3) |
| Total | 107 | (9.3) |

Almost half of all the drop outs are to be found in the 86 group. However, as was noted above this was as a result of a deliberate attempt to recruit above actual capacity, to use the first ten weeks for a further selection. If we would exclude that particular group the drop out rate would be at 6.3 per cent.

There is a wide variation in drop out between the different trades.

Table 5.2 Drop out per trades in rank order (percentages)

| Trade | Drop out rate |
|---|---|
| Pattern Maker | 1.9 |
| Electronics | 3.1 |
| Diesel Engine Mechanics | 4.9 |
| Industrial Electrical Fitter | 6.3 |
| Instrument Mechanics | 6.8 |
| Pipe Fitting & Boiler Mechanics | 7.5 |
| Tool & Die Maker | 7.9 |
| Mechanical Draughting | 9.7 |
| Machine Tool Repair | 10.9 |
| Foundry | 10.9 |
| Refrigeration & Air Condition | 11.5 |
| Machine Fitter | 11.6 |
| Black Smith General | 20.2 |

It is obvious that drop out is most common among trades that are not demanding any previous experiences apart from primary school. Trades that have a qualification from either Form IV or vocational training have got an average drop out rate at 5.9 per

cent. For the other six trades the corresponding figure is as high as 12.2 per cent.

We can note that for the two trades Tool & Die Maker and Mechanical Draughting the course is of a compulsory two years duration. If we take account of this the drop out rate for them would be 17.5 and 29.0 per cent respectively.

Drop out can be caused by many reasons, not always related to performance during the actual training. In most cases trainees have been expelled for theft. One year there was even talk of an organised gang stealing from the workshops. Some others are just claimed to expose a general bad behaviour, or have shown a lack of interest.

In some odd cases the training has been terminated, due to non-payment of fees, or family problems. Another one of the trainees was simply offered a job.

Of course trainees are also dropping out because the trade is too difficult, or there has been problems with the English used.

Some trainees have just simply "disappeared", without any reason given. A few have taken ill and has not been able to complete. Among girls we could expect that some might have been forced to leave due to pregnancies. However, there are only three of them that has left due to that predicament. Actually the drop out among girls (9.9 per cent) is not substantially higher than that of the total sample

In conclusion it can be noted that few leave the training because they are unable to understand it. They would rather hang on for the whole period, and eventually fail. Drop outs are normally resulting from some kind of alleged indiscipline.

## 5.3 Internal assessment.

Throughout the course, trainees are assessed continuously. They are given a grade, from A-E, in theoretical and practical application of the respective trade. In addition to this a mark is given for English, Science and Mathematics. E would stand for failure in any particular subject.

An aggregate grade is given for all the subjects. If this one is set to be E, that means that the trainee has failed in the course. For successful candidates a basic certificate will be given. However, the

basic certificate cannot be seen as more than provisional before an apprenticeship certificate, after a completed inplant training, will be issued. At the moment the basic certificate can be seen as something of a double-edged sword, at least for trainees with some kind of previous experiences;

> *The basic certificate destroys more than it helps. When I showed it to my employer they classified me as a beginner although I had many years of working experience before Moshi VTC.*

So far no single trainee has succeeded in getting an A as a final assessment. Below we will give the grades set, but unfortunately it has been impossible to get a full account on this point. Only the trades of Tool & Die Maker, Instrument Mechanics and Pipe Fitting & Boiler Mechanics have almost a complete set of data available. In most cases the 86 and 87 groups are missing. This is due to some changes being made in the administrative routines.

### 5.3.1 Trades demanding previous experiences.

We can assume that trainees with a wider previous experience will have a better total grade, compared to the ones without.

Table 5.3 Grades for trades demanding a previous vocational training

| Grade | Number of trainees | | | | |
|---|---|---|---|---|---|
| | 84 | 85 | 86 | 87 | 88 |
| B | 29 | 16 | (7) | (14) | 21 |
| C | 40 | 32 | (31) | (31) | 61 |
| D | 16 | 13 | (8) | (9) | 12 |
| E | 2 | 10 | (2) | (0) | 3 |
| Total | 87 | 71 | 87 | 104 | 97 |

Note:The figures given for groups 86 and 87 in parenthesis is representing a very small coverage.

Results given for the 86 and 87 groups are mostly related to what has been attained by the ones continuing for a second year. Therefore, it is not really representative for the whole sample.

Average grades given to the 84 and 88 groups are on a fairly similar level. There is a slightly higher proportion of B:s among the 84 trainees.

For the 85 group the results are distinctly worse, which of course can be related to the fact that many were actually not qualified in that selection.

Among these trades, trainees in Electronics have been noted for many B:s. This is also the trade with the highest share of secondary school students among the enrolment.

Table 5.4 Certificates and failure rates in the trades demanding previous vocational training.

| Trade | No of certificates | Failure rate (%) |
|---|---|---|
| Tool & Die Maker | 57 | (1.7) |
| Machine Tool Repair | 57 | (0.0) |
| Diesel Engine Mechanics | 91 | (6.2) |
| Industrial Electrical Fitter | 81 | (9.0) |
| Electronics | 91 | (3.2) |
| Pattern Maker | 46 | (13.2) |
| Total | 423 | (5.6) |

It seems to be a wide variations in failure rates among the different trades. The figure for Pattern Makers can be referred to the low drop out figure. It seems that all trainees try to hang on to the end of the course, even if they are performing below standards. Furthermore, few of the Pattern Maker trainees had a formal schooling above the primary level, which might have made the academic subjects difficult.

For Industrial Electrical Fitter it can be noted, that above it was shown that this trade was the one with the highest proportion, without the stated minimum qualification.

5.3.2 Pipe Fitting & Boiler Mechanics.

This is one of the few trades for which we have a complete set of data.

Table 5.5 Grades for trainees in Pipe Fitting & Boiler Mechanics

| Grade | Number of trainees 84 | 85 | 86 | 87 | 88 | Tot (%) |
|---|---|---|---|---|---|---|
| B | 2 | 4 | 5 | 4 | 3 | 18 (24.3) |
| C | 8 | 7 | 8 | 7 | 9 | 39 (52.7) |
| D | 4 | 2 | 3 | 4 | 4 | 17 (23.0) |
| E | - | - | - | - | - | - |
| Total | 14 | 13 | 16 | 15 | 16 | 74 |

Obviously Pipe Fitting & Boiler Mechanics is the only trade together with Machine Tool Repair that has had no failures.

Two trainees (groups 86 and 88) were drop outs during the second year of training and received no certificates, making the number of certificates for this trade to stand at 72. All, but three, of the trainees in Pipe Fitting & Boiler Mechanics had a previous secondary school background.

### 5.3.3 Trades not demanding any experiences above primary school.

For these six trades we lack data on first of all the 87 group.

Table 5.6 Grades for trades not demanding any qualification above primary school

| Grades | Number of trainees 84 | 85 | 86 | 87 | 88 |
|---|---|---|---|---|---|
| B | 10 | 9 | 11 | (1) | 3 |
| C | 39 | 28 | 46 | (9) | 44 |
| D | 23 | 25 | 38 | (7) | 56 |
| E | 14 | 11 | 17 | (26) | 21 |
| Total | 86 | 73 | 112 | 106 | 124 |

Note: For the group 87 there are many trainees missing, indicated by parenthesis.

Obviously the result in this category is distinctly worse than the one given for the other trades above. Furthermore, we can detect a serious deterioration during this five year period.

Among the trades not needing any previous experiences Instrument Mechanics is the only one with complete data on grades. Therefore, the results here can be used to illustrate trends.

Table 5.7 Grades for trainees in Instrument Mechanics

| Grade | Number of trainees 84 | 85 | 86 | 87 | 88 | Tot | (%) |
|---|---|---|---|---|---|---|---|
| B | 2 | 2 | 2 | - | 1 | 7 | (9.5) |
| C | 10 | 10 | 7 | 2 | 8 | 37 | (50.0) |
| D | 2 | 2 | 4 | 3 | 5 | 16 | (21.6) |
| E | - | - | - | 10 | 4 | 14 | (18.9) |
| Total | 14 | 14 | 13 | 15 | 18 | 74 | |

We can note the deteriorating trends for the last two groups. This can be connected to what was noted in chapter 4 above, on a distinct change in recruitment for this trade.

According to the table there were supposed to be 14 failures. However, out of them all but one in the 87 group got a certificate after a second year of training. On the other hand, we have two failures and one expelled from the 84 and 85 groups, not provided with a certificate.

Undoubtably, the failure rate among these trades is substantially higher, than the one for the seven others given above. The only exception to this is Black Smith General. On the other hand, this trade has got the highest share of drop outs. Consequently, trainees faring unfavourably will terminate the course before the end.

Among all the trades Mechanical Draughting has the worst result from the first year of training, which would have amounted to a failure rate of 43.4 per cent. However, many of the E trainees have taken a second year, against the strong recommendation of the instructors. Still the failure rate is far above the one found in any other trade.

Table 5.8 Certificates and failure rates for trades not demanding a qualification above primary school.

| Trade | No of certificates | Failure rate (%) |
|---|---|---|
| Instrument Mechanics | 66 | (10.8) |
| Machine Fitter | 128 | (16.3) |
| Refrigeration & Air Condition | 64 | (16.9) |
| Foundry | 66 | (15.4) |
| Mechanical Draughting | 40 | (28.6) |
| Black Smith General | 88 | (2.3) |
| Total | 452 | (15.2) |

An extermely high failure rate for Refrigeration & Air Condition in the 85 group (58 per cent) has to be noticed. This is surprising against the background that most of these trainees had been enrolled for the same trade at another VTC previously. Another odd piece of information is that one of the trainees given an E in the 85 group still got a certificate.

For Machine Fitter we can note the fairly high failure rate, which somehow might be an indication as to the disadvantages of pursuing a double intake.

5.3.4 Discussion on drop out and failure rates.

From the above it can be noted that there is a distinct difference between the trades, depending on entry qualifications.

Table 5.9 Drop out and failure rates depending on trades (percentages).

| Kind of trades | Drop out rate | Failure rate |
|---|---|---|
| With previous experiences (7) | 5.9 | 5.2 |
| Without previous experiences (6) | 12.2 | 15.2 |

If we would discuss the data given in Table 5.9 from the aspect of internal efficiency, the situation for the six trades not demanding previous experiences above primary school has to be looked into seriously. Some kind of a policy has to be formulated in this

respect. This can be a review of entry qualifications, or possibly a prolonged course for these particular trades, possibly including an upgrading of the knowledge in the academic subjects. It might also imply the need to look into the curriculum, in relation to the instruments of assessment.

Table 5.10 Number of certificates per maximum amount of trainees per trade (percentages)

| Trade | Share successful trainees |
|---|---|
| Electronics | 6.2 |
| Tool & Die Maker | 9.5 |
| Pipe Fitting & Boiler Mechanics | 10.0 |
| Diesel Engine Mechanics | 10.8 |
| Machine Tool Repair | 13.0 |
| Industrial Electrical Fitter | 14.7 |
| Pattern Maker | 14.8 |
| Instrument Mechanics | 16.5 |
| Black Smith General | 22.1 |
| Machine Fitter | 26.0 |
| Refrigeration & Air Condition | 26.4 |
| Foundry | 28.3 |
| Mechanical Draughting | 35.5 |

The data given in Table 5.10 is a clear indication, as to the internal efficiency for the various categories of trades. A serious effort is needed to equalize these variations between the trades.

Below we will relate the grades given directly to previous experiences.

## 5.4 Grades related to the previous experiences.

Obviously there is a strong correlation between previous formal schooling and the grades reached. This is natural especially considering the higher level attained within the academic subjects, included in the aggregate grade. This is not only a tendency between various trades, but also in the same class. Above in chapter 4 it was observed that primary school leavers were said to be lowering the standard for others.

Secondary education is an important background to be able to achieve favourably at the Moshi NVTC. To bring down the failure rate it might be possible to intensify the teaching of "academic" subjects for the primary school leavers, as pointed to above.

Table 5.11 Grades related to previous formal schooling (percentages)

| Grade | Trainees with previous schooling up to | | |
|---|---|---|---|
| | Primary | Some Secondary | Complete Secondary |
| B | 9 | 28 | 28 |
| C | 42 | 41 | 53 |
| D | 34 | 26 | 16 |
| E | 15 | 4 | 3 |
| (Total | 500 | 46 | 296) |

A glance at the trainees from the specific technical secondary schools show that for these ones there were a total of 41 trainees with a completed Form IV. Out of them 44 per cent had a B and 51 per cent C, with no failures. This is an indication that, at least from this point of view, it could be adviceable to recruit more trainees with this particular background.

As seen above many of the trainees have previous vocational training. This is so, especially in the first groups, for trades not demanding it.

The average grade among trainees with previous vocational training is slightly worse compared to the ones with a secondary education, but considerably better than the ones with primary school only.

Table 5.12 Grades for trainees with previous vocational training (percentages)

| Grade | Proportion of trainees |
|---|---|
| B | 24 |
| C | 53 |
| D | 20 |
| E | 3 |
| (Total | 334) |

Only a small share of the trainees had any kind of relevant working experiences before being enolled at Moshi NVTC.

Table 5.13 Grades for trainees with previous working experineces (percentages)

| Grade | Proportion of trainees with previous working experiences |
|---|---|
| B | 17 |
| C | 56 |
| D | 27 |
| E | . |
| (Total | 52) |

Also trainees with some working experiences seem to have an, advantage compared to the ones with only primary. It is noticeable that none of them have failed in the training.

## 5.5 Grades related to gender.

Even if the data is not complete an attempt has been made to relate the grades to gender.

From this we can note that the results for girls is distinctly lower than the ones for boys. However, it must be related to the entire picture. Such an analysis will take account of previous experiences and the trades entered for.

Table 5.14 Grades related to gender (percentages)

| Grade | Proportion of trainees | |
|---|---|---|
| | Girls | Boys |
| B | 2 | 19 |
| C | 37 | 47 |
| D | 34 | 26 |
| E | 26 | 8 |
| (Total | 91 | 843) |

The drop out rate for girls has been estimated to be at 19 per cent.

## 5.6 Analysis of the individual subjects.

Like above we have a fairly complete picture for the groups 84, 85 and 88 on the individual grades in the specific subjects. Some individual trainee result might be missing, but there is nothing to change the general pattern. Only in the 88 group we lack one whole trade, e.g. Mechanical Draughting.

Below we will analyse the grades given for the subjects of practical and theoretical application of the trade, plus the academic subjects of English and Mathematics.

### 5.6.1 Practical application.

This is supposed to be a measurement on how well the trainees will be able to master their skills in practical life. Therefore, a low grade in this field will hardly be a good base for a future career.

The standard in practical application has deteriorated over the years, if the criteria to set marks has been similar throughout the whole period. This trend can be related to the fact that trainees have been less experienced in the 88 intake.

Table 5.15 Grades in the practical application for the 84, 85 and 88 groups (percentages)

| Grade | Proportion of trainees | | |
|---|---|---|---|
| | 84 | 85 | 88 |
| A | 1 | 1 | 1 |
| B | 31 | 23 | 10 |
| C | 58 | 56 | 57 |
| D | 10 | 12 | 30 |
| E | 1 | 8 | 3 |
| (Total No | 179 | 157 | 221) |

For the 85 group there is a considerable "failure" rate in the practical application. This share is higher for the six trades, demanding a minimum qualification above the primary school examination, which can be related to the many unqualified trainees selected. Apart from this the trades with more experienced trainees

is on average distinctly above the ones not requiring anything but a basic qualification.

Table 5.16 Grades for the trainees in practical application divided by categories of trades for the 84, 85 and 88 groups (percentages)

| Grades | Proportion of trainees With previous experience | | | Without previous experience | | |
|---|---|---|---|---|---|---|
| | 84 | 85 | 88 | 84 | 85 | 88 |
| A+B | 40 | 30 | 21 | 22 | 16 | 1 |
| C+D | 60 | 60 | 78 | 76 | 77 | 95 |
| E | - | 10 | 2 | 3 | 7 | 4 |

From Table 5.16 we can deduct the importance of previous experiences. For group 84 few were enrolled into Moshi NVTC, without previous experiences, even in trades for which this was not a minimum criteria for selection.

What is here given can be used as an indication to discuss either the basis for selection of trainees, or the length and contents of the course offered.

5.6.2 Trade theory.

Grades for the theoretical part of the trades give a more varied picture compared to the practical application.

Table 5.17 Grades for trade theory for the groups 84, 85 and 88 (percentages)

| Grade | Proportion of trainees | | |
|---|---|---|---|
| | 84 | 85 | 88 |
| A | 1 | 1 | 1 |
| B | 30 | 22 | 16 |
| C | 41 | 40 | 47 |
| D | 22 | 23 | 28 |
| E | 6 | 15 | 8 |
| (Total No | 179 | 157 | 225) |

In theory the over-all grades are of a lower quality, compared to the practical one. Especially noticeable is the high "failure" rates.

Furthermore, we do not find the same kind of decline for the 88 group compared to the other two, even if the average result is worse. Somehow it seems to be a greater polarisation within the groups in the theoretical part of the training.

Table 5.18 Grades for the trainees in trade theory divided by categories of trades for the 84, 85 and 88 groups (percentages)

| Grades | Proportion of trainees With previous experience | | | Without previous experience | | |
|---|---|---|---|---|---|---|
| | 84 | 85 | 88 | 84 | 85 | 88 |
| A+B | 36 | 25 | 28 | 24 | 19 | 6 |
| C+D | 63 | 63 | 67 | 64 | 64 | 82 |
| E | 1 | 12 | 5 | 12 | 18 | 12 |

Comparing Tables 5.16 and 5.18 it seems that the previous experience has a greater impact on the practical skills, than the theoretical ones. It might also be that many are recommended, from the other NVTCs, for further training more on account of the practical ability.

### 5.6.3 English.

The official language of instruction within vocational training is to be English. Even if there are Tanzanian instructors in charge of a major part of the training, a role is also played by the Swedish expatriots. Furthermore, most of the teaching material is written in English. Some words from the trainees themselves;

> *Training should be in English since most technical books are in English, and it's also very common to work with foreigners at the industries.*
>
> *Those who come straight from primary school have great difficulties with English.*
>
> *The school should give the students an English test before they accept them.*

To be able to take part in the training a rather advanced level of English would be required. This is one point that we have heard numerous complaints on throughout the years. Trainees are said to be poor masters of this language. However, they are supposed to be taught specifically in this subject.

Table 5.19 Grades for English for the 84, 85 and 88 groups (percentages).

| Grades | Proportion of trainees | | |
|---|---|---|---|
| | 84 | 85 | 88 |
| A | 1 | 6 | 0 |
| B | 24 | 29 | 29 |
| C | 35 | 31 | 40 |
| D | 23 | 19 | 21 |
| E | 18 | 15 | 9 |
| (Total No | 179 | 157 | 225) |

In English we have somewhat of a reverse trend with better grades for the 88 group, at least a considerable lower "failure" rate. The over-all many E grades is a clear indication to the inability, to use English, as a medium of communication.

Table 5.20 Grades for trainees in English divided by categories of trades for the 84, 85 and 88 groups (percentages)

| Grades | Proportion of trainees | | | | | |
|---|---|---|---|---|---|---|
| | With previous experience | | | Without previous experience | | |
| | 84 | 85 | 88 | 84 | 85 | 88 |
| A+B | 32 | 47 | 44 | 14 | 22 | 16 |
| C+D | 58 | 43 | 52 | 56 | 58 | 70 |
| E | 10 | 10 | 5 | 30 | 20 | 14 |

From the information here given we can assume that there must be a wide variety in the knowledge of English for the different trades, as well as probably within the same classes. We can ask ourselves how the trainee, giving the following comment was able to follow teaching in English;

*I should be report of life at NVTC saw that language is not quantity of learnt and understand but no sweet I will try to understand very important to next year or before in year.*

It can here be pointed out that in the answers to questionnaires adminstrered at the centre in 1988, more than 90 per cent of trainees in the Tool & Die Maker, Machine Tool Repair, Industrial Electrical Fitter, Pipe Fitting & Boiler Mechanics and Electronics trades choose the option of English, instead of Kiswahili, to give their views.

It seems that the standard of English language used to be far too weak in the early years, especially in the trades not demanding any previous experiences.

The role of English, as a medium for instruction, has been questioned. After all the general policy in Tanzania has been for an increased use of Kiswahili, a language that is also being adapted to a more technological world. With a phasing out of expatriate instructors and a gradual introduction of Kiswahili for trade testing, the importance of English will be surrounded with doubt.

On the other hand if English will once again take a stronger position in formal schooling this must influence the role it will be given in vocational training. Otherwise the language issue can in itself constitute an instrument that will down-grade the status of VTCs in relation to, for example, secondary schools.

### 5.6.4 Mathematics.

One subsidiary subject deemed essential for any practical training must be Mathematics. Also this subject is included in the time-table.

The background in Mathematics is seemingly even worse than the one in English. Somehow it would indicate a need to either strenghten the emphasis on the academic subjects, or to lower the demands. The "failure" rate in both these subjects is much too high. The ultimate conclusion must be that either these subjects are not necessary for these trainees in their working career, or the centre is producing craftsmen with insufficient knowledge.

Table 5.21 Grades in Mathematics for the 84, 85 and 88 groups (percentages).

| Grade | Proportion of trainees 84 | 85 | 88 |
|---|---|---|---|
| A | 2 | 3 | 1 |
| B | 21 | 20 | 10 |
| C | 41 | 31 | 38 |
| D | 20 | 20 | 29 |
| E | 15 | 26 | 21 |
| (Total No | 179 | 157 | 225) |

What is said above is especially relevant to the trades without any previous experiences needed. A "failure" rate in Mathematics of close to one third for all the years here presented cannot be satsifactory.

The main issue would be to what extent the Mathematics taught is actually applicable to the trades offered. A comparision between grades given in individual subjects indicates that it is quite possible to manage fairly well in both trade practicals and application, without reaching a "necessary" standard in Mathematics.

Table 5.22 Grades for the trainees in Mathematics divided by categories of trades for the 84, 85 and 88 groups (percentages).

| Grades | Proportion of trainees With previous experience 84 | 85 | 88 | Without previous experience 84 | 85 | 88 |
|---|---|---|---|---|---|---|
| A+B | 33 | 31 | 19 | 12 | 11 | 4 |
| C+D | 64 | 47 | 70 | 58 | 55 | 65 |
| E | 3 | 22 | 12 | 31 | 31 | 31 |

For many of the trainees it seems to be difficult to reach up to an accepeable level in the academic subjects. This is most often related to the trades for which no special entry requirement is demanded.

It is questionable whether these basic trades will need the same kind of English and Mathematics courses, as for the more advanced courses. If the "failure" rate is too high it is not necessarily because of bad trainees, but rather that the curriculum is too complicated.

## 5.7 Some notes on attitudes developed at the centre.

Many of the trainees are rather uncertain, as to their technical interest at the start of the training. However, at the end of it all it seems that an absolute majority of them want to get into a technical working career. Not less than 95 per cent claimed that they would prefer a job within this field. Only two per cent indicated that they would like a non-technical employment. The rest would like to be employed in *"any kind of a job."*

Besides wanting to get employed in a technical sector it is obvious that, as many as 97 per cent, are actually expecting to get such an employment.

For the trades Pattern Maker, Refrigeration & Air Condition, Industrial Electrical Fitter, Electronics, Diesel Engine Mechanics and Tool & Die Maker trainees, seem to be very determined that they want to work within their own specialization. Further, it appears that few Machinery Fitters have any desire to enter for the more advanced courses of either Tool & Die Maker or Machine Tool Repair.

Many of the trainees from various trades seem to prefer some course related to motor vehicle mechanics, which could be a reflection of labour market demands.

## 5.8 Concluding remarks.

Trainees seem to be rather satisfied with the training conditions at Moshi NVTC. On the other hand the social situation at the campus is regarded as a negative feature.

Instructors and equipment are said to be of very high quality. However, many trainees would like the course to be prolonged for them to fully grasp the skills to be imparted. Further it might be adviceable that trainees are trained into greater flexibility. After all some might be attempting to establish themselves as self-employed.

For the total sample the drop out rate is below 10 per cent. If we exclude the planned over-enrolment done in 1986, it will even be

down to approximately 6 per cent. However, there is a large variations between different trades. As a general rule the seven trades with a "compulsory" entry requirement from either previous vocational training or secondary school are noted for a lower drop out rate.

Also the internal assessment is showing a better result for trades, with a higher entry qualification. To a certain extent the 85 group is an exception, which is probably caused by the fact that many of the trainees that year was accepted without fulfilling the actual criteria for selection.

The trends have been that grades are lowered somehow over the years.

If we combine the drop out and failure rates a distinct difference, between the trades demanding previous experiences and the other ones is appearing, to the advantage of the former. Further secondary school, and to a certain extent previous vocational training, are definitely backgrounds that make trainees better prepared to pass through the centre in a satisfactory way.

A comparison shows that girls are on the average getting lower marks, than the boys. However, this must at the same time be connected to previous experiences and the trades selected for.

Grades in trade specialization are better, than the ones for academic subjects. This is so especially for the practical application part.

Results in English and Mathematics must be evaluated, as below standards, particularly for trainees in trades without entry qualification above primary school. This must point towards the need for a review of either selection criteria or the curriculum. In relation to English it is difficult to understand how some of the trainees are actually able to follow any kind of training conducted using that language, as a medium of instruction.

A final point here could be that it seems that an interest in technical issues is transferred to the trainees. This was not an undivided feature, characterizing them at the start of the courses. In the next chapter we will try to investigate how this factor can actually be utilized in an anticipated working career.

# 6. *MOSHI NVTC TRAINEES AND THEIR INITIAL CONTACTS WITH THE INDUSTRIAL REALITY*

After the initial one or two years of institution-based training the next step is supposed to be inplant apprenticeship. This can also be a direct introduction to an industrial company for a future working career.

As noted above the vocational training basic certificate might not be much of a merit in the competition for industrial work. Therefore a special trade test is organized graded I-III, of which I is the highest level. Actually the NVTD was first established to carry out the trade testing. Trade tests are administrated in a wide variety of trades, in most cases without any direct relation to any vocational training.

This chapter will analyze the result in the trade testing for Moshi NVTC trainees. To what extent are they able to acquire the formal certification to show their abilities?

Thereafter, we will study the success in getting inplant placement or to be employed. As will be obvious the border-line between these two is not as distinct, as would have been desirable.

## 6.1 Trade testing.

### 6.1.1 Some views on the trade testing.

After the institutionalized training at Moshi NVTC, trainees are to try for a trade test grade III. If successful in this one, the trainee will be able to pass the higher grades, during the inplant training. To achieve this, further theoretical knowledge is supposed to be acquired through evening classes.

Trade test results are particularly important to those ones getting employed within the Government or parastatal sector. Salary scales, and even the possiblity to be employed, depends on this. During some industrial interviews in Kilimanjaro/Arusha regions it was said, that;

> *Even if you are a good fundi you have to show it by a grade.*
>
> *Trade test is a good measure.*
>
> *Trade test is the only fair way of doing it.*

However, in the private sector many employers have a small interest in this test. Some examples of the negative sentiments read thus;

*To me trade tests are not useful*

*Trade tests irrelevant, only skills and interest counts.*

*I will see myself who is good.*

*Only I can measure the skills myself, according to my needs.*

Private employers are more valuating the trainee ability in a way they themselves regard as relevant. In most cases this is done during a trial employment. We have to keep this in mind, as we account for the numbers passing through a trade test. In some cases it has been deemed of no value to both the employer and the employee in his/her profession.

Some of the inplant trainees have complained, due to the fact that they have not been given a chance to particiapte in the test.

*Whenever a trade test is performed the school should inform the employer with a letter, so that the employer cannot stop the students from doing the test. Now employers see the trade test as a waste of money and it also forces them to raise the salary if students pass the test.*

*My company will not pay for me to go to Moshi for trade test. I have to pay myself.*

It was claimed by this particular trainee that it would cost him salary for one month and a half to pay for the travel himself. That can be seen as an explaination to why some of the trainees will never try at all.

### 6.1.2 Trade test results.

For the analysis below we have trade test results up to 1991. We will only rely on what has been found in the official inplant lists, which in many cases differs from what the trainees claim themselves. These ones are often unwilling to admit to failures in the tests. Data here given should be a fair reflection, as to the over-

all situation up till that time, even if some reservations have to be made.

For trainees in groups 84, 85, 86 and 87 we can assume that only a few odd ones will try at the lowest level (grade III), at a later stage. However, this cannot be ruled out on account of the latest (88) group. Further attempts at upgrading, to I or II, can be found among all trainees.

Table 6.1 Highest trade test result attained by all trainees

| Grade | Number of trainees | | | | | |
|---|---|---|---|---|---|---|
| | 84 | 85 | 86 | 87 | 88 | Tot |
| I | 16 | 10 | 17 | 13 | - | 56 |
| II | 19 | 28 | 41 | 24 | 17 | 129 |
| III | 58 | 32 | 61 | 48 | 50 | 249 |
| Total | 93 | 70 | 119 | 85 | 67 | 434 |

A total of 434 trainees (41 per cent) have been successful in a trade test at any level. Strangely enough, as will be obvious below, even trainees noted for an aggregate E (failure), are trying for trade tests and will even pass in some instances. Below we will analyze the results per trade for the five groups individually.

6.1.2.1 The 84 group.

Within the first group 93 individuals, or 49 per cent, have passed a trade test at any level.

In Tool & Die Maker all trainees have been able to pass a trade test. A high pass rate is also noted for Instrument Mechanics (93 per cent), Pipe Fitting & Boiler Mechanics (86), Electronics (61) and Diesel Engine Mechanics (58). In all other trades less than 40 per cent have been able to pass, even the lowest grade.

We can note that in three trades, e.g. Machine Fitter, Machine Tool Repair and Mechnical Draughting a high proportion have sat for the test, but unsuccessfully. For all the trades, 43 trainees have attempted, without ever making it, which will give a total failure rate at the lowest level of 32 per cent. Apart from this numerous failures have been noted at grade I and II.

Table 6.2 Highest level of pass in trade tests for the 84 group

| Trade | Number of trainees | | | |
|---|---|---|---|---|
| | I | II | III | Tot |
| Tool & Die Maker | 3 | 3 | 7 | 13 |
| Instrument Mechanics | - | 3 | 10 | 13 |
| Machinery Fitter | - | 3 | 5 | 8 |
| Refrigeration & Air Condition | - | 1 | 2 | 3 |
| Foundry | 2 | - | - | 2 |
| Pipe Fitting & Boiler Mechan | - | 5 | 7 | 12 |
| Electronics | 5 | - | 6 | 11 |
| Pattern Maker | 2 | - | - | 2 |
| Machine Tool Repair | - | - | 4 | 4 |
| Mechanical Draughting | - | - | 7 | 7 |
| Industrial Electrical Fitter | - | 2 | 3 | 5 |
| Diesel Engine Mechanics | 3 | 2 | 6 | 11 |
| Black Smith General | 1 | - | 1 | 2 |
| Total | 16 | 19 | 58 | 93 |

Out of the trainees passing through the basic training at Moshi NVTC a total of 72 per cent have at least tried for a trade test. As noted above we can assume that few, if any of the remaining ones will ever register for such a test, except in trying to upgrade the present level.

6.1.2.2 The 85 group.

For this group 70 trainees (45 per cent) have ever made it in the trade test. Another 37 (35 per cent) have failed the test.

A high pass rate is here found for the trades of Machine Tool Repair (88 per cent), Tool & Die Maker (70) and Instrument Mechanics (64).

Trades with a substantial failure rate is Electronics, Industrial Electrical Fitter and Diesel Engine Mechanics. The basic reason for this must once again be found in the fact that these trades selected a high number of unqualified trainees, for this particular group, of which many did fail in the aggregate grade. Still they have been given a chance to sit for a trade test.

The 85 group in the Electronics trade must be a varied one, as it does also include a high proportionate share of trainees, passed for grade I and II.

Table 6.3 Grades in the trade test per trade the 85 group

| Trade | Number of trainees I | II | III | Tot |
|---|---|---|---|---|
| Tool & Die Maker | - | 4 | 3 | 7 |
| Instrument Mechanics | 1 | 2 | 6 | 9 |
| Machinery Fitter | - | 4 | 4 | 8 |
| Refrigeration & Air Cond | 1 | 2 | 1 | 4 |
| Foundry | - | - | 2 | 2 |
| Pipe Fitting & Bolier Mechan | - | 4 | 2 | 6 |
| Electronics | 4 | 3 | 1 | 8 |
| Machine Tool Repair | 2 | - | 5 | 7 |
| Industrial Electrical Fitter | - | 1 | 4 | 5 |
| Diesel Engine Mechanics | - | 5 | 3 | 8 |
| Black Smith General | 2 | 3 | 1 | 6 |
| Total | 10 | 28 | 32 | 70 |

In all 68 per cent of the trainees in the 85 group have tried to sit for a trade test. Like in the previous group we can expect few of the remaining ones, to try at the lowest level.

6.1.2.3 <u>The 86 group.</u>

In the somewhat larger 86 group a total of 119 trainees (52 per cent) have, up till now (1991), passed a trade test.

An acceptable pass rate is found within the trades; Electronics (84 per cent), Machine Tool Repair (75), Diesel Engine Mechanics (71) and Pipe Fitting & Boiler Mechanics (63).

Few (24) have actually failed in the trade test among this particular group. Still we find a high failure rate within Instrument Mechanics, Machine Fitter and Industrial Electrical Fitter trades.

Table 6.4 Trade test grades for the 86 group

| Trade | Number of trainees I | II | III | Tot |
|---|---|---|---|---|
| Tool & Die Maker | 1 | 2 | 1 | 4 |
| Instrument Mechanics | - | 1 | 3 | 4 |
| Machinery Fitter | 2 | 6 | 5 | 13 |
| Refrigeration & Air Condition | 4 | 2 | 2 | 8 |
| Foundry | - | 1 | 2 | 3 |
| Pipe Fitting & Boiler Mechanics | - | 4 | 6 | 10 |
| Electronics | 2 | 5 | 9 | 16 |
| Pattern Maker | 3 | 5 | 1 | 9 |
| Machine Tool Repair | - | 2 | 7 | 9 |
| Mechanical Draughting | - | 7 | 6 | 13 |
| Industrial Electrical Fitter | 1 | - | 8 | 9 |
| Diesel Engine Mechanics | 2 | 5 | 8 | 15 |
| Black Smith General | 2 | 1 | 3 | 6 |
| Total | 17 | 41 | 61 | 119 |

An unexpectably high pass rate is noted for Mechanical Draughting. Inspite of the fact that many were given an aggregate E after one year, some had a basic certificate after the second one. However, the many E:s would indicate a poor quality, which is contradicted by the information given in Table 6.4. We have no way of explaining this obvious dichotomy.

6.1.2.4 The 87 and 88 group.

These two groups cannot be treated in the same manner as the other three commented on. For the 87 group, in all 85 trainees (38 per cent) have managed to get a pass in a trade test, while 25 have been failures so far. There is a possibility that some more will try for the first time at a later stage, which would bring up the low proportionate pass rate.

A high pass rate so far has been noted for Tool & Die Maker (77 per cent), Pattern Maker (71), Machine Tool Repair (69) and Diesel Engine Mechanics (60).

Table 6.5 Trade test results for group 87

| Trade | Number of trainees I | II | III | Tot |
|---|---|---|---|---|
| Tool & Die Maker | 2 | 3 | 6 | 11 |
| Instrument Mechanics | - | - | 3 | 3 |
| Machine Fitter | 1 | 2 | 4 | 7 |
| Refrigeration & Air Condition | 1 | - | 3 | 4 |
| Foundry | - | 3 | - | 3 |
| Pipe Fitting & Boiler Mechanics | - | 3 | 2 | 5 |
| Electronics | 2 | 2 | 8 | 12 |
| Pattern Maker | 2 | 3 | 5 | 10 |
| Machine Tool Repair | 1 | 5 | 5 | 11 |
| Industrial Electrical Fitter | - | 2 | 4 | 6 |
| Diesel Engine Mechanics | 4 | - | 8 | 12 |
| Black Smith General | - | 1 | - | 1 |
| Total | 13 | 24 | 48 | 85 |

For the 88 group only 67 have so far passed a trade test successfully. This proportionate share of 26 per cent can be expected to increase substanially in the coming trade tests.

6.1.2.5 Summary of trade test results.

From the above we have seen that 434 trainees have passed a trade test at any grade. An absolute majority of them (57 per cent) have not been able to go above grade III, that is supposed to be taken in between the institution-based training and the apprenticeship period. Not less than 38 and 56 trainees, passed for grades I and II respectively in the latest test held in 1991.

In addition to this 139 trainees have never been successful in their attempts for a trade test, making it a failure rate of 24 per cent. To complete the picture another 482 out of the total candidates, actually completing at least one year at Moshi NVTC, have never even tried to get a trade test. This information could underline the necessity to over-haul the entire trade testing system.

Looking at the first three groups (84, 85 and 86) we can note that close to 50 per cent have been able to pass for a trade test. Among them 15 per cent have been at grade I, with another 31 per cent at grade II. One third of the trainees, within these three groups, have never tried to sit for a trade test

One of the problems so far has been a certain irregularity in the arrangement of the tests. There has not been a possibility given for some trades to enter for a test at all. With this in mind we have compiled the individual groups per trade for a comparison.

Table 6.6 Trade test results for all groups

| Trade | Number of trainees | | | | | |
|---|---|---|---|---|---|---|
| | I | II | III | Sub-tot | Fail | Tot |
| Tool & Die Maker | 6 | 14 | 21 | 41 | 10 | 51 |
| Instrument Mechanics | 1 | 6 | 23 | 30 | 12 | 42 |
| Machinery Fitter | 3 | 19 | 26 | 48 | 27 | 75 |
| Refrigeration & Air Condition | 6 | 7 | 13 | 26 | 9 | 35 |
| Foundry | 2 | 7 | 9 | 18 | - | 18 |
| Pipe Fitting & Boiler Mechanics | - | 16 | 24 | 40 | 4 | 44 |
| Electronics | 13 | 10 | 29 | 52 | 20 | 72 |
| Pattern Making | 7 | 8 | 12 | 27 | - | 27 |
| Machine Tool Repair | 3 | 7 | 24 | 34 | 7 | 41 |
| Mechanical Draughting | - | 11 | 13 | 24 | 10 | 34 |
| Industrial Electrical Fitter | 1 | 5 | 20 | 26 | 20 | 46 |
| Diesel Engine Mechanics | 9 | 13 | 29 | 51 | 14 | 65 |
| Black Smith General | 5 | 6 | 6 | 17 | 6 | 23 |
| Total | 56 | 129 | 249 | 434 | 139 | 573 |

Two trades are accounted for a higher failure rates in the trade tests, compared to the rest, e.g. Industrial Electrical Fitter (43 per cent), Machine Fitter (36). From this we can reiterate the question why Machine Fitter is offering a double intake. For Industrial Electrical Fiitter it is noticeable that many, with an E from the 85 group is adversely effecting the figure.

Electronics is the only trade with any substantial number of trainees at the grades I and II. At the same time there is also a failure rate above average, noted for this particular trade.

A high proportion of grades I and II:s are also found for Tool & Die Maker, Refrigeration & Air Condition, Pattern Maker and Diesel Engine Mechanics trades.

The fact that we find no failures in Foundry, and partly Pattern Maker, can be related to a low number entering for the tests.

To get a fair representation of how well the various trades have been doing in the trade tests the total proportion of passes can be compared to trainees, reaching the end of the first year of training.

Table 6.7 Share of trainees reaching the end of the first year passing a trade test per trade (percentages).

| Trade | Share of trainees, with pass in trade test |
|---|---|
| Tool & Die Maker | 71 |
| Machine Tool Repair | 60 |
| Electronics | 55 |
| Pipe Fitting & Boiler Mechanics | 54 |
| Diesel Engine Mechanics | 53 |
| Pattern Maker | 51 |
| Mechanical Draughting | 43 |
| Instrument Mechanics | 41 |
| Refrigeration & Air Condition | 34 |
| Machine Fitter | 31 |
| Industrial Electrical Fitter | 29 |
| Foundry | 22 |
| Black Smith General | 19 |

With a few variations this kind of a ranking of trades is fairly similar to the results given in Table 5.10 above. The obvious (and unexplainable) exception being Mechanical Draughting.

Trainees within trades not demanding a previous experience before entering do not seem to have the same chance of success at Moshi NVTC. On the average only 31 per cent of them have been noted for a pass in the trade test, compared to 52 per cent for the other seven trades. This is inspite of the low figure found for Industrial Electrical Fitter.

### 6.1.3 Trade test results correlated to other background variables

A higher proportion of the trainees, with a secondary school backgound (61 per cent), have tried for a trade test compared to the ones with only primary education (49 per cent). We can also register a higher pass rate for the former secondary school pupils.

Among trainees with a previous vocational training, as many as 67 per cent have been doing a trade test in their new trade. Many of them do have an approved trade test result, in another trade, even at the time of entering Moshi NVTC.

Table 6.8 Trade test results correlated to school background (percentages).

| Grade | Trainees from Primary school | Secondary School |
|---|---|---|
| I | 10 | 9 |
| II | 20 | 25 |
| III | 41 | 47 |
| Failure | 29 | 19 |
| (Total | 318 | 246) |

Table 6.9 Trade test results for trainees with a previous vocational training (percentages).

| Grade | Trainees with previous VTC |
|---|---|
| I | 13 |
| II | 19 |
| III | 48 |
| Failure | 20 |
| (Total | 270) |

Among the group with previous relevant working experiences only 58 per cent have tried for a trade test. In this category 30 per cent were noted as failures. Like in the case of trainees, with previous vocational training, many would have passed a trade test in some trade before entering Moshi NVTC.

One relationship to be expected could be a correlation between internal grading and the trade tests.

As expected there is a strong correlation between the internal assessment at Moshi NVTC to the one represented by the trade testing system. This in itself could increase the value of the basic certificate, especially in view of the fact that many are not able to sit for the trade test. However, as was seen above the basic certificate is not worth much at the labour market.

Table 6.10 Grades related to trade tests (percentages)

| Grade | Proportion of trainees | | | | |
|---|---|---|---|---|---|
| | B | C | D | E | Tot |
| I | 19 | 11 | 3 | - | 10 |
| II | 39 | 18 | 18 | 6 | 21 |
| III | 42 | 50 | 40 | 26 | 44 |
| Failure | 1 | 22 | 38 | 68 | 24 |
| (Total No | 96 | 237 | 87 | 34 | 454) |

Note: Information on internal grading is missing for many trainees

Failure in trade tests is in very few cases registered in the practical component. Most of the time an unsatisfactory result is noted for the theoretical part. This would imply a need to tie the evening classes closer to the inplant training.

It can be noted that it is now possible to do the trade test in Kiswahili, for the grade III level. Therefore, the obvious shortcomings in the ability to master English should not be a barrier to pass a trade test.

Out of a total of 106 girls completing the first year at Moshi NVTC 55 trainees have tried for a trade test. So far 39 (37 per cent) have been successful, with eleven of them at grade II, and one at grade I.

## 6.2 Activity after the institution-based training.

Trade testing and internal assessments are essential to evaluate how well the training is functioning. However, the rate of success for any educational programme must, in the final analysis, be measured against its effect in placing the students/trainees on the labour market in some kind of a relevant occupation. This kind of an assessment can never be undisputable, as there are many factors influencing employment status.

One basic aspect in any evaluation of this kind is naturally the labour market conditions. In chapter 3 we gave an account of the present state of affairs in Tanzania. From this it should be obvious that wage employment is more or less a privilege for a small minority.

At the same time some kind of education above the primary level is not very common, why this can be the advantage, that will ultimately give a working opportunity. From the above it is obvious that many of the trainees at Moshi NVTC not only have this background, but also secondary schooling and/or another vocational training.

Socio-economic factors cannot be disregarded in this respect either. Here it is obvious that a high proportion of the trainees are coming from families high up on the social ladder. This will enable contacts and influence in the competition for work.

Furthermore, the inplant posting can in itself be an important first introduction to an employer that will in due course be confirmed.

Irrespective of these issues, however, there is no reason to neglect the impact of Moshi NVTC on the labour market.

As was said, on methodology, in chapter 2 what is here presented cannot claim to follow a "scientific" tracer study approach. It has always been easier to find former trainees in employment. Furthermore, the data collection is done over a considerable period of time. In some cases we have not been able to reach a contact until after many attempts. Therefore, if somebody is given as employed that might in a few cases be of a temporary nature.

Our intention has been to take a rather pragmatic view of the tracer study. It is our belief that what is presented below gives a fairly accurate picture of the actual situation. This is so especially due to the fact that we have reached a high proportionate response rate. Many of the trainees have been responding to our queries at many occasions.

Most of the interviews have been conducted in 1988-89. In addition to this we have tried to illuminate some specific issues at a later stage. From this we have been able to get a further confirmation of our previous results.

The only groups that we can use for any meaningful discussion are 84, 85 and 86. For the other two ones any tracer study would rather be a check up on inplant postings. Below the five groups will be presented individually. It can be pointed out that there is a difference between this data compared to preliminary ones given at earlier stages. The main reason for this is that we have eliminated the drop outs from the final account.

6.2.1 The 84 group.

During our search we have been able to establish the activities of 147 out of the trainees, which gives a coverage rate of 77 per cent.

Table 6.10 Activities after training among the 84 group

| Trade | EM | IN | SEM | TR | UE | Tot |
|---|---|---|---|---|---|---|
| Tool & Die Maker | 11 | - | - | - | 1 | 12 |
| Instrument Mechanics | 8 | - | 2 | - | 1 | 11 |
| Machinery Fitter | 10 | 1 | 1 | - | - | 12 |
| Refrigeration & Air Condition | 13 | - | 1 | - | - | 14 |
| Foundry | 6 | - | - | - | - | 6 |
| Pipe Fitting & Boiler Mechanics | 9 | - | - | - | 2 | 11 |
| Electronics | 15 | - | - | - | - | 15 |
| Pattern Maker | 6 | - | - | - | - | 6 |
| Machine Tool Repair | 7 | - | - | - | - | 7 |
| Mechanical Draughting | 7 | - | - | - | 5 | 12 |
| Industrial Electrical Fitter | 11 | - | - | 1 | 1 | 13 |
| Diesel Engine Mechanics | 12 | - | 3 | 1 | 1 | 17 |
| Black Smith General | 10 | - | 1 | - | - | 11 |
| Total | 125 | 1 | 8 | 2 | 11 | 147 |

Note: EM=Employed, IN=Inplant, SEM=Self-employed, TR=Training, UE=Unemployed

If we include the only one said to be in inplant training among the employed ones we get a share in this category of 86 per cent. He is doing this after further training in Machine Tool Repair, and as such is also included in the 88 group.

Few of the trainees are found within self-employment, which in reality can be assumed to be somewhat higher proportionately.

Apart from the trade of Mechanical Draughting there are only some odd cases of unemployment. The proportion would be 7.5 per cent, if this figure was to be representative for the whole sample.

A total of 43 trainees have not been reached in this search. It can be assumed that a higher proportion of these ones are unemployed, as the easiest way of finding the former trainees is within the industries. However, it is highly unlikely that the unemployment rate would exceed some 10 to 15 per cent. Below, this issue will be dealt with further.

### 6.2.2 The 85 group.

For the 85 group a special attempt was made in 1989 to find, as large a proportion as possible of the trainees. Due to this special effort we reached a coverage rate of 87 per cent. We were also told about two others, that were deceased.

Table 6.11 Activities after training of the 85 group

| Trade | EM | IN | SEM | TR | UE | Tot |
|---|---|---|---|---|---|---|
| Tool & Die Maker | 3 | 5 | 2 | - | - | 10 |
| Instrument Mechanics | 2 | 3 | 1 | 1 | 5 | 12 |
| Machinery Fitter | 8 | 7 | 1 | 1 | 1 | 18 |
| Refrigeration & Air Condition | 3 | 6 | - | - | 2 | 11 |
| Foundry | 6 | 3 | 1 | - | - | 10 |
| Pipe Fitting & Boiler Mechanics | 3 | 7 | 1 | 1 | 1 | 13 |
| Electronics | 5 | 7 | 2 | - | - | 14 |
| Machine Tool Repair | 5 | 4 | - | 1 | - | 10 |
| Industrial Electrical Fitter | 5 | 7 | 3 | - | - | 15 |
| Diesel Engine Mechanics | 8 | 4 | 2 | - | - | 14 |
| Black Smith General | 5 | 4 | - | - | - | 9 |
| Total | 53 | 57 | 13 | 4 | 9 | 136 |

Note: EM=Employed, IN=Inplant training, SEM=Self-employed, TR=Training, UE=Unemployed.

For this group there is still a large proportion that are termed as inplant trainees. These ones together with the ones employed are making up a total of 81 per cent.

The higher share of self-employed can be attributed to the fact that we had a more intensive search among this group. Eight out of the 13 were found in an attempt to find a selected group of trainees, which had not replied to our questionnaires previously.

One reason why it is harder to find the self-employed is that they are involved in unregistered activities, which at least sometimes borders illegality. At least they might have broken an inplant training contract and are unwilling to let themselves be known.

Inspite of the special search the proportion of unemployed was not raised to any extent. It is still not more than 7 per cent among those we got data on. If all the 15 still not found were to be unemployed, which is highly unlikely, this share would increase to

16 per cent. This would give credibility to the assumption made above for the 84 group.

### 6.2.3 The 86 group.

Within this particular group there is still a high share left in inplant training. For these trainees we have been able to find 73 per cent. Like in the 85 group two trainees had died since leaving the centre.

Table 6.12 Activity for the 86 group.

| Trade | EM | IN | SEM | TR | UE | Tot |
|---|---|---|---|---|---|---|
| Tool & Die Maker | 1 | 5 | - | - | - | 6 |
| Instrument Mechanics | 2 | 5 | - | - | - | 7 |
| Machinery Fitter | 8 | 16 | - | 2 | 3 | 29 |
| Refrigeration & Air Condition | 6 | 5 | 2 | - | 1 | 14 |
| Foundry | 3 | 6 | 1 | - | 1 | 11 |
| Pipe Fitting & Boiler Mechanics | 4 | 5 | - | 1 | 1 | 11 |
| Electronics | 2 | 10 | - | - | 2 | 14 |
| Pattern Maker | 2 | 6 | - | - | - | 8 |
| Machine Tool Repair | 3 | 5 | - | - | 3 | 11 |
| Mechanical Draughting | 3 | 2 | 1 | - | 6 | 12 |
| Industrial Electrical Fitter | 3 | 10 | 1 | - | - | 14 |
| Diesel Engine Mechanics | 5 | 15 | - | - | - | 20 |
| Black Smith General | - | 10 | - | - | - | 10 |
| Total | 42 | 100 | 5 | 3 | 17 | 167 |

Note EM=Employed, IN=Inplant training, SEM=Self-employed, TR=Training, UE=Unemployed.

The unemployment pattern seem to be slightly different in this group, compared to the previous two ones. First of all it is slightly higher at 10 per cent.

Further we can note that most of the respondents regard themselves to be still in inplant training. However, the difference between inplant and working is often a matter of semantics, as Moshi NVTC is probably not aware, and in contact with many, of these ones. Further the training part is often totally neglected by the "employer".

### 6.2.4 The 87 and 88 groups.

For these two groups we have made interviews during the inplant training only, or with the ones met while looking for others. We have encountered only 125 from the 87 group, or a coverage rate of 56 per cent. An absolute majority of them, 101 trainees (81 per cent), were regarding themselves to be in inplant. Of the others, twenty were working and four in training.

In the 88 group we have got knowledge on 183 trainees (72 per cent). All but five were in inplant training.

No specific comments will be made on the 87 and 88 groups. However, in view of the fact that the selection has changed it could be of interest to follow up these trainees more closely at a later stage.

## 6.3 Trainees in employment.

From the 84, 85 and 86 groups a total of 220 trainees (49 per cent) were in formal employment, of some kind. In almost all cases the work done is to be found within a technical/practical field, related to the training.

In an attempt, carried out in 1989, to follow up specifically on the 85 group it was found out that 76 per cent worked directly in the trade trained for. However, it is often difficult from answers in a questionnaire to determine the precise nature of the job done.

It might be that the job is not exactly the one trained for specifically. During interviews we have found many such variations; Pipe Fitter & Boiler Mechanics as plumbers, Diesel Engine Mechanics as motor vehicle mechanics, Tool & Die Makers as fitter & turners, Black Smiths as welders, Electronics within electrical installations and Pattern Makers as carpenters. These results seem to be a fair representation of actual demands from the employers point of view.

A special effort was done in 1990 to find out more about the specialized trades and their applicability on the labour market. Five trades were chosen in this survey, e.g. Tool & Die Maker, Foundry, Pattern Maker, Machine Tool Repair and Diesel Engine Mechanics. The total sample for this exercise was 73 former trainees, for which we reached a coverage rate of 63 per cent. This consists of either personal face-to-face interviews or replies to a questionnaire.

The information acquired can be divided into four categories;

(i) those working fully in the specialized trade
(ii) to a certain extent
(iii) based on another vocational training
(iv) not at all.

Table 6.13 Work in specialized trade or not

| Extent of work in trade | No | (%) |
|---|---|---|
| Fully | 19 | (41) |
| To a certain extent | 17 | (37) |
| Other vocational training | 9 | (20) |
| Not at all | 1 | (2) |
| Total | 46 | |

Obviously even the very specialized training offered at Moshi NVTC is being used, even if it is very hard to determine the extent. If we try to break down the informtion further it can be noted that seven out of twelve trainees in the Tool & Die Maker trade, are actually employed as such. Further five out of the nine foundry men are working fully in the trade.

On the other hand five out of 13 Diesel Engine Mechanics are claiming to work entirely within the specialized sector. For the rest we can assume that they are motor vehicle mechanics, possibly sometimes handling a diesel engine. Similarly, only two out of nine Machine Tool Repairers are within their particular trade.

Among the Pattern Makers only three individuals were found, of which one worked specifically as trained.

Some aspects, if not decisive conclusions, can be drawn from this data. There has been a certain demand for these more specialized training. However, it might not take long to fill up such requirements. An industrial survey to determine the needs could be welcome. From interviews carried out so far in the industries it has been obvious that more basic skills is what is mainly asked for. Employers often express their desires to participate in the more specialized training themselves.

To the individual the specialization might work in two ways. On the one hand an extra skill can be an advantage in applying for employment. However, some employers are of the opinion that too qualified a worker will only demand a higher salary, above what is anticipated to be worthwhile.

In the final analysis we have to ask ourselves if the trainee is really interested in a prolonged training, without being able to find an absolute advantage in terms of increased salaries or other benefits. Above we saw that it was difficult to fill up the vacancies for the more specialized trades.

Some further data will be given on the employment situation, in the next chapter, as it is related to the local labour market conditions in Arusha and Kilimanjaro regions.

## 6.4 Inplant trainees.

Among the first three groups there were a total of 158 inplant trainees found. These constitute 35 per cent of the trainees located. Most of them were found in either Kilimanjaro or Dar es Salaam, followed by Arusha. Actually for trainees in other locations there can hardly be any opportunity to follow evening classes, that are normally a requirement to be able to pass the theoretical part of the trade test.

Table 8.6 Location of the inplant trainees in groups 84, 85 and 86

| Region | Number | (%) |
|---|---|---|
| Dar es Salaam | 56 | (36) |
| Kilimanjaro | 53 | (34) |
| Arusha | 18 | (12) |
| Tanga | 9 | (6) |
| Morogoro | 7 | (5) |
| Mwanza | 6 | (4) |
| Dodoma | 3 | (2) |
| Iringa | 2 | (1) |
| Zanzibar | 1 | (1) |
| Total | 155 | |

Vocational training as provided by Moshi NVTC is a mixture of an institutional course and industrial apprenticeship. In discussions it is often heard that this set up is motivated by the cost-sharing

aspect. The Tanzanian industry is supposed to carry its part of the financial burden for this kind of a fairly expensive education.

Inplant training must also be seen from the point of view of its pedagogical value. However, to realize this objective,there must be a very close integration of the total four years of training. So far this has been grossly neglected. Within Moshi NVTC inplant training has been handled, as a part time assignment by one of the instructors.

Now it seems that a new approach will be employed, by moving some of the responsibility over to the individual workshops. There has also been attempts to introduce a log-book.

Apprenticeship training is detailed in the Vocational Training Act. For every single inplant arrangement a contract shall be worked out and accepted by the Director of Vocational Training. However, the first six months are supposed to constitute a period of probation, which can be terminated by either party.

After a completed apprenticehip the employer shall make out an apprenticeship certificate.[1] This is supposed to replace the basic certificate.

In respect of inplant training it seems that the reality is somwhat different from the strict rules set. As an example from the survey mentioned on the specialized trades it was noted that out of the 46 trainees contacted only eight had a total cycle of four years of training. Out of the others, 16 had never ever started as apprenticees, while 22 interupted this activity within one or two years. Therefore, it can be important to scrutinize the posting to inplant a bit closer, as after all trainees without a total four year of training can strictly seen be regarded as drop outs.

### 6.4.1 Postings as inplant trainees.

Each year a list of inplant placement is compiled for national vocational training centres, such as Moshi NVTC. From this one we can find that 595 trainees, in all five groups, have got their postings in various establishments.

Out of the inplant placements, as given in Table 6.14, a total of 360 trainees had only one year at Moshi NVTC.

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[1] Republic of Tanzania (1974): *Vocational Training Act.*

Table 6.14 "Official" inplant placement groups 84 to 88

| Trade | Number of trainees 84 | 85 | 86 | 87 | 88 | Total |
|---|---|---|---|---|---|---|
| Tool & Die Maker | 7 | 7 | 2 | 3 | 11 | 30 |
| Instrument Mechanics | 6 | 7 | 9 | 11 | 4 | 37 |
| Machine Fitter | 11 | 16 | 28 | 25 | 37 | 117 |
| Refrigeration & Air Condition | 7 | 10 | 8 | 3 | 15 | 43 |
| Foundry | 1 | 9 | 1 | 5 | 11 | 27 |
| Pipe Fitting & Boiler Mechanics | 12 | 8 | 5 | 2 | 11 | 38 |
| Electronics | 9 | 11 | 17 | 7 | 11 | 55 |
| Pattern Maker | 3 | - | 4 | 7 | 11 | 25 |
| Machine Tool Repair | 5 | 8 | 10 | 15 | 11 | 49 |
| Mechanical Draughting | 4 | - | 3 | - | 6 | 13 |
| Industrial Electrical Fitter | 5 | 10 | 13 | 9 | 14 | 51 |
| Diesel Engine Mechanics | 5 | 13 | 8 | 11 | 18 | 55 |
| Black Smith General | 4 | 15 | 4 | 16 | 16 | 55 |
| Total | 79 | 114 | 112 | 114 | 176 | 595 |

According to this list it seems to be particularly difficult to place trainees from Mechanical Draugthing and Foundry. This has been confirmed by some of the trainees in Mechanical Draughting:

> *The schools should help the students to find inplant jobs to a much greater extent. In my class only two (out of 20) students were placed for inplant. This is due to the fact that the Tanzanian industry do not use Mechanical Draughting. It's considered execible.*

> *It was a waste of time and money spent one year at Moshi, since it's impossible to find a job within my trade.*

A foundry trainee was simply transferred within his company of inplant training to a workshop, without his trade. Instead he was used as a welder.

For most of the other trades 50 to 60 per cent have been posted. Only Machine Tool Repair (86 per cent) and Machine Fitter (76 per cent) is substantially above this average share.

Besides Foundry and Mechanical Draughting, it seems that Instrument Mechanics is also a difficult trade to get inplant placement in, even if this is not obvious from Table 6.14. It was said to be unfamiliar to many employers;

*That is the reason, we are looking for inplant training without success, from one industry to another.*

*Since I have completed my course in Moshi Vocational Training Centre in 1985 till now I have not been employed the reason is that many industries and organizations there have no post of instrument mechanics.*

*It's useless to train so many Instrument Mechanics, as we cannot find jobs, and if you cannot find a job, you soon forget what you have learnt.*

The fact that as many as 44 per cent of the trainees are not placed for inplant is, of course, in itself a serious predicament, both for the vocational training organization and the individual;

*But unfortunately after my training the government failed to give me a job for further practice... I tried my level best to find a job on my own but the qualification I had was so low for the requirements of various employers.*

*...useless because I'm staying home with my family in the village doing farm work.*

Normally the inplant training is arranged within some industrial establishment. However, some of them have been retained at Moshi NVTC, in all 31 ones in the groups 84 to 88. This has been either as TA:s (Technical Auxiliaries) or for specialized tasks within a rehabilitation project for Tanga and Mwanza NVTCs.

All TA:s are supposed to have a secondary school examination, and will function as a kind of extra instructors. Apart from that they are regarded as other inplant trainees.

It has often been claimed by the inplant training officer at Moshi NVTC that it has been difficult to place the female trainees, but an extra effort is done on this account. We can note that within the first five groups 57 girls (52 per cent) have appeared in the inplant lists.

During our continuous tracer study we have made numerous attempts to check up on the actual place for the inplant trainees. This gives a very divergent picture from what is given officially. Some trainees will not turn up and others will be rejected by the suggested "employer".

*Some of our industries have refused to allow us to be inplant training in their industries once they notice that our course is too low to work in their industries.*

*Reaching there we came to the puzzle once again when the manager refused to receive us, because of redundancy exercise.*

Considering the status of a major part of the Tanzanian industries the latter comment might be describing a common situation. Many industries are trying to survive under difficult conditions.

Apart from this, there is an intense mobility, among this group for various reasons, that will be commented on below. This kind of changes in place of posting is going against the whole idea of inplant work, as part of the training period.

In 1989 a search was conducted to locate inplant trainees. In all 76 places of work were visited, as listed by Moshi NVTC. As most of the inplant adresses are found in a few industrial centres the search could by concentrated to Dar es Salaam (30 enterprises), Kilimanjaro (14), Arusha (11), Tanga (9), Morogoro (5), Mwanza (5), Dodoma (1) and Musoma (1).

From this some results could be well worth narrating. In Kilimanjaro and Arusha there were supposed to be 146 inplant trainees in the 25 companies listed. Out of them only 82 (56 per cent) were still working. On the other hand another 13 trainees, not appearing at any inplant list, were present in the capacity of apprenticees.

Of the inplant trainees missing, 30 had simply not turned up, while another 57 had left. Nine of the companies listed had not got any inplant trainee at all at the time of the visit.

According to available information a total of 166 trainees were to be placed in the 30 Dar es Salaam companies. Out of them only 69 could be found. However, for two of the companies, supposed to have 15 trainees among themselves the information given could be neither confirmed nor rejected. Even excluding these ones only 46 per cent were found as anticipated from the lists.

One case gives a particular aspect to the problem. Not less then 25 trainees had been allocated to one large company, but all of them were turned back straight away.

From reports we got to know, that 42 of the trainees not found, in the allocated Dar es Salaam companies, had been working for a short period of time, before leaving that particular apprenticeship posting.

In Tanga two companies were reported to have nine inplant trainees together. At one of these none was found, but another 13 trainees, not listed were present at five other places of work.

According to the listing no trainees were supposed to be in Morogoro, but due to information attained, this town was still visited. Here 25 inplant trainees were found. For Dodoma three names were given, but these ones could not be traced. Instead two others not known were to be interviewed.

A similar situation was encountered in both Mwanza and Musoma. In Mwanza 13 trainees were found in five companies, against 12 reported to be in two establishments. At Musoma Textiles five trainees were supposed to be present. However, only one had been reporting for work, but also he left after two years.

From this information and through many discussions we have got it confirmed that inplant posting and actual apprenticeship work is far from being the same. This is a point well worth stressing if Moshi NVTC is to be able to turn out able craftsmen for the Tanzanian industries. If the inplant period is to be an integrated part of the training it is remarkable that there is no information available at the centre to tell where the trainees are working. Not even the trainees in Moshi town itself seem to be known at the NVTC.

### 6.4.2 Mobility among inplant trainees.

It is obvious that the mobility among the inplant trainees is a serious hinderance to an efficient training. The problems as seen by a director of one of the parastatals:

> *I am of the impression that there has been quite a lot of training but follow-up is weak to see if the people trained are employed and if not why? Many graduating may have no adequate industrial experiences as there is no staff from NVTC who makes follow up of apprenticees. We have lost two out of four apprenticees brought to us. There was no formal agreement with the NVTC as what happens when the apprenticee absconds.*

One part of the problem in this context is related to the economic situation for the inplant trainees. The serious financial dilemma among the inplant trainees must be adressed urgently. This has often been cited as a reason to move, in combination with the inability to find a place to stay at a reasonable cost.

> *As salaries are so low for inplant students most of us try to change for a better paid job.*

> *The biggest problem with getting an inplant job in Dar es Salaam is to find somewhere to stay.*

From the companies themselves it is admitted that the best way of getting employees is through "poaching".

> *Adequate labour skilled or semi-skilled is available if one is prepared to pay the prize for it.*

This also seems to be applicable to trainees still doing their inplant period. It is therefore, understandable that some employers are reluctant to take on trainees, as they tend to loose some, *"especially the capable ones.."*

Sometimes the inplant training is seen as irrelevant by the trainees, as they are not getting any adequate tasks to carry out. One manager, for example, said his inplant trainee was nothing but a casual worker on trial. Against that background it is easy to understand the complaints from many trainees as to the lack of relevance in their industrial experiences.

> *The employer is more interested in getting the job done than in training for the future.*

> *I have been here for two years, but here there is no kind of education or training.*

Both the pedagogical aspect, as well as the social conditions, must be adressed in relation to the inplant training, if it should function as a means to upgrade the basic skills acquired at the centre.

### 6.4.3 The status of the inplant trainee in the industry.

One bone of contention is related to the actual status of inplant trainees. Some employers have simply taken the attitude that;

*Inplant trainees are all on the regular staff.*

*All inplant trainees are employees.*

Others have adopted another point of view, such as this one;

*During the three years inplant training he is treated as a student, but all apprenticees do not accept this.*

It is definitely a matter for the Moshi NVTC to be consistent, as to the terms applying to inplant trainees. Many employers have described how the apprenticees have been given *"the wrong working attitudes"* at the centre. One manager called them *"big-headed"*. A complicated issue is, of course, the fact that many of the candidates selected to Moshi NVTC are from a family background of a fairly high social status. We must ask ourselves if their objective is to be brought into the tedious realities of industrial manual work.

From one manager we heard that Moshi NVTC had given them *"big hopes that they would receive very high wages as apprenticees."* These kinds of statements are a strong pointer to the fact that career guidance at the centre is not sufficient. It is definitely clear from the interviews that trainees after the basic institutionalized course are uncertain over the concept of inplant training.

Staff at Moshi NVTC must be urged to be more clear in their contacts with the industries, as to what is supposed to be the purpose of inplant training. They cannot refer to trainees leaving the basic year, as "graduates", nor use the inplant period as some kind of labour exchange function. A binding contract specifying the regulations for the training would benefit all the parties involved, e.g. Moshi NVTC, the individual trainees, as well as the employer.

6.4.4 Views on the ability of the inplant trainees.

There has been a divergent picture obtained on the quality of work done by the inplant trainees. During a first round of more general interviews conducted in 1987 a fairly positive impression was given, by most employers, even if the skills displayed were a bit too elementary. From this early survey we got the impression that many employers held the view that the institutionalized training was not long enough.

Many employers interviewed during this first stage said that they were probably willing to employ the inplant trainees after the inplant period. However, the views were getting a bit more critical

later on. Possibly this can be related to a certain decline in the output from the Moshi NVTC. As was shown above there has been a change in selection procedures, enrolling more primary school leavers into some trades.

> *...their basic education is not enough that they can understand thoroughly their instructors.*

However, the opinions on this matter differs considerably. Some employers are saying that they would prefer if the bulk of the trainees in vocational training were selected from primary schools. One reason for this might be that they prefer employees with some general skills, that they themselves can mold for specific needs.

> *Could consider inplant trainees, but still we have to train them our way.*

In chapter 5 we referred to the lack of flexibility among the Moshi NVTC trainees. This has been vividly confirmed by many of the inplant trainees themselves;

> *There is a great lack of tools here. At Moshi we had all the tools we needed.*
>
> *The problem is not finding a job, the problem is finding an equipped working place, with the right machines and tools.*
>
> *When I came to TPTC in Dar for inplant, the instruments were so different from those at Moshi that I had to start all over again.*

Some of the negative statements on inplant trainees, from employers, are fairly categorical. Even if some utterances are not specific, and contradicted by others, all pronouncements must be taken seriously. It is essential not to brush any critisism aside, but to analyze the underlying causes properly.

If the objective of efficient inplant training should be attained, Moshi NVTC must provide a close monitoring system during this phase. It has been suggested by one of the trainees that;

*After the inplant period is completed, we should be called back to Moshi VTC for a short course to check that we have got the right training.*

It would be desirable to make a further follow up some time in the future to clarify the importance of inplant postings, as a labour exchange instrument. Still it is too early to get any conclusive evidence on this issue.

## 6.5 Self-employed.

A mere 26 trainees (6 per cent) have been found in self-employment. However, as was noted above this number is probably higher in the total sample. The self-employed ones are generally more difficult to locate in this kind of a study.

At least from the point of view of technical skills Moshi NVTC would equip its trainees with an ability for self-employment. Still they would lack basic entrepreneurial knowledge, and a flexibility to meet with a harsh working condition.

It has been rather difficult to get a distinct picture, as to the extent, technical skills acquired are used by the self-employed to make a living. Only in three cases the occupation has been stated as technical, like electrician, workshop owner or small repairs. In not less than 14 cases the only information is that the trainees are involved in business, or as shop-keepers. At least one female trainee is trading in second hand clothes, while another one own a hair-dressing saloon.

Naturally, business can involve an application of some part of the technical skills, but we can assume that this is far from the most common activity.

If we look at the individual trades taken among the self-employed we find Diesel Engine Mechanics (5 trainees), plus the "electrical" trades, e.g. Industrial Electrical Fitter, Electronics and Refrigeration & Air Condition (9). All of them could be expected to possess a specific skill, that is possible to use in self-employment.

As so much of the interest in development potentials nowadays is tied to the informal sector the relationship between Moshi NVTC and this sector could be an important issue to pursue further.

## 6.6 Training.

Among the nine in a continuous training we find a couple taking new trades at Moshi NVTC. For the rest there is a very varied picture, including book-keeping course, police school and religious studies at a convent.

## 6.7 The unemployed.

If the 37 unemployed ones, or eight per cent, within the first three groups would reflect a correct rate it would probably be a good outcome. Unfortunately we do not have any "control" group to compare with, but considering the difficult labour market conditions in Tanzania we know that wage employment is extremely difficult to secure.

Most of the unemployed ones have been found in Kilimanjaro region, the home of most trainees. If we had travelled around the country a bit more intensely we might have found more *"being idle at home"* , or *"just farming"*.

Above it was noted that trainees taking Mechanical Draughting and Instrument Mechanics, have been difficult to place in inplant training. Among the unemployed we find eleven and six trainees respectively from these two trades.

As there are still a total of 126 trainees, that has not been located the calculated unemployment rate might be substantially higher. After all many of the trainees found have been met "by chance" in some company, while we have been looking for other prospective trainees.

An indication of the possible size of the number of unemployed not found can be given from the intensified search of 40 trainees in the 85 group, carried out in 1989. Out of the 28 found only three were unemployed. We found out that a major reason for the lack of contact, can be referred to inadequate postal services, or simply faulty adresses.

To be able to get a more accurate estimation on the rate of unemployment some basic data can be compared for the various categories of trainees.

## 6.8 Comparison of background variables.

For the groups 84, 85 and 86 we have been able to trace a total of 79 per cent. Even if this is a considerable coverage rate we still have to analyze the trainees, for which there is no information on activity after training. This is essential in view of the obvious biases caused by the method used in the collection of data.

Table 6.15 Proportion of "missing" trainees per trade (percentages).

| Trade | Proportion not found |
|---|---|
| Foundry | 37 |
| Pattern Maker | 36 |
| Black Smith General | 35 |
| Mechanical Draughting | 33 |
| Instrument Mechanics | 27 |
| Machinery Fitter | 22 |
| Electronics | 22 |
| Pipe Fitting & Boiler Mechanics | 19 |
| Industrial Electrical Fitter | 14 |
| Diesel Engine Mechanics | 11 |
| Tool & Die Maker | 7 |
| Refrigeration & Air Condition | 7 |
| Machine Tool Repair | 7 |

The figures in Table 6.15 raises some issues. For Foundry, Pattern Maker and Black Smith General we have only found two trainees unemployed. Does this mean that we have been unable to locate the ones not working among these trades?

On the other hand many of the trainees from Mechanical Draughting and Instrument Mechanics, which already have a high unemployment rate, have not been found either. Can we expect that the ones "missing" are also unemployed and, thereby, bring up the total unemployment rate?

Experiences before being enrolled at Moshi NVTC can be expected to have an impact. We have divided the trainees according to activity and previous vocational training/working experiences. We have left out those ones still in training, as they are only nine. Further it can be noted that for 20 of the "missing" trainees we do not have any data on previous experiences.

Table 6.16 Previous vocational training or working experiences for the 84, 85 and 86 groups (percentages)

| Previous experience | EM | IN | SEM | UE | NI |
|---|---|---|---|---|---|
| Yes | 62 | 53 | 50 | 32 | 35 |
| No | 38 | 47 | 50 | 68 | 65 |
| (Total No | 220 | 157 | 26 | 37 | 102) |

Note EM=Employed, IN=Inplant training, SEM=Self-employed, UE=Unemployed, NI=No information.

There is a distinct difference between the categories employed, inplant trainees and self-employed, compared to the unemployed, in respect of previous relevant experiences. This can be an indication that a longer and more varied training provides the trainee with a clear advantage at the labour market.

Out of the 37 unemployed ones, 29 (78 per cent), were enrolled in trades not requiring previous vocational training (or relevant working experiences).

It is also noticeable that the trainees not found is showing an average figure rather close to the one for the unemployed. In all 69 per cent of the ones not found are within trades without a minimum entry qualification above formal schooling.

This data would indicate that the actual unemployment rate is defintely higher for the whole sample compared to the ones actually traced.

Another factor to take under consideration is the achievements during the training.

Trainees employed and in inplant have a much better average grade from the first year of training. Trainees with a lower grade might be more difficult to place for inplant and thereby face problems in getting employed at all, on the merits given by the vocational training.

Table 6.17 Aggregate grades given for the trainees in groups 84, 85 and 86 (percentages)

| Grade | EM | IN | SEM | UE | NI |
|---|---|---|---|---|---|
| B | 25 | 20 | 15 | 11 | 7 |
| C | 43 | 54 | 31 | 39 | 40 |
| D | 26 | 20 | 38 | 28 | 35 |
| E | 5 | 5 | 15 | 22 | 18 |
| (Total No | 208 | 128 | 26 | 36 | 100) |

Note:EM=Employed, IN=Inplant training, SEM=Self-employed, UE=Unemployed, NI=No information
The aggregate grade is not available for all trainees.

Once again the pattern found among the "missing" trainees is fairly close to what is found among the unemployed. However, there are also similarities to the self-employed category. This is also in line with the assumption given above that some of the trainees not located are actually self-employed, in some activity that they are unwilling to come out with in this kind of a survey.

Finally we can consider the trade tests passed so far in the various activity divisions.

Table 6.18 Trade tests passed by the trainees in groups 84, 85 and 86 (percentages)

| Grade | EM | IN | SEM | UE | NI |
|---|---|---|---|---|---|
| I | 10 | 11 | 8 | 3 | 1 |
| II | 16 | 25 | 4 | 19 | 4 |
| III | 27 | 31 | 15 | 30 | 16 |
| Failure | 14 | 14 | 27 | 14 | 16 |
| Never tried | 33 | 20 | 46 | 35 | 63 |
| (Total No | 220 | 158 | 26 | 37 | 122) |

Note:EM=Employed, IN=Inplant training, SEM=Self-employed, UE=Unemployed, NI=No Information.

As trade test is normally connected to work or inplant training it can be assumed that many of the unemployed ones have at least

had a stint as industrial workers. Officially 49 per cent of the unemployed trainees have been placed for an initial inplant training, compared to 54 per cent for the total sample.

The fact that such a large number among the employees are not trying for a trade test can be due to the fact that they work in private companies, in which this is not important for the setting of a salary level.

It can also be seen as natural that few of the self-employed ones are trying for a trade test. Either their line of work does not require this, or as self-employed technicians, their earnings are only marginally dependent on some kind of a test.

The fact that as many as two thirds of the ones we have not found never tried a trade test is a clear indication that they are either not working, or at least not in a technical field. Only 43 per cent of them have got an inplant placement. These circumstances coupled with the fact that they are not found in itself would make us to assume that the proportion of unemployed is higher in this category.

Based on this data a guesstimation of the unemployment rate among the first three groups, is that for the total sample it might be almost doubled, to reach approximately 15 per cent. Furthermore, the extent of self-employment can be expected to reach at least the level for the 85 group, close to 10 per cent.

Among the "missing" 21 per cent there might also be more trainees, within a working career outside the technical field.

One interesting result is emerging if we compare the activities for male and female trainees. This might be partly due to the fact that we have been able to trace a higher proportion of the girls, on special request.

The share found in any of the activities employment, inplant training and self-employment is the same for boys and girls. However, the unemployment is much higher for the girls. This anomality is caused by the fact that there is a much larger share of boys not found.

Table 6.19 Male and female trainees according to activity for the 84, 85 and 86 groups (percentages).

| Activity | Boys | Girls |
|---|---|---|
| EM+IN+SEM | 72 | 72 |
| UE | 6 | 17 |
| NI | 23 | 11 |
| (Total No | 522 | 54) |

Note:EM=Employed, IN=Inplant training, SEM=Self-employed, UE=Unemployed, NI=No information

Either we can conclude that girls do actually have a higher proportion of unemployed (that is probably true), or that we have been able to find more, and many of these intensely searched for, are unemployed. The probable truth can be assumed to be somewhere inbetween.

## 6.9 Conclusion.

If the basic certificate given at the centre is fairly unfamiliar to the employers in Tanzania, trade testing is a well known assessment of trainees. However, the value of this test is far from undisputed. Within government and parastatals it is seen as the only way to measure skills and ability, while private companies seem to have their own methods.

In any case it can be noted that Moshi NVTC trainees do not reach up to a satisfactory level of trade test success. Even within the first three groups less than half had been able to pass at any level. Already at the end of the institution based training it should be possible to make it for a grade III.

The reason for a low pass rate in the trade test is not only related to a high number of failures, but to a larger extent that trainees simply do not try for it. This in turn can be related to the inplant conditions, or the lack of evening classes.

Actual passes and grade at trade tests seem to be strongly correlated to previous experiences, as well as results in the internal assessment at Moshi NVTC.

Contacts with trainees after leaving the centre has been characterized by a high coverage rate. However, the obvious bias lies in the fact that in most cases we have met them in industries, leaving out many of the unemployed, or self-employed also for that matter.

It is often argued that technical training is not cost-efficient and therefore not a viable project to support. One calculation has estimated the social rate of return for Moshi NVTC to be at -2.6 per cent. This would indicate that the project should not be acceptable. However, it is hardly useful to apply this kind of unsensitive mathematical acrobatics to determine the being, or not of various projects.

For the trainees followed up we have found a high proportion, either in employment or at inplant training. This is especially significant in view of the depressed employment structure in Tanzania. Even if the background variables gives a picture of a trainee community well above the average both in respect of formal educational and socio-economic status, we can never neglect the role played by Moshi NVTC in this positive adoption into the labour market.

So far we have not been able to trace many self-employed trainees. It has been assumed that the proportion is higher. This could in itself be a topic for further research, not least since we would be able to unveil many "hidden" facts related to this sector of the economy.

Inplant training is a matter that has to be attended to from both a qualitative and quantitative angle. To realize the objectives of having an integrated four year training cycle, all trainees are to be enrolled as apprenticees. Still Moshi NVTC is far away from making this goal into a reality.

In addition to this some of the present confusions surrounding this training component must be straightened out. A close follow up and guidance must be implemented, while the trainees are posted in the industries. Logistical problems in relation to this has to be adressed seriously.

What we have found out so far is a fairly low unemployment rate, but it has been assumed to be higher. Through a more intensive search of individuals so far "missing" we could possibly get closer to the actual situation. One fact on the trainees, whose fate we have not been able to determine, is that their previous background and

results in internal grading is inferior to the ones employed (or at inplant training).

With the background of a somewhat changed intake it would be essential to continue following up the latter groups to find out if the assimilation into work will be remaining on the same level. Largely this task should be administrated from Moshi NVTC itself in close co-operation with the NVTD.

# 7. *MOSHI NVTC AND ITS IMPACT ON THE LOCAL INDUSTRY*

Moshi NVTC is a national centre, supposed to cater for the whole of Tanzania. However, as was seen in chapter 4, almost half of all trainees have been recruited in the Kilimanjaro region. In this chapter we will make an attempt to assess the impact the centre is making on the local industrial scene. Of course we have to take into account the fact that the institution is still at its intitial stage, why no major effects can be expected so far.

This chapter will review some data from a special study on the industrial structure in Kilimanjaro and Arusha regions. From this a general pattern of the assumed future labour market for the trainees will emerge. What is here described is to a large extent based on opinions expressed by the industrialists.

Above we found out that, at least in the first groups, many of the trainees were actually getting a job, which was relevant to the training. The ones employed in the Kilimanjaro and Arusha regions will be the topic of a special survey below.

## 7.1 Contacts between Moshi NVTC and the local industry.

One observation done has been the fairly low knowledge of Moshi NVTC and the local industry. By some industrialists in Moshi town it was more or less regarded as some kind of an advanced service workshop. Training was not thought about as the main activity.

When we came to see one manager in Arusha his frank opening comment was simply that;

> *Don't know anything about Moshi NVTC.*

Even at a large industry in Moshi it was admitted by a manager that he *"hardly knew anything about Moshi NVTC"*.

Still at least inplant would seem to be a natural point of contact between the centre and the local companies. During one of our interviews we were given the following advice to bring back to the centre;

> *MVTC could assist in producing skilled and experienced technicians in the future - which is what we need - this could be made possible by sending your students to companies or factories for a further two years*

*apprenticeship to gain the required experience before they graduate.*

Obviously this employer was not aware of the fact that inplant training is in existence. One manager claimed that he would be willing to take on inplant trainees, but;

*Never any requests.*

However, it can be argued that inplant trainees available are always advertised in the papers. Obviously this must be complemented by other channels, and requests made must be duely recognized.

*We communicated for specific qualified personnel further to advert in Daily News, but no response.*

An urgent task for Moshi NVTC must be to open up a regular communication network with the industrial community. One natural point of contact is an intensified co-operation within the inplant programme. The present situation is far from satisfactory, as found out from many of the inplant trainees;

*There should be much more contact between Moshi VTC and the employer.*

*No communication between the college and me.*

Moshi NVTC would benefit strongly from an opening up in its connections to the local industries. Some suggestions can be, through regular seminars at the centre, including guided tours through the work-shops, and invitations to industrialists to adress the trainees for lectures etc.

## 7.2 The general industrial structure of Kilimanjaro and Arusha.

The review here presented is built on sources of two kinds. Apart from a search for scant written documentation, some 60 industrial establishments of varying size have been visited in Kilimanjaro region for interviews with the management. A similar, but more limited exercise, was carried out in Arusha town. In addition to this, questionnaires were sent out to numerous industrial establishments in Kilimanjaro/Arusha regions.

It has not been possible to get any statistical presentation of the local labour market for these two regions, from more recent years. Therefore, we have to rely on data from the early eighties.

Tab 7.1 Wage employment per sector for the Arusha and Kilimanjaro regions, 1981 (percentages).

| Sector | Arusha | Kilimanjaro |
|---|---|---|
| Agriculture | 30 | 27 |
| Mining & Quarrying | 0 | 0 |
| Manufacturing | 21 | 14 |
| Water & Electricity | 1 | 4 |
| Construction | 8 | 11 |
| Commerce | 8 | 4 |
| Transport & Communication | 2 | 5 |
| Finance | 1 | 1 |
| Services | 29 | 35 |
| (Total No, thousands | 42 | 40) |

Obviously for both regions the agricultural sector has a high share of employment. This is natural as both regions have favourable conditions for commercial agriculture.

However, it can also be noted that, as was seen in chapter 3, both regions are important secondary industrial areas.

In Kilimanjaro there seems to be some fluctuation over time in the number of people engaged in manufacturing industries during the last decade. Variations between individual years, according to official statistics, are too big to give a reliable picture. An assumption would be that around the year 1980 manufacturing industries in the region (with at least 10 people employed), engaged approximately 6,500-7,000 people.

From data collected at the Labour Office we find out that there were some 5,270 persons engaged in manufacturing industries in 1980. The discrepancy between this figure and the one given above is due to the fact that the latter figure excludes administrative, clerical and other personnel. Only the ones in direct contact with the production are here registered.

At the time of our survey, 1989, there were 5,530 persons engaged in production within the manufacturing industries. That means that the increase is as low as 260 (or 5 per cent) more industrial employment opportunities added during the eighties.

Out of the total manufacturing work force in 1989 3,760 (68 per cent) were enrolled in government-run companies. At the beginning of the decade, these same establishments employed only 3,340. From this we can deduct that the total expansion is to be found outside the private industrial sphere. This is a worrying trend, as the economic recovery programme is demanding a high efficiency, within the parastatal companies, which would make many employees redundant.

In 1989 there were 58 motor vehicle repair workshops registered in Kilimanjaro region. Most of them employed 2-5 people. However, there are also some larger ones, with six noted for between 22 to 36 employees. The total number engaged within this sector was 350, which is approximately the same as for 1980.

We also find some 90 people engaged in general engineering at the end of the eighties. This is a small decrease since 1980.

Finally, there is a large amount of small companies involved in a diverse range of manufacturing activities, like bakeries, wood-work, handicrafts and the like. In all we here find some 180 people working. Compared to 1980 this is a substantial decrease.

It can be assumed that what is given above does not contain the total picture. Probably there are numerous smaller garages and work-shops operated without a formal licence in the so called informal sector.

Within the public sector there are also a number of establishments with a need for technically skilled personnel. Here we find the ministries of works and water, Tanzania Railways, TANESCO (electrical generation and distribution), Tanzania Coffee Marketing Board and KCMC (hospital). In all some 500 technical personnel are employed within these latter companies.

Apart from the public service sector, the government establishments are normally operating in the processing of raw materials available in the region. Large companies are TPC (sugar), Tanzania Bag (sisal), Coffee Curing, Kilimanjaro Timber Utilization, Kilimanjaro Plywood, Rongai Saw Mills, Tanneries (hides and skins). Furthermore, there are numerous smaller agricultural estates with coffee pulping. Some government companies have been established to initiate further industrial development, like the Kilimanjaro Industrial Development Corporation and SIDO (Common Facilities and Foundry). The Kilimanjaro Machine Tools is a parastatal company opened with Bulgarian assistance.

Well over two thirds of the private sector employment in manufacture is to be found within eight companies, e.g. Jewatha Garments, Kibo (matches etc), Shah Industries (leather goods), Bonite (soft drinks), Crates Manufactures, Moshi Textiles, Simon Engineering (metal products) and African Flower (mosquito coils). These are the only private manufacturers with a work force above 50 people.

Among the smaller private manufacturers we find the ones opened up, within the SIDO industrial estate. Here some 125 workers are employed.

Tab 7.2 Estimated labour market for technical/practical employment in the Kilimanjaro region 1989.

| "Sector" | No |
|---|---|
| Public services work-shops | 500 |
| Parastatal manufacturers | 3760 |
| Private manufacturing (50+) | 1200 |
| Private manufacturing (10-49) | 570 |
| Small manufacturing, workshops | 180 |
| Motor vehicle garages | 350 |
| Gen engineering workshops | 90 |
| Total | 6650 |

One further sector with a high demand for skilled and semi-skilled craftsmen is construction. However, here there is a limited core of permant staff, normally supplemented by casual labour. As the demand for tempoeary workers is normally high it is difficult to estimate the size of this part of the labour market.

We can note that in 1980 Kilimanjaro was dominated industrially by "traditional sectors" employment-wise. Textile, foot-wear and leather constituted a dominating field, with almost half of the number employed. This was followed by Food, drinks etc, and Wood and Wood products. Up till the end of the decade a radical change has occured. Food, drinks etc is now a dominating sector. Textile etc has lost a lot of ground during the period 1980-89. In connection to this we can note the comments made on the trade liberalization in chapter 3. Metal based manufacturing has taken a more significant

position, primarily due to Kilimanjaro Machine Tools and Simon Engineering.

Tab 7.3 Employment divided by sector of employment of companies with above 10 employees (percentages)

| Sector | 1980 No | 1989 No |
|---|---|---|
| Food, drinks etc | 25 | 39 |
| Textile, foot-wear, leather | 48 | 22 |
| Wood, wood products | 25 | 21 |
| Metal products | - | 6 |
| Other | 2 | 12 |

For the Arusha region we have not been able to collect data on the same scale as with Kilimanjaro. Still it is possible to make a few comparisons. In 1978-82 there was a slightly higher number of people engaged industrially in Arusha compared to the neighbouring region. It fluctuated between 7000 to 8000 persons. From the Directory of Manufacturing Industries of 1984 the number of companies with above 50 workers, were 29 in Arusha and 27 in Kilimanjaro.

The industrial structure of Arusha was somewhat different from Moshi in the early eighties. Textile, foot-wear, leather was the dominant sector, even if it did not have the same share as in Kilimanjaro. Employment-wise this is still significant with major companies, like Sunflag, Kilimanjaro Textile (parastatal) and A to Z Clothing.

Foods, drinks etc is also of significance, primarily due to Tanzania Breweries, but also the Tanzania Food Corporation (joint venture with a Kenyan company). In Arusha the chemical sector stands out as important, with the tyres manufacture, General Tyres (a joint Tanzania Government and multinational company).

## 7.3 Some data from a survey of industries.

### 7.3.1 Basic characteristics of the companies.

A total of 123 industrial units were represented in the industrial survey done in 1989.

Tab 7.4 Data collected according to region and "sector"

| Sector | Arusha No | Kilimanjaro No |
|---|---|---|
| Public services | | 4 |
| Parastatal | 9 | 10 |
| Private manufacture (50+) | 5 | 9 |
| Private manufacture (10-49) | 4 | 10 |
| Small manufacture, work-shop, garages | 11 | 31 |
| SIDO | 10 | 9 |
| Construction | 4 | 7 |
| Total | 43 | 80 |

Out of the ten parastatal manufacturers in Kilimanjaro all, but one were with at least 100 persons engaged. Three of these had even more than 500 employees.

Some of the companies, like Coffee Curing, TPC, Kilimanjaro Timber Utilization, were established before independence with private ownership, but were taken over by the government after 1970.

As was noted above in most cases the companies were established to process local raw materials. One exception to this is the Kilimanjaro Industrial Development Centre, an institution set up to transfer technology to small scale rural industries. It has been drawing on Japanese development assistance. The Kilimanjaro Machine Tools was set up as a Bulgarian joint venture in 1983.

A number of the parastatals have received development assistance from agencies like NORAD and SIDA. Normally this has been as import support or technical assistance. The Tanneries were established as a joint venture with a Swedish company.

Six of the companies utilize an estimated 60 to 70 per cent of the installed capacity. The two lowest are noted for 25 and 40 per cent respectively.

Also the nine Arusha parastatals are important, as employers for that region. Kiltex, Breweries and General Tyres are all employing well over 500 people. All the others, except Tanzania Seed, are engaging at least 100 workers.

The spectrum of activities is wider among the Arusha parastatals visited, e.g. textile, beers, tyres, fibre-boards, pharmaceutical, electrical goods and smoking pipes. This is probably only a reflection of the over-all more diverse industrial structure in Arusha, compared to Kilimanjaro. One company, CAMARTEC, is commissioned to produce and develop agro-mechanic equipment.

Three of the companies are jointly owned by the government and private interests.

Some of the parastatals get development assistance from SIDA, FINNIDA, NORAD etc. General Tyres, for example, have got import support from SIDA, while FINNIDA were giving loans and technical assistance to Fibre-boards and Tanzania Pharmaceutical. The Tanzania Electrical Goods had a sister company in Norway, owning 20 per cent of that company.

CAMARTEC has projects funded by Japan (through UNIDO) and West German aid.

Most of the companies are producing for the local market primarily, with the exception of Tanzania Electrical Goods, which export half of the products. Some of the firms produce a small share for export, or used to do that at an earlier stage.

On utilization of installed capacity three companies are above 80 per cent. Another five estimated the figure to be between 40 to 60 per cent. One company is merely surviving at only 5 per cent. However, the manager of that company was optimistic about the potential for an expansion in the near future.

Of the larger (50+) private industries in Moshi we find a production of mosquito coils, garments, soft drinks, metal products, leather goods, matches, packaging materials and soda crates. The two largest companies are Kibo Match and its subsidiary Kibo Pulp and Paper, with each one above 400 employees. The other seven industries employed between 60 and 180 permanent workers. An absolute majority of these companies are run by proprietors of Asian extraction.

Only Shah Industries (leather goods) and Kibo Match produce for the export market. A couple of the companies are provided with development assistance in the form of import support.

Among the smaller private companies in Kilimanjaro, we find four in the sector food/drinks, and two each within printing/packaging, textile/clothing and metal products respectively. Two of the companies Meru Bakery and Umoja Bottlers have been taken over by the owners of Jewatha Garments. For the latter company a substantial expansion is planned, with an introduction of Pepsi products. Among the larger companies, referred to above, Bonite has recently started production of Coca Cola.

Four of the companies have a capacity utilization of between 50 and 65 per cent. The rest are to be found, as low as 10 to 30 per cent.

Of the private companies in Arusha, Sunflag (textile) is the dominating one, with 2000 employees. Among the others we find production, like biscuits, soft drinks, soap and electrical goods. Of these Food Corporation, Kilima Bottlers and EMCO all have between 110 to 200 employees.

Philips, a subsidiary of the Dutch multinational, has reduced its staff and production to a minimum, due to the alleged low local purchasing capacity. During our interview it was claimed that this company was just about to wind up for good.

Only one of the companies is operating at a capacity of above 50 per cent. For two it is as low as 25 and 15 respectively.

Of four medium sized (10-49) companies, we find printing, metal products, saw milling and textile. For these industries the capacity utilization is at 50 per cent for all but one, which is down to 25 per cent.

Like in all regions of Tanzania an industrial estate, under the auspices, of SIDO has been established to the major towns of Moshi and Arusha. In the Moshi estate we find some eleven units operating. All of them started to function 1981-83.

There is a common facility, with a foundry, to service the other private companies. One firm, e.g. the Moshi Hand-tools is a direct subsidiary of SIDO.

Most of the companies have, or used to have, a sister company in Sweden. All of them have received import support from SIDA and often the management has been trained in Sweden. At one company the situation was expressed in the following way;

*We only survive for SIDA import support.*

The production is consisting of electro plating, battery caps, buffs, scissors, cutlery, packaging materials and optical lenses. Employees at the various units are between 10 up to 25 people.

At the Moshi SIDO estate the production is fairly low compared to capacity. Three companies claim to be operating at 50 per cent. All the rest are at, or below 30 per cent. For one of the companies we heard that there was no production at all. The remaining personnel was used to carry out different odd jobs.

SIDO Arusha contains 13 units. Some of these companies are larger compared to what was found in Moshi. Many are also definitely more successful in their production. Some eight of the entities were said to operate well, while two or three were regarded to be at least partially closed.

Like at SIDO Moshi many of the companies received import support and management training in Sweden. A few of the industries had all their raw materials imported from Sweden. Some of the products were also exported, in some cases to Sweden or other European countries.

The sister company concept was criticized by one manager;

> *Without SIDA there is no sistership. Only one company has remained as a joint venture after SIDA ceased its support*

One of the companies, Northern Electronics, had as many as 135 employees. Almost all of the production was done for IKEA.

Of the others, most are to be found with between 20 to 50 people engaged.

The production consists of diverse metal products, like nails, cutlery etc, and electrical goods.

In some cases the capacity is much better compared to SIDO Moshi. At least four units indicated figures above 50 per cent. However, one had temporarily no production, as it was expecting new raw materials from Sweden. Normally, the manager of that company, claimed, it was run at 80 to 90 per cent out of the optimum capacity.

The three companies with the lowest produtivity reported 40, 30 and 25 per cent respectively.

Of the smaller establishments in Moshi 11 are dealing with wood-works, mainly furniture production. One of the work-shops have 22 people employed, while the rest vary between 3 up to 10. Seven of these wood workshops have estimated their present capacity utilization, with three giving 45-60 per cent. On the other end four gives a bleak estimation of 20 per cent or lower.

There are in all 16 garages and general engineering workshops. One is employing 29 workers, while we find three of them engaging only 2-4 employees. The rest is to be found in the range of 7 to 17 persons involved.

In this category we also find two printers and two companies which manufacture metal products.

Among the Arusha sample, there are eight garages and general engineering workshops of fairly similar sizes as to the Moshi average. In addition to this there are two furniture workshops and one smaller manufacturer of soft drinks.

Within the construction sector we have data, and opinions, for seven companies in Kilimanjaro and four in Arusha. Of these, three have a permanent staff of more than 200 employees, i.e. Khambaita, Penfold and Jandu Plumbers. All these three companies have large workshops to supplement the construction.

Of the others the permanent staff is smaller, but depending on the contracts acquired they have a potential of hiring up to 100-200 casual labourers. At least this is applicable to another three of these ones.

### 7.3.2 Perceived problems for the industrial sector.

While some of the companies, in the sample, have got a satisfactory production, many are running at a level well below capacity.

It is obvious that only one third of the companies are operating at 60 per cent or above compared to the optimum capacity. On this account the proportion recorded for Arusha and Kilimanjaro seem to be similar.

Tab 7.5 Estimated capacity utilization for the manufacturing companies engaging 10 or more people.

| Capacity utilized | Kilimanjaro No (%) | Arusha No (%) | Total No (%) |
|---|---|---|---|
| 80+ | 1 (3) | 4 (16) | 5 (9) |
| 60-79 | 9 (29) | 4 (16) | 13 (23) |
| 40-59 | 9 (29) | 10 (40) | 19 (34) |
| 20-39 | 7 (23) | 5 (20) | 12 (21) |
| -20 | 5 (16) | 2 (8) | 7 (13) |
| Total | 31 | 25 | 56 |

For Kilimanjaro there seems to be a higher share of companies running on a very low productivity. This might be a reflection of the poor performance of many SIDO companies in Moshi.

An attempt has also been made to compare the distribution of employees, according to productivity of their companies.

Tab 7.6 Share of employees in companies by productivity (percentages)

| Capacity utilization | Kilimanjaro | Arusha | Total |
|---|---|---|---|
| 80+ | 2 | 20 | 12 |
| 60-79 | 44 | 8 | 24 |
| 40-59 | 34 | 67 | 52 |
| 20-39 | 18 | 3 | 10 |
| -20 | 2 | 2 | 2 |
| (Total No of (employees | 5236 | 6522 | 11758) |

Comparing the Tables 7.5 and 7.6 seem to indicate that the most acute productivity problem is faced by the smaller companies. More than half of the employees in the two regions are working in companies with a productivity at approximately 50 per cent.

A low productivity, as the one depicted here, could potentially mean serious draw-backs for the employment situation, within manufacturing industries in the Arusha/Kilimanjaro regions. One manager expressed his situation thus;

*It is not a matter to expand, but to survive.*

What then are the reasons for this negative situation found within the industries in the two regions, as well as Tanzania on the whole.

Most of the industrialists interviewed expressed concern regarding the general financial conditions prevailing in the country. Foreign currencies were in short supply. Naturally, this was a significant predicament for firms based on imported raw materials. Among this category we find, for example, many SIDO establishments. For these companies we can also note that the now frequent devaluations are bringing up the production costs.

Many of the companies had a limited access to working capital. Often payments were delayed for a long periods of time. This was often mentioned by, for example, construction contractors, in relation to both public and private assignments. Furthermore, a complex bureaucracy was said to hamper a normal flow of business.

Not only the cost of raw materials constituted a barrier to increased production. In some cases it was not simply available, at least not as demanded. However, on raw materials we could note that many ordered a new supply only after the previous stock was totally finished. This would be an indication of bad management more than anything else. Even this was an issue brought up, during our discussions.

In a difficult economic situation the over-all service sector will be effected negatively. We get into the well-known discussion of a negative cumulative causation. Poor infrastructural conditions are caused by limited funds, as well as a contributing factor to slow industrial advancement. Even if the capital Dar es Salaam is a mere 350 miles away it is easy to get a perception of a greater distance, due to the bad standards of the communications net-work. This in itself contribute to a delay in the provison of raw materials. At the same time it isolates Arusha/Kilimanjaro from a potential market.

One manager of a construction company suggested that;

*...more aid should be channelled into the infrastructural development sectors with a maximum local participation to prop up the entire economy.*

Transportation is not the only infrastructural problem confronting the industries. Frequent break-downs in the distribution of electricity and water were mentioned. This was noticed by ourselves during visits to the plants, as we could observe unvoluntary stoppages due to electrical failures.

Marketing of the produce is a common difficulty. Above we noted that one manager referred the acute problems of his company to low purchasing power in the area.

Confirmation of the effects from the trade liberalization was given by many industrialists. It was said to create severe competition from foreign consumor goods. Especially this was a reason given for the crisis within the textile sector.

*Trade liberalization has shaken the textile industry.*

One particular aspect was the;

*...imports of second hand clothes.*

The state of available equipment is, of course, to a large extent influenced by the general economic situation. Not only raw materials are difficult to purchase without capital, sometimes in foreign currencies, but so are also spare parts and tools.

Many industrialists complained that they were in great need of rehabilitating the out-moded machinery. Obviously a lot of machines had been installed as second hand in accordance with some sister company agreement. However, now a number of them were not functioning.

This might be a reason why a normal reaction to questions on Moshi NVTC was an identification to the production unit. Servicing of broken down machines was seen as a major role for the institution.

Frequent interuption of the regular production was due to faulty machines. At the same time finance was lacking to correct this. This in turn often effected the potential work of service work-shops, like the SIDO Common Facilities, as few could afford to use it.

Consequently, to raise the industrial production a modernisation of available equipment would be necessary. However, once again, this is not possible under the present depressed financial conditions.

One conclusion from these views expressed is that the general economic hardship prevalent in Tanzania is a major predicament to further industrial growth in the two regions. This very fragile situation must have an impact on an evaluation of the role of vocational training.

On the issue of skilled man-power the picture was not as clear-cut. Undoubtebly many industrialists regarded a lack of skilled and semi-skilled labour as a problem. However, it was not mentioned as a first priority, in a spontanous way, during our interviews.

The more general needs were often expressed, thus;

> *In Kilimanjaro region there is quite a shortage of skilled labour.*
>
> *It is very hard to get skilled labour.*
>
> *There is high demand of skilled and semi-skilled labour in the region.*

The need for workers to be trusted was often given as a priority by many employers. One opinion frequently expressed was that thefts by workers were of a very high magnitude. Therefore, some indication of honesty was often more valued, than actual skills certificates. Managers often brought out their satisfaction with old trusted employees, with long service within the company. These ones were also relied on to suggest relatives for recruitment.

A general need for more skilled and semi-skilled labour was felt more frequently in Arusha. Possibly this might be connected to the generally more diverse industrial development in that region.

Some particular trades in short supply was said to be carpenters, machine operators and machine maintenance technicians, i.e. not primarily the more specialized ones offered at Moshi NVTC.

In view of the existing low salary structure some loss of tools and material could be expected. Few workers are actually able to fend for themselves on the present wages, let alone providing for a family. Still one employer complained about the high demands raised by skilled workers.

*Skilled and semi-skilled labour is a main problem, as they demand a very high salary.*

Competition for suitable workers seem to be harsh. Here parastatal companies had a fixed salary scale to follow. The only way to offer something extra would be through some kind of fringe benefits, like housing allowances, tea, lunch, transport etc. Private establishments, on the other hand, have an opportunity to offer higher wages.

Among the parastatals we could hear the view that their salary scale was not enough to compete with the private sector.

*Salary of labour is not enough.*

"Poaching" of labour from other firms was regarded as the normal way to recruit new employees.

*Experienced staff are poached by new establishments, who thereby get ready knowledge and experience.*

*Adequate labour skilled or semi-skilled is available if one is prepared to pay the prize for it.*

Naturally, the parastatals are often at the loosing end in this kind of a competition.

*...operatives and technicians, as in most cases trained people at that level, could normally be poached and join private similar joints in Arusha region.*

We also find the view that some are leaving the formal sector, to open up on their own.

*Low salaries mean that most employers loose their qualified technicians who decide to either start their own small firm or even changing into petty business.*

A similar view from a manager in a parastatal company;

*Lack of motivation in the form of salaries are too low, hence skilled people prefer to do own jobs, than taking up paid employment.*

These last two quotations can possibly indicate that our assumption that self-employment is higher, than what we found above, could be a correct one.

The reluctance to take on inplant trainees might very well be related to the fact that workers could simply be poached after a complete apprenticeship period. The cost involved would thereby be lost, which is hard to accept in the present economic situation. During a seminar at Moshi NVTC this fear was obvious among many of the managers.

One of the possibilities for companies to get more involved with the training centre is to utilize the possibility of sponsoring trainees. However, in the present situation with "poaching" this might not be very attractive. In the survey of specialized trades above it was noted that 17 individuals had been sponsored by companies. Out of them four never returned to the sponsoring employer, and another five changed their working place at a later stage.

For construction companies relying, to a large extent, on casual labour seasonal availablity is a perceived problem.

> *The labour market in the region flucuates greatly depending on the season with people working on farms for weeding and harvest.*

In view of the rather problematic picture here painted it must be an achievement for Moshi NVTC to get their trainees employed to such an extent, that was obvious from chapter 6.

## 7.4 Employment in the Arusha/Kilimanjaro regions of trainees from Moshi NVTC

So far the most common location of the former trainees working is Dar es Salaam, followed by Kilimanjaro and Arusha. Another 13 regions are the place of work, for the rest of the trainees.

Obviously Dar es Salaam has been attracting many of the trainees, originating from other parts of the country. Many of them with their roots in the Kilimanjaro region. This will in fact deplete Kilmanjaro of many skilled craftsmen. Their contribution to the home area could possibly be through remittances, which might be a bit difficult to realize under the present salary structure.

Table 8.5 Region of work for the 84, 85 and 86 groups

| Region | Number | (%) |
|---|---|---|
| Dar es Salaam | 76 | (35) |
| Kilimanjaro | 53 | (24) |
| Arusha | 28 | (13) |
| Mwanza | 16 | (7) |
| Tanga | 13 | (6) |
| Dodoma | 9 | (4) |
| Morogoro | 7 | (3) |
| Other | 15 | (7) |
| Total | 217 | |

Within an industrial labour market of 6,650 employees a mere 53 trainees from Moshi NVTC can hardly make much of an impact. Still, however, the bulk of the workers are in an unskilled capacity, while the ones here dealt with are fairly skilled craftsmen.

Bonite Bottlers, manufacturers of soft drinks, is the largest employer of trainees, with a total of five. It is noticeable that according to our records this company has not had any inplant trainee. With its higher salary scale this company is able to "poach" skilled workers from other establishments.

Other large industries with some employees traineed at Moshi NVTC are Kibo Match and Kibo Pulp and Paper, with four and three ones respectively. Both of them have also received numerous apprenticees throughout the years.

A Government institution the KIDC has employed another five trainees. Other public institutions, such as Labour Office, Municpal Council and Directorate of Civil Avitation have got some workers from Moshi NVTC. Among the major parasatatals we also find Kilimanjaro Timber Utilization (2 employees), Tanneries, Tanzania Bag, Tanesco, TPC, TRC and Kilimanjaro Machine Tools (one each).

Within SIDO we find Mawenzi Forging, with two employees and some inplant trainees from Moshi NVTC. Another employee is found at Simon Engineering.

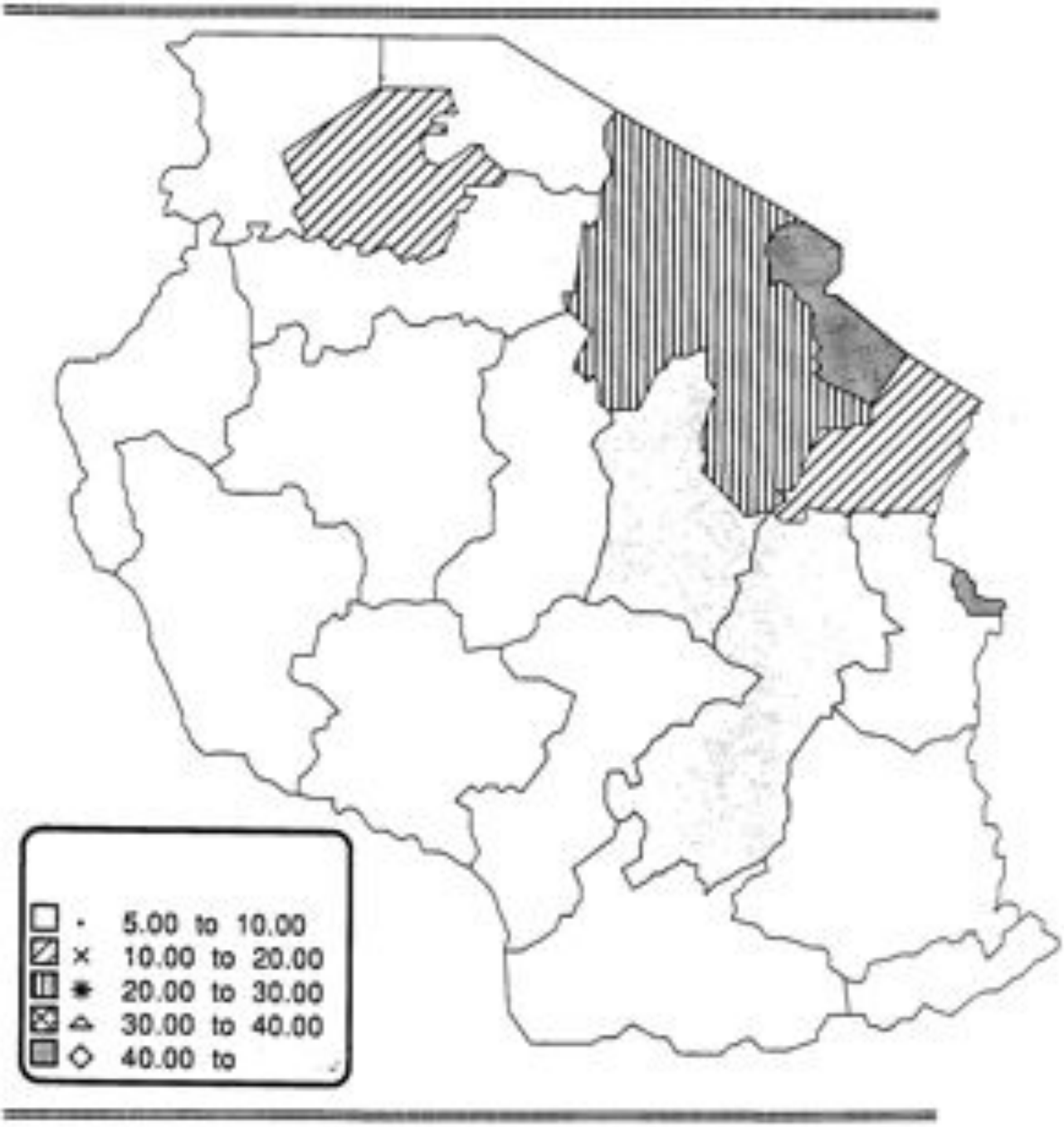


Fig 7.1 Regions of work for trainees in the 84, 85 and 86 groups.

Industries in Arusha seem to offer some opportunities for work, above the numbers recruited from this region. Here one company is the dominante receiver of workers trained at the centre, e.g. the Breweries with 14 employees and nine apprenticees. Apart from that there are one or two employees in companies, such as Sunflag, Carmatec, Tanelec, Kilimanjaro Textiles, Sai Spray Painter.

Obviously, so far the trainees from Moshi NVTC have not been able to make any substantial impact on the industrial scene in either Kilimanjaro or Arusha regions. Apart from a few examples they only constitute some one or two workers, out of a total number of employees normally exceeding at least 100.

A few trainees have been employed by smaller engineering workshops or garages. However, during interviews in these ones we hardly found any of the trainees, to be traced.

Inplant trainees are often found in the same establishments that were mentioned as major employers. One addition with numerous apprenticees is the KCMC hospital in Moshi and Northern Electronics in Arusha.

Above we have commented on the fact that for the first three groups passing through the training at Moshi NVTC it has been fairly easy to acquire relevant employment. They seem to fill a need in the Tanzanian labour market. However, in the future the institution must go far beyond its borders and function more, as part of the society it is built to serve.

It can once again be pointed out that Moshi NVTC must live up to its role through a much better net-work of communication with the employers. This must be essential both for the development of the total course package and as a service to its trainees and the industries.

> *Labour division should communicate with employers as to regard of availability of skilled and semi-skilled workers.*
>
> *Although information on the availability of NVTC graduates is always given, industries should benefit more by direct contact between NVTC and clients.*

To be able to make a future positive impact on the local industrial scene it is up to Moshi NVTC to broaden its contacts with industrialists and others demanding technicial man-power in their operations. Many industrialists seem to be very willing to take part in a closer co-operation. Probably they would also constitute a rich source of ideas to tap, on how to proceed in the task of training skilled craftsmen.

## 7.5 Conclusion.

We have noted a lack of integration of Moshi NVTC into the local industrial community. An important task for the future must be to establish a broader communication net-work

Kilimanjaro and Arusha regions are both fairly well advanced industrially in a national context. In Kilimanjaro 6,650 people were employed in this sector in 1989, while it was slightly more in Arusha. An important role is played by the government and parastatal companies.

A major problem within the industrial sector is the low utilization of capacity. This has been explained mainly by references to harsh economic conditions. Shortage of skilled manpower has been mentioned, as a reason, but not as the most significant one.

Most of the trainees from Moshi NVTC find their way to be employed in Dar es Salaam. So far no substantial impact can be detected on a local labour market, by trainees from Moshi NVTC. However, a few have been able to secure employment with companies in Kilimanjaro, and to a certain extent Arusha, after a completed training.

To be able to keep up the favourable employment record, so far achieved, Moshi NVTC will have to cultivate closer contacts with local industries. If the institution will develop into an isolated enclave it can never serve the industries in the way anticipated, by providing skilled labour.

# 8. *CONCLUDING ANALYSIS.*

Trainees at Moshi NVTC are supposed to participate in a four years cycle of training, integrating an institution based component and practical industrial experience. With this background they should be able to graduate, as fullyfledged craftsmen, qualified for employment in the Tanzanian industrial sector.

Within the first five years of operation more than 1,000 trainees passed through, at least one year, of training at Moshi NVTC. It is these ones that constitute the sample scrutinized in this present volume. We have analysed the criteria for selection, achievements at the centre and during implant training. A follow up study has tried to map out the entrance into working life.

A mass of factual data has been collected in relation to this sample, which has been combined in the text with various expressions of opinion. Some of the correlations cited might seem a bit self-evident. However, too often relations are taken for granted, without a proper follow up.

My aspiration in connection to this paper has been, that it can be useful as a basis for a policy discussion, related to strategic decisions in a review of the vocational training in Tanzania. In addition to this, data here high-lighted might constitute further "evidence" contributing to the on-going debate on the place of vocational training in low-income countries.

Like so many other papers of this character it might be posing more questions, than giving answers. Suggestions might be more related to the need for new studies, instead of definite concrete recommendations. This is natural, as the solutions to many of the issues raised cannot be found in a mere technocratic manner, but in a complex web built up of factual, as well as normative, considerations.

## 8.1 Selection.

Any kind of evaluation of an educational institution must relate the final outcome to basic characteristics of the student/trainee population selected.

Moshi NVTC can be divided into two distinct categories of trainees. For seven of the trades there is clearly stated that entry must be based on either previous vocational training, or in one case a pass

in the Form IV examination, with the six remaining ones can be accepted directly from primary school.

We have found some disrepancies between the mimimum entry qualification, as stated formally, and the actual trainee background. Mainly this has been a feature of the 85 group of trainees. As expected this has resulted in a substantial failure rate among these trainees. This fact under-lines the need to be strict in the implementation of selection criteria decided upon.

An over-all observation is that trainees at Moshi NVTC, at least for some early groups, have a background above the mere minimum to get themselves enrolled. This, however, seemed to be almost a necessary basis to keep up the level set in the syllabus, posing the basic issue, if a primary education is really sufficient to make it through the training in any of the trades. If the answer to this is no, that will necessitate a discussion on an adjustment of either the selection criteria, or the curriculum.

Pointing to the fact that there are few alternative options for primary school leavers cannot on its own be a relevant argument for their selection into Moshi NVTC. The cost of running the centre, related to experienced instructors and advanced equipment, makes it necessary to operate on a high level of efficiency. Regulations in respect of selection must take this into account.

However, there might be other strong reasons to make selections among primary school leavers, such as the possiblity to mold them into getting a positive attitude towards manual work in a technical sector. Secondary school leavers might already have a life style developed opposed to this kind of a career.

There would be ample opportunities to investigate on this issue further, as the entry qualification has changed during the first five intakes. A comparison related to long-term working careers of these trainees could shed more light on what is a valied criteria for selection. So far we only have the internal achievements to judge from.

## 8.2 Internal achievements.

Most of the trainees have a positive experience related to the training process at Moshi NVTC. It can further be assumed that it encourages an interest in technological matters.

Formal achievements within the training is to a large extent correlated to educational/training background at the time of entry into the centre. Both the drop out and failure rates are substantially higher for trades not demanding any qualification above primary school.

In few cases the drop out or failure is due to an unsatisfactory performance in the practical part of the training. It is rather caused by a poor understanding of either the trade theory, or the subsidiary academic subjects. Therefore, it might be worthwhile to extend the teaching of these subjects, possibly with a preparatory course, to upgrade all trainees to a similar level.

During many discussions it has been claimed that the length of the courses is too short. An integrated approach has to be adopted to the whole complex interplay between the length of courses, curriculum and selection criteria. It can be assumed that with the diverse background among the trainees a greater flexibility has to be adopted.

An official measurement of training skills is through the trade testing. Our observation here is that a high proportion is never trying, to pass a trade test. One obvious reason is that with the specialized trades offered at Moshi NVTC it is impossible to follow any evening classes to upgrade the theoretical knowledge. In addition to this the timing of the tests have been rather haphazard, at least for the last few years and some employers are unwilling to release their inplant trainees. If trade tests are supposed to determine employment status and salary structure it is urgent to regulate the system.

Once again passes in trade tests seem to be strongly correlated to the previous educational/training background. Failures are mostly found within the theoretical part.

## 8.3 Inplant training.

One issue that has been coming back constantly during the discussions, as part of this evaluation, has been the situation at the inplant training. Our point of departure has been that the four year training cycle shall be an integrated totality. Even if the institution based training is functioning up to standard, the situation is not satisfactory if inplant training is not done adequately.

From our survey it has been obvious that far from all trainees are initially placed in an inplant position. Furthermore, many leave

their apprenticeship for various reasons. In addition to this, tasks given to perform might be totally void of any training element.

To make inplant training function properly it has to be viewed in the perspective of its definite pedagogical value. Therefore, Moshi NVTC must monitor this part of the learning process closely. Inplant training must be the responsibilty for the individual trades, co-ordinated by at least one full-time member of staff.

Trainees going out on inplant apprenticeship must be made aware of the fact that they are still in training, and not employed. This must also be discussed with companies co-operating with. The staff and administration of Moshi NVTC must not give any kind of confusing directions, as to the purpose of inplant training.

## 8.4 The world of work.

Even if we have objections to the way trade testing and inplant training is actually implemented, it has to be stressed that Moshi NVTC trainees have to a substantial rate been employed in a relevant job after the training. It is difficult to assess the extent of unemployment, as the data collection contains certain flaws. However, we have made an estimate that it might be somewhere between 10 and 15 per cent. Unemployment, can be correlated to factors, such as previous background and internal gradings at the centre.

Without a "control" group it might be difficult to give any assessment of the actual "success" in relation to the world of work. However, considering the extremely difficult industrial conditions facing Tanzania, the fact that so many are getting employed is a considerable achievement. In addition to this many are also utilizing the specific skills trained for.

On the local scene in Kilimanjaro and Arusha regions it is much too early to talk about any substantial impact. Some are presently settling down into a working career in the area. For the future a much more distinct effect can be expected. However, a lot of that hinges on the ability of Moshi NVTC to establish an integrated communication net-work with the local industrial community.

## 8.5 Final remarks.

This report follows the seemingly compulsory final call for further studies. First of all it is essential that what is here initiated will get a follow up in a longer time perspective. Partly this must be a task

of the individual centre, but also the NVTD. To be able to do this one basic requirement would be to stream-line the filing system at Moshi NVTC, as well as the other NVTC:s.

Some important tasks for the future have been mentioned casually in the text above. Basically it is important to find out how Moshi NVTC will be able to live up to the numerous challenges for the future. It is no time to be complacent with the obvious high proportion of the trainees being employed. This in itself is important, but cannot conceal some obvious shortcomings. These are primarily related to the trade testing system and inplant training. Without doubt the key task for the near future must be to sort out these two aspects of the vocational training.

In addition to this, other issues have to be reviewed thoroughly, such as selection procedure, curricula and length of training. All this implies the need for intensive follow up, primarily by specific assignments to the internal staff.

To a large extent it must be the task of an evaluator to bring out the negative sides, that has to be reformed. However, it seems to be an undisputed fact that Moshi NVTC has been able during its first few years of existence to produce craftsmen suitable for the Tanzanian labour market. If we go beyond mere mathematical calculations, it is an absolute conviction that this training could not have been done **more** efficiently from the industries themselves.

After all one of the critical components of the training involving the industries themselves, e.g. the apprenticeship seem to be difficult to solve. Building on this particular experience we can assume, that if vocational training is left entirely, to private interests the obvious danger running, will be that no manpower will be provided except in response to certain immidiate specific demands, without any over-all long-time perspective.

For a country like Tanzania the foundation for an indigenous industrial future has to be laid. From that point of view the present vocational training structure is needed. However, to get it run smoothly it needs a well-balanced lubrication.

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